

THE  
*Comptometer*  
COURSE IN  
BUSINESS ARITHMETIC

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*There is no other*  
"COMPTOMETER"  
*than that made by*  
FELT & TARRANT MFG. CO.

The  
**Comptometer**  
REG. TRADE MARK  
Course in  
Business Arithmetic

Compiled for use only in the instruction of the operation  
of the Comptometer — adding and calculating machine.

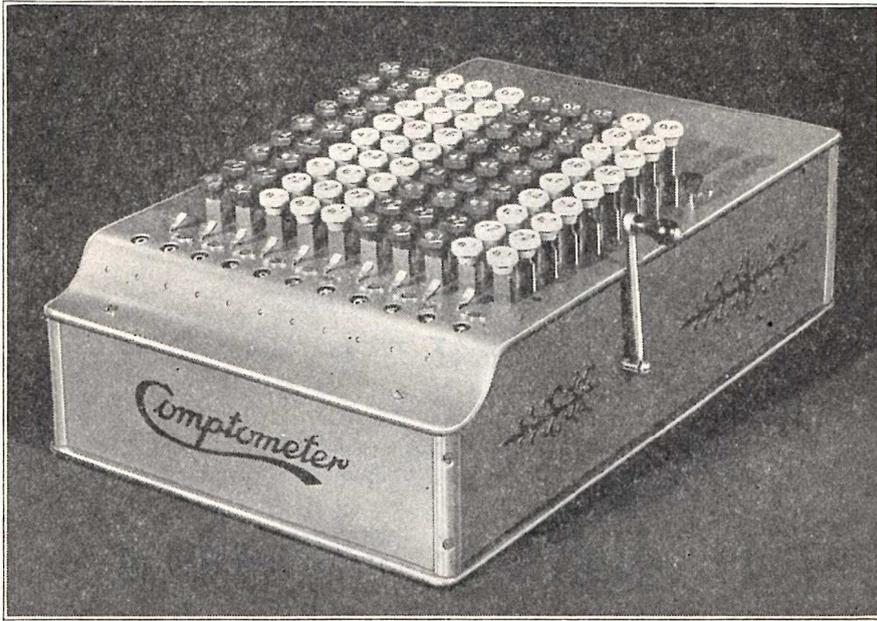
*Practical Training for  
Modern Business*

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Revised Edition

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FELT & TARRANT MFG. CO.  
CHICAGO, ILLINOIS



## THE TEN COLUMN COMPTOMETER

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Chicago, Ill.

# *Preface*

The purpose of this book is to serve as a basis in developing in the student the ability to handle figures rapidly and accurately, and at the same time to acquaint him with the value of applying the Comptometer to all business calculations.

The special prominence given to machine figuring in the commercial field is very strong evidence of its practical value. This work correlates easily with other commercial subjects in High School and it is reasonable to assert that there is no subject that arouses and maintains better interest, nor is there any subject that quickens the perceptive faculties and develops logical reasoning to a greater degree. Comptometer training merits a thorough investigation on the part of those responsible for the effective teaching of arithmetic.

We have aimed to keep the problems practical and within the understanding of average students so that they will be able to meet the exacting demands of the business world. Each new topic is introduced by a discussion of the business activities related to it, and the problems and exercises are such as actually arise in business. The arrangement of various subject material in tabular form has been chosen to save space and to educate the student to an orderly arrangement of his own work. It has been deemed wise to include everything essential to the course in one volume which is divided into two parts, each to correspond to one semester of the school year.

Experienced teachers may wish to handle the subject in their own way making some additions or substitutions, but the young teacher will, no doubt, find suggestions in the book helpful. The keyboard chart may be advantageously used especially in the teaching of all new subjects. It is intended that a part of each daily recitation be given to addition exercises, drilling carefully on the touch method and verifying the results at every point for proof in accuracy. Rhythm drills to develop an even touch and stroke can be taught with phonograph records specially adapted to this work. An explanation of the tests is given on the page entitled "Foreword to Teachers." The teacher's work will be greatly reduced if class instruction can be given, using the supplementary lessons for extra drill. Special assignments in mental figuring should be required in connection with the work in machine arithmetic, and the results compared for speed and accuracy.

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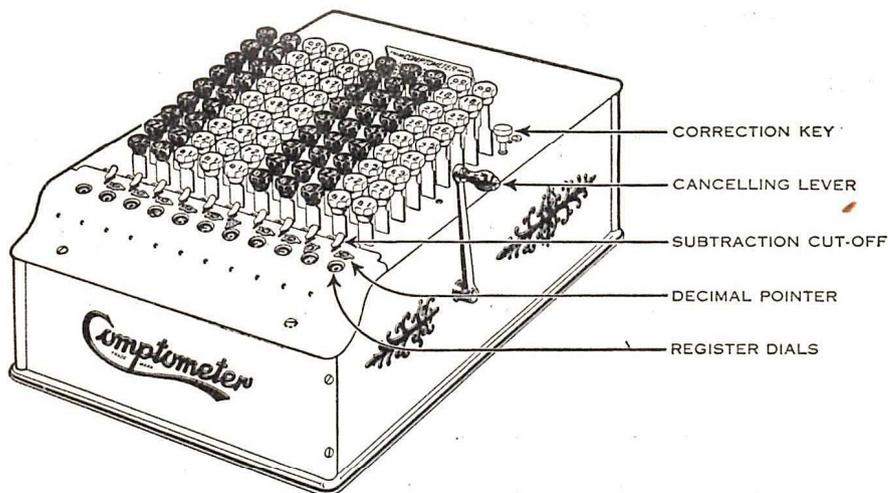
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## FOREWORD TO TEACHERS

The Comptometer is a key-driven adding and calculating machine and is manufactured in three standard sizes. The keyboard is arranged in eight or more columns

of nine keys which are grouped in alternating sections, colored green and white. Each key-top has a large and a small figure; the large figures are used for addition and multiplication and the small figures, for subtraction and division. The register dials show the result of the calculation. The lever at the right



clears the register dials. The numbered pointers are decimal pointers. The cut-offs at the left of each column are used for subtraction. The red key at the upper right hand corner is a "correction key" that releases the keyboard after a partial key-stroke error has been corrected.

### POSTURE

A machine improperly placed is detrimental to speed and ease of operation. Teachers should see that each student is in a comfortable operating position. The machine may be placed at right angles or slightly to the right of the operator with the left edge in a direct line with the center of the body. The desk and the seat of the chair should be of a height to permit the feet to touch the floor and the fingers to rest comfortably on the keys.

### TESTS

A series of Progress Tests covering the work of the previous period has been made a part of the text.

Each test is divided into three separate units of work with a definite time limit on each. Three goals—Excellent, Normal, and Fair—have been set and are shown at the bottom of the page. These standards are based upon a required number of problems solved correctly within the time given.

All of the tests are closely related to the instructional work in the book and they should serve as a fair guide to the teacher in measuring the different levels of ability and also prove a stimulation to the pupils.

### HOW TO GIVE THE TESTS

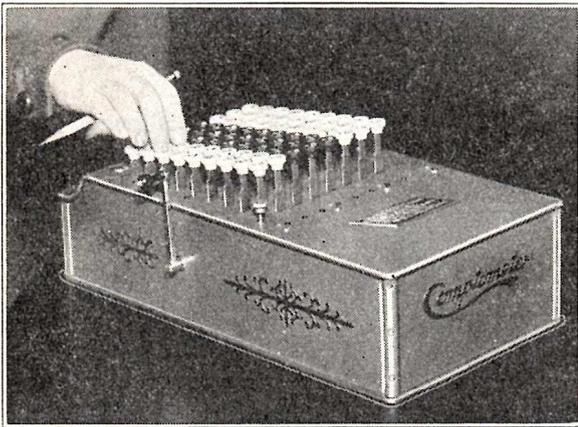
1. The tests should be given at the beginning of the recitation period, preferably in separate units.
2. Allow pupils time to look over the problems and to discuss the work.
3. Rule an answer sheet and number the lines.
4. Each pupil should look over the test schedule and set his goal before starting. Then, if time permits, he may work more problems and reach a higher goal.
5. Start and stop all pupils at the same time.
6. Record the results on the table in the back of book.

## ADDITION

Addition is the process of combining two or more numbers and expressing the total as one number. This is the basis of all mathematical processes and forms a large per cent of all figure work and, therefore, of all Comptometer work.

The touch method of addition is performed on the lower half of the Comptometer keyboard. This provides for the greatest degree of speed and accuracy and is simple and easy to learn.

**To the Teacher:** Illustrate carefully the correct operating position and see that each student is comfortable and at ease before starting the work on the machine. From the keyboard chart explain the keys to use in addition, the correct fingering, and then demonstrate the method of depressing the keys with a smooth even stroke. Write column one on the blackboard and give the preliminary instruction from the board.



*Position of pencil and hand in addition*

The keys with the large figures 1 to 5 are used in touch addition. Combine numbers for 6, 7, 8, and 9. There are no large cipher keys so skip columns in which naughts appear.

The keys of the odd numbers 1, 3, and 5 are concave; the even numbers 2 and 4 are flat-topped. This facilitates the touch method.

Use only the first and second fingers of the right hand. Hold a pencil in hand between thumb and palm. This helps to balance the hand and the pencil is also in readiness for use.

Place the finger on the key and push it down until you feel it register. Lift finger slightly off the key after each stroke. If the keyboard locks, it is a signal of a partial keystroke. Correction rules for these errors will be taught as soon as you have acquired the right operating habits.

For the first few days go very slowly, memorizing the keyboard and acquiring a full rhythmic stroke. Practise on the following examples, without looking at the keyboard, until the key location is firmly fixed in the mind. Add down the column.

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.
11	12	11	22	23	11	11	22	32	21	12	55	22	20	30
12	23	12	23	33	21	21	32	33	32	13	45	23	32	32
22	34	22	33	34	22	22	33	34	43	23	54	24	24	34
23	45	12	23	44	32	21	32	44	54	35	24	44	43	35
33	55	22	44	45	22	22	44	54	55	55	34	43	34	33
34	44	23	34	55	33	32	43	55	44	35	53	53	30	23
44	33	33	55	44	44	33	55	44	33	43	44	35	54	43
45	22	23	45	33	54	32	54	33	22	33	24	45	53	34
<u>55</u>	<u>11</u>	<u>22</u>	<u>55</u>	<u>22</u>	<u>55</u>	<u>33</u>	<u>55</u>	<u>22</u>	<u>11</u>	<u>22</u>	<u>43</u>	<u>54</u>	<u>45</u>	<u>20</u>
279	279	180	334	333	294	227	370	351	315	271	376	343	335	284

## ADDITION EXERCISES

The following problems are selected to promote correct fingering and key location and should be added several times. Work very slowly; speed will come later.

**Proof of Addition:** If the student is to be efficient in the business world, his work must be accurate. The simplest way to verify addition is to re-add beginning either at the top or bottom of the column.

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
12	34	33	12	45	12	34	23	11	54
23	44	32	23	54	23	54	32	12	55
34	45	23	34	34	33	44	21	21	45
45	55	34	45	45	32	34	11	22	43
55	54	44	54	23	21	32	12	23	23
54	44	43	43	32	11	12	23	21	32
45	43	33	32	22	12	11	22	11	23
44	33	32	21	23	21	23	22	22	21
43	34	23	12	45	14	32	34	23	23
34	43	22	23	43	22	34	33	43	32
33	32	21	34	54	23	33	34	44	33
22	23	23	45	34	33	43	45	43	34
23	33	23	54	31	32	44	54	34	44
22	34	22	43	43	22	55	45	44	43
21	45	21	34	34	21	54	44	45	44
<u>11</u>	<u>44</u>	<u>11</u>	<u>43</u>	<u>52</u>	<u>11</u>	<u>43</u>	<u>34</u>	<u>23</u>	<u>45</u>
521	640	440	552	614	343	582	489	442	594
11.	12.	13.	14.	15.	16.	17.	18.	19.	20.
23	33	13	24	14	45	44	32	12	23
21	45	35	42	45	55	43	43	23	21
12	55	55	35	34	42	45	44	11	12
32	54	53	53	44	31	34	34	12	12
34	45	31	13	13	33	35	33	45	24
45	43	11	31	42	33	32	44	33	45
44	23	12	33	31	11	22	43	35	42
43	22	22	35	42	13	23	33	54	22
34	21	33	45	31	34	22	35	43	33
33	12	35	53	12	44	23	45	21	31
23	22	53	31	23	45	45	43	22	32
22	23	35	24	34	53	45	34	23	35
11	33	31	42	41	33	43	44	34	45
12	43	23	24	41	31	34	43	44	43
22	44	34	35	13	34	42	34	43	45
<u>23</u>	<u>34</u>	<u>44</u>	<u>55</u>	<u>34</u>	<u>42</u>	<u>42</u>	<u>13</u>	<u>44</u>	<u>43</u>
434	552	520	575	494	579	574	597	499	508

**To the Teacher:** Dictate numbers such as 34, 54, 31, etc. Tap for rhythm and have pupils follow the chart as they change from one number to another. This is an easy way to develop correct fingering and rhythm.

## ADDITION EXERCISES

In touch addition never go above the 5-key; combine numbers for 6, 7, 8 and 9 as follows:

To add 6 depress 3 and 3  
 To add 7 depress 3 and 4  
 To add 8 depress 4 and 4  
 To add 9 depress 4 and 5

Always depress the 3 **before** the 4 for a 7 and the 4 **before** the 5 for a 9. This is following the natural order and the student will soon realize the value of adhering to correct fingering.

Add the following very slowly; verify by adding again.

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
23	32	43	34	12	48	67	45	12	23
36	63	37	73	63	73	43	39	26	64
43	34	84	48	24	45	77	73	37	75
48	84	38	83	37	94	65	26	49	93
35	53	49	94	83	26	95	58	94	38
49	94	54	45	65	73	48	48	73	47
43	34	83	38	49	24	64	95	62	59
36	63	36	63	88	39	23	89	21	86
42	24	88	24	94	83	72	56	15	35
22	24	34	24	37	39	48	26	26	59
43	38	12	45	95	23	73	64	64	57
63	45	48	77	65	89	47	68	68	72
78	85	67	73	26	21	39	38	38	26
52	52	12	37	49	86	94	47	47	17
<u>34</u>	<u>46</u>	<u>23</u>	<u>75</u>	<u>93</u>	<u>46</u>	<u>72</u>	<u>25</u>	<u>25</u>	<u>29</u>
11.	12.	13.	14.	15.	16.	17.	18.	19.	20.
53	27	48	16	25	49	84	92	21	49
68	38	47	25	92	52	31	34	33	55
95	49	63	37	14	34	21	78	74	34
74	56	84	29	52	23	12	12	96	42
83	75	93	53	71	54	45	42	63	21
39	94	32	41	42	43	98	34	81	54
57	72	26	17	35	45	74	98	42	34
46	13	82	29	92	25	63	63	93	75
23	67	14	92	25	31	61	82	82	89
48	63	48	43	92	13	42	31	34	43
16	84	16	73	52	45	38	52	78	12
25	37	25	43	24	55	96	46	95	24
38	32	92	39	35	88	77	75	48	64
47	26	63	24	26	14	34	41	34	78
<u>25</u>	<u>24</u>	<u>37</u>	<u>36</u>	<u>84</u>	<u>48</u>	<u>45</u>	<u>52</u>	<u>75</u>	<u>31</u>

Lesson 4.

## ADDITION EXERCISES

Carelessness in reading numbers is often the cause of errors.

Practice very slowly on the following. Keep the eyes constantly on the figures you are adding. If the keyboard locks, it is signalling a partial key-stroke error. Give each key a full stroke.

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
89	72	75	29	88	41	28	56	25	82
73	34	83	83	96	51	31	48	20	12
35	68	96	45	30	32	40	17	34	96
98	75	29	75	24	98	64	90	75	70
54	93	84	90	21	41	98	17	34	34
23	86	63	45	75	42	35	74	75	22
48	34	84	96	34	63	13	64	24	96
73	21	26	84	96	96	70	24	31	34
31	55	75	21	11	42	22	68	70	21
48	45	45	74	21	80	44	71	96	70
78	83	98	35	34	75	45	30	75	34
34	42	93	75	84	29	91	34	21	35
61	31	70	32	75	73	30	73	95	34
78	13	21	26	80	96	96	24	31	22
48	31	12	52	48	59	59	42	13	57
45	37	82	29	83	90	73	28	57	10
73	48	34	88	57	13	30	60	22	27
84	45	79	41	92	22	98	75	80	34
54	70	21	12	68	81	54	43	21	48
<u>50</u>	<u>63</u>	<u>44</u>	<u>33</u>	<u>40</u>	<u>26</u>	<u>17</u>	<u>21</u>	<u>15</u>	<u>13</u>
11.	12.	13.	14.	15.	16.	17.	18.	19.	20.
24	96	43	53	45	29	14	66	54	23
43	31	81	29	31	17	53	58	98	53
61	42	63	43	13	26	25	19	13	90
32	75	56	43	32	72	10	92	20	54
98	34	80	59	30	57	59	20	25	63
70	63	12	95	54	59	75	21	53	75
64	35	36	20	92	30	34	49	53	96
35	10	71	56	54	86	25	29	43	90
75	31	42	36	23	25	29	21	50	75
12	98	92	42	34	75	47	21	31	14
67	36	32	31	15	55	45	45	26	42
98	45	48	67	98	93	30	12	13	53
14	13	31	84	29	24	96	67	84	34
90	10	40	45	92	30	47	40	45	67
35	56	53	80	52	47	45	59	93	12
33	75	84	62	25	45	73	84	54	50
75	37	48	45	70	63	82	29	34	79
84	62	25	21	44	29	80	41	10	33
60	80	57	92	68	40	95	13	22	81
<u>25</u>	<u>52</u>	<u>26</u>	<u>48</u>	<u>57</u>	<u>33</u>	<u>57</u>	<u>22</u>	<u>88</u>	<u>20</u>

## ADDITION EXERCISES

Bad habits in the beginning will cause trouble later. Correct fingering leads to accuracy and speed. Never sacrifice accuracy for speed.

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
43	45	46	89	42	35	29	34	20	29
82	31	97	32	67	12	25	14	18	33
63	22	25	19	29	31	48	59	72	46
56	60	30	24	63	47	14	25	20	75
36	43	71	46	48	59	53	42	34	57
28	47	43	12	20	24	25	49	95	73
45	17	24	21	41	23	90	23	42	30
28	13	52	14	36	54	43	34	49	67
24	81	35	41	94	13	66	50	62	25
25	15	92	79	54	95	84	48	58	46
45	24	86	31	73	72	80	39	55	20
64	31	45	24	44	96	22	64	64	22
<u>73</u>	<u>29</u>	<u>20</u>	<u>63</u>	<u>29</u>	<u>73</u>	<u>96</u>	<u>71</u>	<u>73</u>	<u>96</u>
412	450	666	1995	640	634				
11.	12.	13.	14.	15.	16.	17.	18.	19.	20.
84	35	43	25	79	13	13	14	89	36
25	79	13	82	94	14	41	12	23	43
43	94	15	92	96	83	83	83	21	51
33	86	84	49	70	46	12	62	43	94
21	38	75	76	53	60	21	63	13	28
75	64	78	21	21	42	50	14	32	30
78	84	68	31	53	29	43	14	32	30
60	95	30	89	30	41	57	49	54	63
35	80	79	24	48	27	26	79	36	59
79	95	94	70	53	53	43	21	50	42
50	29	55	81	22	59	55	55	29	86
64	83	92	49	93	63	93	86	61	39
<u>73</u>	<u>46</u>	<u>73</u>	<u>62</u>	<u>84</u>	<u>70</u>	<u>61</u>	<u>73</u>	<u>74</u>	<u>40</u>
21.	22.	23.	24.	25.	26.	27.	28.	29.	30.
65	14	36	25	46	85	39	98	98	23
19	13	72	16	52	79	74	31	64	39
21	63	14	31	21	27	45	24	32	46
49	95	21	62	26	46	54	98	45	21
65	29	94	46	95	32	32	53	57	12
84	57	95	31	84	54	98	74	32	33
14	89	42	89	53	60	34	74	32	34
14	35	76	90	96	27	43	25	12	64
90	62	14	41	17	42	52	43	22	20
41	46	87	54	95	52	60	12	74	64
96	89	34	59	89	26	92	58	39	29
54	64	90	64	63	83	75	64	84	63
<u>23</u>	<u>72</u>	<u>75</u>	<u>73</u>	<u>74</u>	<u>45</u>	<u>31</u>	<u>71</u>	<u>10</u>	<u>71</u>

## THE CONTROLLED-KEY

### In Addition

The important points stressed in the first adding lessons have been key location and a full rhythmic stroke with the result that a fair amount of speed on two-figure adding has been acquired.

Success in the business world depends largely upon speed on all computations plus a very high degree of accuracy.

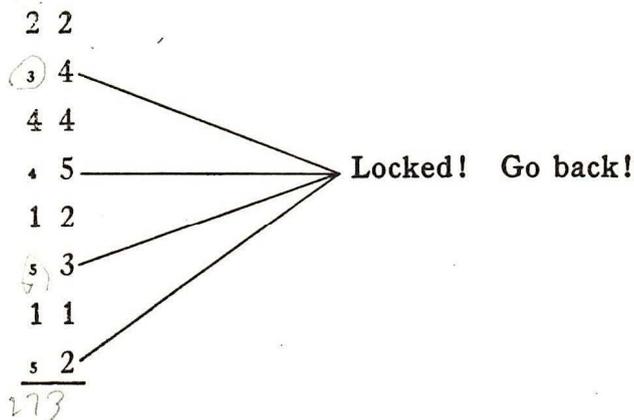
To insure operating accuracy, the Comptometer is equipped with a mechanical locking device, known as the controlled-key, which gives instant signal when a partial key-stroke error has been made. A key that cannot be depressed is a warning of an incomplete key-stroke and, if not corrected, will result in a wrong answer.

### TO MAKE A CORRECTION

When a key is found locked in adding, always go back and try to depress the last key operated. (There is never an exception to this rule.)

RULE 1. If this key can be depressed, touch the red correction key and continue the addition, starting on the key that locked and signalled the error.

In the following column intentionally give each of the smaller numbers a partial key-stroke and correct.



How do you find the error? How do you make the correction?

**Suggestion for oral drill:** "When I came to the 4 I found it locked. I went back to the 3 and gave it a complete stroke—touched the correction key and continued with the addition beginning with the 4."

## THE CONTROLLED-KEY

On

### Combination Numbers

Sixty per cent of the value of the Controlled-Key is in the instant and positive signal of an error; the other forty per cent lies in the operator's ability to correct the error without having to re-add.

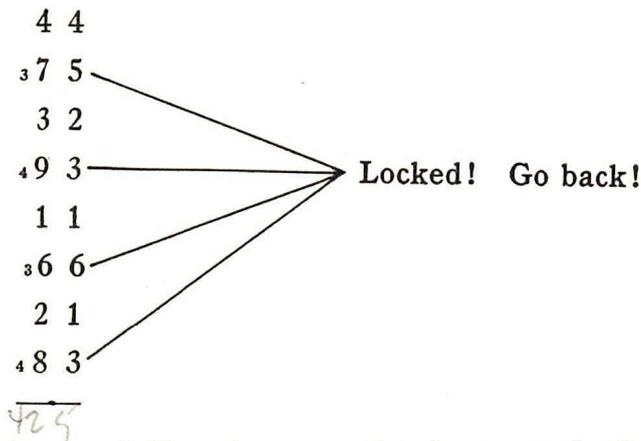
As the student becomes proficient on the machine he will readily appreciate the value of making a correction when the error signal is given.

### TO MAKE A CORRECTION

When a key is found locked in adding, **always** go back and try to depress the last key operated. (There is never an exception to this rule.)

**RULE 2.** If the last key operated is found locked, the error was made on the preceding key in the same column. Touch the red correction key and again depress the key where the error was made. Then continue the adding, starting on the key that signalled the error.

In the following column intentionally give each of the smaller numbers a partial key-stroke and correct.



How do you find the error? How do you make the correction?

**Suggestion for oral drill:** "When I came to the 5, I found it locked. I went back to the 4 of the 7 and found it locked. This told me the error was made on the 3. I touched the correction key; added the 3 and continued with the addition starting with the 5."

**NOTE:** If the key "preceding the last" is larger than the "last key operated" cancel and re-add.

## THE CONTROLLED-KEY

## Review

The Controlled-Key, even in the hands of a beginner, will not permit an incomplete key-stroke. Every key-stroke must give the right answer or none at all.

As the student becomes proficient on the machine he will readily appreciate the value of making a correction when the error signal is given.

Drill carefully on the following problems until the student can easily make every correction.

1.	2.	3.	4.
3 4	9 9	7 0	5 6
<sup>3</sup> 7 9	<sup>3</sup> 4	<sup>4</sup> 8 4	8 <sup>3</sup> 7
5 <sup>5</sup>	6 <sup>3</sup> 9	4 5	4 3
4 3	3 4	7 <sup>4</sup> 2	2 2
1 5	6 7 <sup>4</sup>	4 4	<sup>4</sup> 5
6 <sup>4</sup> 9	5 1	9 <sup>5</sup> 5	3 6
4 4	<sup>4</sup> 9 6	3 <sup>4</sup> 9	<sup>5</sup> 5
<sup>3</sup> 5	3 2	8 2	8 7
374	482	511	431
5.	6.	7.	8.
8 0	9 3	3 9 <sup>5</sup>	7 2
<sup>3</sup> 4	4 4	4 2	8 <sup>4</sup> 4
5 1	7 <sup>4</sup> 6	1 0	5 4
8 <sup>4</sup>	8 <sup>4</sup> 5	1 <sup>5</sup>	<sup>3</sup> 3
5 5	5 6	8 3	7 <sup>4</sup> 4
2 <sup>3</sup>	<sup>3</sup> 7 7	2 <sup>4</sup> 9	9 <sup>5</sup> 3
9 4	3 <sup>3</sup>	4 5	9 <sup>5</sup> 3
4 5	6 4	6 6	1 2
440	529	329	515

NOTE: Controlled-Key in Multiplication and Division.

Owing to the speed of the Comptometer, it is easier and faster on small calculations to cancel and go over the problem than to stop and make the correction. The fact that the machine has locked is a danger signal and demands attention.

## ADDITION EXERCISES

Written Exercise: In all written work make your figures plain and of a uniform size. Often it is necessary to write rapidly but this speed should not be secured at the expense of legibility. The ability to make neat figures is a strong factor in all Comptometer work.

Copy and add by lines and by columns:

1.

$$34 + 96 + 75 + 27 = 232$$

$$96 + 12 + 15 + 42 = 165$$

$$78 + 84 + 14 + 26 = 202$$

$$34 + 23 + 44 + 55 = 156$$

$$25 + 78 + 96 + 38 = 237$$

$$\underline{60 + 26 + 53 + 46 = 185}$$

Totals  $327 \quad 319 \quad 297 \quad 234 = 1177$

2.

$$78 + 39 + 93 + 64 = 274$$

$$43 + 20 + 82 + 39 = 184$$

$$29 + 43 + 14 + 27 = 113$$

$$82 + 98 + 35 + 96 = 311$$

$$45 + 74 + 93 + 70 = 282$$

$$\underline{27 + 65 + 16 + 57 = 165}$$

Totals  $304 \quad 339 \quad 333 \quad 359 = 1329$

3.

$$59 + 16 + 69 + 54 = 198$$

$$82 + 24 + 82 + 67 = 255$$

$$46 + 29 + 45 + 33 = 153$$

$$93 + 83 + 93 + 55 = 324$$

$$29 + 42 + 86 + 27 = 184$$

$$\underline{57 + 60 + 27 + 49 = 193}$$

Totals  $366 \quad 257 \quad 402 \quad 285 = 1307$

4.

$$57 + 82 + 38 + 91 = 268$$

$$96 + 93 + 73 + 27 = 289$$

$$80 + 59 + 42 + 56 = 237$$

$$24 + 86 + 98 + 81 = 289$$

$$93 + 43 + 47 + 20 = 203$$

$$\underline{56 + 25 + 26 + 56 = 163}$$

Totals  $406 \quad 388 \quad 324 \quad 331 = 1449$

5.

$$39 + 89 + 73 + 55 = 256$$

$$89 + 82 + 86 + 66 = 323$$

$$93 + 14 + 29 + 28 = 164$$

$$57 + 24 + 54 + 57 = 192$$

$$96 + 34 + 83 + 24 = 237$$

$$\underline{21 + 60 + 24 + 61 = 146}$$

Totals  $375 \quad 303 \quad 349 \quad 291 = 1318$

6.

$$79 + 24 + 56 + 49 = 208$$

$$83 + 96 + 73 + 56 = 308$$

$$20 + 82 + 82 + 17 = 201$$

$$55 + 93 + 52 + 25 = 225$$

$$42 + 46 + 67 + 31 = 186$$

$$\underline{26 + 52 + 30 + 19 = 127}$$

Totals  $305 \quad 2393 \quad 360 \quad 197 = 1255$

## ADDITION EXERCISES

## "Split" Method

In adding columns of large numbers it is often an advantage to add the cents first and then the dollars.

Add the cents in the 1st and 2nd columns at the right of the keyboard. Leave this total in the register and add the dollars in their position in the 3rd and 4th columns. This gives the total for the column. Pay careful attention to correct fingering and strive to keep a smooth rhythmic stroke.

The "split" method of addition enables the student to perform large additions with speed and accuracy.

1. \$56.95 59.38 6.28 1.13 64.74 35.76 3.56 31.65 4.70 74.59 <u>338.74</u>	2. \$94.83 3.42 4.56 36.42 78.56 7.86 68.99 43.93 .65 70.62 <u>409.84</u>	3. \$79.46 6.97 45.86 66.80 9.75 31.38 93.22 89.70 2.79 87.62 <u>513.55</u>	4. \$36.68 67.48 8.76 3.48 38.48 66.29 4.11 36.84 74.90 7.82 <u>344.84</u>	5. \$98.40 78.36 .65 5.43 36.97 85.78 33.56 9.21 45.38 90.44 <u>484.18</u>
6. \$23.45 1.70 11.67 58.83 8.44 13.71 43.93 4.58 49.73 17.35 <u>233.39</u>	7. \$23.74 9.45 93.40 28.85 7.31 34.56 6.34 49.89 64.05 6.42 <u>324.01</u>	8. \$57.49 34.87 2.30 4.78 52.46 34.89 7.32 22.64 17.33 30.71 <u>264.79</u>	9. \$89.36 5.48 64.45 44.33 8.70 33.62 23.84 .68 71.45 23.30 <u>365.21</u>	10. \$39.78 8.47 34.52 46.35 1.30 47.65 8.40 9.43 13.95 45.33 <u>255.18</u>
11. \$ 4.97 39.46 74.50 68.17 1.93 4.59 34.33 75.69 8.32 43.44 <u>353.40</u>	12. \$65.30 42.80 6.37 56.93 3.34 86.36 22.34 7.96 36.72 34.39 <u>342.51</u>	13. \$ 9.36 78.25 80.38 7.54 6.42 87.29 33.48 62.71 3.42 82.24 <u>451.09</u>	14. \$ 8.65 45.34 74.70 36.91 4.73 30.57 46.70 3.89 63.86 74.38 <u>389.73</u>	15. \$39.22 57.23 6.49 .38 42.78 40.60 85.42 3.66 6.85 26.90 <u>309.53</u>

ADDITION EXERCISES

"Split" Method

1.  
\$23.74  
13.59  
2.56  
62.41  
74.50  
1.67  
43.44  
19.11  
.85  
1.23  
243.10

2.  
\$17.33  
39.74  
3.41  
.52  
65.30  
8.79  
34.28  
25.00  
4.92  
23.56  
222.85

3.  
\$62.51  
1.24  
18.43  
90.25  
.96  
54.16  
82.24  
6.76  
43.05  
71.99  
431.59

4.  
\$11.67  
36.15  
97.23  
5.65  
21.04  
42.38  
4.55  
15.31  
64.35  
91.65  
389.88

5.  
\$46.35  
11.22  
4.79  
53.81  
14.23  
3.54  
26.90  
18.45  
49.30  
3.05  
291.64

6.  
\$56.95  
1.93  
31.64  
41.62  
5.11  
49.04  
12.16  
33.79  
.52  
21.79  
254.55

7.  
\$94.83  
3.25  
70.62  
21.94  
9.37  
36.52  
22.64  
94.55  
7.22  
16.52  
438.46

8.  
\$36.68  
21.79  
4.11  
7.05  
54.67  
25.34  
.17  
70.18  
66.25  
.30  
286.54

9.  
\$64.45  
14.92  
2.34  
90.49  
56.46  
1.23  
46.25  
11.40  
7.48  
46.73  
341.75

10.  
\$26.90  
2.78  
57.03  
32.43  
8.71  
76.54  
24.33  
3.54  
61.55  
52.41  
336.22

11.  
\$43.57  
95.60  
61.08  
7.44  
53.88  
19.67  
4.10  
85.24  
17.23  
8.21  
376.02

12.  
\$33.59  
78.11  
7.05  
21.82  
36.91  
4.24  
23.94  
61.55  
35.18  
.45  
282.84

13.  
\$31.69  
45.23  
1.95  
12.50  
75.38  
24.33  
18.76  
3.45  
79.22  
94.55  
387.06

14.  
\$ 1.78  
74.51  
11.87  
.13  
56.15  
63.26  
2.18  
91.75  
26.53  
3.67  
331.73

15.  
\$34.95  
51.12  
6.67  
47.35  
13.76  
4.22  
44.51  
13.17  
5.26  
37.62  
258.43

## MULTIPLICATION

## Right of Keyboard

Multiplication is repeated addition, that is  $5 \times 5$  is 25, and the same result is obtained by adding  $5+5+5+5+5$ . In machine multiplication as in addition, use the large figures on the key-tops.

The multiplicand and multiplier are the two factors which when multiplied together produce the product. The result is the same whichever factor is used as the multiplier. The number held on the keyboard is the keyboard factor.

Too much attention should not be given to definitions as they are rarely used in business. However, they are valuable as a help in teaching and should be clearly understood.



*Position of hands in Multiplication*

**To the Teacher:** Use the keyboard chart in illustrating the different key positions.

To multiply 44 by 3, place the index finger of the left hand on the 4-key in the tens' column; the index finger of the right hand on the 4-key in the units' column. Depress the keys 3 times, answer 132. To multiply 56 by 34, hold 56 with the index finger of each hand and depress 4 times; then move the fingers one column to the left and depress 3 times, answer 1904.

The fingers should be held in a curved position and should be raised slightly above the keys after each depression.

Count the strokes of the multiplying factor but do not get into the habit of counting aloud or moving the lips. Careful attention should be given to the development of skill in moving from one column to another without breaking the rhythm. Do not look at the keyboard after the fingers are placed on the proper keys.

Use the first finger of each hand for keyboard factor and drill on the following problems until you are able to glide from column to column without a break in rhythm.

- |              |                |                 |
|--------------|----------------|-----------------|
| 1. 555 x 55  | 8. 55465 x 35  | 15. 896435 x 22 |
| 2. 5454 x 31 | 9. 78642 x 41  | 16. 78463 x 77  |
| 3. 6834 x 33 | 10. 35641 x 57 | 17. 64532 x 50  |
| 4. 7134 x 25 | 11. 4635 x 62  | 18. 45605 x 43  |
| 5. 8462 x 54 | 12. 13455 x 89 | 19. 96453 x 99  |
| 6. 564 x 67  | 13. 3426 x 75  | 20. 12934 x 76  |
| 7. 8463 x 30 | 14. 468 x 5    | 21. 5809 x 22   |

## ADDITION EXERCISES

### "Split" Method

The following sales were made in the General Bargain Store. Find the totals of the cash sales, the charge sales, and the returned goods.

Clerk No.	Cash Sales	Charge Sales	Returns
1	\$94.75	\$45.00	\$ 7.84
2	78.60	29.84	
3	39.45	72.75	25.00
4	75.96	80.64	18.80
5	66.34	16.60	
6	29.83	75.00	5.80
7	88.81	34.50	2.24
8	76.50	50.55	22.25
9	55.25	20.64	10.15
10	64.59	10.12	5.50
	<u>610.08</u>	<u>435.64</u>	<u>89.74</u>

## MULTIPLICATION EXERCISES

### Right of Keyboard

Operate with a smooth even stroke sliding the fingers from column to column without looking at the keyboard. If the machine locks, it is a danger signal and demands attention.

Find the product of the following problems; verify by holding the other factor:

- |             |             |             |
|-------------|-------------|-------------|
| 11. 28 x 35 | 31. 34 x 56 | 51. 64 x 35 |
| 12. 45 x 93 | 32. 14 x 57 | 52. 11 x 62 |
| 13. 77 x 44 | 33. 64 x 35 | 53. 98 x 98 |
| 14. 88 x 84 | 34. 58 x 63 | 54. 67 x 55 |
| 15. 56 x 73 | 35. 98 x 34 | 55. 37 x 95 |
| 16. 86 x 85 | 36. 78 x 76 | 56. 14 x 37 |
| 17. 62 x 75 | 37. 98 x 64 | 57. 42 x 42 |
| 18. 64 x 70 | 38. 35 x 76 | 58. 96 x 78 |
| 19. 57 x 38 | 39. 46 x 73 | 59. 49 x 87 |
| 20. 59 x 30 | 40. 54 x 72 | 60. 57 x 86 |
| 21. 34 x 68 | 41. 13 x 12 | 61. 38 x 94 |
| 22. 29 x 33 | 42. 25 x 98 | 62. 30 x 42 |
| 23. 58 x 58 | 43. 14 x 77 | 63. 46 x 75 |
| 24. 64 x 32 | 44. 29 x 29 | 64. 86 x 77 |
| 25. 35 x 35 | 45. 18 x 56 | 65. 93 x 24 |
| 26. 75 x 84 | 46. 59 x 44 | 66. 50 x 76 |
| 27. 31 x 25 | 47. 83 x 72 | 67. 34 x 34 |
| 28. 93 x 40 | 48. 55 x 55 | 68. 29 x 88 |
| 29. 85 x 64 | 49. 93 x 81 | 69. 75 x 63 |
| 30. 66 x 33 | 50. 72 x 64 | 70. 84 x 72 |

## ADDITION EXERCISES

## "Split" Method

1.	2.	3.	4.	5.
\$79.84	\$93.12	\$24.68	\$75.93	\$29.64
82.93	12.45	93.82	43.59	64.71
30.84	27.44	24.25	21.18	36.23
75.14	8.24	5.92	48.21	1.54
3.34	7.33	75.35	3.43	75.67
96.24	26.51	6.64	5.75	82.47
3.16	16.45	15.12	54.87	4.25
45.73	17.85	69.76	46.25	47.12
29.00	2.77	6.85	7.96	2.36
3.55	91.36	36.41	26.80	22.73
59.37	48.34	54.37	12.42	23.27
64.83	16.51	96.26	37.63	14.49
75.21	9.15	3.45	5.98	5.26
2.95	45.31	27.87	64.42	73.65
<u>16.43</u>	<u>37.08</u>	<u>46.52</u>	<u>98.75</u>	<u>24.43</u>

672.56

## MULTIPLICATION EXERCISES

## Right of Keyboard

Find the product of each of the following:

- |              |               |               |               |
|--------------|---------------|---------------|---------------|
| 6. 364 x 93  | 18. 768 x 35  | 30. 148 x 37  | 42. 991 x 65  |
| 7. 82 x 75   | 19. 6575 x 93 | 31. 368 x 73  | 43. 43 x 86   |
| 8. 479 x 82  | 20. 824 x 68  | 32. 2224 x 67 | 44. 895 x 63  |
| 9. 356 x 29  | 21. 492 x 78  | 33. 445 x 75  | 45. 3428 x 75 |
| 10. 425 x 62 | 22. 1252 x 27 | 34. 37 x 86   | 46. 565 x 29  |
| 11. 78 x 54  | 23. 795 x 83  | 35. 824 x 68  | 47. 658 x 36  |
| 12. 563 x 75 | 24. 56 x 94   | 36. 645 x 73  | 48. 97 x 65   |
| 13. 628 x 46 | 25. 366 x 35  | 37. 456 x 87  | 49. 2235 x 48 |
| 14. 395 x 37 | 26. 84 x 24   | 38. 78 x 28   | 50. 963 x 26  |
| 15. 387 x 21 | 27. 542 x 13  | 39. 365 x 89  | 51. 37 x 75   |
| 16. 456 x 37 | 28. 635 x 76  | 40. 5574 x 37 | 52. 845 x 85  |
| 17. 45 x 75  | 29. 476 x 85  | 41. 496 x 55  | 53. 1343 x 27 |

54. A man purchases land containing 79 buildings lots. At a value of \$795 per lot, what is the total cost?

55. How many pounds of flour in 7846 bags, allowing 98 pounds to a bag?

## ADDITION EXERCISES

## "Split" Method

1.	2.	3.	4.	5.
\$12.06	\$90.11	\$15.07	\$42.36	\$57.62
24.48	2.31	67.89	65.90	4.50
1.13	37.62	.54	4.62	96.52
98.23	24.32	7.89	92.51	12.12
18.79	89.11	37.68	6.72	110.92
21.54	.29	98.23	18.75	2.27
7.11	4.78	46.75	28.50	76.98
53.67	55.25	8.88	37.44	3.33
77.00	76.80	56.23	8.17	53.67
5.78	3.65	72.39	.81	2.28
12.23	46.57	2.43	16.57	25.91
70.89	3.89	86.59	98.70	6.22
12.12	89.26	19.23	3.36	83.56
5.45	77.15	3.56	57.68	15.26
<u>27.24</u>	<u>19.81</u>	<u>11.15</u>	<u>23.85</u>	<u>2.53</u>

## ACCUMULATIVE MULTIPLICATION

## Whole Numbers

Accumulation is the process of finding the grand total of several multiplications. Find the product of the first two factors and, without clearing the machine, multiply each of the succeeding numbers.

6. 34 x 45 29 x 30 46 x 75 98 x 64 39 x 46 <u>13916</u>	7. 63 x 98 24 x 24 88 x 64 73 x 26 82 x 34 <u>17068</u>	8. 45 x 93 78 x 53 96 x 75 93 x 48 69 x 15 <u>21018</u>	9. 47 x 53 25 x 66 57 x 82 35 x 49 78 x 40 <u>13650</u>
10. 96 x 34 35 x 28 75 x 69 80 x 84 75 x 32 <u>18539</u>	11. 49 x 45 64 x 70 83 x 64 92 x 66 75 x 84 <u>24369</u>	12. 39 x 56 83 x 75 15 x 15 12 x 34 29 x 63 <u>10869</u>	13. 57 x 69 83 x 54 97 x 75 86 x 54 29 x 80 <u>22654</u>
14. 98 x 35 39 x 52 68 x 73 28 x 54 90 x 63 <u>17804</u>	15. 28 x 45 64 x 73 88 x 69 73 x 45 92 x 87 <u>23293</u>	16. 73 x 64 72 x 51 68 x 37 48 x 35 27 x 83 <u>14781</u>	17. 25 x 47 86 x 83 75 x 77 83 x 21 15 x 19 <u>16116</u>

### ADDITION EXERCISES "Split" Method

1.	2.	3.	4.	5.
\$58.63	\$49.50	\$75.83	\$96.54	\$29.19
81.16	5.93	20.56	4.21	5.73
5.86	54.29	1.12	34.16	17.75
52.50	98.34	29.75	86.40	93.88
93.15	6.75	37.42	4.89	72.95
9.37	42.56	2.91	74.32	8.52
79.83	29.54	8.20	19.83	85.96
11.24	15.16	81.23	2.98	61.25
93.29	4.75	68.75	93.72	6.80
2.93	72.81	5.80	79.34	15.72
75.81	23.49	87.06	8.42	32.98
98.61	.81	93.29	24.83	7.95
5.86	16.63	8.81	75.52	3.59
.50	93.29	34.75	56.43	16.75
<u>81.49</u>	<u>79.20</u>	<u>11.29</u>	<u>7.19</u>	<u>78.14</u>
<i>750.73</i>	<i>593.05</i>	<i>566.77</i>	<i>668.78</i>	<i>537.16</i>

### MULTIPLICATION EXERCISES

#### Right of Keyboard

Hold keyboard factor with the first and second fingers of right hand.

**Natural Fingering.** Example 45. Hold "4" with first finger and "5" with second finger.

**Reverse Finger.** Example 76. Hold "6" with first finger and "7" with second finger.

**Rule:** Hold longest finger on highest number.

Drill on the following problems multiplying from right to left of multiplicand.

- |                |                |               |               |
|----------------|----------------|---------------|---------------|
| 6. 4852 x 45   | 18. 2180 x 87  | 30. 2384 x 67 | 42. 9834 x 23 |
| 7. 3242 x 12   | 19. 4982 x 23  | 31. 6983 x 57 | 43. 1435 x 64 |
| 8. 384 x 34    | 20. 437 x 56   | 32. 4382 x 12 | 44. 825 x 13  |
| 9. 8691 x 43   | 21. 5654 x 26  | 33. 4064 x 76 | 45. 134 x 32  |
| 10. 1042 x 65  | 22. 1872 x 77  | 34. 324 x 54  | 46. 1654 x 32 |
| 11. 9372 x 21  | 23. 1046 x 89  | 35. 3986 x 40 | 47. 3242 x 12 |
| 12. 53691 x 11 | 24. 783 x 67   | 36. 920 x 13  | 48. 640 x 13  |
| 13. 920 x 12   | 25. 2980 x 43  | 37. 4684 x 32 | 49. 1543 x 53 |
| 14. 555 x 56   | 26. 349 x 33   | 38. 4982 x 23 | 50. 98 x 54   |
| 15. 98632 x 79 | 27. 4315 x 45  | 39. 429 x 40  | 51. 1432 x 54 |
| 16. 14326 x 43 | 28. 321 x 44   | 40. 780 x 42  | 52. 1046 x 31 |
| 17. 328 x 21   | 29. 29862 x 34 | 41. 994 x 16  | 53. 1718 x 25 |

54. Find the cost of 125 acres of land at \$98 an acre.

55. Find the total weight by accumulation:

14 hogs weighing 250 lbs.	18 hogs weighing 198 lbs.
26 " " 212 "	22 " " 201 "
34 " " 187 "	39 " " 208 "

## ADDITION EXERCISES

## "Split" Method

1.	2.	3.	4.	5.
\$78.94	\$96.38	\$42.93	\$75.80	\$41.29
82.90	71.75	14.15	96.83	20.15
75.56	83.29	52.98	75.93	21.56
93.84	20.84	93.72	57.82	96.75
80.25	32.70	91.95	20.56	83.29
21.53	93.56	86.68	54.45	15.88
86.72	98.41	11.20	74.23	55.49
57.28	18.15	71.88	37.22	72.26
94.63	45.21	80.78	32.24	47.25
35.84	38.84	19.46	35.42	81.16
47.29	82.54	53.24	86.37	35.89
89.44	77.21	19.90	41.75	83.16
56.41	68.25	82.13	73.57	48.27
29.92	17.89	12.38	49.66	33.72
<u>86.77</u>	<u>80.93</u>	<u>45.76</u>	<u>75.44</u>	<u>94.85</u>

## MULTIPLICATION EXERCISES

## Right of Keyboard

Problems like the following afford splendid drill in rhythmic action.

Practise carefully until each problem can be solved in approximately three seconds. Hold keyboard factor with fingers of right hand.

6. 24,531 x 35	21. 4,312 x 57	36. 9,254 x 68
7. 12,456 x 68	22. 94,345 x 22	37. 13,452 x 44
8. 5,312 x 64	23. 46,533 x 11	38. 23,346 x 89
9. 23,456 x 75	24. 4,983 x 24	39. 15,135 x 77
10. 84,143 x 79	25. 5,624 x 26	40. 4,532 x 98
11. 35,642 x 45	26. 935 x 54	41. 12,546 x 43
12. 15,341 x 76	27. 2,223 x 45	42. 1,345 x 54
13. 45,673 x 24	28. 14,523 x 24	43. 8,891 x 69
14. 341 x 23	29. 29,482 x 65	44. 7,543 x 32
15. 14,683 x 47	30. 463 x 26	45. 469 x 11
16. 848 x 22	31. 808 x 55	46. 722 x 90
17. 13,245 x 53	32. 5,964 x 70	47. 1,843 x 57
18. 6,034 x 40	33. 12,384 x 65	48. 590 x 42
19. 750 x 78	34. 761 x 42	49. 11,159 x 66
20. 23,451 x 31	35. 5,555 x 76	50. 693 x 80

## ADDITION EXERCISES

### "Split" Method

1.	2.	3.	4.	5.
\$31.23	\$16.84	\$82.34	\$73.25	\$35.29
.45	.90	8.97	4.98	2.29
41.98	3.27	.69	.89	25.90
9.43	2.32	92.38	86.30	.58
.69	24.38	6.72	5.29	94.83
42.50	9.67	4.56	11.56	12.89
4.58	98.93	52.84	41.13	.73
1.13	4.52	72.59	.25	71.12
.67	.69	66.68	3.29	1.29
52.43	24.39	.37	.75	81.20
1.20	.47	.83	51.29	.67
2.03	35.70	76.45	77.26	.40
29.84	1.15	26.83	1.00	46.80
.76	.26	12.28	87.65	39.80
<u>5.29</u>	<u>72.03</u>	<u>13.33</u>	<u>61.59</u>	<u>43.51</u>

## MULTIPLICATION EXERCISES

### Three-Figure Multiplier

$$3463 \times 376 = 1,302,088.$$

Hold 3 with the first finger of left hand and 76 in reverse position with the first and second fingers of right hand.

**Rule:** Always hold the figures that are most conveniently reached by the first and second fingers of either hand.

Perform the following multiplications:

6. 4,542 x 467	22. 12,754 x 756	38. 30,354 x 895
7. 763 x 326	23. 8,349 x 234	39. 19,498 x 346
8. 5,632 x 676	24. 40,987 x 467	40. 80,543 x 427
9. 15,497 x 746	25. 39,654 x 854	41. 5,434 x 832
10. 63,860 x 497	26. 9,467 x 345	42. 11,325 x 597
11. 8,956 x 326	27. 127,326 x 923	43. 24,656 x 865
12. 9,346 x 763	28. 10,892 x 762	44. 36,457 x 435
13. 10,432 x 856	29. 15,497 x 498	45. 7,238 x 659
14. 101,785 x 488	30. 75,856 x 758	46. 17,549 x 458
15. 27,395 x 954	31. 326 x 367	47. 34,985 x 976
16. 787 x 756	32. 16,498 x 576	48. 7,654 x 548
17. 4,542 x 354	33. 6,763 x 342	49. 1,783 x 349
18. 15,678 x 756	34. 29,954 x 786	50. 2,872 x 478
19. 42,976 x 657	35. 8,756 x 342	51. 34,981 x 597
20. 349 x 567	36. 76,761 x 721	52. 12,569 x 465
21. 9,126 x 342	37. 4,217 x 764	53. 41,678 x 329

**To the Teacher:** A few minutes practice each day on multiplication drills for right and left hands will soon develop the fingers so that the student can easily hold any combination of numbers.

Right Hand—Multiply each of the following by 5: 34, 65, 13, 76, 25, 69, 15, 406.

Left Hand—Multiply each of the following by 4: 21, 75, 43, 33, 86, 31, 52, 402.

## ADDITION EXERCISES

### "Split" Method

1.	2.	3.	4.	5.
\$21.15	\$71.23	\$73.31	\$45.43	\$26.75
3.00	33.45	.64	57.45	18.45
.59	.43	44.00	43.22	.54
72.29	45.34	8.19	.76	55.41
4.04	9.08	72.35	58.07	63.25
5.55	4.00	7.77	.59	2.22
87.45	.64	33.45	63.00	41.15
.79	28.33	77.16	1.56	.35
63.37	1.12	.74	8.62	24.54
1.29	96.55	22.21	75.78	1.38
4.34	4.12	5.34	1.81	97.86
46.51	.78	96.55	28.99	73.03
21.47	54.56	15.06	.48	2.46
.35	92.57	.65	77.69	.41
<u>98.75</u>	<u>13.14</u>	<u>25.63</u>	<u>52.23</u>	<u>14.15</u>

## MULTIPLICATION OF DECIMALS

### Three-Figure Multiplier

The multiplication of decimals is performed on the Comptometer in the same way as is the multiplication of whole numbers.

**Rule for Decimal Point:** Beginning at the right of the machine, point off from the right, as many register dials as there are decimal places in the factors.

$$3.42 \times 44.3 = 151.506$$

The three decimal places in the two factors place the decimal point at the left of the third register dial—this is the number three pointer.

A careful computer always takes care of the decimal point first. The student who forms this habit in all of his computations will add a large degree of accuracy to his work.

6. 485.2 x 32	21. 1654 x 5.45
7. 2342 x .24	22. 9.876 x 3.45
8. 5.042 x 34.5	23. .9524 x .335
9. 543.2 x 1.2	24. 154.62 x 4.5
10. 48.33 x 4.5	25. 734.8 x 6.48
11. 218.6 x 3.67	26. 8.196 x 7.12
12. 92.5 x 88.7	27. 86.91 x 212
13. 5364 x 6.7	28. .5654 x 123
14. .6421 x 74	29. 64.20 x 2.3
15. 943.2 x 367	30. 384.25 x 14.5
16. 21.82 x 23	31. 97.621 x 7.46
17. 4.678 x 3.78	32. 129.4 x 353
18. 69.75 x .76	33. 87.46 x 4.8
19. .4675 x 124	34. 3.552 x 111
20. 963.4 x 78.1	35. 46.33 x .228

Reading decimals: The word "point" or "decimal" is used in reading numbers. As for example, 24.26 is read "24 point 26."

### PROGRESS TEST NUMBER ONE

Every twentieth lesson in the text is a test for speed and accuracy. Note the time allowed for each test and the goal requirements. You pass a test when you have reached one of the three goals, but the teacher will permit you to take the test as many times as you need to raise your rating to a higher goal.

Work each group of problems separately starting and stopping when the signal is given. No credit is allowed for unfinished problems. Write answers on separate answer sheets and record your grades on the progress sheet in the back of the book.

#### Test 1 A—Addition—(Time 3 Min.)

1. 75	2. 67	3. 34	4. 11	5. 86	6. 80	7. 25	8. 55	9. 73	10. 12	11. 44
98	39	23	17	75	23	37	18	70	16	30
65	40	51	55	30	40	60	37	54	89	64
71	78	65	47	29	16	75	40	21	45	22
29	16	22	83	45	55	23	38	33	44	50
78	47	89	16	56	73	51	42	40	68	12
30	31	30	75	12	50	17	71	29	57	32
23	26	35	48	24	41	85	28	82	32	45
67	75	41	73	87	22	43	75	11	60	21
<u>21</u>	<u>30</u>	<u>11</u>	<u>69</u>	<u>24</u>	<u>29</u>	<u>15</u>	<u>61</u>	<u>12</u>	<u>54</u>	<u>33</u>

#### Test 1 B—"Split" Method—(Time 4 Min.)

1. \$ 2.15	2. \$49.80	3. \$51.66	4. \$34.65	5. \$28.30	6. \$14.67	7. \$56.89	8. \$ 3.98
98.92	85.67	4.02	46.57	37.64	9.86	11.66	14.55
.72	12.41	30.35	95.70	83.59	98.53	90.74	66.23
76.44	.65	19.55	5.11	.22	15.80	.47	.48
2.89	4.36	82.71	24.67	4.86	46.23	7.68	1.22
.46	43.74	3.30	6.85	35.74	.59	84.67	73.64
28.61	35.78	60.90	48.61	47.11	37.80	62.48	26.50
87.54	3.63	7.86	13.61	19.85	26.73	46.89	1.77
45.67	48.70	43.50	9.64	4.60	31.15	.60	55.16
<u>1.23</u>	<u>26.15</u>	<u>79.44</u>	<u>65.42</u>	<u>99.61</u>	<u>44.67</u>	<u>75.36</u>	<u>38.22</u>

#### Test 1 C—Multiplication—(Time 4 Min.)

1. 536 x 45	7. 23 x 23	13. 54.3 x 1.2	19. 24.6 x 2.2
2. 234 x 33	8. 3689 x 80	14. 8.76 x 4.4	20. .333 x 66
3. 467 x 345	9. 456 x 303	15. 346 x 1.45	21. 5.4 x 7.6
4. 1645 x 56	10. 640 x 66	16. 7.8 x .33	22. 202 x 7.7
5. 22 x 24	11. 111 x 202	17. 5.55 x 5.7	23. 13.8 x 5.1
6. 555 x 50	12. 666 x 66	18. 2.2 x 340	24. 4.42 x 5.4

GOALS	TEST 1 A	TEST 1 B	TEST 1 C
Excellent	10 problems correct	7 problems correct	20 problems correct
Normal	9 problems correct	6 problems correct	18 problems correct
Fair	8 problems correct	5 problems correct	15 problems correct

## ADDITION EXERCISES

## "Cross" Method

In "cross" addition, add the numbers without splitting. Begin with the left hand figure of value and depress each figure successively. Use the first finger on the tens and hundreds columns and the second finger on the units column. Fix the column and key locations in your mind and then drill carefully on a smooth, even stroke.

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
451	127	295	33	211	57	27	823	246	567
397	468	48	78	645	233	72	58	54	125
66	13	67	69	77	567	468	432	127	74
54	27	23	322	54	84	135	54	564	13
189	53	71	56	137	37	89	133	39	45
92	589	698	427	59	164	74	26	54	321
64	82	137	368	95	59	648	511	375	23
271	581	98	72	364	74	35	37	694	56
197	38	73	54	475	37	98	35	38	77
56	43	212	67	37	98	47	29	55	478
33	298	124	122	56	554	233	641	64	112
<u>12</u>	<u>12</u>	<u>35</u>	<u>54</u>	<u>112</u>	<u>23</u>	<u>15</u>	<u>422</u>	<u>132</u>	<u>35</u>

## MULTIPLICATION OF DECIMALS

Accuracy is getting the correct result the first time. Find the cost of the following and record the result. Verify and see how many results you had correct the first time.

11.	89 lb.	tea	at	49c	36.	78 bu.	apples	at	\$4.45
12.	125 lb.	cocoa	"	38c	37.	750 lb.	coffee	"	58c
13.	123 lb.	tea	"	53c	38.	129 lb.	coffee	"	67c
14.	98 lb.	candy	"	68c	39.	128 bbl.	flour	"	\$9.45
15.	782 lb.	chocolate	"	38c	40.	98 boxes	farina	"	29c
16.	132 boxes	currants	"	23c	41.	49 lb.	raisins	"	19c
17.	129 bbl.	apples	"	\$3.50	42.	87 boxes	salt	"	19c
18.	308 cans	corn	"	18c	43.	125 cans	peas	"	14c
19.	178 bu.	pears	"	\$1.60	44.	156 bu.	apples	"	72c
20.	129 bu.	peaches	"	\$1.75	45.	229 bu.	onions	"	80c
21.	49 bbl.	flour	"	\$8.45	46.	78 bbl.	apples	"	\$3.78
22.	73 lb.	coffee	"	62c	47.	793 bu.	potatoes	"	\$2.25
23.	643 lb.	tapioca	"	7c	48.	29 lb.	tea	"	52c
24.	29 lb.	tea	"	63c	49.	240 doz.	eggs	"	35c
25.	925 lb.	sugar	"	7c	50.	123 lb.	cocoa	"	39c
26.	450 lb.	coffee	"	39c	51.	236 lb.	beef	"	16c
27.	95 gal.	vinegar	"	27c	52.	175 lb.	tea	"	52c
28.	573 lb.	raisins	"	16c	53.	753 bu.	wheat	"	\$1.26
29.	82 gal.	molasses	"	38c	54.	98	articles	"	\$3.43
30.	723	articles	"	\$1.29	55.	543	articles	"	\$1.29
31.	293 lb.	coffee	"	52c	56.	158 lb.	coffee	"	49c
32.	78 lb.	tea	"	33c	57.	123 lb.	tea	"	43c
33.	726 bu.	oats	"	56c	58.	5000 lb.	tea	"	42c
34.	823	articles	"	39c	59.	726 lb.	tea	"	39c
35.	78 cans	corn	"	14c	60.	128 cans	pears	"	23c

**ADDITION EXERCISES**

Find the expense (a) for each day, (b) for each item, and (c) the total expense for the month.

<b>EXPENSE SHEET</b>						
<b>To SMITH &amp; TAYLOR MFG. CO.</b>						
<b>CHICAGO, ILLINOIS.</b>						
Expenses during month of .....19 .....						
Signature of Solicitor						
Date	Hotel	Meals	Baggage	Carfare	Incidentals	Totals
1	350	125	75	980	10	
2	150	150	80			
3	300	225	125	435	110	
4	175	400	30			
5	150	525	40	820		
6	175	75				
7	425	315	150	125	95	
8	300	165	780	255		
9	75	195	255			
10	100	225		460	580	
11	200	150	155	225	125	
12	240	400	75	130		
13	150	225	80	225		
14	450	300	45	750	340	
15	175	175	125	150		
16	150	225	105			
17	300	825				
18	150	595	425		110	
19	100	280				
20	325	420	80	210	480	
21	175	225	40	895		
22	150	435	125	240		
23	425	125	210	350		
24	100	340	90	595	950	
25	225	125	85	410		
26	300	315	75	555		
27	150	325		785		
28	175	425	125	110	125	
29	400	100	110	210		
30	125	695	95	150		

**NOTE:** A flexible ruler, blotter or any straight edge will be an aid in following the lines.

## ADDITION EXERCISES

## "Cross" Method

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
\$3.75	\$9.67	\$2.34	\$4.11	\$2.86	\$6.26	\$5.55	\$4.12	\$6.86	\$3.59
2.98	.37	3.27	.17	.57	.37	.48	6.16	.59	1.25
.65	.56	6.51	6.55	.35	5.68	2.37	.89	1.78	.73
.73	3.78	.65	.47	1.29	3.75	8.95	.55	3.55	.25
.29	9.56	1.37	.83	3.45	.23	.29	8.44	.46	4.14
1.78	.47	.89	2.16	.56	4.26	.42	.68	1.78	.26
.67	2.34	2.56	5.75	3.12	2.17	1.71	5.57	3.32	.38
.23	4.26	.35	.48	5.44	.85	.28	.32	.49	3.54
5.67	.75	.43	3.75	.87	.43	3.75	1.68	1.23	1.12
6.79	.29	3.11	.69	1.24	7.15	4.61	.54	4.26	2.33
1.24	3.45	3.40	4.45	4.46	5.00	7.55	1.00	1.00	3.00
.25	.45	.45	.35	.34	.64	.24	.64	.75	.25
.15	.25	4.45	9.45	.24	.34	.25	.70	.64	.24

## MULTIPLICATION EXERCISES

## Left of Keyboard

When multiplying large numbers containing decimals, it is advisable to work from the left of machine toward the right. If necessary, run off the keyboard to the right dropping first one finger and then another until all figures in the multiplicand have been used.

**Rule for Decimal Point:** Beginning at the left of machine, point off from the left, as many register dials as there are whole numbers in both factors.

$$46.75 \times 3.56 = 166.43$$

There are three whole numbers in the two factors. This places the decimal point at the right of the third register dial.

Hold 356 at left of keyboard and multiply toward the right, commencing with the left hand figure of multiplicand.

Find the product of the following:

- |       |               |       |               |     |               |
|-------|---------------|-------|---------------|-----|---------------|
| 11.   | 346.21 x 4.67 | 21.   | 174.90 x 2.89 | 31. | .64231 x 124  |
| 12.   | 11.463 x 37.8 | 22.   | 1.4362 x 77.6 | 32. | .33021 x 2.34 |
| ✓ 13. | 4627.1 x .846 | ✓ 23. | 140.82 x .454 | 33. | .45632 x 15.4 |
| 14.   | 2.2635 x 12.3 | 24.   | 126.76 x 7.43 | 34. | 1.2382 x 24.4 |
| 15.   | 314.6 x 7.34  | 25.   | 2673.2 x 9.12 | 35. | 7560.1 x .789 |
| 16.   | 17.264 x 434  | 26.   | 1674.4 x 223  | 36. | 564.32 x 23.2 |
| 17.   | 1508.2 x 3.10 | 27.   | 89.301 x 34.3 | 37. | 632.9 x 25.4  |
| 18.   | 29.83 x 3.67  | 28.   | 1498.2 x 555  | 38. | 764.2 x .421  |
| 19.   | 263.35 x 33.5 | 29.   | 3402.9 x 45.6 | 39. | 8.321 x .235  |
| ✓ 20. | 324.62 x 434  | 30.   | .78463 x 89   | 40. | 873.4 x 1.35  |

41. (a) At 12c a bu. find the freight charges on the following shipment of 23,468 bushels.

(b) Find the charges at  $11\frac{1}{2}$ c a bu. (Hold \$.115 as keyboard factor).

## ADDITION EXERCISES

## "Cross" Method

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
\$4.96	\$3.41	\$5.20	\$1.84	\$1.69	\$2.12	\$5.54	\$ .69	\$1.73	\$8.00
.74	.69	.83	.32	.72	.10	.56	.73	.29	.10
.82	1.23	.70	.05	1.13	2.43	1.52	1.78	1.16	.94
1.34	4.22	5.28	1.63	7.23	1.54	3.16	6.27	4.29	1.62
.59	.96	7.52	2.26	.59	5.93	2.94	.83	7.56	.47
.47	1.34	.82	.84	5.98	3.14	.60	1.29	4.22	6.82
.82	4.29	.84	.42	.05	.07	1.57	1.67	.63	9.16
7.26	2.21	.10	2.10	1.54	5.54	.46	1.52	3.16	.13
.73	1.70	7.82	1.73	2.29	1.16	4.29	8.00	1.10	.36
1.62	.77	3.04	5.67	4.55	1.06	.33	1.41	1.56	4.57
6.66	8.23	4.92	.55	.33	4.22	.99	.67	3.86	.82
5.09	1.33	.88	1.62	9.15	6.24	1.11	5.61	.78	3.67
.99	.71	1.62	1.48	.55	1.11	4.53	.98	1.56	.66
1.66	3.10	5.23	.77	.53	4.53	.33	.10	4.66	.19
<u>.32</u>	<u>1.51</u>	<u>.99</u>	<u>1.84</u>	<u>1.07</u>	<u>.66</u>	<u>6.92</u>	<u>1.34</u>	<u>2.17</u>	<u>5.15</u>

## MULTIPLICATION EXERCISES

Multiply from left to right of machine, dropping off of keyboard if necessary.

- |     |                  |     |                  |
|-----|------------------|-----|------------------|
| 11. | 734.632 x 82     | 21. | 7834.212 x 3.49  |
| 12. | 2958.372 x 3.56  | 22. | 206045.2 x .3456 |
| 13. | 634.2465 x 203.4 | 23. | 12.345 x 38.71   |
| 14. | 56.43082 x 9.13  | 24. | 642.612 x 21.89  |
| 15. | 136.4281 x 543.2 | 25. | 1342.601 x 4.343 |
| 16. | 4257.321 x 30.57 | 26. | 56.43212 x 3.134 |
| 17. | 1726.34 x 23.69  | 27. | 135.22 x 8.09    |
| 18. | 3428.02 x 3.553  | 28. | 22.012 x 6.71    |
| 19. | 76432.12 x 4.313 | 29. | 364.43 x 24.43   |
| 20. | 13682.92 x 3.024 | 30. | 48.225 x 1.067   |

- 37 38
31. A has 178 bu. of rye, B has 5 times as much as A, and C has 4 times as much as B. How many bushels has each? How many bushels have they together?
32. What is the cost of building 764 miles of railroad at \$20,434 per mile?
33. An orchard contains 25 rows of apple trees, 48 trees to a row; 9 rows of cherry trees, 49 trees to a row; 45 rows of peach trees, 47 trees to a row; 49 rows of plum trees, 46 trees to a row. How many fruit trees does the orchard contain?
34. A farmer harvested 828 acres of wheat at an average of 37 bushels to an acre and sold it at \$1.56 a bushel. What was the total selling price?
35. What is the cost of 158 yards of cloth at \$1.93 per yard?

## ADDITION EXERCISES

### "Cross" Method

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
\$5.63	\$7.64	\$5.92	\$3.80	\$2.94	\$6.98	\$ .75	\$2.96	\$8.32	\$4.96
4.35	8.32	8.64	.93	.85	2.93	1.85	.94	2.96	3.02
.95	9.64	3.02	1.59	.23	.32	.49	.86	7.83	5.96
8.94	.75	.75	4.93	2.96	8.39	4.02	5.79	.91	.75
5.96	.83	1.26	.96	.77	4.51	8.09	2.37	8.56	.46
3.84	.29	.75	3.43	5.60	1.33	6.91	7.81	4.32	1.07
.29	9.80	.83	1.44	7.91	.88	.43	5.42	7.68	9.10
.80	1.23	2.92	5.55	.56	.41	8.64	.45	5.42	7.62
9.86	5.64	3.39	.33	8.66	9.08	7.71	3.43	3.45	8.00
1.39	1.59	4.29	.68	.41	5.66	1.44	7.65	.80	1.11
.80	2.93	8.75	7.72	9.08	8.79	.38	6.67	6.47	9.08
<u>5.93</u>	<u>.98</u>	<u>9.23</u>	<u>6.53</u>	<u>5.66</u>	<u>.66</u>	<u>2.99</u>	<u>8.87</u>	<u>1.19</u>	<u>2.25</u>

## MULTIPLICATION EXERCISES

### Left of Keyboard

**Holding four figures in multiplier:** In holding combinations of more than three figures, use the natural and reverse fingering, that is, the longer finger on the highest number.

**Note:** In numbers like 1891, hold first and last number with left hand and 89 with right hand.

11. 43.261 x 211.2	19. 4213.51 x 4.289	27. 243.82 x 53.33
12. 840.12 x 3.213	20. 304.69 x 216.7	28. 1428.3 x 40.67
13. 865.01 x .4445	21. 145.326 x 1672	29. 46.832 x 1.221
14. 493.2 x 31.12	22. 2864.2 x 2451	30. 8342.6 x 65.67
15. 604.03 x 33.33	23. 543.02 x 43.34	31. 5902.4 x 12.34
16. 834.12 x 545.6	24. 986.4 x 31.32	32. 143.02 x 548.9
17. 142.96 x 3.203	25. .14632 x 60.54	33. 100.24 x 2.516
18. 309.02 x 55.56	26. 1596.3 x 65.21	34. 328.64 x 16.17

### Preceding Ciphers

$$464 \times .0048 = 2.2272.$$

Hold 48 at left of keyboard. Disregard the ciphers and multiply by 464.

**Decimal Point Rule.** Point off one register hole less for each preceding cipher.

**Note:** The same result will be obtained if the keyboard factor is held and columns allowed for the preceding ciphers. The decimal point in this case is not changed.

MULTIPLY:

35. .003 x 325	<i>0.975</i>	40. .454 x .016
36. 721 x .0021		41. .0049 x 236
37. 32.5 x .079		42. .0983 x 214
38. 5723 x .0065		43. 73 x .00125
39. 1.7221 x .023		44. 22.34 x .075

## CONTROLLED-KEY REVIEW

Find the totals of the following; then re-add making the intentional partial key-strokes and correct.

1.	2.	3.	4.	5.
3 4 5	1 3 5	4 0 4	6 3 4	3 5 6
9 <sup>5</sup> 5	9 8	2 9 5	8 4 3	5 2 5
8 4 6	6 4	8 4 3	2 9 <sup>5</sup> 5	4 2 9 <sup>5</sup>
1 3 5	2 2 2	9 0	2 8 2	8 6
8 4	8 4 3	6 4 5	4 2 9	5 4 3
2 9 8	9 9 <sup>5</sup> 8	8 4 3	8 <sup>4</sup> 5	2 9 8
5 4 9	4 5	2 9	4 0	7 5 4
8 <sup>4</sup> 5 1	8 4 6	4 2 2	2 2	3 0
9 5	4 0 4	5 8 4	5 2 2	2 0 5
<u>3 8 4</u>	<u>2 2 5</u>	<u>1 7<sup>3</sup> 6</u>	<u>2 9 5</u>	<u>6 4 9</u>

Problems like the above are very helpful and the student will readily appreciate the intrinsic value of a partial key-stroke signal and the ability to make a correction. The instructor should be sure that every student understands how to make a correction quickly and accurately.

## DICTATION EXERCISES

**Dictation:** To save time one is often required to do machine figuring from dictation. This demands care and concentration and affords splendid training in ear perception.

From the instructor's dictation, add exercises similar to the following:

6. 846	7. 243	8. 159	9. 564	10. 329	11. 362
734	963	49	380	543	593
24	38	83	98	640	86
59	142	756	64	34	84
68	59	383	302	968	380
<u>348</u>	<u>634</u>	<u>422</u>	<u>643</u>	<u>24</u>	<u>245</u>

Multiply the following numbers by 67. Accumulate in groups of three.

12. 345	13. 642	14. 382	15. 403	16. 164
786	802	4532	6815	753
<u>7834</u>	<u>2064</u>	<u>1234</u>	<u>1435</u>	<u>808</u>

The election returns in the different wards came in over the radio as follows:

17. 1868	1553	292	756	1963
<u>563</u>	<u>292</u>	<u>893</u>	<u>777</u>	<u>690</u>

## ADDITION EXERCISES

"Cross" Method

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
347	892	193	778	418	774	460	672	326	658
656	578	315	160	240	101	145	223	445	268
179	857	825	576	814	596	582	219	148	87
145	214	467	235	59	66	330	25	234	824
23	12	53	47	533	877	92	192	768	315
915	455	819	752	44	14	31	48	71	36
29	218	21	148	197	729	975	786	47	612
246	455	533	424	267	883	334	421	635	667
823	876	895	555	788	966	436	781	664	350
348	375	749	634	229	434	850	958	877	543
662	16	114	43	187	635	754	33	624	317
562	367	112	412	361	336	503	255	352	453
81	67	37	68	51	13	24	541	360	45
806	227	458	513	237	451	647	236	648	619
<u>33</u>	<u>575</u>	<u>11</u>	<u>24</u>	<u>876</u>	<u>217</u>	<u>91</u>	<u>11</u>	<u>25</u>	<u>123</u>

## ACCUMULATIVE MULTIPLICATION

11.	5 x 645 24 x 24 755 x 345 76 x 345 <u>64 x 64</u>	12.	12 x 483 895 x 16 24 x 97 368 x 590 <u>125 x 24</u>	13.	677 x 98 65 x 65 785 x 36 124 x 685 <u>75 x 185</u>	14.	580 x 34 17 x 17 365 x 126 58 x 776 <u>182 x 182</u>
15.	24 x 168 382 x 75 125 x 125 898 x 671 <u>17 x 85</u>	16.	67 x 88 793 x 328 520 x 11 128 x 237 <u>16 x 38</u>	17.	59 x 150 276 x 870 49 x 728 976 x 145 <u>68 x 795</u>	18.	24 x 36 552 x 150 11 x 890 250 x 675 <u>63 x 63</u>
19.	380 x 936 58 x 245 146 x 52 16 x 26 <u>150 x 437</u>	20.	480 x 39 786 x 847 45 x 45 67 x 981 <u>287 x 105</u>	21.	24 x 87 11 x 551 599 x 120 62 x 62 <u>530 x 620</u>	22.	67 x 85 168 x 720 50 x 282 132 x 32 <u>650 x 787</u>
23.	75 x 800 345 x 205 78 x 15 25 x 22 <u>304 x 865</u>	24.	212 x 15 34 x 645 55 x 109 777 x 212 <u>84 x 69</u>	25.	703 x 145 81 x 64 224 x 834 75 x 216 <u>3 x 45</u>	26.	834 x 29 705 x 111 293 x 46 55 x 22 <u>84 x 17</u>

## ADDITION EXERCISES

## "Split" Method

This lesson introduces five-column addition. Add the cents columns first, then add the dollars columns. For the dollars or three-column addition, use the first finger to depress the keys in the 4th and 5th columns, the second finger keeps its permanent position in the 3rd column. The fingering is the same as for three-figure "cross" addition.

Operate very slowly in the beginning. If an error is made it is the result of trying to work too fast.

1.	2.	3.	4.	5.
\$556.39	\$235.67	\$447.51	\$457.34	\$631.64
84.00	33.52	664.23	24.16	89.56
243.57	68.50	13.45	138.80	97.15
276.39	369.74	131.00	244.34	349.81
80.61	236.88	237.11	89.56	246.55
58.37	43.57	34.22	365.57	47.60
167.34	35.75	86.43	94.35	449.63
346.89	459.80	247.35	651.09	43.85
437.94	37.55	43.41	86.78	239.17
<u>95.60</u>	<u>143.96</u>	<u>343.40</u>	<u>273.49</u>	<u>71.46</u>

6.	7.	8.	9.	10.
\$162.12	\$453.21	\$132.25	\$112.15	\$251.46
365.21	64.19	81.35	423.92	94.32
29.81	15.52	23.46	61.83	417.26
143.72	244.36	191.15	392.91	144.17
301.33	189.86	625.34	42.30	89.52
39.36	53.42	90.87	213.12	323.33
178.44	554.07	985.54	90.49	87.05
543.21	98.70	123.32	176.54	807.37
65.77	356.65	39.81	565.35	44.25
<u>138.65</u>	<u>123.43</u>	<u>987.65</u>	<u>37.33</u>	<u>561.43</u>

11.	12.	13.	14.	15.
\$645.32	\$334.58	\$123.65	\$177.86	\$128.98
122.35	411.89	716.15	313.45	286.17
48.00	62.80	37.58	81.43	101.44
218.91	33.54	54.85	341.80	21.79
236.88	451.07	693.41	237.55	62.41
58.43	313.00	45.13	50.68	711.23
19.56	69.74	345.27	348.16	642.09
435.60	137.94	254.72	168.43	78.10
312.54	276.55	16.39	71.46	138.80
<u>501.27</u>	<u>55.13</u>	<u>135.46</u>	<u>367.00</u>	<u>446.82</u>

## ADDITION EXERCISES

## "Split" Method

1.	2.	3.	4.	5.
\$ 56.95	\$394.83	\$137.68	\$298.47	\$78.36
295.38	65.97	234.56	508.31	135.24
464.70	36.42	43.29	70.63	36.89
56.88	817.00	340.11	54.39	267.05
335.61	172.15	98.44	293.12	403.57
640.53	297.23	445.32	128.52	31.20
36.89	51.04	119.60	601.12	631.21
128.52	523.12	12.72	31.91	95.64
648.41	38.54	538.43	396.45	253.29
<u>17.25</u>	<u>115.96</u>	<u>272.35</u>	<u>51.66</u>	<u>520.03</u>

## MULTIPLICATION

## "Split" Multipliers

In multiplying large amounts, it is often easier to split the multipliers.

Example:  $12.365 \times 83.79 = 1036.06335$

Hold 83 in position at left of keyboard and multiply by 12365, leaving result in the register. Then hold 79 in its natural position on keys in 3rd and 4th columns and multiply by 12365.

- |                   |                    |                    |
|-------------------|--------------------|--------------------|
| 6. 75.89 x 36.11  | 22. 36485 x .2186  | 38. 83485 x .6543  |
| 7. 5964 x 9.769   | 23. 489.6 x 343.56 | 39. 864.35 x 33.45 |
| 8. 5694 x 3608    | 24. 863.28 x 43.54 | 40. 8643.5 x 864.5 |
| 9. 2415 x 546.1   | 25. 8.643 x 987.66 | 41. 4.354 x 86.484 |
| 10. 9879 x 97.65  | 26. 7.3486 x 43.86 | 42. 2.1864 x .9432 |
| 11. 6752 x 3.615  | 27. .86485 x 45.86 | 43. 2186 x .43545  |
| 12. 14931 x .2565 | 28. 1354 x 96213   | 44. .36485 x 4386  |
| 13. 5.268 x 4679  | 29. 314.86 x 734.8 | 45. .13648 x 26485 |
| 14. 12.46 x 1743  | 30. 964.83 x 4.386 | 46. .9647 x .56841 |
| 15. 9.743 x 1275  | 31. 65.43 x 864.32 | 47. 54.321 x 654.2 |
| 16. .1297 x 1979  | 32. 96.48 x 3.6482 | 48. 36482 x 928.65 |
| 17. 297.6 x 987.5 | 33. 46489 x 3621   | 49. 86435 x .43861 |
| 18. 29.14 x 14.92 | 34. 31.48 x .65486 | 50. 76.43 x 48654  |
| 19. 2.695 x 1.892 | 35. 73.864 x 98.64 | 51. 98643 x 2.184  |
| 20. .1695 x .1911 | 36. 4281 x 4.4356  | 52. .1345 x 36485  |
| 21. 252.5 x 267.0 | 37. 43.84 x 96542  | 53. 68643 x 9643   |

54. A contractor employed 76 men to complete a contract in 31 days. At \$5.45 a day how much did each man receive?

55. At 32 quarts to the bushel, how much will 318 bushels of cranberries cost at 15c a quart?

## ADDITION EXERCISES

## "Split" Method

1.	2.	3.	4.	5.
\$98.70	\$54.38	\$70.95	\$48.07	\$75.48
37.69	19.02	20.98	95.46	47.63
54.37	66.58	17.59	25.43	18.50
6.58	4.37	74.38	6.58	31.65
6.90	53.28	6.57	9.72	4.36
47.68	16.57	42.35	34.78	65.47
36.57	7.55	8.73	97.60	15.38
7.05	55.38	31.62	5.48	8.00
19.65	17.53	74.37	24.53	11.32
30.92	73.29	9.08	63.48	26.59
86.57	85.47	37.69	18.70	64.35
5.46	1.98	68.53	4.39	3.41
27.59	42.35	7.69	37.69	43.20
72.31	54.23	38.46	17.48	23.32
<u>4.37</u>	<u>19.70</u>	<u>38.06</u>	<u>5.49</u>	<u>16.57</u>

## ACCUMULATIVE MULTIPLICATION

Accumulate in groups of five.

6.	90 gal. at \$ .42	11.	346 lb. at \$ .44
	2 " " .16		584 " " .56
	112 " " .78		29 " " .78
	34 " " .36		5 " " .36
	2 " " 1.45_____		16 " " .12_____
7.	14 yd. at \$ .22	12.	72 yd. at \$ .96
	46 " " 2.33		4 " " .39
	111 " " .92		5 " " .42
	646 " " .11		15 " " .06
	304 " " .14_____		222 " " .11_____
8.	29 doz. at \$ .55	13.	446 bu. at \$ .78
	315 " " .05		12 " " .63
	221 " " .06		3 " " .72
	389 " " .12		404 " " 1.69
	64 " " .77_____		39 " " .56_____
9.	111 bu. at \$ .92	14.	968 lb. at \$ .33
	3 " " 1.10		75 " " .62
	442 " " .86		303 " " .42
	59 " " .44		29 " " .20
	63 " " .36_____		14 " " .78_____
10.	129 bu. at \$ .76	15.	16 gal. at \$ .63
	384 " " 1.10		20 " " .46
	292 " " 2.22		7 " " .59
	6 " " .46		2 " " .73
	5 " " .54_____		46 " " .22_____

## ADDITION EXERCISES

## "Split" Method

1.	2.	3.	4.	5.
\$453.96	\$192.32	\$454.78	\$174.32	\$423.75
43.78	382.96	29.31	82.43	101.43
298.34	64.85	96.53	428.68	32.13
756.62	584.29	289.30	642.24	236.45
37.89	23.16	435.20	16.38	337.69
134.37	423.68	53.12	261.11	76.27
120.29	824.83	92.06	152.08	906.12
427.14	31.56	100.24	624.67	563.42
23.89	222.54	396.43	57.12	228.14
93.72	56.21	114.36	224.68	23.89
367.23	149.56	17.68	49.37	83.55
702.36	64.43	23.75	278.64	539.27
114.06	218.42	348.96	432.99	776.13
94.32	116.72	84.36	10.82	36.42
<u>217.90</u>	<u>36.74</u>	<u>644.01</u>	<u>125.05</u>	<u>209.50</u>

## MULTIPLICATION EXERCISES

Split keyboard factor to avoid awkward combinations but only when absolutely necessary. With practice, operators are able to hold most combinations without splitting.

6. 53.648 x 76.34	16. 713.27 x 86.142	26. 862.22 x 45.45
7. 8467 x 6.5789	17. 151.62 x 1.642	27. 134.22 x 56.622
8. 265.43 x 9.736	18. 384.22 x 646.2	28. 8124.2 x 1.5222
9. 8924.6 x 27.25	19. 80.692 x 54.62	29. 86.42 x 134.22
10. 4.148 x 64885	20. 134.25 x 64.78	30. 596.40 x 142.62
11. 312.86 x 94.32	21. 26.373 x 42.579	31. 382.42 x 1.4664
12. 86.432 x 21.81	22. 46.842 x 15.421	32. 138.22 x 462.22
13. 4.348 x 86.485	23. 5542 x 58.641	33. 1842 x 80.18
14. 82.562 x 342.15	24. 51640 x 2.242	34. 426.24 x 823.4
15. 3472 x 4.158	25. 25.682 x 14.232	35. 42.579 x 64.25

## PROBLEMS FOR PRACTICE

Multiply from left of keyboard, pointing off for whole numbers; verify from right of keyboard, pointing off for decimals. Change fractions to decimals and hold either factor.

- |  |  |
|--|--|
| 36. 8246 bu. oats at $66\frac{1}{2}c$  | 41. 823 bbl. flour at \$4.69                 |
| 37. 2864 bu. corn at 86c               | 42. 3934 bu. apples at $\$2.25\frac{1}{2}$   |
| 38. 864 brooms at 49c                  | 43. 1226 bu. wheat at $\$1.13\frac{1}{2}$    |
| 39. 1216 brushes at $24\frac{1}{2}c$   | 44. 864 bbl. oil at $\$8.93\frac{1}{2}$      |
| 40. 819 lb. coffee at $36\frac{1}{2}c$ | 45. 7646 bu. potatoes at $\$1.56\frac{1}{2}$ |

## ADDITION EXERCISES

The following table shows the weekly sales report made by a number of newsboys during a certain week.

Newsboy	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Total
H. Smith	593	319	59	619	159	782	25 31
S. Crawford	96	64	64	523	321	98	11 06
J. Peterson	834	492	78	806	246	132	25 88
D. Marks	219	98	115	582	59	49	11 22
E. Johnson	49	73	233	964	86	83	14 88
D. Jahn	83	406	98	293	93	596	15 69
L. Baker	402	129	30	840	152	834	23 87
F. Jacobs	319	75	159	159	293	292	12 97
J. Green	649	96	643	293	826	586	30 73
R. Barnes	29	304	716	416	92	139	14 76
F. Thomas	382	219	829	844	59	219	25 52
C. McGee	402	863	59	93	83	158	16 58
T. Wilson	96	756	76	86	105	783	17 52
F. Downs	83	93	83	129	92	596	10 76
T. Jones	219	95	159	593	83	159	13 08
R. Wright	549	122	328	430	563	202	21 94
B. Austin	864	312	149	986	75	156	25 42
F. Hayes	29	159	296	242	86	84	8 96
R. Rudin	89	328	83	119	93	92	8 04
H. Beck	101	64	72	381	49	305	9 72
Total	60 87	50 67	43 21	93 98	34 15	63 45	348 41

**RULE A BLANK** similar to the above form; copy and find:

- The total sales for each boy during the week, and enter these totals in the column at right.
- The total sales made each day, and enter these totals at the bottom of the columns.
- The line totals should equal the column totals.

## ADDITION EXERCISES

## "Split" Method

1.	2.	3.	4.	5.
\$241.35	\$187.90	\$304.25	\$157.68	\$887.69
54.36	90.78	65.45	27.68	19.78
167.56	867.68	197.68	774.35	303.34
10.98	25.44	76.58	33.26	47.68
404.76	16.57	24.55	19.00	68.77
69.78	321.24	715.46	338.76	52.23
221.99	443.26	25.46	228.90	775.48
15.46	198.79	19.98	9.35	61.57
889.77	75.46	36.57	854.46	446.50
30.29	56.48	219.80	209.88	443.67
141.76	246.72	327.75	75.56	91.48
33.41	305.46	228.90	645.03	239.60
443.25	16.57	45.63	303.19	885.11
82.16	149.46	212.40	98.00	14.33
<u>510.11</u>	<u>85.57</u>	<u>32.75</u>	<u>531.64</u>	<u>265.73</u>

## MULTIPLICATION EXERCISES

## Speed Drill

Drill for speed and accuracy. Time yourself for rapid work. Multiply each of the following numbers by 334 and to each product add 464, 244, 673 and 146.

6.	434	26	593	364	178
7.	22	96	82	18	36
8.	247	487	61	545	874
9.	83	171	331	98	488
10.	246	242	125	80	99

Multiply each of the following numbers by 198 and to each of the products add 94, 656, 359 and 84.

11.	529	76	880	78	399
12.	64	448	366	595	188
13.	238	693	79	983	43
14.	125	175	289	842	429
15.	398	586	467	287	469

## ADDITION EXERCISES

## "Split" Method

1.	2.	3.	4.	5.
\$309.80	\$744.55	\$ 83.42	\$164.35	\$ 46.11
783.46	406.93	199.25	734.20	729.53
45.51	96.54	732.23	39.41	353.46
52.22	27.83	46.45	334.40	25.24
209.34	124.45	73.29	46.33	313.22
122.46	335.70	246.59	293.46	75.49
343.24	74.56	229.64	198.08	100.04
91.79	544.31	92.65	73.84	493.77
59.01	38.93	311.98	33.41	19.25
515.64	298.32	435.60	345.29	245.53
69.82	16.83	5.86	11.80	16.64
100.54	100.11	14.29	222.49	700.15
73.84	59.16	303.14	71.64	83.80
111.20	73.84	66.22	11.83	17.76
<u>16.85</u>	<u>222.19</u>	<u>11.20</u>	<u>404.11</u>	<u>551.31</u>

## MULTIPLICATION

## Stock Purchases

Find the value of each of the following:

6.	445 shares	Miami Copper	at \$ 8.25
7.	25	Union Carbide	" 67.00
8.	75	Stewart-Warner	" 20.25
9.	35	Simmons Co.	" 18.00
10.	50	Loose Wiles	" 54.50
11.	22	Deere Co.	" 21.50
12.	75	General Motors	" 46.00
13.	110	Bethlehem Steel	" 63.50
14.	175	Standard Oil	" 64.25
15.	250	Mullins Mfg.	" 44.00
16.	155	Butterick	" 17.00
17.	85	Illinois Central	" 74.50
18.	38	Pure Oil	" 15.25
19.	21	Radio Corp.	" 25.50
20.	79	Phillips Petroleum	" 11.00
21.	36	Commercial Credit	" 20.25
22.	70	Congoleum	" 10.50
23.	25	Nash Motors	" 39.00
24.	16	Woolworth	" 65.75
25.	85	Otis Steel	" 14.50

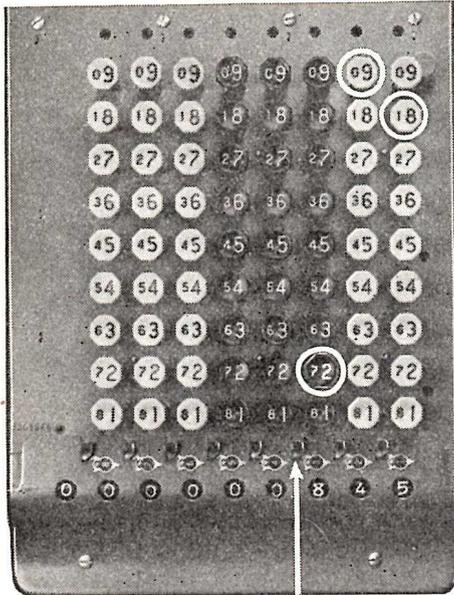
## SUBTRACTION

Subtraction is the process of finding the difference between two numbers. This is performed on the Comptometer by using the small figures on the key-tops and the subtraction "cut-off."

### Rules

1. Add larger amount in the Comptometer.
2. Hold back "cut-off" at the left of an amount in the register equal to or larger than the amount to be subtracted.
3. Holding back the "cut-off," depress the amount to be subtracted on small figures, less one.
4. If necessary to borrow, hold back the "cut-off" at the left of the column or columns from which you borrow. Depress the small cipher key in such column or columns.

**NOTE:** Cipher keys are used in the amount to be subtracted but the nines are ignored.



*Subtraction Cut Off*

### Problems for Practice

**Example:**  $98 - 75 = 23$ .

Add 98 in the right of keyboard. Hold back "cut-off" at left of the figure 9; depress a small 7 in the second column and a small 4 (5 less 1) in the first column. Answer, 23. Check: 23 plus 75 equals 98.

**Example:**  $845 - 702 = 143$ .

Add 845 in the right of keyboard. Hold back "cut-off" at left of the figure 8; depress a small 7 in the third column, a small cipher in the second column and a small 1 (2 less 1) in the first column. Answer, 143. Check: 143 plus 702 equals 845.

**Example:**  $\$28.64 - \$9.62 = \$19.02$ .

Add 28.64 in right of keyboard. Hold back "cut-off" at left of figure 2. Borrow from fourth column by depressing cipher key; ignore the 9 in the third column, small 6 in the second column, and 1 (2 less 1) in the first column. Answer, 19.02. Check:  $\$19.02$  plus  $\$9.62$  equals  $\$28.64$ .

The apostrophe in the following problems indicates where the "cut-off" is to be held back.

1. 
$$\begin{array}{r} '4.36 \\ \underline{1.25} \\ 3.11 \end{array}$$
 Add large figures  
Small figures 124

2. 
$$\begin{array}{r} '8.34 \\ \underline{.68} \\ 7.66 \end{array}$$
 Add large figures  
Small figures 067

3. 
$$\begin{array}{r} '21.43 \\ \underline{6.42} \\ 15.01 \end{array}$$
 Add large figures  
Small figures 0641

4. 
$$\begin{array}{r} 1'70.36 \\ \underline{.85} \\ 169.51 \end{array}$$
 Add large figures  
Small figures 0084

5. 
$$\begin{array}{r} '65.23 \\ \underline{31.00} \\ 34.23 \end{array}$$
 Add large figures  
Small figures 30\*\*

6. 
$$\begin{array}{r} '6.42 \\ \underline{1.93} \\ 4.49 \end{array}$$
 Add large figures  
Small figures 1\*2

7. 
$$\begin{array}{r} '15.60 \\ \underline{8.83} \\ 6.77 \end{array}$$
 Add large figures  
Small figures 0882

8. 
$$\begin{array}{r} '48.50 \\ \underline{9.60} \\ 38.90 \end{array}$$
 Add large figures  
Small figures 0\*5\*

## ADDITION EXERCISES

## "Split" Method

1.	2.	3.	4.	5.
\$454.24	\$771.29	\$343.26	\$154.93	\$264.29
55.54	444.32	29.61	723.41	202.54
29.83	22.46	170.71	77.01	23.42
693.44	19.92	27.93	62.93	776.54
321.43	296.81	230.74	309.84	56.21
83.00	229.73	151.55	470.05	384.59
115.93	42.36	54.96	25.22	116.45
577.01	993.24	475.86	234.20	842.93
404.93	169.05	301.40	129.31	22.49
<u>74.86</u>	<u>32.21</u>	<u>34.52</u>	<u>69.70</u>	<u>390.45</u>

## SUBTRACTION EXERCISES

Subtract and verify:

6.	\$48.64 - \$ .64	18.	\$43.21 - \$36.48	30.	\$65.43 - \$54.00
7.	6.43 - 1.65	19.	8.67 - 5.43	31.	86.54 - 66.54
8.	5.42 - 2.48	20.	98.76 - 67.86	32.	86.51 - 7.34
9.	98.65 - 34.65	21.	3.54 - 2.45	33.	36.48 - 16.48
10.	3.86 - 1.86	22.	65.43 - 55.55	34.	76.54 - .43
11.	43.54 - 9.86	23.	32.86 - 21.86	35.	254.36 - 143.86
12.	43.21 - 8.65	24.	438.65 - 364.86	36.	8.64 - 7.64
13.	32.14 - 8.65	25.	46.54 - 31.48	37.	87.43 - 6.54
14.	86.43 - 65.42	26.	6.54 - 5.48	38.	16.43 - 4.86
15.	68.73 - 21.86	27.	151.86 - 31.85	39.	46.65 - 9.86
16.	48.21 - 42.65	28.	86.54 - 4.65	40.	98.86 - 6.54
17.	86.78 - 43.21	29.	645.32 - 543.21	41.	88.65 - 6.54

Find the balance on deposit in each of the following; verify by adding the checks and remainder.

Bank Balance	Checks	Bank Balance	Checks
42. \$684.20	\$125.10	47. \$1254.60	\$1202.50
43. 329.64	202.59	48. 984.20	780.29
44. 75.90	32.50	49. 683.20	520.45
45. 129.54	100.29	50. 764.29	129.25
46. 726.26	6.24	51. 159.16	50.29

NOTE: In using machines not equipped with the subtraction cut-off, depress the small cipher keys to the left of the columns in which the subtraction is made. Although this method is a longer process, it can be used on the Comptometer.

ADDITION EXERCISES

"Split" Method

1.	2.	3.	4.	5.
\$167.85	\$243.25	\$178.69	\$889.70	\$165.46
75.68	88.79	884.35	600.98	75.48
885.46	224.35	21.24	24.35	303.91
22.53	19.78	17.60	175.69	15.47
317.68	225.48	410.89	35.44	288.79
22.25	32.44	298.70	19.78	37.65
655.47	118.11	17.68	664.37	117.51
19.78	980.73	554.36	37.64	38.07
443.26	32.44	704.38	231.45	775.43
27.68	17.36	19.80	45.31	10.98
344.21	174.39	238.00	186.57	330.98
10.61	87.69	61.47	25.44	25.45
133.24	36.59	198.70	462.47	678.59
16.57	303.25	30.07	54.36	24.35
<u>564.32</u>	<u>227.31</u>	<u>424.35</u>	<u>278.57</u>	<u>333.24</u>

SUBTRACTION EXERCISES

A Depositor's Ledger

The depositor's ledger is a form of record which shows the depositor's opening balance, the deposits made, the checks paid, and the closing balance. Rule a blank similar to the following model and find the daily balances.

Depositor	Opening Bal.	Deposits	Checks	Closing Bal.
W. T. Charles	\$ 683	\$116	\$ 84	715
Frank Mills	529	20	5	544
J. T. Smith	1,640	222	112	1750
Ora Jones	983	110	28	1065
S. M. Reed	756	505	13	1248
G. A. Frey	84	80	25	139
John T. White	1,246	111	88	1369
F. L. Green	834	109	75	768 ✓
S. J. Busse	756	222	101	877
F. T. Grigsby	210	175	33	352
L. M. Rogne	79	110	47	142
Mary Smith	834	34	16	852
Grace McCurry	596	9	10	595
W. R. Cross	84	78	25	137
A. Tulley	1,111	842	39	1914
Lucy Stone	555	98	15	638
F. A. Daniels	229	10	48 ✓	191
T. C. Walters	326	152	69	367 ✓
M. L. Johnson	135	62	111	88 ✓
E. M. Bell	400	122	22	500

## BALANCE SHEET

Add by lines and by columns—deducting the amounts in bold faced type. The total of the lines should equal the total of the columns.

	1	2	3	4	5	6	
1	3.45	4.98	8.55	6.77	4.04	2.82	30.61
2	7.52	1.25	2.55	3.11	3.27	2.79	17.31
3	5.01	3.56	3.82	.56	1.39	8.98	20.59
4	.58	7.49	.85	6.69	.93	.36	16.18
5	3.74	.68	1.26	1.78	6.89	9.70	21.53
6	8.29	1.66	4.83	4.14	3.45	.45	25.82
7	2.63	3.45	1.24	2.33	8.78	3.00	18.95
8	.75	5.67	1.17	.15	1.20	.94	9.58
9	6.93	.98	7.76	.89	.15	7.80	24.51
10	1.40	.33	.16	4.00	9.07	2.10	16.40
11	7.84	6.80	1.25	4.83	8.88	5.00	44.94
12	.38	2.34	.64	5.54	5.90	1.50	15.08
13	5.90	.89	.64	6.93	2.01	7.80	16.79
14	.70	7.77	1.33	2.22	3.33	6.54	19.23
15	2.93	.49	9.98	4.00	.69	2.11	19.52
	58.05	42.42	31.99	43.98	57.20	29.99	283.62

## BALANCING DEBITS AND CREDITS OF LEDGER ACCOUNTS

A debit is a record of money or other value received. A credit is a record of money or other value delivered.

A ledger account is a record of related debits and credits and is kept in a record book called a ledger.

The balance of an account is the difference between the sum of the debits and the sum of the credits.

Find the balance of the following:

- Add credit items and jot down total.
- Clear machine and add debit items.
- With total of debits still in machine subtract the total credits and set down balance.

1.	Dr. \$484.25 43.86 98.65 <u>48.36</u>	Cr. \$46.50 3.68 <u>4.98</u>	2.	Dr. \$36.40 9.86 43.56 <u>21.43</u>	Cr. \$6.50 2.86 29.43 <u>6.45</u>	3.	Dr. \$365.40 86.25 48.98 <u>36.48</u>	Cr. \$36.50 8.50 9.43 <u>      </u>
4.	486.50 43.25 <u>46.85</u>	25.40 <u>36.48</u>	5.	36.48 9.65 <u>4.50</u>	8.60 <u>2.31</u>	6.	486.50 36.40 <u>8.65</u>	3.60 <u>4.98</u>
7.	48.65 76.48 42.86 3.42 <u>8.50</u>	19.25 4.65 1.25 <u>3.60</u>	8.	465.50 36.40 9.65 48.36 <u>5.36</u>	8.60 4.65 3.86 <u>9.65</u>	9.	364.80 98.36 4.56 86.50 <u>48.65</u>	3.21 8.65 <u>4.86</u>
10.	486.00 36.48 28.50 46.25 <u>36.10</u>	36.00 4.86 <u>1.36</u>	11.	486.50 98.50 36.48 1.88 <u>46.50</u>	6.50 3.48 4.25 <u>8.64</u>	12.	486.50 86.30 98.72 48.73 <u>65.42</u>	600.50 1.30 4.65 <u>17.86</u>
13.	643.87 96.48 73.65 42.65 86.40 <u>36.40</u>	6.50 3.21 6.40 <u>6.50</u>	14.	42.96 43.50 4.65 8.85 9.36 <u>4.65</u>	3.48 2.90 4.65 <u>10.00</u>	15.	36.48 96.43 5.48 6.50 8.83 <u>9.64</u>	6.40 7.50 <u>4.36</u>
16.	463.20 24.16 58.45 100.10 <u>22.64</u>	3.12 2.40 <u>5.80</u>	17.	464.10 200.05 73.84 22.15 <u>5.00</u>	200.05 70.14 <u>16.12</u>	18.	312.48 68.31 40.25 9.81 <u>111.43</u>	12.85 2.10 <u>16.14</u>

PROGRESS TEST NUMBER TWO

Test 2 A—Addition—(Time 5 Min.)

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
\$3.75	\$4.67	\$1.34	\$5.11	\$3.80	\$4.26	\$5.55	\$2.25	\$6.21	\$7.05
2.98	.31	7.23	.17	.75	.37	.40	1.73	.42	4.61
.60	.56	.51	6.50	.31	5.68	2.37	5.10	.20	.56
.73	3.78	.65	.47	1.20	3.75	9.09	.72	6.50	.92
.19	9.56	1.20	.83	3.45	.23	.30	3.25	4.67	3.26
2.78	.47	.89	2.16	.56	4.01	.42	7.56	.24	8.11
4.67	2.34	2.56	5.75	3.12	2.17	1.71	.33	.72	.57
.23	1.26	.30	.48	5.04	.85	.28	9.70	3.28	3.22
5.67	.70	.43	4.70	.87	.43	3.75	.58	1.17	.46
<u>3.70</u>	<u>.29</u>	<u>3.11</u>	<u>.69</u>	<u>2.24</u>	<u>8.05</u>	<u>4.61</u>	<u>.91</u>	<u>.45</u>	<u>1.57</u>

Test 2 B—Accumulation—(Time 4 Min.)

1.	2.	3.	4.
3 x 345	12 x 12	480 x 34	58 x 64
22 x 22	16 x 366	222 x 56	222 x 35
108 x 303	242 x 54	34 x 222	50 x 43
62 x 34	8 x 8	9 x 9	100 x 62
<u>111 x 505</u>	<u>56 x 56</u>	<u>303 x 63</u>	<u>78 x 78</u>
5.	6.	7.	8.
84 gal. at \$.42	135 ft. at \$.43	38 lb. at \$1.56	64 lb. at \$.02
8 gal. " .15	188 ft. " .75	9 lb. " 2.02	32 lb. " .05
33 gal. " .77	244 ft. " .43	59 lb. " 3.15	8 lb. " .12
222 gal. " .12	175 ft. " .05	136 lb. " 1.25	5 lb. " .14
<u>45 gal. " .33</u>	<u>336 ft. " 1.35</u>	<u>63 lb. " .78</u>	<u>16 lb. " .03</u>

Test 2 C—Subtraction—(Time 4 Min.)

✓1. \$345.50 — \$122.55 _____	✓7. \$ 556.12 — \$139.45 _____
✓2. 78.80 — 6.85 _____	✓8. 78.92 — 9.86 _____
✓3. 100.33 — 45.10 _____	✓9. 98.60 — 4.35 _____
✓4. 788.00 — 54.16 _____	✓10. 111.55 — 45.92 _____
✓5. 222.23 — 29.68 _____	11. 1264.25 — 3.14 _____
✓6. 78.34 — .22 _____	12. 2212.10 — 6.24 _____

GOALS	TEST 2 A	TEST 2 B	TEST 2 C
Excellent	10 problems correct	8 problems correct	10 problems correct
Normal	8 problems correct	7 problems correct	8 problems correct
Fair	6 problems correct	6 problems correct	6 problems correct

### CONTROLLED-KEY REVIEW

Give the rules for making each correction in the following partial key-stroke errors.

A			B			C			D			E		
3	7	8	4	5	0	5	1	5	1	7 <sup>4</sup>	6	4	8	3
	6	4	2	2	2	4	2	2		8	4		2	4
4	3	2		9 <sup>5</sup>	3		9	4	4	3	9	3	2	9
	9	8	8	7	5	7	8	3		2	4	2	1	7 <sup>4</sup>
2	3	1	1	8	6	4	1	9	3	1	4		4	0
4	4	9	5	5	5		6	9	2	8 <sup>4</sup>	9	5	4	6
	8	6	4	1	4	2	7	4		7	5		7	5
1	7 <sup>4</sup>	5		7 <sup>4</sup>	7		3	8	8	8	8	2	8 <sup>4</sup>	0
	3	0		4	4	2	4	5		2	5	8	4	5
2	2	2	3	3	2	2	7	0	4	3	9	1	5	0

### SUBTRACTION EXERCISES

#### Department Store Record

The following tabulation is the record of the daily sales in a large department store. Subtract the cost of the goods from the sales to get the gross profit. Then subtract the expenses from the gross profit or loss to find the net profit or loss.

Department	Sales	Cost of Goods Sold	Gross Profit	Expenses	Net Profit or Loss
1.	\$843.29	\$500.20	543 09	\$22.40	520 69
2.	546.25	448.25	98 00	44.00	54 00
3.	84.26	79.25	5 01	8.25	3 24
4.	129.54	100.20	29 34	30.15	81
5.	643.29	329.64	313 65	50.29	263 36
6.	546.33	442.25	104 08	36.25	67 83
7.	92.20	75.80	16 40	20.20	3 20
8.	305.00	280.25	15 75	35.25	19 50
9.	425.25	592.15	166 90	12.15	197 05
10.	92.00	60.25	22 75	5.65	17 10
11.	156.49	101.30	54 70	14.65	40 05
12.	293.25	128.62	164 63	22.56	142 07
13.	78.46	80.20	1 26	6.60	3 84
14.	225.40	240.25	14 85	15.75	3 60
15.	190.55	98.25	92 30	20.40	67 70
16.	135.35	101.20	34 15	15.10	19 05
17.	200.05	150.25	49 80	8.40	41 40
18.	73.20	98.20	25 00	6.25	21 25
19.	840.25	603.25	146 50	30.25	116 25
20.	745.00	430.19	314 81	29.75	285 06

## DIVISION

### Division by Subtraction or Reducing Remainder

Division is the process of finding the number of times that one number is contained in another. The machine method of division is even more simple than the mental or written process for it consists merely of a series of subtractions and the quotient, or answer figure, is a record of the number of subtractions made.

**To the Teacher:** Use the keyboard chart to illustrate the different steps in division and drill carefully on the practice problems given below.

96  
 $\overline{)12}$   
 84  
 $\overline{)12}$   
 72  
 $\overline{)12}$   
 60  
 $\overline{)12}$   
 48 etc.

**Example:** 96 divided by 12 equals 8.

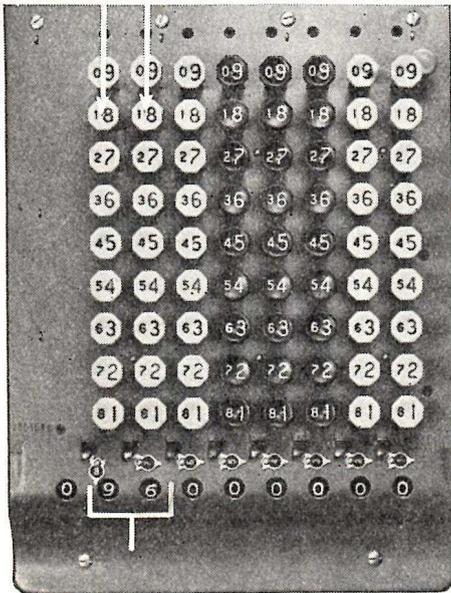
The illustration at the left shows the mental process of division by subtraction. The answer is obtained by counting the number of subtractions made. This illustrates that division is a short-cut method of subtraction.

### Comptometer Method

Add dividend in left of keyboard and place decimal pointer to agree with point in dividend.

**Decimal Point Rule 1.** For each whole number in the divisor, move dividend decimal one place to left. (Move the dividend decimal point two places to the left for the two whole numbers in the divisor—12).

*Pointing to Divisor Keys*



*Reduce Remainder Figures 96*

The picture illustration shows the divisor keys, the remainder figures in the register, and the decimal pointer in correct position.

Hold divisor 12 with first and second fingers of right hand on small figures, less one, directly over the 96 in the register dials. Then simply subtract 12 from 96, from 84, 72, 60, 48, 36, 24, 12, 00. The answer figure 8 is in the register dial at the left.

This subtraction operation is called **reducing the remainder**. The remainder figures are always directly beneath the divisor keys.

**Example:**  $144 \div 12$ .

Hold divisor keys 12 directly over the 14 in the register. Reduce 14; this leaves a remainder of 2. Move divisor one place to right over next remainder and reduce 24 to less than divisor. Answer, 12.

In the following problems, point off before dividing and then reduce each remainder to less than divisor.

Check your answers with those shown here.

- |                         |                           |                             |
|-------------------------|---------------------------|-----------------------------|
| 1. $1728 \div 12 = 144$ | 3. $5328 \div 1.2 = 4440$ | 5. $197.44 \div 16 = 12.34$ |
| 2. $3276 \div 14 = 234$ | 4. $4884 \div 2.2 = 2220$ | 6. $546.38 \div .17 = 3214$ |

**NOTE:** In these drill problems, have the student cover the dials next to the remainder figures with the fingers of the left hand. The remainder figures then stand out prominently and the operation of reducing is more readily seen.

## DIVISION—Continued

## Agreeing with Index or Division by Multiplication and Subtraction

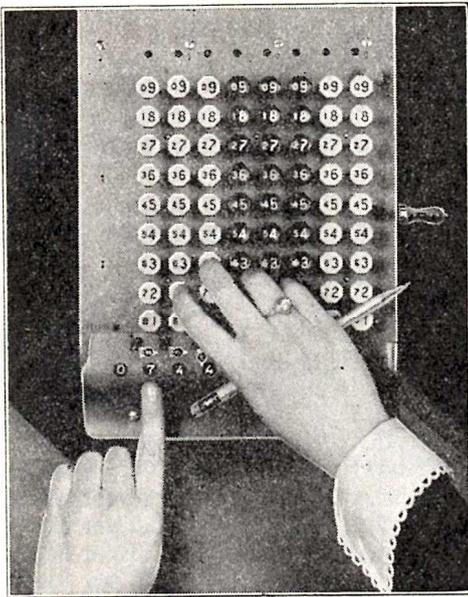
This division process is similar to the long division method in arithmetic. In problems where the first remainder cannot be reduced, it is necessary to consider a larger portion of the dividend. This requires the application of **multiplication** (agreeing with the index figure) and **subtraction** (reducing the remainder).

**Example:**  $7442 \div 77 = 96.649347$

Add dividend in left of keyboard and point off for the 2 whole numbers in the divisor. Take operating position and hold divisor 77 on small figures less one (76) at left of keyboard.

The first remainder 74 is less than the divisor 77, therefore, move divisor figures 1 place to right and divide the larger portion thus obtained, 774.

The register figure immediately to the left of the divisor figures, as shown in the illustration, is called the **index** figure. This figure always indicates the approximate number of times the divisor will be contained in a portion of the dividend.



*Index figure 7 changes to 9*

Without looking at the register dials, multiply the divisor keys 7 times. Notice now that the index figure has changed to 9. Depress two more times to agree with this index 9. Remainder 51—less than divisor 77.

Move and agree with next index 5—6.  
Remainder 50—less than divisor 77.

Move and agree with next index 5—6  
Remainder 38—less than divisor 77.

Move and agree with next index 3—4  
Remainder 72—less than divisor 77.

Move and agree with next index 7—8—9  
Remainder 27—less than divisor 77.

Move and agree with next index 2—3  
Remainder 39—less than divisor 77.

Move and agree with index 3—4  
(drop second finger off keyboard)  
Remainder 7. Answer, 96.649347.

This completes the two steps that are a part of all division problems. The index figure is **always** in the dial at the left of the divisor keys and must be equaled. The remainder figures are **always** directly beneath the divisor keys and must be reduced to less than the divisor. Then move to right and repeat.

Drill carefully on the following problems and check your answer with those shown here.

- |                             |                              |                              |
|-----------------------------|------------------------------|------------------------------|
| A. Agree with index figure  | 1. $1345 \div 25 = 53.8$     | 4. $297.364 \div 34 = 8.746$ |
| B. Reduce remainder figures | 2. $41.778 \div 45 = .9284$  | 5. $2377.2 \div 56 = 42.45$  |
| C. Move to right and repeat | 3. $16.7772 \div 44 = .3813$ | 6. $1307.68 \div 22 = 59.44$ |

**NOTE:** If index figure is a zero and the remainder less than divisor, move to right for next position.

## ADDITION EXERCISES

## "Split" Method

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
548.92	620.10	188.70	355.11	278.95	114.39	437.92	664.38	611.48	988.70
6.28	9.28	33.26	32.19	93.25	57.17	73.44	19.26	3.27	6.11
98.60	32.55	2.11	7.49	22.11	3.37	186.70	227.60	38.60	74.36
175.49	6.38	664.58	427.59	765.00	104.62	14.39	15.49	303.11	.98
2.27	19.50	18.59	17.59	18.50	74.57	2.28	909.80	19.50	234.32
86.57	336.48	302.24	3.11	321.55	13.26	887.60	4.37	45.46	27.27
35.43	553.27	56.47	335.28	65.40	987.60	2.23	116.47	3.03	261.76
433.54	2.37	13.31	19.58	19.55	30.27	18.50	20.75	981.04	45.45
870.69	185.67	662.24	202.48	775.48	175.49	303.60	309.61	16.57	789.00
2.27	64.59	443.35	20.20	3.37	75.60	20.75	111.45	1.11	33.00

## DIVISION EXERCISES

Proof of Division. Verify by multiplying the quotient by the divisor. Always point off before dividing.

- |                       |                        |
|-----------------------|------------------------|
| 11. $828.96 \div 2.4$ | 23. $791.56 \div .14$  |
| 12. $26686 \div 55$   | 24. $147.66 \div 23$   |
| 13. $272.328 \div 84$ | 25. $1015 \div 70$     |
| 14. $1958.4 \div 51$  | 26. $2382.35 \div 6.2$ |
| 15. $65.646 \div 6.3$ | 27. $75850 \div 8.2$   |
| 16. $1221 \div 22$    | 28. $5548.8 \div 16$   |
| 17. $5244 \div 12$    | 29. $5995 \div 25$     |
| 18. $11154 \div .26$  | 30. $174.048 \div 74$  |
| 19. $487.9 \div 34$   | 31. $1994.52 \div .66$ |
| 20. $7731 \div .45$   | 32. $2779.32 \div 46$  |
| 21. $2717.12 \div 56$ | 33. $89089 \div 89$    |
| 22. $1844.4 \div 87$  | 34. $18105 \div 3.4$   |

35. The daily sales of a high school cafeteria for a week were as follows: Monday, \$84.20; Tuesday, \$89.30; Wednesday, \$92.64; Thursday, \$94.70; Friday, \$76.40. What was the average for the five days?

36. The cash receipts at the A & P Grocery Store for the week of June 6th were as follows:

Monday	\$2264.20
Tuesday	1560.32
Wednesday	1446.24
Thursday	1986.50
Friday	1786.21
Saturday	2064.22

Find the average daily sales.

## ADDITION EXERCISES

## "Split" Method

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
\$769.86	\$431.18	\$742.67	\$901.94	\$ 52.88	\$ 20.89	\$ 1.44	\$801.19	\$ 95.17	\$198.65
1.68	56.72	73.82	68.29	153.67	126.57	818.31	64.59	15.92	43.58
46.27	14.69	53.29	37.73	24.20	53.44	1.16	335.65	564.52	15.37
93.26	90.57	524.82	11.38	90.72	5.11	18.99	36.59	4.92	5.29
57.60	115.48	26.33	2.81	41.73	126.52	279.61	1.16	357.79	75.60
876.90	4.48	4.11	28.30	5.61	35.73	13.52	75.69	53.70	25.26
45.21	38.60	626.81	381.90	351.33	96.57	30.79	83.29	379.12	1.14
16.50	95.47	10.71	13.27	13.52	11.49	471.25	3.38	231.81	85.47
31.75	3.37	224.25	175.10	67.37	553.78	73.06	52.14	14.38	447.82
117.79	336.72	1.19	34.35	352.11	17.59	23.86	147.98	.33	67.59

## DIVISION EXERCISES

Divide each of the following. Carry to end of keyboard but show only three decimal places in the answers.

- |                      |                      |
|----------------------|----------------------|
| 11. $34.44 \div 3.6$ | 21. $63.36 \div .82$ |
| 12. $2.342 \div 2.7$ | 22. $3663 \div .89$  |
| 13. $.3432 \div 3.5$ | 23. $44.22 \div 53$  |
| 14. $6655 \div 85$   | 24. $342.1 \div 44$  |
| 15. $755.7 \div 84$  | 25. $1.568 \div 17$  |
| 16. $63.36 \div 74$  | 26. $3465 \div .45$  |
| 17. $8.686 \div 89$  | 27. $135.78 \div 21$ |
| 18. $.4224 \div 43$  | 28. $36.85 \div 38$  |
| 19. $6654 \div .75$  | 29. $12.345 \div 14$ |
| 20. $5565 \div 6.6$  | 30. $54321 \div .78$ |

31. A steamer completed a voyage of 7840 miles in 28 days. What was its average speed per day?
32. A farmer harvested 1190 bushels of wheat from a field of 34 acres. What was the average yield per acre?
33. At \$89.00 apiece, how many cows can be purchased for \$10,858?
34. A farm of 78 acres was sold for \$13,026.00. What was the price per acre?
35. If 76 tons of coal cost \$646.00, what is the cost per ton?

**NOTE:** Use of cut-off in division.

In reducing remainder, if divisor keys are depressed once too often, do not clear the register and start over. Simply hold back the cut-off at the left of the divisor position and add in the divisor (not less one) on large figures. Then continue with the division.

## ADDITION EXERCISES

## "Split" Method

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
61.58	52.77	18.79	40.11	67.55	20.24	98.70	16.47	43.35	53.44
4.17	14.67	5.46	6.58	3.28	.65	5.48	86.50	5.48	6.58
16.58	7.25	74.36	18.60	19.71	98.67	24.22	3.22	19.80	19.60
43.26	64.36	26.57	27.68	54.37	30.98	4.37	96.44	36.58	34.25
.15	32.69	4.38	4.37	8.15	4.53	16.58	30.89	.20	5.46
3.27	5.48	19.80	17.69	25.79	.32	30.30	5.43	95.40	17.68
85.47	.31	53.46	75.48	98.57	15.46	.53	33.22	3.26	3.38
11.12	64.39	6.57	4.39	33.27	3.26	75.69	11.84	20.76	84.39
6.57	32.77	11.85	97.56	5.44	48.70	52.22	20.91	3.22	29.80
63.28	8.60	95.37	15.48	58.68	76.58	1.11	5.47	54.11	7.14
29.80	3.26	45.62	32.80	16.57	3.28	49.82	73.27	6.38	42.28
7.43	53.33	7.51	9.11	44.28	18.70	62.29	44.21	85.30	57.68
38.92	19.70	.19	52.85	9.80	53.27	8.80	5.44	66.55	6.68
48.91	5.47	38.79	80.32	86.57	6.57	51.38	55.18	9.69	70.52
<u>2.26</u>	<u>45.46</u>	<u>85.48</u>	<u>6.59</u>	<u>60.06</u>	<u>33.26</u>	<u>85.47</u>	<u>60.19</u>	<u>14.36</u>	<u>9.41</u>

## DIVISION EXERCISES

NOTE: When nines occur in the divisor they are disregarded. Hold the small cipher in divisor when between figures of value.

Perform the following divisions, getting each result correct to 3 decimal places.

11.	2468 ÷ 65.4	21.	2343.95 ÷ .708
12.	86.4 ÷ 3.24	22.	6432.8 ÷ 9.64
13.	.9865 ÷ .256	23.	86.43 ÷ 2.86
14.	8643 ÷ 987	24.	54.329 ÷ .698
15.	.76435 ÷ 642	25.	345.286 ÷ .642
16.	8643.5 ÷ 9.42	26.	98.643 ÷ 96.5
17.	<u>643.281 ÷ .304</u>	27.	643.281 ÷ 83.2
18.	86.435 ÷ .864	28.	38.96 ÷ .645
19.	643.52 ÷ 983	29.	.8494 ÷ .604
20.	.8643 ÷ .765	30.	86.43 ÷ 1.91

31. A bookkeeper earns \$125.00 a month and his monthly expenses average \$78.00. If he saves the remainder, how long will it take him to save \$846.00?
32. A furniture dealer invested \$38,190 in living room sets at \$285 a set. How many sets did he buy?
33. Find the cost of 14,100 lb. of wheat, allowing 60 lb. to the bushel at \$1.12 a bushel.
34. I bought a number of lots for \$9,416 and sold them for \$14,564, gaining \$234 a lot. How many did I buy?
35. The product of two factors is 122.82; one of the factors is 445. What is the other factor?

## ADDITION EXERCISES

## "Split" Method

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
157.82	218.99	879.00	325.62	175.60	768.92	352.22	344.00	645.87	422.58
11.85	86.79	43.33	96.55	27.55	25.43	75.57	35.50	70.98	11.10
890.11	25.65	19.61	35.62	86.55	72.45	24.23	75.66	91.14	64.55
.36	9.26	435.65	.13	43.00	3.36	75.48	4.48	.23	755.19
76.58	37.55	91.15	240.56	338.60	161.58	174.90	575.68	16.39	30.30
18.50	981.77	60.05	57.83	59.00	45.54	3.36	9.67	80.95	27.68
3.37	46.55	224.25	14.38	91.44	595.01	87.69	47.50	9.57	663.01
774.58	85.55	57.66	6.57	668.40	38.76	24.37	36.72	446.58	996.73
32.65	191.02	84.44	447.82	75.23	62.22	6.38	3.02	33.42	38.60
141.55	65.55	754.90	57.69	448.67	808.90	737.56	665.49	202.19	505.98

## DIVISION APPLIED TO BUSINESS PROBLEMS

**AVERAGE:** The average of two or more numbers is found by dividing the sum of the numbers by the number of items added. Thus, the average of 5, 10 and 12 is found by adding 5, 10 and 12 and dividing the sum by 3.

## Exercises

11. What is the average weight of 13 bales of cotton weighing 460 lb., 462 lb., 475 lb., 459 lb., 468 lb., 473 lb., 448 lb., 449 lb., 453 lb., 457 lb., 463 lb., 431 lb., and 457 lb.?
12. The sales for the W. & C. Candy and Ice Cream Store by months for a year were as follows: January, \$3,464.54; February, \$1856.50; March, \$1283.75; April, \$2246.12; May, \$3115.86; June, \$4863.22; July, \$3846.55; August \$4224.54; September, \$2263.54; October, \$2111.14; November, \$1645.45; December, \$3884.64. Find the average monthly sales. Mark the months that are below the average by a minus sign, and the months that are above by a plus sign.
13. The following table shows the number of men employed and the total weekly wages. Find the average wage for each department and the average wage for the twelve departments.

DEPARTMENT	NUMBER OF MEN EMPLOYED	TOTAL WEEKLY WAGE	AVERAGE WAGE
14	23	\$805	
15	18	657	
16	40	1880	
17	39	1638	
18	62	2418	
19	24	1080	
20	12	600	
21	22	935	
22	15	712.50	
23	26	1118	
24	34	1581	
25	29	1058.50	

## ADDITION EXERCISES

Cross foot; verify by adding in reverse direction.

1.	612	219	251	303	783	563	_____
2.	296	78	69	56	803	756	_____
3.	84	209	84	196	56	61	_____
4.	21	111	205	366	108	173	_____
5.	411	93	733	59	100	129	_____
6.	504	31	542	403	78	42	_____
7.	399	245	30	592	59	158	_____
8.	75	104	40	294	158	200	_____
9.	86	22	215	73	73	10	_____
10.	403	593	88	82	82	12	_____
11.	291	666	61	596	241	133	_____
12.	500	30	154	843	73	369	_____
13.	78	112	783	159	296	222	_____
14.	30	76	555	33	43	111	_____
15.	296	100	93	34	80	609	_____

## DIVISION EXERCISES

The Jones Department Store wishes to know the total weekly sales for each department and the average sales. Find the total daily sales and the average.

DEPARTMENT STORE WEEKLY SALES REPORT								
Dept.	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Total	Average Sales
A.	\$ 98.25	\$101.20	\$ 75.80	\$ 64.25	\$ 88.45	\$125.25		
B.	40.40	20.45	84.25	75.25	60.00	150.24		
C.	120.25	230.40	195.45	98.20	70.05	202.45		
D.	240.66	104.75	202.20	101.45	98.60	340.40		
E.	78.34	55.74	22.45	78.45	38.25	98.20		
F.	343.25	404.20	324.90	206.40	122.22	504.25		
G.	84.96	78.25	98.65	93.75	60.65	101.10		
H.	98.34	82.34	88.70	78.64	84.20	97.11		
I.	224.68	102.46	202.45	198.75	109.10	300.12		
J.	55.94	20.98	34.35	20.24	15.64	64.25		
K.	400.20	502.65	398.24	205.98	98.75	570.22		
L.	525.64	498.30	478.40	347.75	202.40	525.36		

## ADDITION EXERCISES

## "Split" Method

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
\$22.39	\$17.21	\$ .36	\$72.21	\$13.13	\$75.27	\$78.16	\$23.45	\$15.45	\$69.21
41.11	89.32	27.77	5.67	1.23	5.67	69.76	3.16	.63	5.19
.98	.49	1.19	.73	.69	.29	.63	.48	21.26	51.12
14.49	47.95	.83	.24	21.90	64.24	28.88	15.96	.69	.76
72.96	.12	49.34	89.09	5.00	1.03	.99	9.78	1.87	22.34
.35	3.14	94.11	3.98	87.34	37.22	12.78	21.33	6.42	6.19
.68	.67	.88	4.26	.42	.29	.62	.45	.60	12.13
21.13	77.49	5.63	.24	.37	.62	.75	.50	21.13	.73
7.79	.42	33.33	16.48	99.42	86.68	.48	76.69	4.48	.79
.97	.57	6.41	4.32	1.23	5.67	19.57	84.79	2.65	99.90
63.94	54.65	1.16	.75	.46	.20	4.32	1.15	.73	.43
54.56	47.45	22.68	51.17	27.77	52.22	1.94	.57	3.38	.45
6.70	2.96	.88	9.97	2.34	7.19	14.18	1.03	.42	19.24
<u>10.83</u>	<u>12.25</u>	<u>16.69</u>	<u>.59</u>	<u>14.47</u>	<u>14.29</u>	<u>7.51</u>	<u>29.33</u>	<u>75.72</u>	<u>.50</u>

## DIVISION EXERCISES

## Preceding Ciphers

**Decimal Point Rule 2.** If the divisor is a decimal and contains preceding ciphers, (.0075) move dividend decimal one place to right for each preceding cipher. Then hold 75 in regular position and divide.

Example:  $78.342 \div .0075 = 10445.6$

**Note:** When the dividend contains preceding ciphers, place the dividend in the dials, allowing one column at the left for each cipher.

Divide the following problems, carrying out to end of keyboard. In actual business practice, only a certain number of decimal places are required but the student should be able to quickly and easily carry a division to the very limit of the keyboard. When the right-hand limit of the keyboard has been reached, drop one figure at a time until all the figures have been dropped.

- |     |                      |     |                     |
|-----|----------------------|-----|---------------------|
| 11. | $4.642 \div .054$    | 21. | $27.485 \div .1673$ |
| 12. | $431.77 \div 193$    | 22. | $25896 \div 64.05$  |
| 13. | $7846.54 \div 87.65$ | 23. | $345 \div .015$     |
| 14. | $12.84 \div .670$    | 24. | $46.24 \div 90.09$  |
| 15. | $456.38 \div .077$   | 25. | $154 \div .0035$    |
| 16. | $65432 \div 65.43$   | 26. | $39.234 \div 62$    |
| 17. | $.8643 \div .4865$   | 27. | $596.4 \div 2.252$  |
| 18. | $789.25 \div 99.99$  | 28. | $.0454 \div 4.25$   |
| 19. | $48.54 \div .0079$   | 29. | $364.5 \div 569.33$ |
| 20. | $3199.45 \div 5.96$  | 30. | $290.45 \div 12.34$ |

31. At \$11.50 a ton, what is the cost of 7460 lbs.?
32. A retailer bought 284 yards of cloth for \$249.32 and sold it at \$1.39 per yard. How much did he gain per yard?
33. A man bought a herd of cattle at the rate of \$79 per head. He sold them at a profit of \$11.25 per head and received \$7039.50. How many heads were there in the herd and what was the gain?
34. At \$105.50 per acre, how many acres of land can be bought for \$633? for \$949.50? for \$1266? for \$2426.50? for \$4747.50?
35. The passenger fare from Chicago to Pittsburgh is \$16.94. The rate per mile is \$.035. What is the distance between the two cities?

## COMPARISON OF COMMON AND DECIMAL FRACTIONS

The terms of a fraction are its **Numerator** and **Denominator**.

The **Numerator** is the number above the line and tells the number of parts expressed by the fraction. The **Denominator** is the number below the line and shows the size of the parts considered. Thus, in the fraction  $\frac{4}{5}$ , 5, the denominator, tells that the number has been divided into five equal parts. 4, the numerator, shows that 4 of the 5 equal parts have been taken.

A common fraction may be expressed as a decimal by dividing the numerator by the denominator. Thus,  $\frac{4}{5} = 4 \div 5$  or .80. For machine work in fractions this method is preferable.

Change the following common fractions to the decimal form by dividing the numerator by the denominator. Carry the results to 4 decimal places, if necessary.

1.  $\frac{4}{7}$     $\frac{7}{8}$     $\frac{5}{6}$     $\frac{7}{8}$     $\frac{7}{12}$     $\frac{11}{16}$     $\frac{5}{8}$     $\frac{5}{12}$     $\frac{4}{9}$     $\frac{7}{16}$     $\frac{7}{9}$     $\frac{8}{12}$   
 2.  $\frac{7}{16}$     $\frac{5}{24}$     $\frac{1}{12}$     $\frac{7}{9}$     $\frac{3}{8}$     $\frac{1}{6}$     $\frac{5}{32}$     $\frac{11}{12}$     $\frac{13}{16}$     $\frac{35}{64}$     $\frac{11}{16}$     $\frac{4}{9}$

Express each of the following as a decimal carrying to 2 decimal places.

3.  $21\frac{11}{55}$     $24\frac{43}{64}$     $29\frac{87}{128}$     $76\frac{21}{144}$     $88\frac{1142}{5280}$     $20\frac{6}{45}$   
 4.  $212\frac{1}{64}$     $245\frac{3}{48}$     $170\frac{48}{160}$     $135\frac{166}{180}$     $1625\frac{1}{6}$     $83\frac{92}{160}$   
 ✓ 5.  $245 \times 8\frac{1}{2}$    ✓ 6.  $5461 \times 11\frac{3}{12}$    7.  $834\frac{1}{4} \times 4\frac{5}{8}$   
 ✓ 8.  $125.8 \times 3\frac{3}{4}$    ✓ 9.  $756 \times 6\frac{5}{6}$    10.  $13.454 \times 1\frac{7}{16}$

4ths		6ths		8ths		12ths		16ths		32nds			64ths						
1	.25	1	.1667	1	.125	1	.0833	1	.0625	1	.03125	17	.53125	1	.0156	22	.3438	43	.6719
2	.5	2	.3333	2	.25	2	.1667	2	.125	2	.0625	18	.5625	2	.0313	23	.3594	44	.6875
3	.75	3	.5	3	.375	3	.25	3	.1875	3	.09375	19	.59375	3	.0469	24	.375	45	.7031
		4	.6667	4	.5	4	.3333	4	.25	4	.125	20	.625	4	.0625	25	.3906	46	.7188
		5	.8333	5	.625	5	.4167	5	.3125	5	.15625	21	.65625	5	.0781	26	.4063	47	.7344
		6	.75	6	.5	6	.5	6	.375	6	.1875	22	.6875	6	.0938	27	.4219	48	.75
				7	.875	7	.5833	7	.4375	7	.21875	23	.71875	7	.1094	28	.4375	49	.7656
						8	.6667	8	.5	8	.25	24	.75	8	.125	29	.4531	50	.7813
						9	.75	9	.5625	9	.28125	25	.78125	9	.1406	30	.4688	51	.7969
						10	.8333	10	.625	10	.3125	26	.8125	10	.1563	31	.4844	52	.8125
						11	.9167	11	.6875	11	.34375	27	.84375	11	.1719	32	.5	53	.8281
														12	.1875	33	.5156	54	.8438
								13	.8125	13	.40625	29	.90625	13	.2031	34	.5313	55	.8594
								14	.875	14	.4375	30	.9375	14	.2188	35	.5469	56	.875
								15	.9375	15	.46875	31	.96875	15	.2344	36	.5625	57	.8906
										16	.5			16	.25	37	.5781	58	.9063
														17	.2656	38	.5938	59	.9219
														18	.2813	39	.6094	60	.9375
														19	.2969	40	.625	61	.9531
														20	.3125	41	.6406	62	.9688
														21	.3281	42	.6563	63	.9844

The decimal equivalents of the 4ths, 6ths, 8ths, 12ths and 16ths are constantly used in the extension of bills and inventories and should be thoroughly memorized.

## ADDITION OF MIXED NUMBERS

The fractions in mixed numbers will, as a rule, be all of the same denominator.

Method 1. Change the fraction to its decimal equivalent as  $4\frac{3}{4}$  or 4.75.

Method 2. Often it is quicker and easier, when items are in column form, to add the fractions first by holding the decimal equivalents and depressing the number of times indicated by the numerators. Thus, for  $\frac{3}{4}$  hold .25 and depress 3 times; for  $\frac{1}{4}$  depress once. Then add the whole numbers.

Add the columns containing **quarters** first by Method 1, then by Method 2, and compare totals:

Add the columns containing **eighths** by Method 1 only.

### Quarters—

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
4 <sup>3</sup>	3 <sup>1</sup>	9	7	19 <sup>1</sup>	35 <sup>2</sup>	42 <sup>1</sup>	53	127	450 <sup>1</sup>
2 <sup>1</sup>	9 <sup>2</sup>	10 <sup>1</sup>	15 <sup>1</sup>	27	42	27	39 <sup>1</sup>	35 <sup>3</sup>	320 <sup>1</sup>
5	10 <sup>3</sup>	45 <sup>3</sup>	38 <sup>2</sup>	16 <sup>2</sup>	76	66 <sup>2</sup>	77 <sup>1</sup>	642	762 <sup>1</sup>
7 <sup>2</sup>	12	16	70 <sup>1</sup>	54	95 <sup>3</sup>	79	28	77 <sup>3</sup>	925
25 <sup>1</sup>	15 <sup>1</sup>	27 <sup>2</sup>	19	32 <sup>3</sup>	28	80 <sup>3</sup>	16 <sup>2</sup>	295	813 <sup>3</sup>
13 <sup>2</sup>	44 <sup>3</sup>	8	46 <sup>2</sup>	79 <sup>3</sup>	57 <sup>3</sup>	36	65	104 <sup>1</sup>	664
75 <sup>3</sup>	73 <sup>2</sup>	7	35 <sup>2</sup>	18	32	52 <sup>3</sup>	43 <sup>2</sup>	345 <sup>1</sup>	257 <sup>2</sup>
9 <sup>2</sup>	68	26 <sup>1</sup>	76	34	19	77	89	620	793 <sup>2</sup>
10 <sup>3</sup>	70	35 <sup>2</sup>	54 <sup>3</sup>	25 <sup>1</sup>	76	54 <sup>2</sup>	72 <sup>1</sup>	767 <sup>2</sup>	188
27 <sup>2</sup>	29 <sup>3</sup>	49 <sup>3</sup>	15	58	39 <sup>1</sup>	33	13	88 <sup>3</sup>	375 <sup>3</sup>
39 <sup>2</sup>	18 <sup>1</sup>	77	80	70	11 <sup>1</sup>	85 <sup>1</sup>	55	75	211
<u>88<sup>1</sup></u>	<u>36</u>	<u>85</u>	<u>76<sup>3</sup></u>	<u>66<sup>2</sup></u>	<u>25<sup>1</sup></u>	<u>91</u>	<u>43<sup>3</sup></u>	<u>456<sup>1</sup></u>	<u>450<sup>1</sup></u>

### Eighths—

11.	12.	13.	14.	15.	16.	17.	18.	19.	20.
6 <sup>6</sup>	6 <sup>1</sup>	56 <sup>3</sup>	76 <sup>3</sup>	8	146	140 <sup>1</sup> / <sub>4</sub>	295 <sup>3</sup> / <sub>4</sub>	426 <sup>1</sup> / <sub>2</sub>	40 <sup>5</sup> / <sub>8</sub>
3	54 <sup>5</sup>	29 <sup>1</sup>	25	43 <sup>2</sup>	295 <sup>5</sup>	536	733 <sup>5</sup> / <sub>8</sub>	150 <sup>5</sup> / <sub>8</sub>	175
27 <sup>2</sup>	39 <sup>2</sup>	3 <sup>4</sup>	49 <sup>1</sup>	66 <sup>3</sup>	107	702 <sup>1</sup> / <sub>2</sub>	614 <sup>2</sup> / <sub>16</sub>	36 <sup>7</sup> / <sub>16</sub>	221 <sup>3</sup> / <sub>4</sub>
2	72 <sup>7</sup>	44	8	80 <sup>5</sup>	33 <sup>7</sup>	93 <sup>3</sup> / <sub>4</sub>	27	727 <sup>3</sup> / <sub>4</sub>	88
13 <sup>7</sup>	5 <sup>2</sup>	37 <sup>5</sup>	32 <sup>2</sup>	79	415	275	93 <sup>1</sup> / <sub>2</sub>	913 <sup>2</sup> / <sub>4</sub>	315 <sup>1</sup> / <sub>2</sub>
65	18 <sup>4</sup>	9 <sup>7</sup>	50	45 <sup>4</sup>	99	364 <sup>5</sup> / <sub>8</sub>	181 <sup>7</sup> / <sub>8</sub>	48 <sup>1</sup> / <sub>16</sub>	474
40 <sup>5</sup>	44 <sup>6</sup>	22 <sup>2</sup>	9 <sup>4</sup>	30 <sup>6</sup>	24 <sup>4</sup>	605 <sup>5</sup> / <sub>8</sub>	416 <sup>5</sup> / <sub>16</sub>	76 <sup>6</sup> / <sub>8</sub>	680 <sup>5</sup> / <sub>16</sub>
76	36	11	77	67	366	74	65	85	92
9 <sup>3</sup>	17 <sup>2</sup>	8 <sup>6</sup>	28 <sup>6</sup>	22 <sup>7</sup>	700 <sup>6</sup>	514 <sup>5</sup> / <sub>16</sub>	48 <sup>1</sup> / <sub>16</sub>	19	77 <sup>4</sup> / <sub>8</sub>
10 <sup>2</sup>	29	7 <sup>4</sup>	43	19 <sup>3</sup>	25 <sup>2</sup>	38	275 <sup>3</sup> / <sub>8</sub>	150	314
73	34 <sup>1</sup>	15 <sup>5</sup>	75	7 <sup>1</sup>	140 <sup>1</sup>	147 <sup>7</sup> / <sub>8</sub>	34	725 <sup>5</sup> / <sub>16</sub>	127 <sup>2</sup> / <sub>4</sub>
<u>8<sup>1</sup></u>	<u>90</u>	<u>43</u>	<u>60<sup>7</sup></u>	<u>5<sup>2</sup></u>	<u>76</u>	<u>215</u>	<u>140<sup>1</sup>/<sub>2</sub></u>	<u>90</u>	<u>80<sup>3</sup>/<sub>16</sub></u>

## ADDITION EXERCISES

## "Cross" Method

Add by lines and by columns:

1.	2.	3.	4.	5.	6.	7.	8.	
7.42	3.59	9.85	1.45	.65	4.36	2.45	7.39	_____
.84	1.19	.76	9.92	4.50	6.82	5.96	1.16	_____
.68	.92	4.11	.87	9.22	.43	.72	.98	_____
2.49	4.50	6.81	2.67	1.82	5.11	8.00	.75	_____
.34	1.17	.75	3.54	.59	6.23	4.38	7.63	_____
1.29	9.80	5.20	6.90	4.87	.29	5.69	2.59	_____
.75	4.32	3.45	7.23	5.87	9.78	.66	.93	_____
.84	.98	.16	1.13	.42	.68	7.11	6.45	_____
2.93	3.62	9.11	5.48	5.67	4.56	9.23	.72	_____
.89	1.11	3.41	.72	1.98	.65	.19	4.51	_____

## ADDITION OF FRACTIONS

The most common fractions used in business are small and easily changed mentally to their decimal equivalents. In the dry goods business the fractions of yards are usually written without a denominator because practically all pieces are an exact number of yards or fourths of a yard. The small figures indicate fourths of a yard.

Find the number of yards in each of the following:

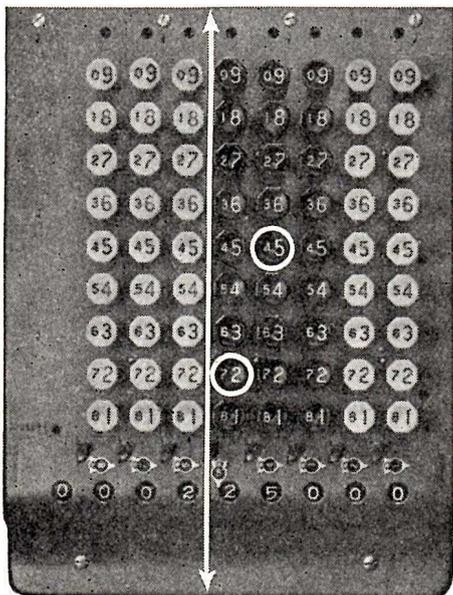
9. 5 pc. linen,  $40^3$ ,  $41^2$ ,  $45^1$ ,  $38^3$ , and  $46^2$ .
10. 8 pc. silk,  $55^3$ ,  $61^2$ ,  $48^2$ ,  $35^1$ ,  $45^1$ ,  $47^3$ ,  $51^2$ ,  $30^3$ .
11. 4 pc. silk containing  $35^3$ ,  $36^1$ ,  $40^2$ ,  $45^3$ , at \$1.29 a yard.
12. A merchant bought 8 pieces of carpet containing  $248\frac{1}{2}$  yd.,  $204\frac{1}{8}$  yd.,  $198\frac{3}{4}$  yd.,  $259\frac{3}{8}$  yd.,  $126\frac{1}{2}$  yd.,  $149\frac{1}{4}$  yd.,  $231\frac{5}{8}$  yd.,  $143\frac{3}{4}$  yd. Find the cost at \$3.55 a yard.
13. Find the cost of the following pieces of silk at \$1.65 a yard:  $43^1$ ,  $40^3$ ,  $35^3$ ,  $39^2$ ,  $52^1$ ,  $49^2$ ,  $50^3$ ,  $47^2$ ,  $46^3$ ,  $54^3$ ,  $38^2$ ,  $49^2$ ,  $36^3$ ,  $51^3$ ,  $48^2$ ,  $53^1$ ,  $49^3$ ,  $40^3$ ,  $56^2$ ,  $41^1$ ,  $53^3$ ,  $60^1$ ,  $61^3$ ,  $59^1$ ,  $53^3$ .
14. 6 Pieces Gingham,  $52^3$ ,  $58^1$ ,  $57^3$ ,  $56$ ,  $54^2$ ,  $51^1$  @ 15c a yd.
15. 8 Pieces of Prints,  $40^1$ ,  $42^2$ ,  $44^3$ ,  $41^1$ ,  $40$ ,  $43^2$ ,  $45^1$ ,  $42^1$  @ 22c a yd.

## PERMANENT DECIMAL POINT

The permanent decimal point in multiplication is used extensively in figuring incoming and outgoing bills, payrolls, cost work, inventories and reciprocal division. The decimal pointer is set in a given place and the problems worked around this point. This eliminates pointing off each problem when multiplying fractional amounts and also permits the accumulation of whole and fractional amounts in checking invoices.

### METHOD

1. Turn down the number 5 decimal pointer. This marks the division between the green and white keys, and is to be used as a permanent or fixed decimal.
2. In most cases hold the price factor as the keyboard factor—the dollars or whole numbers to the left of the decimal pointer and the cents or fractions to the right.
3. With keyboard factor in position, multiply by the unit or first whole number of the multiplicand. Move to the left for every other whole number and to the right for decimals (for starting position, the price factor may be shifted to the left or right for the first position).



**Example:** 9 articles at 25c

Hold \$.25 in the columns to right of decimal point and multiply by 9. Answer, \$2.25.

**Example:** 34 articles at \$1.45.

Hold \$1.45 in position over decimal pointer and multiply by 4. Then move the keyboard factor 1 column to left and multiply by 3. Answer, \$49.30.

**Example:**  $28\frac{1}{2}$  articles at  $$.05\frac{1}{2}$ .

Hold .055 in position over decimal pointer. This is the position for the 8. Move to the left for starting position and multiply by 2-8-5. Answer, \$1.57.

### PROBLEMS FOR PRACTICE

- |   |  |
|---|--|
| 1. 8 yd. at \$ .25                          | 11. $16\frac{1}{8}$ yd. at \$ .85              |
| 2. 18 yd. at 1.25                           | 12. 204 yd. at $.40\frac{1}{2}$                |
| 3. 24 yd. at 3.40                           | 13. $24\frac{1}{4}$ yd. at $.08\frac{1}{2}$    |
| 4. 124 yd. at .85                           | 14. $14245\frac{1}{2}$ yd. at $.05\frac{1}{4}$ |
| 5. 205 yd. at 1.24                          | 15. $124\frac{3}{4}$ yd. at 1.35               |
| 6. $4\frac{1}{2}$ yd. at .45                | 16. $876\frac{7}{8}$ yd. at $.12\frac{1}{2}$   |
| 7. $7\frac{1}{4}$ yd. at 1.25               | 17. 505 yd. at $5.45\frac{1}{2}$               |
| 8. $25\frac{1}{2}$ yd. at $.35\frac{1}{2}$  | 18. $52\frac{1}{2}$ yd. at $1.01\frac{1}{2}$   |
| 9. $125\frac{1}{4}$ yd. at $.20\frac{1}{2}$ | 19. $634\frac{1}{4}$ yd. at $.10\frac{1}{4}$   |
| 10. $324\frac{1}{4}$ yd. at 1.25            | 20. $156\frac{7}{8}$ yd. at $.25\frac{1}{4}$   |

## ADDITION EXERCISES

## "Split" Method

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
650.90	650.56	27.10	106.71	182.71	2.19	21.06	311.95	25.88	25.82
42.56	42.22	498.71	60.75	72.85	924.53	47.68	3.97	9.68	9.70
195.67	186.59	67.39	100.28	98.56	501.04	545.89	92.54	117.89	47.69
62.30	13.26	4.35	13.82	16.59	2.02	51.35	10.17	.23	443.77
19.56	544.92	9.81	40.79	180.94	3.52	240.21	60.57	3.75	96.58
30.46	67.58	81.76	58.17	20.46	75.86	79.37	6.27	60.59	11.37
3.33	18.50	29.60	211.34	63.92	23.83	75.38	553.78	98.70	137.82
74.38	3.36	432.02	321.54	158.92	58.91	185.11	19.57	37.11	75.19
876.50	28.57	2.98	911.19	16.49	5.43	27.86	24.33	645.78	64.59
35.62	90.58	196.46	.23	36.72	795.34	3.19	9.57	35.36	3.37
10.98	33.35	90.63	3.87	11.13	73.23	30.78	116.49	7.56	336.72
459.37	378.98	57.48	87.50	573.11	223.23	113.28	3.37	12.24	75.49
76.58	115.38	23.94	43.50	54.68	73.25	47.36	71.19	32.66	6.48
3.27	30.86	87.56	60.48	223.24	19.86	524.92	224.85	443.19	226.85
18.50	1.19	157.17	118.50	69.00	102.66	11.85	13.67	27.50	45.45

## PERMANENT DECIMAL POINT

It is the custom in business, when solving problems dealing with dollars and cents to drop the fractions in the result if less than one-half cent, and to call the fraction an extra cent if one-half or more. Follow this method unless otherwise instructed.

Find the product of each of the following; show answer in dollars and cents.

11.	9	lb. at	39c	31.	156 $\frac{1}{2}$	lb. at	27 $\frac{1}{2}$ c
12.	8 $\frac{1}{2}$	" "	27c	32.	108 $\frac{1}{4}$	" "	39c
13.	5 $\frac{1}{4}$	" "	18c	33.	95 $\frac{3}{4}$	" "	57 $\frac{1}{2}$ c
14.	27	" "	9c	34.	46 $\frac{1}{2}$	" "	35c
15.	35 $\frac{3}{4}$	" "	25c	35.	64 $\frac{3}{4}$	" "	75 $\frac{1}{2}$ c
16.	78	" "	47c	36.	45 $\frac{1}{2}$	" "	25c
17.	125	" "	5 $\frac{1}{2}$ c	37.	15 $\frac{3}{4}$	" "	27 $\frac{1}{2}$ c
18.	130 $\frac{1}{2}$	" "	10 $\frac{1}{4}$ c	38.	56	" "	50 $\frac{1}{2}$ c
19.	56	" "	7 $\frac{3}{4}$ c	39.	3 $\frac{1}{4}$	" "	1.25
20.	38 $\frac{1}{2}$	" "	8 $\frac{1}{2}$ c	40.	10 $\frac{1}{2}$	" "	1.33
21.	45	" "	15 $\frac{1}{2}$ c	41.	155	" "	5 $\frac{1}{2}$ c
22.	69 $\frac{1}{4}$	" "	12 $\frac{1}{2}$ c	42.	75 $\frac{1}{4}$	" "	1.19
23.	145 $\frac{1}{2}$	" "	9 $\frac{1}{4}$ c	43.	33 $\frac{1}{4}$	" "	75 $\frac{1}{2}$ c
24.	50	" "	19c	44.	27 $\frac{1}{2}$	" "	11c
25.	207	" "	25 $\frac{1}{2}$ c	45.	115	" "	15 $\frac{1}{2}$ c
26.	94 $\frac{1}{4}$	" "	10 $\frac{1}{2}$ c	46.	38 $\frac{3}{4}$	" "	10 $\frac{1}{2}$ c
27.	38 $\frac{3}{4}$	" "	27c	47.	11 $\frac{1}{2}$	" "	1.75
28.	4	" "	9c	48.	67 $\frac{1}{2}$	" "	25 $\frac{1}{2}$ c
29.	24	" "	10c	49.	333	" "	9 $\frac{3}{4}$ c
30.	134	" "	8 $\frac{3}{4}$ c	50.	18 $\frac{1}{4}$	" "	1.15

**ADDITION EXERCISES**  
"Cross" Addition

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
5.04	1.12	6.42	1.81	9.87	4.49	6.02	3.21	1.23	.46
4.46	4.05	2.18	.53	2.55	2.03	1.25	1.43	9.87	9.64
.93	2.87	.92	6.44	6.54	.68	3.16	7.85	2.34	1.13
2.82	4.36	1.31	5.43	8.64	.16	.16	.35	8.76	2.16
.56	2.59	6.87	2.28	1.26	3.16	.75	8.75	.63	5.78
2.94	.57	.22	.83	6.43	2.98	4.36	6.52	.31	3.21
3.49	.62	4.92	9.62	3.95	7.77	.82	.65	.29	2.03
1.54	4.93	.99	3.39	2.17	9.36	.46	.95	.70	.12
6.93	9.42	.18	4.36	6.43	.27	6.52	3.29	7.65	4.44
.75	.39	2.72	.31	9.64	4.16	3.24	2.35	6.54	.81
5.92	.21	3.60	.08	.24	6.43	.28	.46	1.08	.64
3.46	1.35	.45	.96	.31	2.19	3.21	.82	.82	3.17
7.82	.44	5.46	5.54	.95	3.45	5.60	2.98	3.35	7.84
3.39	2.28	.59	1.12	8.90	1.11	1.40	3.90	1.72	2.38
.82	.43	1.06	3.42	1.19	7.49	.69	.53	8.92	1.60

95.87      93.13      37.9      10.77      6.87      5.73      37.97      41.04      54.71      45.41

**PERMANENT DECIMAL BILLING**

When merchandise is sold, the buyer receives a list of the merchandise he has purchased. This list is known as an invoice, or in the retail business as the sales ticket. The buyer regards this list of goods as a purchase invoice, and the seller regards it as a sales invoice.

Different kinds of invoice blanks are used depending upon the nature of the business. The illustration below shows one form of an invoice. The date, name and address of the buyer, the name and address of the seller, the method of delivery, the terms, etc., are in addition to the merchandise which changed hands.

Find the total amount of the bill:

GENERAL DRY GOODS COMPANY			
Wholesale Dry Goods Merchants			
Sold to	MURPHY & DOERING MARENGO ILLINOIS		Chicago, Nov. 5, 193_____
Terms: 30 days	Our Order No. 156.	Your Order No. 21	Delivered via Truck
10	pieces Prints 42 <sup>3</sup> , 45 <sup>1</sup> , 40, 46 <sup>2</sup> , 41 <sup>1</sup> 40 <sup>2</sup> , 44 <sup>3</sup> , 44 <sup>3</sup> , 46, 45 <sup>1</sup>	\$0.16½	
8	pieces Flannel 36 <sup>3</sup> , 34 <sup>2</sup> , 39 <sup>3</sup> , 40 <sup>3</sup> 40 <sup>1</sup> , 34 <sup>2</sup> , 34, 32	.54½	
6	pieces Percale 49 <sup>3</sup> , 54 <sup>2</sup> , 55 <sup>1</sup> 50 <sup>1</sup> , 45 <sup>1</sup> , 52 <sup>3</sup>	.18	
7	pieces Crepe 52 <sup>1</sup> , 54 <sup>1</sup> , 45 <sup>2</sup> , 36 <sup>3</sup> 44 <sup>3</sup> , 51 <sup>2</sup> , 53 <sup>3</sup>	.88½	
8	pieces Gingham 36 <sup>2</sup> , 38 <sup>2</sup> , 40 <sup>3</sup> , 41 <sup>1</sup> 42 <sup>2</sup> , 38 <sup>3</sup> , 46, 42 <sup>1</sup>	.30¼	

Lesson 56.

ADDITION EXERCISES  
"Split" Method

1.	2.	3.	4.	5.
\$436.75	\$233.30	\$936.59	\$643.13	\$741.18
77.55	51.20	19.20	224.43	56.75
33.75	983.35	64.40	85.31	48.05
116.59	65.70	251.18	9.84	238.33
89.57	115.50	367.82	434.34	900.64
36.59	39.67	45.72	90.64	14.37
7.68	1.05	557.68	114.37	37.56
566.20	80.15	16.82	7.56	5.53
9.28	43.35	24.99	55.53	47.82
1.14	766.67	471.21	47.82	52.36
870.37	24.53	14.65	552.36	648.90
3.76	175.67	2.25	749.90	3.75
30.75	38.11	26.72	3.85	16.40
115.41	11.95	65.25	16.47	20.92
<u>27.76</u>	<u>742.25</u>	<u>9.74</u>	<u>28.92</u>	<u>311.19</u>

PERMANENT DECIMAL  
BILLING

The billing clerk writes up the invoice and this is held until the order is to be shipped. In some offices as many as seven carbon copies are made for various purposes. When the order has been shipped and certain other office routine has been completed, the invoice is mailed to the customer. One of the carbon copies of the customer's invoice is first of all used as a means of instructing the shipping department to ship the order. This same carbon or another is also used as a requisition on the stock room for the specified items.

The shipping clerk indicates in the spaces provided on the shipping order how the order was shipped, the amount, if any, of prepaid transportation, etc. Note the order no., invoice no., dates, etc.

Making Extensions: Filling in the totals for each item is called extending the invoice; finding the total of the invoice is called footing it.

<b>OLD GOLD GROCERY CO.</b>		ORDER NO.	C12319
San Francisco, Cal.		INVOICE NO.	5082
Sold to	CURTISS & BALDWIN 100 N. SWALL DRIVE LOS ANGELES, CAL.	INVOICE DATE	3-24, 193___
		SHIPPED VIA	Truck
Shipped to	SAME	WHEN SHIP	3-21, 193___
		DATE ENTERED	3-20, 193___
		YOUR ORDER NO.	40764
		Net 30 days	
		F.O.B. SAN FRANCISCO	
	6.	173 lb. Sugar	\$ .061½
	7.	145 lb. Rice	.08
	8.	256 lb. A. Coffee	.45½
	9.	15 bags Potatoes	1.75
	10.	300 lb. Butter	.44
	11.	176 lb. A. Tea	.36½
	12.	102 bbl. Flour	6.60
	13.	26 lb. Dried Beef	.65
	14.	154 lb. Crackers	.19
	15.	144 doz. Eggs	.39
	16.	46 lb. Ham (Cooked)	.45½
	17.	116 lb. Lard	.22
	18.	35 gal. Vinegar	.38
	19.	18 doz. Ivory Soap	.52
	20.	37 doz. American Family	.46
	21.	111 lb. American Cheese	.32½
	22.	26 bags Flour	1.12
	23.	18 lb. Dried Corn	.18
	24.	222 lb. Candy	.28
	25.	115 lb. Chocolate	.22

## ADDITION EXERCISES

### "Split" Method

1.	2.	3.	4.	5.
\$178.13	\$435.27	\$306.42	\$815.30	\$217.91
34.35	170.05	16.38	227.50	14.38
114.48	16.38	876.59	86.57	537.69
3.27	3.28	12.23	35.35	37.69
87.60	98.60	87.60	98.60	116.42
632.24	851.04	175.39	115.48	912.31
3.28	77.68	338.50	19.75	38.90
28.90	114.48	116.57	245.69	18.59
117.50	98.70	38.64	67.58	57.54
<u>336.89</u>	<u>781.80</u>	<u>15.48</u>	<u>774.36</u>	<u>354.77</u>

## PERMANENT DECIMAL POINT

### Accumulation

When totaling the products of several extensions, multiply over the permanent decimal point without cancelling between each operation. This proves the accuracy of all the extensions and the addition in one continuous operation.

It is better in most cases to hold the price as the keyboard factor. Always clear the register if the machine locks. This is a signal that an error has been made.

Example—showing single extensions  
and total:

45 lb. at \$0.16	= \$	7.20
32½ lb. at .27	=	8.775
116 lb. at .34½	=	40.02
243 lb. at .04¾	=	11.5425
187 lb. at .26¼	=	<u>49.0875</u>

\$116.625

Example—proved by  
accumulation:

45 lb. at \$0.16	
32½ lb. at .27	
116 lb. at .34½	
243 lb. at .04¾	
187 lb. at .26¼	<u>          </u>

\$116.625

In the following, show answers in dollars and cents to individual items, treating each 5 mills or over as 1c. Accumulate in groups of five examples for proof.

6. 48 at \$0.56	21. 96 at .48½	36. 35 at .47
7. 48½ at .36	22. 48 at .65	37. 76 at .43
8. 98½ at .45¼	23. 46 at .52½	38. 21 at .32
9. 48¼ at .36½	24. 56 at .48½	39. 36 at .48½
10. 25¾ at .98	25. 98 at .30¼	40. 96 at .67¼
11. 48 at 6.50	26. 25 at .65½	41. 48 at .56
12. 56 at .49	27. 49 at .65	42. 64 at .25
13. 25 at .48	28. 21 at .89	43. 36½ at .48
14. 36 at .54	29. 36 at .49½	44. 2.6 at .32
15. 65 at .48	30. 25 at .64½	45. 9.86 at .48
16. 43 at .56¼	31. 46 at .98¾	46. 7.65 at .32
17. 98 at .36¾	32. 36 at .48	47. 26 at .83½
18. 25½ at .48½	33. 65 at .78	48. 42 at .78
19. 46 at .98	34. 32 at .63½	49. 46 at .43½
20. 21 at .36	35. 43 at .65½	50. 25 at .98½

NOTE: When fractions of a cent are added or dropped in single extensions, the proof by accumulation will differ accordingly.

### ADDITION EXERCISES

#### "Split" Method

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
42.65	96.77	13.14	66.74	96.22	24.67	53.47	18.20	44.33	38.72
1.22	33.61	99.81	2.05	.87	57.69	18.52	77.52	6.87	66.82
56.55	.63	4.50	35.50	16.82	1.12	.81	5.69	17.80	5.86
45.78	15.60	1.59	19.75	.24	47.11	63.57	2.76	72.58	48.62
16.82	9.80	60.27	4.50	17.28	9.62	73.26	96.47	77.50	19.71
4.60	.20	71.24	.73	55.82	53.40	1.15	11.10	1.52	62.46
9.82	66.82	24.90	57.80	82.46	24.24	95.17	73.49	16.50	.75
44.67	11.15	.88	90.75	1.53	3.30	.31	.99	9.57	48.52
.72	90.00	57.82	44.67	56.55	17.82	35.68	60.47	57.62	13.41
<u>58.92</u>	<u>12.40</u>	<u>26.72</u>	<u>1.15</u>	<u>.64</u>	<u>68.92</u>	<u>75.64</u>	<u>1.62</u>	<u>4.81</u>	<u>6.92</u>

### BILLING

Make the following extensions and find the totals:

11.	Quantity	Description	Price	Extension	Total
	11	lb. Pecans	@ \$ .55	6	
	55	lb. Sugar	@ .06 $\frac{1}{2}$	3	
	25	lb. Crackers	@ .08 $\frac{1}{2}$	2	
	14	lb. Cocoa	@ .33	4	
	25	lb. Coffee	@ .59		
	55	lb. Tea	@ .45		
	15	lb. Mustard	@ .68		
	89	lb. Candy	@ .44 $\frac{1}{2}$		
	24	lb. Tapioca	@ .07 $\frac{1}{4}$		
	66	lb. Raisins	@ .14		
	98	lb. Chocolate	@ .34		
	49	lb. Tea	@ .39 $\frac{1}{2}$		
	75	lb. Coffee	@ .55		
	93	lb. Sugar	@ .05 $\frac{1}{2}$		
	77	lb. Currants	@ .16 $\frac{1}{2}$		
	38	lb. Walnut Meats	@ .56		
	11	Jars Pickles	@ .49		
	144	Cans Corn	@ .16 $\frac{1}{2}$		
	152	Cans Peas	@ .17		
	146	Cans Peaches	@ .22		

12.	66	Pr. Boy's Hose	@ \$ .25		
	83	Pr. Silk Hose	@ .79		
	12	Dz. Linen Handkerchiefs	@ 2.76		
	15	Dz. Linen Handkerchiefs	@ 3.30		
	12	Bolts Lace	@ 2.10		
	24	Yd. Silk	@ 1.69		
	75	Yd. Silk	@ 2.21		
	14	Yd. Velvet	@ 2.19		
	24	Yd. Velvet	@ 2.75		
	80	Pc. Ribbon	@ 1.10		

## ADDITION EXERCISES

### "Split" Method

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
34.19	20.65	90.45	16.72	63.76	4.19	55.67	11.66	79.21	44.55
1.99	6.54	33.58	58.82	11.62	87.75	7.20	10.02	11.43	59.96
6.27	19.57	4.85	6.82	1.47	20.98	45.77	.28	1.31	6.96
.66	77.89	66.23	58.94	57.82	14.11	81.56	91.17	51.32	84.67
96.58	6.96	46.87	39.64	16.48	1.41	5.76	33.65	6.79	44.67
55.38	47.78	67.78	.53	.28	84.58	45.56	83.49	3.67	19.57
5.57	9.34	.75	4.45	17.56	7.82	1.18	3.39	83.16	94.22
11.95	89.70	11.15	83.57	8.56	34.75	8.99	16.82	54.78	5.78
6.94	.86	55.78	63.75	49.81	68.92	84.56	72.56	2.24	76.53
<u>67.82</u>	<u>45.78</u>	<u>6.79</u>	<u>4.39</u>	<u>1.98</u>	<u>5.89</u>	<u>13.45</u>	<u>3.11</u>	<u>40.11</u>	<u>16.63</u>

## PERMANENT DECIMAL POINT

### Buying and Selling by Hundredweight

Buying and selling of different commodities today is often done by the hundred and thousand pounds, pieces, etc. Various types of containers of a standard weight are used and this has simplified the handling as well as the machine calculations.

Pointing off two places divides by 100; pointing off three places divides by 1000; thus 1215 lb.  $\div$  100 = 12.15 lb.; 3462 lb.  $\div$  1000 = 3.462 lb.

C = 100  
M = 1000  
Cwt. = hundredweight

EXAMPLE: 645 pc. at \$1.48 per C.  
6.45 (645  $\div$  100)  $\times$  1.48 = \$9.55

Find the cost:

- |                            |                           |
|----------------------------|---------------------------|
| 11. 643 lb. at \$ .67 Cwt. | 16. 2,246 lb. at \$4.35 M |
| 12. 242 lb. at .34 Cwt.    | 17. 1,432 lb. at 3.27 M   |
| 13. 3,242 lb. at .77 Cwt.  | 18. 436 lb. at .78 M      |
| 14. 4,216 lb. at 1.25 Cwt. | 19. 5,463 lb. at 4.12 M   |
| 15. 3,439 lb. at 1.13 C    | 20. 10,643 lb. at 5.25 M  |

Accumulate each of the following:

- |  |                                       |
|--|---------------------------------------|
| 21. 2,746 lb. Meat at \$12.50 per cwt. | 22. 2,970 ft. Lumber at \$14.50 per M |
| ✓ 4,264 lb. Meat at 35.00 per cwt.     | 2,322 ft. " at 24.00 per M            |
| 434 lb. Meat at 18.00 per cwt.         | 12,642 ft. " at 43.35 per M           |
| .546 lb. Meat at 8.85 per cwt.         | 5,642 ft. " at 18.80 per M            |
| 9,964 lb. Meat at 7.22 per cwt.        | .646 ft. " at 55.00 per M             |
| 23. 2,936 lb. at \$14.50 per C         | 24. 7,522 at \$9.75 per C             |
| 7,896 lb. at 9.50 per M                | 345 at 6.91 per M                     |
| 1,741 lb. at 62.40 per M               | 2,345 at 1.50 per C                   |
| 5,765 lb. at 9.23 per Cwt.             | 3,392 at 3.65 per M                   |
| 3,625 lb. at 10.50 per Cwt.            | 4,776 at 3.50 per Cwt.                |

**PROGRESS TEST NUMBER THREE**  
**Test 3 A—Addition “Split” Method—(Time 4 Min.)**

1.	2.	3.	4.	5.	6.
\$561.25	\$312.55	\$ 51.19	\$406.59	\$156.29	\$204.32
84.60	606.14	134.62	198.22	80.40	78.16
304.22	29.83	72.80	5.96	155.16	154.20
5.98	15.00	5.61	303.44	73.72	30.45
66.70	116.73	324.56	22.93	202.50	226.92
33.14	82.59	77.88	58.64	86.84	803.49
555.29	63.75	123.29	772.93	22.13	76.56
80.13	209.33	16.66	88.49	751.21	5.93
11.29	78.54	707.14	7.22	103.40	202.14
<u>304.56</u>	<u>66.12</u>	<u>156.92</u>	<u>93.86</u>	<u>56.79</u>	<u>78.62</u>

**Test 3 B—Billing—(Time 7 Min.)**

Make single extensions and foot for totals of each group.

1.	8 yd.	at \$ .33			
	24 yd.	“ .85			
	4½ yd.	“ .16			
	55 yd.	“ .22½			
	48 yd.	“ .15½			
	Total				
2.	156½ lb.	at \$ .35			
	28 lb.	“ .14½			
	105 lb.	“ 1.25			
	33¼ lb.	“ .22½			
	45 lb.	“ .45½			
	Total				
3.	604 lb.	at \$12.50 cwt.			
	323 lb.	“ 8.80 cwt.			
	1546 lb.	“ 6.45 cwt.			
	777 lb.	“ 12.00 cwt.			
	346 lb.	“ 9.05 cwt.			
	Total				
4.	1960 ft.	at \$14.40 M			
	2222 ft.	“ 9.60 M			
	965 ft.	“ 23.30 M			
	5642 ft.	“ 8.85 M			
	2263 ft.	“ 15.00 M			
	Total				

**Test 3 C—Division—(Time 7 Min.)**

Carry answers to 3 decimal places.

- |                    |                   |                   |
|--------------------|-------------------|-------------------|
| 1. 1945.83 ÷ 87.65 | 5. 111.531 ÷ .113 | 9. 27269. ÷ 192.2 |
| 2. 225.837 ÷ 3.45  | 6. 2.45 ÷ .003    | 10. 112.65 ÷ 9.43 |
| 3. 1325.44 ÷ 4.36  | 7. 345.45 ÷ 7.5   | 11. 30.92 ÷ .067  |
| 4. 9864. ÷ 86      | 8. 2687. ÷ 888    | 12. 492. ÷ 55     |

GOALS	TEST 3 A	TEST 3 B	TEST 3 C
Excellent	5 problems correct	4 problems correct	10 problems correct
Normal	4 problems correct	3 problems correct	8 problems correct
Fair	3 problems correct	2 problems correct	6 problems correct

## ADDITION EXERCISES

### "Cross" Method

This lesson introduces four-column addition. The first finger is used on all the columns except the units column, this is taken care of with the second finger.

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
12.29	89.66	10.50	83.90	25.00	6.89	71.23	34.57	75.00	.44
42.34	23.57	16.82	.16	6.98	31.44	24.56	1.78	90.99	33.75
.78	3.78	3.78	69.98	.25	69.24	5.78	48.92	6.15	50.16
.63	.34	90.67	6.78	77.58	.56	.82	4.56	92.11	5.67
3.45	11.69	.56	45.67	53.47	9.81	58.66	.28	52.49	92.65
29.86	4.99	51.50	92.16	77.69	44.17	.44	33.00	4.78	7.34
44.45	46.72	7.46	4.50	.59	51.67	88.46	.62	67.82	88.65
1.27	55.82	9.11	72.66	15.67	.47	.96	90.01	53.78	4.68
77.19	.23	16.54	.38	4.58	18.46	.54	16.02	2.11	72.67
63.13	72.10	.27	66.58	88.32	26.76	65.89	1.14	39.00	.39

## PERMANENT DECIMAL POINT

### Billing

11. Study the following bill and verify the extensions. Prove by accumulation.

MR. W. T. BABCOCK Madison, Wisconsin		Chicago, Ill.....19....				
Bought of		J. C. PIERCE				
TERMS 30 DAYS		Ship via Express				
42	lbs. A. & P. Tea	\$ .29	\$12	18		
28	" Java Coffee	.48	13	44		
66	" Sugar	.06	3	96		
20	" Rice	.07	1	40		
16	" Cheese	.38	6	08		
44	" Crackers	.18	7	92		
70	" Butter	.42	29	40		
86	" Candy	.66	56	76		
38	" Cocoa	.35	13	30		
74	" Oat Meal	.05½	4	07	\$148	51

12. On June 25, you bought of J. W. Harris Co., New York, N. Y. for cash: 147 bu. corn at 88c; 68 bu. oats at 62c; 219 bu. barley at 99c; 43 bu. wheat at \$1.10; 48 bu. rye at \$1.02; 130 bu. corn at 93c; 138 bu. barley at \$1.02; 161 bu. wheat at \$1.11; 93 bu. rye at 99c. Write the bill.

## THREE-FACTOR MULTIPLICATION

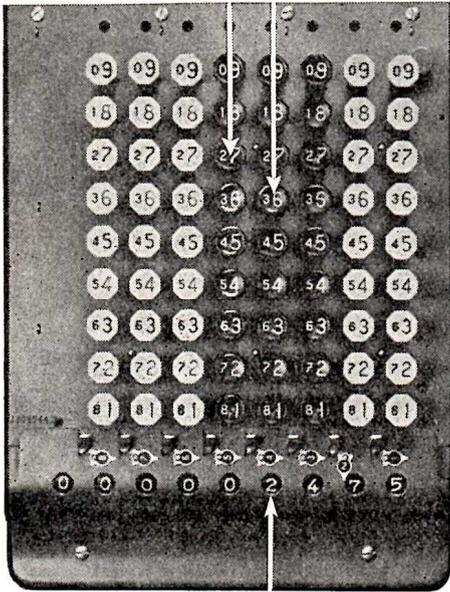
Three or more factors can be multiplied on the Comptometer without having to clear the register after each operation. This method is known as Three-factor Multiplication and saves the time of writing the result of the first multiplication when the result is to be multiplied by another factor.

**Example:** 45 bolts, 55 yards each, at \$.77 a yd.

Multiply 45 x 55 at right of keyboard, answer 2475. Since this number is already in the register once, it is only necessary to multiply this amount by 76 instead of 77. Therefore, hold 76 (77 less 1) with the right hand figure of keyboard factor 6 over the left hand figure of the amount in register.

Holding keyboard factor 76 over left hand figure of 2475, depress two times. Move to right for next position and depress four times and so on for each successive figure in the register. Answer, \$1905.75

**Decimal point:** Point off from the right as many register dials as there are decimal places in all the factors.



*Six-key over figure 2 in register*

Find the cost:

1. 84 bolts 24 yd. at \$ .54 a yd.
2. 24 bolts 48½ yd. at 1.25 a yd.
3. 124 bolts 44 yd. at .03½ a yd.
4. 78 bolts 34¾ yd. at .48 a yd.
5. 105 bolts 12 yd. at 1.10 a yd.
6. 56 bu. 56 lb. at .03½ a lb.
7. 24 bu. 60 lb. at .04½ a lb.
8. 108 bu. 45 lb. at .05½ a lb.
9. 112 bu. 32 lb. at .11 a lb.
10. 78 bu. 70 lb. at .15 a lb.
11. 45 boxes 24 lb. at .22 a lb.
12. 66 boxes 39 lb. at .01½ a lb.
13. 79 boxes 79 lb. at .34¼ a lb.
14. 112 boxes 32 lb. at .16 a lb.
15. 133 boxes 33½ lb. at .22½ a lb.
16. 34 dozen at .16 an article
17. 16 dozen at .06½ an article
18. 122 dozen at .01¼ an article
19. 6 gross at .22 an article
20. 14 gross at .45 an article

21. What is the cost of 12 car loads of wheat each car containing 840 bushels, at \$1.46 per bushel?
22. The produce of a field of 112 acres averaged 48 bushels of corn per acre. At 75 cents a bushel what is the value of the yield?
23. Find the cost of 6 pieces of muslin, 54 yards to a piece, at 24½ cents a yard.
24. Fourteen men built a boat in 22 days. What was the total wage at \$5.25 a day?
25. At \$.45½ per hour, 8 hours a day, how much will a man earn in 13 days?

Balance.

## ADDITION EXERCISES

1.	34.93	4.28	4.20	9.66	38.63	59.64	<u>151.34</u>
2.	5.93	9.80	6.34	8.33	7.83	7.59	<u>45.89</u>
3.	8.64	42.95	11.29	4.22	15.94	8.60	<u>91.64</u>
4.	.98	8.39	13.43	15.96	16.01	32.43	<u>87.20</u>
5.	30.41	2.10	5.96	16.84	78	9.99	<u>66.08</u>
6.	55.64	5.16	.84	2.93	84	71.84	<u>137.25</u>
7.	22.93	18.22	.13	11.59	11.12	20.00	<u>83.99</u>
8.	5.96	15.19	22.17	8.64	1.96	14.95	<u>68.87</u>
9.	7.83	82.64	19.19	2.91	2.13	23.06	<u>137.76</u>
10.	<u>.84</u>	<u>30.25</u>	<u>59.64</u>	<u>14.96</u>	<u>44.12</u>	<u>9.54</u>	<u>159.35</u>
	174.09	218.98	143.19	96.04	139.36	25.764	1029.30

## THREE FACTOR MULTIPLICATION

Find the product of the following:

- |     |                                       |     |  |     |  |
|-----|---------------------------------------|-----|--|-----|--|
| 11. | $48 \times 65\frac{1}{2} \times 56$   | 23. | $21 \times 32 \times 46$                               | 35. | $386 \times 482 \times .65$                    |
| 12. | $35 \times 486 \times 504$            | 24. | $85 \times 465 \times 37\frac{1}{2}$                   | 36. | $48\frac{1}{4} \times 26 \times 32$            |
| 13. | $.25 \times 36\frac{1}{2} \times 48$  | 25. | $6\frac{1}{2} \times 6\frac{1}{2} \times 6\frac{1}{2}$ | 37. | $94\frac{1}{2} \times 65\frac{1}{2} \times 48$ |
| 14. | $54 \times 986 \times .255$           | 26. | $.486 \times .98 \times .42$                           | 38. | $65 \times 32 \times 48$                       |
| 15. | $47\frac{1}{2} \times 965 \times .42$ | 27. | $865 \times 48 \times 32$                              | 39. | $65 \times 48 \times 26\frac{1}{2}$            |
| 16. | $36\frac{1}{2} \times 48 \times 567$  | 28. | $26 \times 48 \times 98$                               | 40. | $48 \times 36\frac{1}{2} \times 2\frac{1}{4}$  |
| 17. | $24 \times .98 \times 56$             | 29. | $65 \times 365 \times 86$                              | 41. | 36 tons at .25 per lb.                         |
| 18. | $.54 \times .687 \times .98$          | 30. | $56 \times 486 \times 32$                              | 42. | 48 tons at $.32\frac{1}{2}$ per lb.            |
| 19. | $325 \times 48 \times 68$             | 31. | $.86 \times 89\frac{1}{2} \times 36$                   | 43. | 396 lbs. at .28 per lb.                        |
| 20. | $465 \times 48 \times 96$             | 32. | $.25 \times .25 \times .25$                            | 44. | 46 lbs. at .30 per lb.                         |
| 21. | $36 \times 4\frac{1}{2} \times 54$    | 33. | $48 \times 42 \times 86\frac{1}{2}$                    | 45. | 435 lbs. at .22 per lb.                        |
| 22. | $486 \times 36\frac{1}{2} \times 42$  | 34. | $42 \times 65\frac{1}{2} \times 25$                    | 46. | 400 lbs. at $.16\frac{1}{2}$ per lb.           |

47. Find the value of 87 acres of corn, each acre yielding 34 bushels to the acre at 78 cents a bushel.
48. Frank Smith worked  $8\frac{1}{2}$  hours a day and completed the job in 19 days. At 66 cents an hour what is his salary?
49. Find the cost of 228 tubs of butter; 54 lbs. to the tub at  $42\frac{1}{2}$  cents a pound.
50. Thirty-nine apple trees produced an average of  $4\frac{1}{2}$  bushels to a tree. At \$1.56 a bushel what is the value of the crop?

### CONTROLLED KEY REVIEW

Find the totals of the following; then re-add making the intentional partial key-strokes and correct.

<p>1.</p> <table style="width: 100%; border-collapse: collapse;"> <tr><td>3</td><td>4</td><td>5</td><td>2</td></tr> <tr><td>1</td><td><sup>5</sup></td><td>4</td><td>8</td></tr> <tr><td></td><td>2</td><td>4</td><td>8</td></tr> <tr><td>2</td><td>4</td><td><sup>3</sup></td><td>5</td></tr> <tr><td>6</td><td>1</td><td>6</td><td>9<sup>5</sup></td></tr> <tr><td>7</td><td>4</td><td>1</td><td>1</td></tr> <tr><td></td><td>5</td><td><sup>5</sup></td><td>7</td></tr> <tr><td>4</td><td>2</td><td>1</td><td>1</td></tr> <tr><td><sup>5</sup></td><td>6</td><td>5</td><td>9</td></tr> <tr><td></td><td>2</td><td>8</td><td>7</td></tr> </table>	3	4	5	2	1	<sup>5</sup>	4	8		2	4	8	2	4	<sup>3</sup>	5	6	1	6	9 <sup>5</sup>	7	4	1	1		5	<sup>5</sup>	7	4	2	1	1	<sup>5</sup>	6	5	9		2	8	7	<p>2.</p> <table style="width: 100%; border-collapse: collapse;"> <tr><td>1</td><td>0</td><td>5</td><td>7</td></tr> <tr><td></td><td>9<sup>5</sup></td><td>8</td><td>6</td></tr> <tr><td><sup>3</sup>7</td><td>3</td><td>1</td><td>9</td></tr> <tr><td>5</td><td>8</td><td>4</td><td>8</td></tr> <tr><td><sup>3</sup></td><td>4</td><td>2</td><td>1</td></tr> <tr><td>6</td><td>7<sup>4</sup></td><td>3</td><td>2</td></tr> <tr><td>2</td><td>5</td><td>4</td><td>5</td></tr> <tr><td></td><td>6</td><td>2</td><td><sup>4</sup></td></tr> <tr><td>4</td><td>9</td><td>8</td><td>9</td></tr> <tr><td>9</td><td>2</td><td>3</td><td>1</td></tr> </table>	1	0	5	7		9 <sup>5</sup>	8	6	<sup>3</sup> 7	3	1	9	5	8	4	8	<sup>3</sup>	4	2	1	6	7 <sup>4</sup>	3	2	2	5	4	5		6	2	<sup>4</sup>	4	9	8	9	9	2	3	1	<p>3.</p> <table style="width: 100%; border-collapse: collapse;"> <tr><td>2</td><td>5</td><td><sup>3</sup></td><td>6</td></tr> <tr><td></td><td>3</td><td>2</td><td>0</td></tr> <tr><td>6</td><td>3</td><td>1</td><td>1</td></tr> <tr><td>1</td><td>6</td><td><sup>4</sup></td><td>4</td></tr> <tr><td>5</td><td>3</td><td><sup>3</sup>7</td><td>2</td></tr> <tr><td></td><td>4</td><td>3</td><td>9</td></tr> <tr><td>3</td><td>9</td><td>3</td><td>7<sup>4</sup></td></tr> <tr><td>7</td><td>2</td><td>4</td><td>2</td></tr> <tr><td>5</td><td>1</td><td>1</td><td>0</td></tr> <tr><td></td><td><sup>5</sup></td><td>8</td><td>7</td></tr> </table>	2	5	<sup>3</sup>	6		3	2	0	6	3	1	1	1	6	<sup>4</sup>	4	5	3	<sup>3</sup> 7	2		4	3	9	3	9	3	7 <sup>4</sup>	7	2	4	2	5	1	1	0		<sup>5</sup>	8	7	<p>4.</p> <table style="width: 100%; border-collapse: collapse;"> <tr><td>3</td><td>0</td><td>2</td><td><sup>5</sup></td></tr> <tr><td></td><td>7</td><td>4</td><td>3</td></tr> <tr><td><sup>3</sup>7</td><td>5</td><td>5</td><td>1</td></tr> <tr><td>1</td><td>1</td><td><sup>5</sup></td><td>7</td></tr> <tr><td><sup>3</sup></td><td>6</td><td>1</td><td>4</td></tr> <tr><td>2</td><td>8<sup>4</sup></td><td>3</td><td>7</td></tr> <tr><td>4</td><td>7</td><td><sup>4</sup>8</td><td>0</td></tr> <tr><td></td><td>3</td><td>3</td><td>7</td></tr> <tr><td>8</td><td>4</td><td><sup>4</sup></td><td>4</td></tr> <tr><td>3</td><td>3</td><td>9</td><td>1</td></tr> </table>	3	0	2	<sup>5</sup>		7	4	3	<sup>3</sup> 7	5	5	1	1	1	<sup>5</sup>	7	<sup>3</sup>	6	1	4	2	8 <sup>4</sup>	3	7	4	7	<sup>4</sup> 8	0		3	3	7	8	4	<sup>4</sup>	4	3	3	9	1
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### THREE-FACTOR MULTIPLICATION

Make each extension and find the total of the following:

Description	Quantity	Unit	Price	Amount
Granulated sugar	1634 lb.	cwt.	\$5.34	
Powdered sugar	55 boxes	box	.29	
Brown sugar	918 lb.	cwt.	5.86½	
Domino sugar	385 boxes	box	.22½	
Granulated sugar (50 lb. bag)	65 bags	cwt.	6.95	
Granulated sugar (25 lb. sack)	112 sacks	cwt.	6.04	
Vinegar (31½ gal.)	125 bbl.	gal.	.05½	
Molasses (31½ gal.)	343 bbl.	gal.	.65	
Rice (96 lb. bag)	25 bags	lb.	.06¼	
Beans (145 lb. bag)	38 bags	lb.	.05	
Soap (144 bars)	54 boxes	bar	.09	
Onions (110 lb. bag)	42 bags	lb.	.01½	
Prunes (30 lb. box)	15 boxes	lb.	.12½	
Cheese (50 lb. box)	17 boxes	lb.	.34½	
Powdered sugar	65 boxes	box	.31½	

### ADDITION EXERCISES

#### "Cross" Method

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1.15	29.80	57.66	24.67	18.30	24.67	46.89	67.21	2.24	49.80
58.92	85.67	4.02	46.57	37.64	9.86	11.66	9.86	41.90	6.66
.72	12.47	50.35	95.17	83.59	98.56	90.74	6.74	83.24	19.67
76.44	.55	19.65	5.11	.22	15.80	.47	17.69	24.57	46.57
2.89	4.36	82.71	44.67	4.86	46.23	7.68	99.60	.16	82.11
.46	43.78	3.30	6.85	35.74	.59	84.67	57.82	31.80	.55
28.61	15.78	60.90	48.61	47.11	57.80	92.48	.31	84.39	58.76
87.54	3.68	7.80	13.16	19.85	26.73	46.89	52.66	90.55	19.40
45.67	48.70	43.50	9.64	4.60	11.15	.60	3.39	1.57	7.25
1.22	16.15	79.44	35.42	99.61	44.67	57.66	57.60	17.69	44.67

### INVOICES

#### Tare

Tare is a deduction from the gross weight to allow for the weight of the bag, barrel, crate, or other covering. The net weight is the difference between the gross weight and the tare.

In the following invoice the amount of tare is shown opposite each item.

Find gross weight and subtract each tare. With the net weight in register, multiply by the price per pound.

8	Tubs Butter						
	54 - 6		54 - 5	<i>Tare 41</i>			
	56 - 6		55 - 5	<i>Gross 437</i>			
	53 - 5		56 - 4	<i>Net 396</i>			
	55 - 4		54 - 6	<i>@ \$ .45½ lb.</i>	<i>\$ 180</i>	<i>18</i>	
12	Boxes Cheese						
	26 - 6		28 - 6	<i>Tare 61</i>			
	28 - 6		26 - 6	<i>Gross 321</i>			
	26 - 4		24 - 4	<i>Net 260</i>			
	25 - 4		25 - 5				
	28 - 5		27 - 5	<i>@ .22½ lb.</i>	<i>\$ 58</i>	<i>50</i>	
	30 - 4		28 - 6				
10	Bbl. Sugar						
	341 - 22		348 - 24	<i>Tare 20</i>			
	345 - 23		341 - 23	<i>Gross 3443</i>			
	340 - 20		343 - 23	<i>Net 3223</i>	<i>\$ 209</i>	<i>50</i>	
	346 - 21		344 - 21	<i>@ .06½ lb.</i>			
	347 - 21		348 - 22				
6	Bags Coffee						
	135 - 3		136 - 4	<i>Tare 17.25</i>			
	132 - 2¼		133 - 2	<i>Gross 805</i>			
	134 - 2½		135 - 3½	<i>Net 787.75</i>	<i>\$ 348</i>	<i>58</i>	<i>790 76</i>
				<i>@ .44¼ lb.</i>			

## ADDITION EXERCISES

### "Cross" Method

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
54.19	16.11	25.30	47.82	20.90	1.23	67.82	28.94	61.34	38.92
1.16	9.34	6.52	1.15	1.24	43.24	1.14	3.52	3.36	1.15
23.42	23.42	73.49	91.18	56.72	14.37	98.60	7.78	19.89	47.62
16.78	.98	91.48	58.16	3.36	98.00	5.78	99.84	5.62	23.42
4.67	45.90	6.73	4.67	28.95	25.67	27.83	85.69	36.72	1.11
19.55	10.10	9.18	29.70	4.56	.78	36.00	4.47	4.48	98.00
.33	6.50	24.93	3.38	77.81	.93	4.62	18.92	28.71	3.36
9.98	90.80	1.11	9.18	5.16	4.50	15.77	66.75	2.24	45.78
32.34	3.44	46.72	24.93	1.20	82.30	3.99	1.15	.98	7.89
<u>4.56</u>	<u>45.78</u>	<u>27.68</u>	<u>1.14</u>	<u>45.63</u>	<u>1.35</u>	<u>42.11</u>	<u>37.52</u>	<u>42.35</u>	<u>56.79</u>

## TRADE DISCOUNT

TRADE DISCOUNT is a deduction made from the list or catalogue price, or from the amount of an invoice. In some lines of business merchants sell both at wholesale and retail; the prices listed are the retail prices and the dealers are supplied with a separate sheet which shows the discounts or deductions from the list prices. The use of trade discounts permits the manufacturer or dealer to meet the fluctuation in market prices by changing the trade discount instead of changing the list price.

The amount of the purchase before subtracting the discounts is sometimes called the list price or gross amount. The amount of the purchase less the discounts is called the net price. The discount is a given per cent of the list price.

Per cent means by the hundred and is another way of writing decimals. The per cent sign (%) is generally used instead of per cent.

Example: A trade discount of 25% is allowed a retailer on a watch which is listed in the catalogue at \$78.00. What is the amount of the discount?  
 $.25 \times \$78 = \$19.50$  the amount of discount.

Find the amount of discount:

- |                                   |                                    |
|-----------------------------------|------------------------------------|
| 11. 5 % of \$485.25               | 21. 9 % of \$ 78.80                |
| 12. 52 % of \$ 45.20              | 22. 20 % of \$ 96.40               |
| 13. 16 % of \$225.20              | 23. $8\frac{1}{2}$ % of \$ 125.22  |
| 14. 18 % of \$ 84.50              | 24. 40 % of \$ 93.86               |
| 15. $12\frac{1}{2}$ % of \$123.22 | 25. $32\frac{1}{2}$ % of \$ 700.20 |
| 16. 38 % of \$584.66              | 26. 50 % of \$ 98.00               |
| 17. 4 % of \$123.10               | 27. 2 % of \$ 124.40               |
| 18. $10\frac{1}{2}$ % of \$846.00 | 28. 12 % of \$8464.50              |
| 19. 8 % of \$ 29.64               | 29. $24\frac{1}{2}$ % of \$ 724.38 |
| 20. 16 % of \$204.32              | 30. 6 % of \$ 88.96                |

31. The list price of a stove is \$132.50, less a trade discount of 25%. What is the net price?
32. The list price of an automobile is \$980.00, less a trade discount of 16%. What is the net price?
- ✓ 33. A music dealer buys a radio at \$225.00 with a trade discount of 40%. What is the invoice cost?
34. A trade discount of 35% is given on a furnace listed at \$345.25. What price does the retailer pay?
- ✓ 35. A hardware dealer receives a trade discount of 15% on a cabinet listed at \$35.40. What is the cost?

## TRADE DISCOUNT

<b>THE BROOKLYN COMPANY</b> Designers-Engravers-Electrotypers Catalogue and Booklet Printers 210 E. Rush Street				Invoice No. 106 Salesman Reed Order No. 0964 Your Req. No.	
Sold to <b>JAMES &amp; ROBERTS</b> 400 Lincoln Avenue Woodstock, Illinois				Chicago, May 1, 19__	
	2000	Envelopes, size 5½ x 8½, with printed corner card	60	75	
	8275	M. M. Announcements and engraving,	125	00	
		Less 20%	185	75	
			37	15	
			148	60	148 60

Show the gross amount, the actual discount and the net. Prove by adding the discount and the net amount. 45 yd. at \$.25 less 15% discount.

$$\begin{aligned}
 45 \times \$ .25 &= \$11.25 \text{ List price.} \\
 .15 \times 11.25 &= 1.69 \text{ Amount of discount.} \\
 \hline
 &= \$9.56 \text{ Net discount.}
 \end{aligned}$$

Find the list price and then multiply by the rate of discount using the three-factor multiplication method (large figures less 1). Then subtract the amount of discount from the list price for the net price.

- |   |  |
|---|--|
| <ol style="list-style-type: none"> <li>1. 125 articles at \$1.75 less 5%</li> <li>2. 75 " at .37½ less 10% ✓</li> <li>3. 26 " at .25 less 5%</li> <li>4. 29 " at .75 less 15%</li> <li>5. 40 " at .25 less 9%</li> <li>6. 50 " at .85 less 10%</li> <li>7. 75 " at .75 less 25%</li> <li>8. 125 " at 1.15 less 75%</li> <li>9. 175 " at 2.51 less 25%</li> <li>10. 165 " at 3.15 less 20%</li> <li>11. 148 " at 2.25 less 5%</li> <li>12. 175 " at 1.15 less 10%</li> <li>13. 165 " at 1.65 less 10%</li> <li>14. 195 " at .25 less 5%</li> <li>15. 125 " at .75 less 20%</li> <li>16. 146 " at .35 less 40%</li> <li>17. 126 " at 2.25 less 10%</li> <li>18. 25 " at 1.25 less 5%</li> <li>19. 16 " at 2.25 less 10%</li> <li>20. 24 " at 1.75 less 25%</li> </ol> | <ol style="list-style-type: none"> <li>21. 175 articles at \$1.75 less 75%</li> <li>22. 24 " at 2.95 less 9%</li> <li>23. 65 " at 2.25 less 30%</li> <li>24. 44 " at .30 less 20%</li> <li>25. 77 " at .67½ less 5%</li> <li>26. 125 " at 1.15 less 15%</li> <li>27. 175 " at 1.26 less 7%</li> <li>28. 162 " at .52 less 20%</li> <li>29. 175 " at .75 less 50%</li> <li>30. 146 " at .35 less 75%</li> <li>31. 175 " at 1.00 less 20%</li> <li>32. 185 " at 1.25 less 10%</li> <li>33. 175 " at 1.25 less 10%</li> <li>34. 165 " at 2.45 less 15%</li> <li>35. 125 " at 1.75 less 35%</li> <li>36. 175 " at 2.25 less 15%</li> <li>37. 125 " at 1.75 less 5½%</li> <li>38. 145 " at 1.95 less 50%</li> <li>39. 165 " at .75 less 25%</li> <li>40. 95 " at .75 less 12½%</li> </ol> |
|---|--|

## ADDITION EXERCISES

## "Cross" Method

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
4.39	43.90	78.20	25.63	38.72	46.50	47.62	38.92	1.35	53.54
16.98	1.16	16.40	3.37	4.47	.62	3.39	9.01	36.57	1.11
.23	23.32	1.11	90.98	23.48	34.52	26.40	10.10	25.38	76.89
98.00	4.57	23.46	3.56	4.46	5.30	3.38	7.57	4.62	56.71
1.13	19.06	.89	71.50	78.24	19.40	27.84	18.50	78.67	4.11
5.57	78.65	.23	4.45	9.88	4.46	.75	5.75	57.60	18.97
6.20	3.35	62.33	6.72	11.55	22.43	38.62	98.79	2.25	.23
35.48	6.11	1.19	62.30	3.50	1.14	3.35	35.46	63.30	.31
2.22	7.82	22.32	3.37	8.90	35.40	24.22	5.34	5.62	5.67
6.11	14.65	1.17	28.67	82.30	2.26	.16	36.79	78.20	78.95

## TRADE DISCOUNT

When the actual discount is not required, the net amount of a bill may be found by multiplying the list price or gross amount by the net per cent (difference between discount per cent and 100%).

Example: Find the net amount of 28 yd. at \$1.35 a yd. less 15%.

Solution:  $28 \times \$1.35 \times .85$  (100%—15%).

Operation:  $28 \times \$1.35 = \$37.80$ . Hold 84 (85 less one) as the keyboard factor and multiply, using the three-factor method. Answer \$32.13.

The mental subtraction may be eliminated by using the keys with the small figures as the discount factor. The discount 15 on the small figures is 84 (85 less 1) on the large figures, therefore, to find the keyboard factor for the net per cent, simply hold the discount on small figures and multiply the amount in the machine.

Find the net amount in each of the following:

- |      |                    |           |      |                                   |           |
|------|--------------------|-----------|------|-----------------------------------|-----------|
| 11.  | 67½ yds. at \$0.25 | less 5%   | 31.  | 900 yds. at .89                   | less 10%  |
| 12.  | 12¼ yds. at .76½   | less 12½% | 32.  | 296 yds. at .78                   | less 12½% |
| 13.  | 86 yds. at 2.62    | less 25½% | 33.  | 2876 yds. at .06                  | less 5%   |
| 14.  | 99 yds. at .26     | less 74%  | 34.  | 296 yds. at .12½                  | less 10%  |
| 15.  | 896 yds. at .02    | less 45½% | ✓35. | 2364 ft. lumber at 9.56 per M ft. | less 25%  |
| 16.  | 80 yds. at .22     | less 23%  | 36.  | 394 boxes at 1.50                 | less 14%  |
| 17.  | 89 yds. at .62     | less 7%   | 37.  | 734 chairs at 6.75                | less 12%  |
| 18.  | 28 yds. at .74     | less 76%  | 38.  | 397 tables at 25.50               | less 15%  |
| 19.  | 26 yds. at .76     | less 89%  | 39.  | 3984 lb. at .05½                  | less 19%  |
| 20.  | 286 yds. at .05    | less 6½%  | 40.  | 2453 gal. at 1.45                 | less 19%  |
| 21.  | 212 yds. at .80    | less 20%  | 41.  | 7341 yd. at .05½                  | less 10%  |
| 22.  | 213 yds. at .74    | less 16%  | 42.  | 2496 tons at 6.75                 | less 50%  |
| ✓23. | 296 yds. at .87    | less 12½% | 43.  | 4935 tons at 7.57                 | less 60%  |
| 24.  | 200 ft. at 2.96    | less 10%  | 44.  | 7983 bu. at 1.40                  | less 25%  |
| 25.  | 296 yds. at .26    | less 55%  | 45.  | 594 hats at 8.40                  | less 56%  |
| 26.  | 87 yds. at 2.95    | less 10%  | 46.  | 922 coats at 8.75                 | less 35%  |
| 27.  | 80 pcs. at 2.50    | less 29¾% | 47.  | 43 lots at 625.50                 | less 49%  |
| 28.  | 100 chains at 7.50 | less 90%  | 48.  | 2121 lb. at .89                   | less 2½%  |
| 29.  | 966 yds. at 2.10   | less 10%  | 49.  | 7743 lb. at .42                   | less 5½%  |
| 30.  | 200 yds. at .75    | less 5%   | 50.  | 5622 lb. at .39                   | less 9½%  |

## ADDITION EXERCISES

## "Cross" Method

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
4.50	19.80	45.00	98.70	67.00	57.60	76.89	1.23	45.62	23.01
37.50	76.50	13.42	6.72	8.11	23.22	24.10	25.61	67.24	87.60
12.34	1.45	6.50	24.33	87.60	1.19	3.34	89.70	8.56	1.15
.98	.34	57.46	35.62	2.31	17.69	45.87	3.47	17.50	56.72
37.68	62.30	78.23	.31	79.80	35.46	22.43	15.16	89.20	7.51
81.57	3.78	9.78	6.98	4.26	5.58	8.92	7.50	4.30	57.60
23.22	34.50	65.40	46.78	82.30	15.48	38.65	68.92	57.82	9.81
1.24	6.89	3.11	.99	5.76	7.98	23.43	8.79	6.49	42.33
14.55	57.68	23.27	16.72	56.43	46.52	.75	43.56	57.69	3.35
67.86	29.23	82.51	30.00	2.24	5.67	65.40	1.15	2.56	98.79

## SERIES OF TRADE DISCOUNTS

Sometimes a trade discount consists of a series of discounts. In this case the net amount is found on the list price and then the net amount of the remainder, and so on. Each discount is deducted separately.

The order in which the different discounts are taken will make no difference in the selling price. Thus, 12%, 15%, and 2% are the same as 2%, 15% and 12%.

\$410.00 less 25% - 5%.

Add \$410.00 in right of machine.

.25 (small figures 25)

\$307.50

.05 (small figure 05)

\$292.13 net amount

Point off as many places in the answer as there are decimal places in all the factors. If the figures run into the ninth register dial before obtaining the required net, point off and reset in the right of the register. Eliminate the unnecessary decimal places.

11. \$46.52 less 45 - 7½ - 5%
12. 52.85 less 65 - 5 - 5%
13. 25.65 less 55 - 25 - 20%
14. 16.62 less 25 - 10 - 5%
15. 14.72 less 25 - 5 - 2½%
16. 19.25 less 75 - 10 - 5%
17. 50.45 less 45 - 7½ - 5%
18. 16.65 less 20 - 10 - 5%
19. 47.75 less 40 - 10 - 5%
20. 20.25 less 40 - 10 - 10%
21. 27.50 less 20 - 15 - 10 - 5%
22. 91.50 less 15 - 7½ - 5 - 5%
23. 42.75 less 15 - 10 - 10 - 5%
24. 75.55 less 25 - 20 - 10 - 5%
25. 65.75 less 50 - 10%
26. 40.75 less 15 - 5 - 2½%
27. 21.75 less 80 - 10 - 10 - 5 - 2½%
28. 40.15 less 40 - 10 - 7½%
29. \$21.16 less 25 - 20 - 10%
30. 17.75 less 12½ - 10 - 5%
31. 14.92 less 20 - 5%
32. 25.50 less 15 - 10 - 5%
33. 65.70 less 25 - 7½%
34. 540.75 less 7½ - 2½%
35. 621.75 less 80 - 7½%
36. 940.15 less 25 - 7½ - 5%
37. 321.16 less 50 - 10 - 2½%
38. 717.75 less 7½ - 5 - 5%
39. 514.92 less 30 - 25 - 10 - 2½%
40. 765.70 less 30 - 25 - 7½ - 5%
41. 850.40 less 10 - 10 - 5 - 2½%
42. 50.40 less 25 - 10 - 2½%
43. 21.70 less 30 - 20 - 10 - 5%
44. 42.24 less 40 - 4 - 2½%
45. 41.62 less 50 - 20 - 5%
46. What is the net cost of 4 radio outfits listed at \$168.75 each with trade discounts of 10%, 5% and 2%?
47. The list price of an automobile was \$1185.00 less discounts of 20% and 5%. What was the net price?
48. What would be the price of six stoves listed at \$98.40 each, with discounts of 10% and 5%?
49. What would be the cost of a typewriter listed at \$110.50 with discounts of 15%, 5% and 5%?
50. The list price of a desk is \$145.80 less 20%, 12½% and 5%. What is the net price?

**ADDITION EXERCISES**

**"Cross" Method**

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
\$24.96	\$19.80	\$23.42	\$16.78	\$25.60	\$78.67	\$13.24	\$79.00	\$35.44	\$90.00
1.23	42.56	6.78	58.79	9.81	3.56	59.82	3.56	9.55	57.60
98.70	4.32	58.72	4.83	37.89	22.11	4.48	81.25	57.82	4.46
7.69	37.62	1.11	78.92	5.52	46.73	34.37	19.60	77.85	35.67
67.56	86.57	19.02	35.34	76.45	35.47	62.29	68.79	24.30	46.57
6.48	9.50	8.92	4.45	5.57	3.38	7.40	1.57	6.59	9.50
20.10	45.62	35.67	78.50	52.32	16.75	98.78	77.68	23.74	46.52
1.11	6.78	46.79	23.29	48.90	58.92	21.45	7.61	6.87	7.82
23.39	22.39	7.42	4.77	6.22	6.96	4.45	19.56	19.68	35.49
<u>9.78</u>	<u>59.60</u>	<u>79.80</u>	<u>57.82</u>	<u>78.20</u>	<u>79.81</u>	<u>72.11</u>	<u>3.35</u>	<u>3.45</u>	<u>3.38</u>

**SERIES OF TRADE DISCOUNTS**

**Net Decimal Equivalent**

When a series or chain of discounts is used frequently, it is often easier and quicker to reduce the discounts to a net decimal equivalent. This is found by taking the series of discounts from the original 100% or 1.00.

**EXAMPLE: 20 - 10 - 5%.**

1.00
<u>.20 (small figures)</u>
.80
<u>.10 (small figures)</u>
.72
<u>.05 (small figures)</u>

Add 1 in the units' column of the keyboard and multiply by .20. Then multiply each result by the different discounts. Point off as as many places in the answer as there are decimal places in all the factors.

.684 net decimal which is equivalent to the discount series.

**EXAMPLE: \$48.75 less 45 - 7½ - 5%.**  
 .48331 = the net decimal equivalent for  
 45 - 7½ - 5%.  
 \$48.75 x .48331 = \$23.56, the net amount.

**Note:** Whenever possible, multiply the gross amount over the permanent decimal point.

Find the net decimal equivalent for each of the following series. Then multiply each list price by the net.

- |                        |                            |                         |                              |
|------------------------|----------------------------|-------------------------|------------------------------|
| 11. List price—\$64.50 | } (less 15 - 10 - 5%)      | 21. List price—\$275.50 | } (less 45 - 10 - 2½%)       |
| 12. " " 125.00         |                            | 22. " " 4.85            |                              |
| 13. " " 543.05         |                            | 23. " " 18.80           |                              |
| 14. " " 97.80          |                            | 24. " " 140.50          |                              |
| 15. " " 130.50         |                            | 25. " " 300.25          |                              |
| 16. List price—\$35.66 | } (less 50 - 10 - 10 - 5%) | 26. List price—\$ 27.50 | } (less 45 - 12½ - 10 - 2½%) |
| 17. " " 600.45         |                            | 27. " " 15.00           |                              |
| 18. " " 54.45          |                            | 28. " " 2.85            |                              |
| 19. " " 270.00         |                            | 29. " " 400.65          |                              |
| 20. " " 803.50         |                            | 30. " " 303.50          |                              |

### ADDITION EXERCISES "Cross" Method

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
21.72	19.80	16.50	98.70	24.30	15.40	35.00	42.30	53.40	60.98
4.32	24.30	98.60	6.54	5.33	98.80	3.57	.82	4.95	6.11
19.70	6.50	67.82	71.51	78.59	3.25	98.79	45.17	47.82	14.67
89.68	9.60	3.78	22.32	3.29	61.16	13.14	75.49	3.85	6.11
75.49	43.59	.98	1.14	45.92	24.35	96.15	23.16	24.35	28.94
.63	35.67	47.60	43.22	4.78	48.75	1.98	4.75	2.86	3.67
.42	57.82	3.22	78.67	83.56	9.14	75.45	16.72	86.50	74.50
9.87	.67	13.55	6.78	24.35	35.68	3.33	.77	.03	.10
35.48	8.56	3.89	.21	7.82	27.89	67.89	4.62	78.10	35.49
24.36	89.70	25.67	43.57	96.72	16.50	1.06	26.79	16.72	3.62
17.59	4.11	7.82	8.92	5.83	5.45	78.50	31.87	5.92	85.02
3.37	6.24	27.89	14.29	3.68	86.50	6.58	92.11	52.78	72.33
46.58	37.60	5.72	4.38	45.67	15.40	23.24	64.50	3.79	6.59
53.20	4.82	91.70	76.59	2.24	9.81	9.85	4.50	69.78	4.50
<u>67.05</u>	<u>78.92</u>	<u>77.58</u>	<u>3.35</u>	<u>6.11</u>	<u>24.51</u>	<u>16.50</u>	<u>35.49</u>	<u>1.10</u>	<u>19.70</u>

### CHAIN DISCOUNT Discount Table

Rate %	5	7½	10	12½	15	20	25	30
2½	.92625	.90188	.8775	.85313	.82875	.78	.73125	.6825
5	.9025	.87875	.855	.83125	.8075	.76	.7125	.665
5 2½	.87994	.85678	.83363	.81047	.78731	.741	.69469	.64838
5 5	.85738	.83481	.81225	.78969	.76713	.722	.67698	.63175
5 5 2½	.83594	.81394	.79194	.76995	.74795	.70395	.65995	.61596
7½		.85663	.8325	.80938	.78625	.74	.69375	.6475
7½ 2½		.83423	.81169	.78914	.76659	.7215	.67641	.63131
7½ 5		.81284	.79088	.76891	.74694	.703	.65906	.61513
10			.81	.78750	.765	.72	.675	.63
10 2½			.78975	.76781	.74588	.702	.65813	.61425
10 5			.7695	.74813	.72675	.684	.64125	.5985
10 5 2½			.75026	.72942	.70858	.6669	.62522	.58354
10 7½			.74925	.72844	.70763	.666	.62438	.58275
10 10			.729	.70875	.6885	.648	.6075	.567
10 10 5			.69255	.67331	.65408	.61556	.57713	.53865
10 10 5 2½			.67524	.65648	.63772	.60021	.5627	.52518
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### ADDITION EXERCISES

#### "Cross" Method

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
42.19	92.35	20.97	24.35	30.16	2.10	25.40	57.82	42.68	16.78
6.78	3.88	3.76	9.80	7.28	16.59	9.70	1.14	9.70	97.68
23.24	23.21	98.68	67.58	92.14	98.60	27.50	72.35	23.11	2.45
7.79	5.47	68.71	4.62	3.38	6.72	4.82	9.81	7.59	87.56
67.82	78.76	97.78	78.52	26.50	4.46	19.50	15.60	98.25	34.52
.32	1.13	.14	45.45	2.26	36.72	3.36	4.89	33.21	7.16
11.79	16.98	.78	3.37	17.59	24.39	53.78	35.62	.31	42.75
98.70	43.46	7.89	84.39	2.25	6.82	6.72	38.96	19.68	67.90
35.46	4.23	23.10	11.67	45.62	75.60	75.23	8.19	57.69	5.40
<u>5.67</u>	<u>75.68</u>	<u>57.55</u>	<u>2.29</u>	<u>96.16</u>	<u>4.50</u>	<u>7.89</u>	<u>25.37</u>	<u>8.95</u>	<u>10.10</u>

### CASH DISCOUNT

Cash discount is a deduction allowed on the invoice price for prompt payment. The terms of purchase are usually stated on the heading of the order blanks and invoices. Thus, 2%, 10 days, net 30 days, means that the purchaser may deduct 2% if he pays cash in ten days, but if it is not paid until after the ten days, the whole amount is due without discount in 30 days. On account of limited space the terms are often abbreviated and written thus, "2/10 n 30".

Extend and foot the following invoice. Then find the amount due after deducting cash discount.

E. M. TILT WHOLESALE COMPANY		222 W. Adams St. Chicago		Chicago, June 4, 19.....
Sold to	JAMES FURLONG & CO.		Customer's Order No. 4261	
	Deland,		Our Order No. B324	
	Minnesota.		Routing C. N. N. Ry.	
Shipped to same			Terms, 2/10 n 30.	
Salesman, Bell				
49/97	35¼	Yd. Nelflure	@ \$ .55	
	50	Yd. Birchwood	" .17¾	
	37¼	Yd. Virginia	" .38	
17/98	1½	Doz. Union Suits	" 8.00	
	60	Yd. Lining	" 42½	
42/98	26¾	Yd. Lining	" 32½	
	39½	Yd. Lining	" 32½	
6/97	20¼	Yd. Wash Goods	" 47½	
	38¼	Wendover prints	" 32½	
	40	Wendover prints	" 32½	
22/97	1	Doz. black Belts	" 4.00	
	2½	Gross Buttons	" 2.00	
	1	Doz. Ric Rac asst.	" 2.25	
67/98	1	Doz. Belts asst.	" 4.40	
23/97	3	Doz. Tape asst.	" 1.15	
	1	Doz. Combs	" 2.00	
9/84	14	Umbrellas #754	" 7.95	
	22	Umbrellas #808	" 11.05	
10/97	9	Nickle Plate Iron #120	" 4.55	
11/59	4	Toasters #116	" 7.50	
6/93	15	Beads #101	" .93½	
4/88	1½	Doz. Hose #104	" 7.83	
	11	Doz. Hose #22	" 4.42	

## ADDITION

### Sub-Totals

Write down answer for the sub-total of the columns. Then continue the addition without clearing the register. If necessary to check for errors, each sub-total may be verified separately.

1.	2.	3.	4.	5.
\$42.64	\$87.36	\$35.64	\$78.32	\$29.42
4.98	2.26	98.70	2.25	56.47
2.59	46.72	.34	19.67	8.67
19.78	18.59	26.55	25.40	.23
27.55	2.24	75.60	.37	4.35
.33	.19	63.11	3.36	18.60
55.38	29.55	3.37	47.82	75.60
89.00	85.44	.91	59.02	25.50
6.35	37.50	16.72	3.38	3.37
.29	9.90	45.62	.81	1.99
38.66	.28	80.16	6.26	.63
62.11	52.33	3.37	68.22	16.58
9.81	87.60	.29	34.44	47.82
75.60	18.60	38.60	85.46	.14
13.14	10.15	51.14	9.25	2.28
19.78	2.00	14.68	80.58	21.19
2.23	45.62	89.64	2.27	85.66
56.80	1.39	2.26	17.60	.35
.36	.33	81.11	25.49	3.37
6.72	<u>28.67</u>	<u>66.15</u>	<u>4.57</u>	<u>19.80</u>
30.45	53.22	79.80	91.13	3.28
27.14	81.56	3.24	42.55	75.60
98.12	37.55	.18	19.70	.67
.46	.67	5.57	4.36	8.90
7.75	2.33	25.67	.76	1.56
1.89	57.82	4.46	53.68	5.48
37.82	62.33	.95	3.38	64.80
42.90	7.92	37.50	75.68	4.55
68.92	.26	75.60	22.32	36.72
.13	89.20	57.88	6.80	47.82
6.68	3.36	3.36	94.35	57.89
24.33	10.00	88.75	70.89	63.24
6.55	2.47	24.33	25.44	19.80
18.50	45.11	8.50	6.27	.26
32.11	27.59	16.57	84.69	1.48
8.95	5.72	95.47	17.50	27.50
.33	36.70	6.43	26.50	80.75
2.25	5.24	.81	3.37	35.65
47.69	86.77	3.38	.98	.54
90.81	<u>52.68</u>	<u>75.69</u>	<u>5.56</u>	<u>4.46</u>
<u>1087.88</u>	<u>1235.88</u>	<u>1708.16</u>	<u>1230.95</u>	<u>962.97</u>

*553.98*

*662.50*

*614.14*

*655.91*

*540.95*

### ADDITION EXERCISES "Cross" Method

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
12.06	90.11	15.07	42.36	57.62	2.23	46.57	24.39	16.57	25.98
24.48	2.31	67.89	65.90	4.50	70.89	3.89	86.59	98.70	6.22
1.13	37.62	23.62	4.62	96.52	12.12	89.26	9.23	3.36	83.56
98.23	24.32	7.89	92.52	24.36	45.45	77.15	73.56	57.68	15.26
68.79	89.11	37.68	6.72	10.92	6.72	19.81	11.15	23.85	92.53
.54	.29	98.23	18.75	2.27	10.57	2.42	.47	11.18	37.62
17.11	4.78	46.72	28.50	76.98	67.26	38.72	37.82	.67	79.25
53.67	55.25	8.88	37.50	3.33	86.50	4.60	52.31	37.62	.74
77.00	76.80	56.23	88.17	53.67	4.98	55.47	95.46	49.21	66.47
5.78	3.65	72.39	.81	2.28	72.24	10.20	.91	62.31	46.57

### HARDWARE BILLING

Billing problems differ according to the nature of the product, the method of packing, etc. Hardware problems consist of calculations by the piece, dozen, gross, hundred, or thousand. In this business, a series of discounts is usually given.

Extend the following invoice and find the net amount of bill. Then deduct the cash discount for total.

### INVOICE

Please mention date and amount of this invoice if claim is made for shortage or error.

**ACME HARDWARE CO.**

No credit issued for goods returned without our written approval.

Chicago, Ill., June 6, 19....

Sold To

**PEOPLES HARDWARE CO.**  
Ridgefield,  
Illinois.

Your Order A x 463  
Order No. 742  
Shipped Via C. N. W. Ry.  
Terms 2/10, n/30  
Salesman J. T. Smith

Interest charged if not paid at maturity. All claims must be made promptly on receipt of goods. Our responsibility ceases after delivery of goods to transportation company. Examine all packages carefully before giving transportation company receipt for them in good order.

	Quantity	List Price	Net Price	List Extension	Net
3" W. I. Couplings	6	.80 ea.			
3 1/2" " " "	4	1.05 "			
2" Reducers	2	1.00 "			
3" Tees	8	1.75 "			
3" Tees	4	1.25 "			
3" x 1 1/2" Crosses	5	2.20 "			
3" Elbows	16	.75 "			
3 1/2" "	4	1.05 "			
1 1/2" "	27	.20 "			
1 1/4" "	35	.16 "			
Less 70—10—5%			68.20	46 65	
D. K. Leather Belting	246'	2.65 '	651.90	309 65	
Less 50—5%					
11" Pipe	214'	.95 '	2033.00	67 60	
7" "	164'	.75 1/2'	123.88	41 17	
Less 65—5%					
H. Saw Blades	18 doz.	6.15 doz.	110.70	36 81	
H. Wrenches	18 doz.	2.19 doz.	39.42	13 11	
Less 66 2/3%					514 97 309 69

Checks and drafts accepted for collection only, and as the agent of and for the sender at his risk. For conditional credit subject to all rules of the clearing house. We reserve the right to charge back to the customer any item charged to us for any cause, or on which full payment in cash has not been made to us.

ADDITION EXERCISES

“Cross” Method

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
.26	2.99	3.93	51.29	11.67	39.02	17.18	11.23	80.68	20.99
3.24	.10	28.96	3.67	3.45	1.95	2.34	2.20	16.40	5.66
87.69	23.76	15.40	15.72	.19	27.38	19.70	87.65	6.57	30.92
6.18	82.96	7.82	94.57	56.82	89.57	64.50	56.72	14.92	4.47
22.22	4.15	26.52	25.38	22.38	64.50	5.40	3.35	85.67	72.89
4.67	7.89	1.16	67.73	4.45	16.58	94.50	27.68	46.55	3.38
98.18	15.78	47.52	89.57	16.73	4.98	6.11	54.92	.34	57.62
2.34	79.62	55.80	2.25	38.92	38.79	23.33	3.34	37.89	6.68
14.15	3.24	75.69	74.56	3.36	77.53	56.44	17.68	1.14	45.92
3.37	57.11	1.19	43.47	13.48	2.24	1.11	44.56	68.92	6.13

ELECTRICAL BILLING

11.

Extend and foot the following bill:

Quantity	Material	Unit Price	Extension
1	# 219865 5 Amp. Tungar Battery	\$28.00 ea.—35%	
10	F-2025 Economy Fuses	.50 ea.—22%	
120	25W 220V S-17 R. Lamps	.37 ea.—25%	
2	6202 H. Receptacles	.85 ea.—15%	
105 ft.	# 18 S.J. 2 C T Junior Lamp Cord	80.00 M—10%	
120	25W 110V S-17 Cl. Maz. B. Lamps	.27 ea.—24%	
120	40W 110V S-19 Cl. Maz. B. Lamps	.27 ea.—24%	
60	50W 110V S-19 Cl. Maz. B. Lamps	.27 ea.—24%	
24	100W 110V SA-23 Maz. C. Lamps	.45 ea.—24%	
120	25W 220V P-19 Cl. Maz. B. Lamps	.32 ea.—24%	
60	50W 220V P-19 Cl. Maz. B. Lamps	.32 ea.—24%	
	Less 2%—10 days.		

12. 13½ lb. Wire \$.39 lb.

13. 22.4 lb. Wire \$.35 lb.

14. 10.62 lb. Wire \$.50½ lb.

15. 445' Wire \$15.50 M. ft.

16. 220' Wire \$18.00 M. ft.

17. 1124' Wire \$32.20 M. ft.

18. 222' Moulding \$3.25 C. ft.

19. 2264 lb. Wire \$25.00 cwt.

20. 1164 lb. Wire \$24.00 cwt.

21. 16 Ec. Fuses \$.45 ea.—21%

22. 37 #1 Lamps \$.38 ea.—15%

23. 14 21-C Battery \$24.40—35%

24. 15 T-Conduits \$.24

25. 46 J.Conduits \$.73—5%

### ADDITION EXERCISES

#### "Cross" Method

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
16.78	84.65	97.60	81.00	19.24	57.69	81.90	23.52	45.62	60.89
9.82	2.24	2.45	1.40	6.72	15.69	2.35	9.61	1.18	1.14
35.47	18.60	37.62	67.92	1.35	84.50	94.62	45.62	93.13	37.82
3.36	6.45	4.79	3.43	98.79	.76	1.15	6.78	32.32	2.45
53.22	1.17	3.78	3.78	45.45	1.35	83.45	81.75	19.80	11.19
6.11	39.82	38.62	19.45	3.89	85.67	75.67	2.13	3.54	3.49
51.68	5.67	4.72	53.49	.86	36.78	4.30	17.68	9.81	18.69
7.98	98.68	76.80	73.24	.66	4.67	27.16	5.46	74.52	4.49
54.33	.35	43.77	3.35	2.25	82.30	89.83	76.88	16.58	97.60
2.90	6.47	8.91	57.62	56.72	78.65	14.50	4.11	2.33	.42

### DRUG BILLING

11.

Draw a form similar to the order shown. Then enter the commodities, extend and foot.

The Davis Wholesale Drug. Co sold the following items to The Red Front Drug Store, June 2:

Quantity	Description	Price	Unit	Disc.	Amount	Total
6 doz.	A. D. H. Plaster 11½"	\$ .75	Doz.	25%		
6 doz.	" " " " 11"	1.00	"	25%		
¼ doz.	" " " " 11"	6.00	"	25%		
⅙ "	Alkazane Wabner	8.00	"			
1 gr.	3 oz. Lyric	3.72	Gross			
1 gr.	Lyric Ovals ½ oz.	2.83	"			
4 gal.	Syrup No. 86 Lillys	1.75	Gal.			
8 doz.	B. Zinc Stearate	1.95	Doz.	40%		
				10%		

12. The Jones Wholesale Drug Co. to Thos. P. Bolger Drug Store.

16 doz. boxes	Aspirin	\$1.41 doz.
72 jars	Vaseline	.11¾ jar
85 lbs.	Pot. Iod.	.18½ lb.
12 doz. bottles	Witch Hazel	2.35 doz.
56 bottles	Alcohol (rubbing)	.52½ bottle
13½ oz.	Codeine	8.54 oz.

13. Davis, Parke Wholesale Drugs to Stones Drug Store.

45 gr.	Bath Soap	\$7.20 gr.
46 lbs.	Sod. Salic.	.35½ lb.
144 boxes	Talcum Powder A.&D.	.19¼ box
72 jars	Vaseline carbolated	.14¼ jar
67 lbs.	Lozenges	.72½ lb.
2¼ doz.	M. Ext.	11.55 doz.
¼ doz.	Amoline	3.03 doz.

### ADDITION EXERCISES "Cross" Method

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
14.50	8.91	11.55	93.65	65.77	14.35	46.21	52.89	83.60	29.71
36.19	39.01	46.21	14.92	17.51	63.42	24.36	60.38	26.60	22.95
24.75	2.26	93.75	7.81	4.83	.78	2.69	12.64	44.25	39.70
3.83	43.84	72.11	4.30	7.05	9.15	71.13	1.87	96.43	3.40
9.10	12.65	8.97	87.60	85.60	18.66	41.50	4.65	6.55	91.59
47.80	7.33	1.75	.79	33.92	81.19	42.57	21.79	1.17	.75
.98	89.97	45.00	44.50	47.76	9.23	8.34	33.67	45.62	18.65
2.95	14.35	8.39	17.33	.55	42.63	3.37	16.34	8.73	7.89
69.84	21.82	93.23	78.02	3.42	25.00	62.44	8.71	.65	2.62
13.44	65.76	18.46	1.45	36.19	5.76	.79	95.22	53.44	67.83

### PRE-INVENTORY SALE

Jones & Smith advertised a pre-inventory sale and marked each article, or garment, with the original marked price, the sale discount, and the selling price.

Find the amount received for each piece of merchandise sold. Assuming that all of the articles listed were sold, find the total value of the goods at marked price; at selling price.

	Article	Marked Price	Sale Discount	Selling Price
11	Davenport	\$199.50	25%	\$149.63
12	Table	19.75	15	<i>16.79</i>
13	"	5.25	"	<i>4.46</i>
14	"	21.50	"	
15	Chair	39.75	12½	
16	Writing Desk	24.75	25	
17	Secretary	49.50	10	
18	Dresser	69.85	10	
19	Four-Post Bed	92.25	10	
20	Chair	89.10	10	
21	Gordian Worsted Suit	57.65	12½	
22	Two Trouser Suit	48.50	"	
23	New College Suit	37.50	"	
24	Phalanx Worsted Suit	25.00	"	
25	Top Coat	22.85	"	
26	Dress	45.00	14	
27	"	35.50	12½	
28	"	18.00	10	
29	Coat	155.00	35	
30	"	89.50	30	
31	"	75.00	33⅓	
32	Negligee slippers	6.85	10	
33	"	4.50	5	
34	Garment Bag	2.75	10	
35	Shoe Cabinet	1.50	10	
36	Suit Case	15.00	12½	
37	" "	8.50	10	
38	" "	14.85	15	
39	Hand Bag	12.50	35	
40	Hand Bag	7.70	40	
41	" "	5.25	25	

## BALANCE SHEET Permanent Decimal

Rule a form similar to the following:

Make original extensions and cross-add for totals. Prove extensions by accumulating cross-wise.

To balance and prove the additions: Total the extensions vertically; then cross-add these totals. The totals should agree with the sum of the horizontal totals.

Price	QUANTITY								Totals
	175	235½	142¼	106¾	220	162½	78	222	
\$ .25 ea.	43.75	58.88	35.56	26.69	55.00	40.66	19.50	55.50	335.59
\$ 3.45 C.	6.04	8.12	4.91	3.68	7.59	5.61	2.69	7.66	46.30
\$ .07½ ea.	13.13	17.66	10.67	8.01	16.55	12.19	5.85	16.65	100.66
\$25.50 C.	44.63	60.05	36.27	27.22	56.10	41.44	19.29	56.61	342.21
\$ .58 ea.	14.50	136.59	82.51	61.92	127.60	94.25	45.24	122.76	778.37
\$ 1.35 ea.	236.25	319.23	192.04	144.11	277.20	211.38	105.30	297.20	1811.71
\$ 5.70 M.	1.00	1.34	.81	.61	1.25	.93	.44	1.27	7.65
\$ .10 ea.	17.50	23.55	14.23	10.67	22.00	16.25	7.80	22.20	134.21
Totals	463.80	624.12	377.00	382.97	583.04	430.60	204.71	588.35	3556.53

4644.45  
3556.61

## ALIQOT PARTS

An aliquot part of a number is an exact divisor of that number—a number which is contained in another without a remainder. 2 is an aliquot part of 4; 3 of 6, etc. The aliquots of 100 commonly used in business were reviewed in Lesson 50. Aliquots are used extensively in billing, figuring inventories, discounts, etc. Comptometer operators will add to their efficiency in computing if they will become familiar with these short-cuts and do as much of this quick figuring mentally as is possible.

The price and quantity may be interchanged as for instance, "Find the cost of 18 yd. at 50c", or "Find the cost of 50 yd. at 18c". The price is seen at a glance to be one-half of 18 or \$9.00. The items or articles may be considered as dollars and the fractional part taken.

Interchange the price or quantity and mentally find the cost of each of the following. Prove by machine calculation.

1.	25	gal. at \$	.48	13.	336	gal. at \$	.50
2.	45	yd. "	.20	14.	999	lb. "	.33 $\frac{1}{3}$
3.	1	yd. "	.19	15.	1	pc. "	.35
4.	50	yd. "	.38	16.	50	lb. "	.37
5.	884	lb. "	.25	17.	614	lb. "	.10
6.	12 $\frac{1}{2}$	lb. "	.48	18.	20	gal. "	.95
7.	724	lb. "	.25	19.	96	doz. "	.33 $\frac{1}{3}$
8.	6 $\frac{1}{4}$	ft. "	.32	20.	1	yd. "	.45
9.	128	yd. "	.06 $\frac{1}{4}$	21.	1288	yd. "	.12 $\frac{1}{2}$
10.	1	pc. "	.16	22.	696	lb. "	.25
11.	446	yd. "	.50	23.	784	gal. "	.50
12.	25	yd. "	.88	24.	800	oz. "	.75

When the price is per ton of 2000 lb. and the quantity given in pounds, divide by 1000 by pointing off three places in the number of pounds. Then divide mentally by 2 and multiply by the price per ton. If more convenient, the price may be divided by 2. Point off and divide mentally, then make the extension on the machine.

Example: 4640 lb. at \$4.00 per ton.  
 $4.64 \div 2 = 2.32 \times 4.00 = \$9.28$ ,  
 or  $4.64 \times \$2.00 = \$9.28$ .

25.	5265	lb. at \$	8.00	per ton	30.	12600	lb. at \$	24.00	per ton
26.	17864	lb. "	8.75	" "	31.	36000	lb. "	6.60	" "
27.	7642	lb. "	5.50	" "	32.	10400	lb. "	7.80	" "
28.	10400	lb. "	7.50	" "	33.	12200	lb. "	12.00	" "
29.	8112	lb. "	5.75	" "	34.	8464	lb. "	9.60	" "

Commodities sold by the thousand or hundred. Divide the quantity by 1000 (Pointing off 3 places) or 100 (pointing off 2 places) and multiply by the price.

35.	1500	ft. at \$	38.00	M	40.	1250	ft. at \$	9.50	M
36.	2250	ft. "	8.00	M	41.	1500	ft. "	18.50	M
37.	4500	ft. "	21.50	M	42.	1750	ft. "	38.00	M
38.	3000	ft. "	62.50	M	43.	3250	ft. "	4.50	C
39.	1625	ft. "	44.00	M	44.	3500	ft. "	16.00	C

6/160  
2)12,200

PROGRESS TEST NUMBER FOUR

Test 4 A—Addition “Cross” Method—(Time 5 Min.)

1.	2.	3.	4.	5.	6.	7.
\$68.48	\$42.00	\$75.31	\$98.24	\$46.51	\$73.21	\$34.62
3.24	2.22	4.47	.73	32.55	1.41	2.25
29.63	9.55	38.60	9.48	6.68	57.81	8.64
.84	56.84	.77	42.79	91.42	.63	73.29
65.66	.93	25.52	53.34	5.03	39.24	5.60
11.63	51.07	7.28	.69	14.67	5.60	11.54
5.26	34.16	18.75	1.58	66.11	40.34	2.99
.45	.69	.53	38.65	.53	1.16	1.04
34.72	1.85	57.20	.82	15.84	38.94	16.26
6.29	44.51	3.14	25.00	3.33	.77	67.44

Test 4 B—Three-Factor Multiplication—(Time 7 Min.)

- |                    |                                     |                    |
|--------------------|-------------------------------------|--------------------|
| 1. 23 x .84 x 6.5  | 6. 82 x 4.06 x 29                   | 11. 24 x 9 x 66    |
| 2. 4.25 x 96 x 2   | 7. 435 x 365 x 5 x .24              | 12. 62 x 4.6 x 25  |
| 3. 54 x 202 x 68   | 8. 42 x 56½ x 25                    | 13. 4 x 16½ x 4.8  |
| 4. 36 x 5½ x 54    | 9. 323 x .46 x 75                   | 14. 80 x 3.65 x 2  |
| 5. 2.5 x 4.8 x 46½ | 10. 108 x 2.2 x .34 x 4.2           | 15. 30 x 34½ x 5.4 |
|                    | 16. 26 bolts—24 yd. at \$ .39 a yd. |                    |
|                    | 17. 76 bolts—44 yd. “ .78 a yd.     |                    |
|                    | 18. 46 boxes—36 lb. “ .12½ a lb.    |                    |
|                    | 19. 6 gross “ .14 an article.       |                    |
|                    | 20. 36 dozen “ .08½ an article.     |                    |

Test 4 C—Discounts—(Time 8 Min.)

Find each net and multiply each list price by the net.

- |                        |                          |                        |                       |
|------------------------|--------------------------|------------------------|-----------------------|
| 1. List price \$13.20  | } Less 15—10<br>—2%.     | 11. List price \$ 8.70 | } Less 10—10<br>—2½%. |
| 2. List price 14.00    |                          | 12. List price 2.22    |                       |
| 3. List price 25.50    |                          | 13. List price 60.88   |                       |
| 4. List price 97.50    |                          | 14. List price 7.44    |                       |
| 5. List price 21.10    |                          | 15. List price 55.00   |                       |
| 6. List price \$140.50 | } Less 45—12½<br>—10—2%. | 16. List price \$ 3.22 | } Less 10—5<br>—2½%.  |
| 7. List price 2.88     |                          | 17. List price 77.80   |                       |
| 8. List price 54.20    |                          | 18. List price 10.32   |                       |
| 9. List price 100.10   |                          | 19. List price 9.88    |                       |
| 10. List price 60.14   |                          | 20. List price 6.65    |                       |

GOALS	TEST 4 A	TEST 4 B	TEST 4 C
Excellent	6 problems correct	18 problems correct	20 problems correct
Normal	5 problems correct	16 problems correct	18 problems correct
Fair	4 problems correct	14 problems correct	15 problems correct

## PERCENTAGE

A large part of all business figuring consists of taking a certain per cent of a number as in figuring discounts, interest commissions, etc. Also it is frequently required to find the relation or per cent one number is to another as in finding the per cent of net sales needed for selling expense, buying expense, etc.

This subject of percentage means the computing by hundredths and the process of solving these problems is the same as that applied to the solution of problems in common and decimal fractions.

The sign for per cent is "%". Thus a number of hundredths may be expressed: 6%, .06, 6/100.

The terms in percentage are the Base, Rate and Percentage.

Base           \$480.00, the number of which some per cent is taken.

Rate                     .25, the per cent which is taken.

Percentage \$120.00, the result of taking a per cent of the base.

To establish the three fundamental principles of percentage, let us examine the following problems.

(a) What is 25% of \$480?

$$\$480 \times .25 = \$120.$$

$$\text{Base} \times \text{Rate} = \text{Percentage.}$$

(b) What per cent or part is \$120 of \$480?

$$120.00 \div 480 = .25 \text{ or } 25\%.$$

$$\text{Percentage} \div \text{Base} = \text{Rate.}$$

(c) 120 is 25% of what number?

$$120.00 \div .25 = 480.$$

$$\text{Percentage} \div \text{Rate} = \text{Base.}$$

Find each of the following:

### Percentage Required

1. 21% of 3745.
2. 14% of 8416.
3. 37% of \$4756.25.
4. 75% of 1.85.
5. 49% of 6.73.

### Rate Required

6. \$170.85 is what % of \$6834?
7. 28 lb. is what % of 32 lb.?
8. 2376 ft. is what % of 5280 ft.?
9. \$54.53 is what % of \$436.24?
10. \$542.08 is what % of \$16,840?

### Base Required

11. 248 is 8% of what number? *108*
12. 360 is 45% of what number?
13. 4375 bu. is 17½% of what number?
14. \$4.98 is 75% of what number?
15. \$1038.24 is 32% of what number?

### Base

### Rate

### Percentage

- |     |           |     |           |
|-----|-----------|-----|-----------|
| 16. | \$4836.00 | 6%  | ?         |
| 17. | \$6834.00 | ?   | \$1230.12 |
| 18. | ?         | 44% | \$ 736.50 |
| 19. | 7342 ft.  | 14% | ?         |
| 20. | \$834.00  | ?   | \$ 300.24 |

## ADDITION EXERCISES

## "Cross" Method

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
43.56	90.76	14.58	20.35	40.56	1.36	56.74	64.32	8.79	40.57
16.98	3.42	90.82	3.95	79.72	50.98	30.82	34.98	80.92	6.70
10.00	15.62	52.34	67.82	1.15	52.31	1.69	.32	53.47	76.59
5.36	.98	1.40	2.62	.24	.05	64.00	12.00	11.20	3.33
11.11	9.60	.80	.64	2.10	2.22	.78	1.10	2.12	.98
.98	.78	.20	.21	50.40	70.70	11.11	55.12	.34	12.12
5.93	1.60	12.12	18.98	18.64	19.19	20.22	44.44	12.12	64.60
13.22	64.00	2.61	1.92	16.60	11.53	11.66	17.80	14.50	22.24
1.78	1.48	2.67	6.92	2.61	2.98	1.74	7.67	7.85	8.42
18.75	18.05	16.36	12.64	10.78	89.28	91.14	16.74	11.16	21.21

## PERCENTAGES

## Finding the Percentage

Example:  $24\%$  of \$684.

$.24 \times 684 = \$164.16$ , the percentage.

The following problems provide practice in finding the percentage when the base and rate are given.

- |                           |                                  |
|---------------------------|----------------------------------|
| 11. $14\%$ of \$1288.75.  | 21. .09 of \$ 12.30.             |
| 12. $22\%$ of 12.85.      | 22. $33\frac{1}{2}\%$ of 224.98. |
| 13. .155 of 6564.25.      | 23. $8\%$ of 6783.20.            |
| 14. $37.5\%$ of 777.00.   | 24. $.34\frac{1}{4}$ of 52.00.   |
| 15. $25\%$ of 2184.64.    | 25. .63455 of 527.50.            |
| 16. .0145 of 998.40.      | 26. $6\frac{1}{2}\%$ of 9.98.    |
| 17. $54.25\%$ of 7619.30. | 27. .07 of 446.14.               |
| 18. .185 of 225.98.       | 28. .083 of 16.75.               |
| 19. $135\%$ of 925.45.    | 29. $12\frac{1}{2}\%$ of 54.60.  |
| 20. .3645 of 57.10.       | 30. $25\%$ of 18.80.             |

31. A man is worth \$64,125.00,  $14\%$  of which is invested in government bonds. What is the value of the bonds?
32. A speculator invested \$12,640.00 in stocks and lost  $45\%$  of his investment. How much of his investment did he lose?
33. J. C. Jones purchased merchandise amounting to \$17,846.25 during a certain year. He paid transportation charges at the rate of  $5\frac{1}{2}\%$  of his purchases. What were the transportation charges?
34. The total sales for the year were \$15,846.25. Customers returned  $15\%$  of this merchandise. What was the value of the returned goods?
35. A truck cost \$2245.50 and depreciated  $20\%$  in value the first year. What is the value of the truck at the end of the first year?

## ADDITION EXERCISES

## "Cross" Method

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
8.65	1.66	4.68	9.43	28.16	67.34	74.60	31.75	89.88	74.24
1.38	44.53	28.15	78.14	1.53	18.82	5.73	43.42	.19	2.44
36.73	.67	1.53	24.16	5.75	47.55	.24	5.93	22.97	86.45
74.72	28.44	5.74	1.54	68.03	6.11	29.30	.08	.93	43.66
2.24	3.36	52.84	7.32	52.83	1.95	.11	1.48	96.50	25.77
28.15	14.74	68.03	11.98	38.67	63.70	88.61	.62	8.90	1.65
93.01	57.62	1.54	13.10	1.52	5.98	1.76	32.54	14.95	16.22
9.80	3.92	.69	3.65	.20	2.15	36.86	50.40	13.44	92.22
2.70	56.06	45.08	2.95	3.56	45.08	2.66	2.61	3.45	56.66
35.51	27.58	56.07	46.57	8.04	15.44	66.32	18.55	.55	3.03

## PERCENTAGES

## Finding the Base

The percentage and rate are given in the following problems. Find the base.

Example: 120 is 25% of what number?

$120 \div .25 = 480$ , the number.

NOTE: If divisor contains preceding ciphers, move dividend decimal one place to right for each preceding cipher.

11. \$1038.24 is 32% of what number?
12. \$45.00 is  $12\frac{1}{2}\%$  of what number?
13. 1320 lb. is .25 of what number?
14. \$4375 is  $17\frac{1}{2}\%$  of what number?
15. \$562.00 is  $6\frac{1}{2}\%$  of what number?
16. 1299 mi. is .375 of what number?
17. \$2785 is 44% of what number?
18. \$12,960.23 is  $5\frac{1}{2}\%$  of what number?
19. \$2747.52 is 108% of what number?
20. \$2185.42 is  $16\frac{1}{2}\%$  of what number?
21. A merchant withdrew \$1038.24 from a bank, which was 32% of his deposit. How much had he remaining in the bank?
22. A dealer sold 3898 bushels of corn which was 42% of all he had. How many bushels had he left?
23. A merchant sold 35% of his stock and had \$23,725.00 worth of goods left. What was the value of the goods sold?
24. The yearly return from an investment was \$646.01. If the rate is  $5\frac{1}{4}\%$ , find the amount invested.
25. A dealer sold a bill of goods and gave a cash discount of  $2\frac{1}{2}\%$ . If the discount amounted to \$9.66, what was the amount of the bill?

## ADDITION EXERCISES

### "Cross" Method

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
18.76	31.45	55.67	12.33	21.43	40.45	56.44	18.70	81.87	69.11
2.27	20.34	4.83	1.12	41.66	8.60	8.49	3.54	73.21	7.96
72.61	3.28	1.57	55.64	2.39	.82	4.85	7.40	9.33	52.64
29.18	57.66	81.19	69.53	35.45	31.29	78.29	87.09	87.51	43.55
2.37	8.44	49.36	13.45	62.39	26.82	24.85	34.84	8.88	7.25
96.32	95.20	12.77	4.13	1.51	78.92	23.32	3.54	24.85	69.43
88.17	59.34	.61	9.89	18.49	2.36	5.25	23.46	56.62	18.31
26.47	78.37	35.45	48.38	93.26	73.64	67.74	42.14	22.78	23.44
9.53	34.34	15.36	36.47	5.65	98.69	12.67	21.79	12.82	9.21
54.13	5.61	68.14	.98	34.87	17.38	90.13	33.19	2.19	42.42

## PERCENTAGES

### Finding the Rate

Example: 210 is what % of 840?  
 $210 \div 840 = .25$  or 25%.

Always move the decimal point in the answer, two places to the right when the % sign is to be used.

Carry answers to 5 decimal places .47536 but give answer 47.54%.

11. \$12.85 is what % of \$88.54?
12. \$392.50 is what % of \$455.40?
13. 3.5 gal. is what % of 138 gal.?
14. 128 da. is what % of 365 da.?
15. 640 lb. is what % of 554 lb.?
16. 24.68 is what % of 223.88?
17. 55847 is what % of 89976?
18. 733 is what % of 295?
19. 98432 bu. is what % of 192945 bu.?
20. 1240 ft. is what % of a mile?
21. A contractor constructed a building at a cost of \$45,375.00. He sold the building at a profit of \$9,864.00. What is his per cent of profit?
22. A collector charged \$157.17 for collecting a bill of \$4,836.00. What per cent did he charge?
23. A reduction of \$8.84½ is allowed on an invoice of \$353.80. What per cent is the invoice reduced?
24. A man's salary is \$7,250.00 a year and he spends \$6,198.75. What per cent does he save?
25. An estate is valued at \$48,570.00. \$16,999.50 is in real estate, \$21,225.09 in bonds, \$10,345.41 stock. Find % invested in each.

### CONTROLLED-KEY REVIEW

Find the totals of the following; then re-add making the intentional partial key-strokes and correct.

1.	2.	3.	4.
4 8 6 4	7 8 <sup>4</sup> 6 4	6 9 8 3	5 6 3 4
9 7 5	2 9 0 6	4 4 0	2 9 8 0
1 3 4 6	7 5 3	7 5 6 9	7 7 5 6
9 0 4 2	2 9 <sup>5</sup> 6	8 8 7 5	8 3 4 2
8 9 6	8 0 0 4	3 2 4 6	5 9 6
3 4 2 9	7 7 5 6	7 5 9 3	8 <sup>4</sup> 3 4
7 <sup>4</sup> 5 6 3	3 2 9 8	8 4 6 1	2 9 6 1
1 4 9	7 5 6 3	7 5 3	7 7 5 4
9 6 4 2	9 3 2 9	2 9 8	2 9 8 2
	48 4	7 <sup>4</sup> 8 3 9	7 5 3 2

### PERCENTAGE PROBLEMS

The following items are quoted from a sale held after the Christmas holidays. The first amount is the marked price of the goods and the second amount is the sale price. Find (a) the reduction in price; (b) the per cent of this reduction based on the former price.

Carry percentages to 4 decimal places but set down answer, .3157, as 31.57%.

	Marked Price	Sale Price	Amount of Reduction	Per cent of Reduction
5.	\$ 475.00	\$ 325.00		
6.	78.50	65.00		
7.	10.50	9.25		
8.	157.50	145.25		
9.	8.80	7.20		
10.	1294.95	1050.00		
11.	15.00	12.00		
12.	120.00	95.50		
13.	.98	.78		
14.	1100.00	850.25		
15.	1.95	1.40		
16.	345.50	198.25		
17.	85.60	68.25		
18.	12.75	8.88		
19.	569.50	445.80		
20.	18.50	16.25		
21.	12.85	7.70		
22.	7.70	5.40		
23.	25.00	20.00		
24.	344.50	222.10		

## ADDITION EXERCISES

## "Split" Method

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
142.57	197.68	335.44	898.11	425.00	2.24	19.57	443.55	982.01	154.66
53.44	30.98	5.38	2.24	3.28	677.11	301.76	20.98	14.38	13.27
75.99	67.58	72.50	176.58	38.92	35.34	89.00	16.58	3.28	98.79
103.37	225.48	334.34	15.47	3.27	4.28	775.47	886.79	532.47	2.27
.18	16.59	42.22	53.29	13.22	98.00	11.75	52.22	75.48	64.55
774.38	33.21	10.10	1.87	338.92	345.45	693.29	161.41	75.69	848.92
98.60	2.28	553.28	447.68	16.48	3.30	25.24	27.68	202.98	15.48
534.77	664.39	75.60	801.57	505.92	76.48	186.79	56.61	10.91	3.25
10.98	10.92	5.27	35.46	31.52	184.38	25.25	664.55	86.57	639.08
3.24	166.58	338.60	303.98	104.60	30.03	3.03	20.35	121.53	12.42

## SALES PROBLEMS IN PERCENTAGE FIGURING

It is necessary for every business concern to keep a careful record of all sales so as to measure the efficiency of the sales organization. Salesmen may be paid a salary, a salary and commission or a commission only, but his services are always measured by the amount of his sales. The comparison of sales are best expressed as a rate per cent.

The following record shows the monthly sales made by P. C. Baldwin. (a) Find the total sales for the year; (b) the average per month; (c) the amount of increase or decrease over the average; (d) the per cent of increase or decrease.

Find the difference between the average monthly sales and the sales for each month in the regular adding position. Then in this same position divide and carry per cent to 3 decimal places. Give the answer .427 as 42.7%.

	Sales	Increase	% Increase	Decrease	% Decrease
11. January	\$671.44	\$102.22	17.9%		
12. February	345.56			\$223.66	39.2%
13. March	170.83			398.39	61.9
14. April	98.98			470.24	82.6
15. May	769.94	200.72	35.2		
16. June	856.40	287.18	50.4		
17. July	554.71			14.51	02.5
18. August	775.40	206.18	36.2		
19. September	176.50			392.72	68.9
20. October	798.55	229.33	40.2		
21. November	645.92	76.70	13.4		
22. December	966.41	397.19	61.7		
Total	6830.64				

# 569.22 = average <sup>86</sup>

## ADDITION EXERCISES

## "Cross" Method

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
55.60	45.19	36.58	68.77	81.93	87.69	48.72	24.18	33.22	67.74
31.16	68.79	19.50	11.81	6.78	9.23	15.78	72.50	16.49	23.26
6.29	4.35	6.50	70.82	45.58	73.29	.63	6.49	4.62	4.72
22.25	68.63	18.75	4.62	35.46	52.63	98.63	16.82	75.49	72.54
1.85	4.46	92.40	14.67	4.48	71.11	16.49	5.38	16.72	38.94
65.47	35.72	.85	73.56	62.58	.82	.53	48.62	3.33	.77
6.30	56.40	25.00	70.67	50.48	38.65	47.82	3.37	18.50	5.60
75.60	1.34	64.72	6.42	1.58	46.58	6.11	16.50	90.82	57.69
11.63	24.35	5.62	52.86	58.20	.55	58.72	.69	76.52	74.50
.45	9.80	10.60	46.80	6.92	80.96	95.40	75.99	1.16	.16

## PERCENTAGE OF INCREASE OR DECREASE

## Division

This form of percentage dealing with the relation of one number to another is very important in business in comparing daily, weekly and yearly sales.

Dept. A. January sales last year—\$2947  
 January sales this year—\$3964  
 $\$3964 - \$2947 = \$1017$  increase  
 $1017 \div 2947 = .345$  or 34.5%

Rule a form similar to the following and find the increase and decrease over the previous year. Place a plus (+) sign before the increases and a minus (−) sign before the decreases.

In most commercial houses only 3 or 4 answer figures are required in the per cent. Subtract in dollars and cents position and then divide carrying to 3 complete answer figures.

	Last year's sales	This year's sales	Increase or Decrease	% of Increase or Decrease
11. January	\$5240	\$6046		
12. February	4450	4976		
13. March	3955	4366		
14. April	3400	3756		
15. May	3444	3710		
16. June	3555	4118		
17. July	4355	4834		
18. August	4594	4944		
19. September	4230	4436		
20. October	3433	3764		
21. November	3555	5098		
22. December	7877	6929		

**PERCENTAGE OF INCREASE**

The different forms of percentage figuring as used in business gives an easy and accurate analysis of conditions. The various applications will be studied in detail throughout the course.

In many cases only the percent of increase or decrease, not the actual amount, is required.

January                      February  
 \$896.84                      \$996.94

Divide the amount of the current year by that for the previous year. The per cent of increase will be the % above 100%.

$$\begin{aligned} & \$996.00 \div \$896.00 \text{ (disregard the cents)} = 1.1116 \\ & 1.1116 - 100\% (1.00) = .1116 \text{ or } 11.16\% \text{ increase} \end{aligned}$$

	January sales	February sales	% of Increase
Territory 1	\$2,694.25	\$3,563.25	32.25
2	3,246.10	4,564.20	40.16
3	525.05	645.10	22.86
4	4,495.77	6,645.98	47.83
5	7,954.00	8,934.64	12.32
6	5,664.99	7,863.25	38.82
7	8,995.77	9,964.40	10.77
8	1,994.33	2,863.25	43.58
9	645.98	734.10	13.7
10	508.64	683.45	35.1

**PERCENTAGE OF DECREASE**

January                      February  
 \$785.64                      \$664.50  
 $664.00 \div 785.00 = .8458$  or 84.58%  
 $100.00 - 84.58 = 15.42\%$  decrease

The percentage may be subtracted from 100% by mentally subtracting each number in the register from 9 except the last which is subtracted from 10. Prove by adding the answer obtained to the amount in the register. .8458—.1542 or 15.42%.

	January sales	February sales	% of Decrease
Territory 11	\$1,223.90	\$ 995.45	18.65%
12	3,475.55	2,246.15	37.37
13	3,987.00	3,340.25	16.23
14	998.40	776.77	22.25
15	7,865.49	5,645.15	28.73
16	1,399.40	1,111.55	20.59
17	6,665.11	5,340.00	19.86
18	899.10	893.25	8.67
19	4,876.55	4,465.20	8.43
20	2,386.18	1,816.45	23.89

100  
 84.58  
 15.42

6964.      0.11

## ADDITION EXERCISES

### Balance Sheet

Add by lines and by columns:

1.	43.86	12.19	76.18	11.98	33.21	54.11	<u>231.53</u>
2.	6.58	98.70	10.98	67.10	46.52	96.50	<u>326.38</u>
3.	86.40	.13	4.98	3.28	2.27	16.50	<u>113.56</u>
4.	42.38	6.47	20.97	36.58	14.39	.23	<u>121.02</u>
5.	.19	75.69	75.49	24.33	85.46	43.26	<u>304.42</u>
6.	64.38	15.84	42.63	16.58	3.28	.15	<u>142.86</u>
7.	5.29	.11	73.89	25.44	64.39	84.39	<u>253.51</u>
8.	85.49	20.97	16.59	3.27	49.80	51.00	<u>227.12</u>
9.	15.48	19.67	20.96	64.35	30.65	6.57	<u>157.68</u>
10.	43.26	64.57	4.37	20.11	6.57	97.60	<u>236.48</u>
11.	8.79	2.25	75.69	3.38	16.58	4.39	<u>111.08</u>
12.	79.80	63.49	.24	86.57	37.69	81.17	<u>348.96</u>
13.	3.28	19.70	39.78	21.56	96.57	6.57	<u>187.46</u>
14.	64.36	44.36	21.67	17.58	30.26	61.57	<u>239.80</u>
15.	21.67	7.51	18.49	86.59	.21	75.48	<u>209.95</u>
16.	<u>75.41</u>	<u>97.68</u>	<u>42.37</u>	<u>11.95</u>	<u>64.38</u>	<u>19.70</u>	<u>311.49</u>
TOTALS	646.62	549.33	545.18 78	506.65	1082.88 382.23	699.19	3523.30 4023.85

### COMMISSION AND BROKERAGE

A commission merchant or broker is one who buys or sells merchandise for others.

Commission or brokerage is the sum charged by an agent for buying or selling property and for collecting or investing money. The commission is usually a per cent of the gross proceeds of the sales, but on some merchandise, it is often a fixed rate per bushel, barrel or other standard measure.

The gross proceeds is the amount received by the agent including the expense connected with the sale. The net proceeds is the difference between the gross amount and the sum of the charges. An account sales is a business form used by the agent or commission merchant showing the sales and the expenses incurred in handling the consignment.

Find the net proceeds of the following:

Account Sales		June 22, 19____	
<b>THOS. F. SMITH &amp; COMPANY</b> Chicago, Illinois			
For Account of		E. W. HANSLER & CO.	
Car No. _____		Woodstock, Illinois	
R. R. _____			
Lot No. _____			
Received			
June	15	1 car Oats 1 car Wheat 2 cars Wheat 1 car Wheat 2 cars Timothy	
Sold			
June	20	1 car Oats 850 bu.                      \$ .68 1 car Wheat 960 bu.                    1.32 2 cars Wheat 1980 bu.                1.24 1 car Wheat 988 bu.                    1.12 2 cars Timothy 1680 bu.                .75	
		Gross Amount	
		Charges	
		Freight	\$360.73
		Cartage and Unloading	196.25
		Commission, 3½%	
		Total Charges	
		Net Proceeds	

**ADDITION EXERCISES**

**"Cross" Method**

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
56.72	19.75	42.13	78.62	11.76	2.43	90.86	50.40	16.72	47.82
9.82	4.50	2.90	14.56	87.90	68.79	1.62	4.62	78.56	37.89
1.16	.87	56.40	7.67	4.98	.75	16.79	72.30	5.60	4.80
48.92	58.93	58.72	48.92	14.70	72.30	57.82	19.74	45.72	14.50
7.62	13.14	4.62	1.99	35.46	62.35	42.36	5.72	3.50	74.80
.90	.88	19.80	35.11	1.57	1.19	8.54	58.72	19.75	19.72
23.32	46.72	4.20	34.86	57.82	53.78	16.40	9.72	.22	1.11
89.79	9.76	30.32	9.01	3.78	3.68	2.30	81.98	46.77	.75
1.72	93.62	7.81	57.92	17.82	46.80	85.40	4.72	8.92	52.34
<u>56.65</u>	<u>.50</u>	<u>60.70</u>	<u>4.52</u>	<u>1.40</u>	<u>3.67</u>	<u>4.62</u>	<u>45.62</u>	<u>73.40</u>	<u>6.72</u>

An **account purchase** is a detailed statement given by an agent showing the amount of purchases.

Verify the following account:

Boston, Mass., June 10, 19....					
<b>Purchase of Merchandise</b>					
<b>For Account of J. T. SMITH &amp; CO.,</b>					
<b>NEW YORK, NEW YORK.</b>					
<b>By E. J. Mathews</b>					
10	175	bbl. Webster flour @ \$7.25		\$1268	75
		Charges			
		Drayage	\$12.75		
		Commission, 2%	25.38	38	13
		Total Charged to your account		\$1306	88

11. J. M. Jones Co., merchandise brokers of Chicago, Ill., purchased the following order:

100	boxes cheese	2800 #	32c		
78	tubs butter	4212 #	48c		
36	tubs butter	1944 #	42c		
78	tubs lard	4290 #	18c		
26	bu. apples		2.15		
32	bu. crab apples		2.10		
3	crates cucumbers		2.90		
	Charges				
	Drayage		62.50		
	Commission, 2½%				

Find (a) the gross proceeds and (b) the net proceeds.

12. A commission merchant sold a consignment of goods for \$846 and charged 2¼% commission. What was his commission?

## ADDITION EXERCISES

## "Cross" Method

1.	2.	3.	4.	5.
54.00	22.05	75.45	73.23	33.64
73.68	65.98	53.65	33.75	98.67
2.07	7.43	4.67	2.98	5.21
10.87	60.45	45.00	7.52	23.89
32.40	56.20	78.54	68.21	78.80
67.68	2.13	54.34	78.35	5.45
6.35	23.67	6.21	56.20	96.87
53.11	42.24	88.78	64.02	12.55
45.65	84.79	90.87	9.87	54.22
.45	4.58	63.55	56.37	3.64
34.48	66.57	3.75	42.45	78.87
12.34	71.04	1.98	7.45	53.40
38.44	3.22	67.00	53.40	35.11
2.65	45.00	46.23	78.89	3.67
<u>66.44</u>	<u>78.23</u>	<u>33.34</u>	<u>34.16</u>	<u>39.87</u>

## COMMISSION AND BROKERAGE

Find the amount of commission and to this add the expenses and prime cost for the total cost.

	Prime Cost	Commission	Expenses	Total Cost
6.	\$3464.58	2%	\$346.15	_____
7.	964.24	2½%	101.45	_____
8.	1206.15	3%	125.40	_____
9.	777.32	1½%	192.30	_____
10.	646.22	2%	103.45	_____
11.	1264.59	3½%	135.00	_____
12.	883.40	2%	96.50	_____
13.	222.64	4%	2.58	_____
14.	1115.20	2½%	101.54	_____
15.	806.40	1½%	84.40	_____
16.	938.42	2%	111.10	_____
17.	268.20	3½%	2.34	_____
18.	1283.44	2%	303.12	_____
19.	763.24	1½%	180.64	_____
20.	303.15	2%	9.98	_____
21.	2224.60	2½%	396.14	_____
22.	776.34	3%	108.25	_____
23.	1112.30	2½%	343.15	_____
24.	500.00	3%	93.00	_____
25.	444.55	3½%	25.14	_____

### ADDITION EXERCISES

#### "Cross" Method

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
.93	10.29	50.10	90.82	23.17	54.38	93.16	10.16	27.00	16.99
76.27	34.42	1.59	2.56	78.92	14.17	28.62	9.71	1.45	71.82
8.64	.87	16.58	12.90	6.82	1.14	.28	90.01	50.47	4.32
56.88	.36	36.71	.57	90.72	62.85	18.61	61.99	2.84	17.88
4.37	4.35	.55	1.88	3.54	.33	48.65	72.67	50.72	3.64
56.29	89.26	5.40	13.64	48.92	33.46	1.56	.81	.16	99.86
7.56	45.44	47.82	80.42	50.83	32.95	36.55	2.11	13.78	57.89
61.40	8.21	11.64	7.36	3.69	8.99	4.78	35.73	78.96	4.88
70.09	91.77	78.94	64.98	45.97	66.43	49.72	68.75	9.72	16.79
<u>.44</u>	<u>6.38</u>	<u>47.82</u>	<u>16.78</u>	<u>4.68</u>	<u>8.74</u>	<u>7.21</u>	<u>9.31</u>	<u>68.97</u>	<u>43.65</u>

### Buying and Selling Stocks

Stocks are usually purchased through a stock broker. A brokerage fee is paid the broker for each share purchased at a standard rate established by the stock exchange. The New York Stock Exchange has the following rates for 100 shares or more.

Market Price per Share	Brokers Fee per Share
Between \$ 10 and \$ 25	12½c
Between 25 and 50	15c
Between 50 and 75	17½c
Between 75 and 100	20c
Between 100 and 200	25c

Find the cost of the stocks purchased for Richard Bradshaw. Compute the brokerage charges based on the New York Stock Exchange rates and find the total amount of the bill.

JAMES E. BENNETT & CO.						
Chicago, Ill., Jan. 15, 19___						
Sold to — RICHARD BRADSHAW						
Quantity	Description	Price	Commission		Total	
25 shares	American Roll Mills	\$32	\$3	75	\$803	75
8 shares	American Stores	47½				
10 shares	American Tel. & Tel.	195				
15 shares	Baltimore & Ohio	74½				
45 shares	U. S. Steel	146				
35 shares	Continental Motors	14				
75 shares	Standard Brands	20				
80 shares	General Foods	55				
25 shares	Ananconda	30¼				
10 shares	Eastman Kodak	171				

### CIPHER METHOD OF DIVISION

The "cipher" method of division is a simplified method consisting only of a series of subtractions until the dividend figures are less than the divisor.

In "cipher" division a preceding cipher is held with the divisor keys. This carries the answer one additional column to the left so that the answer figures are not confused with the remainder figures. One column at the left of the dividend is also allowed and then the remainder figures reduced.

Example:  $747.88 \div 14 = 0747.88 \div 14$  (Hold 013 on small figures)  
 Holding 013 over 74, subtract 14 until the remainder is 4. Move over and reduce 47, then 58, then 28. Answer, 53.42.

**Decimal Point.** Move dividend decimal 1 place to the left for the preceding cipher in the divisor and two places to the left for the 2 whole numbers.

The cipher method of division is useful in adding and converting hours and minutes, feet and inches, bushels and pounds, etc.

17 lb.	15 oz.
23 lb.	12 oz.
44 lb.	45 oz.
46 lb.	36 oz.
<hr/>	
130 lb.	108 oz.

Total the ounces at the right of the keyboard in the dark section columns, 3, 4 or 5, and the pounds in the white section columns, 6, 7 or 8. Now convert 108 oz. to lb. by holding 015 (16-1) over 108 and subtracting. The ounces are automatically carried over into the pounds column and the answer, 136 lb. 12 oz. shown.

Add and convert the following problems showing the answers in pound or bushels and remaining pounds.

1. Oats, 32 lb.

135 bu.	30 lb.
52 bu.	18 lb.
43 bu.	19 lb.
156 bu.	28 lb.
64 bu.	12 lb.
238 bu.	9 lb.
145 bu.	18 lb.
<hr/>	
837	06

4.	120 lb.	15 oz.
	78 lb.	12 oz.
	256 lb.	10 oz.
	345 lb.	8 oz.
	59 lb.	12 oz.
	211 lb.	14 oz.
	213 lb.	3 oz.
<hr/>		
	1286	10

2. Timothy, 45 lb.

64 bu.	12 lb.
74 bu.	34 lb.
108 bu.	40 lb.
32 bu.	36 lb.
45 bu.	29 lb.
204 bu.	9 lb.
69 bu.	13 lb.
<hr/>	
599	30

5.	118 lb.	13 oz.
	63 lb.	9 oz.
	255 lb.	11 oz.
	48 lb.	15 oz.
	222 lb.	14 oz.
	131 lb.	7 oz.
	90 lb.	11 oz.
<hr/>		
	932	94

3. Wheat, 60 lb.

122 bu.	55 lb.
98 bu.	45 lb.
64 bu.	36 lb.
36 bu.	24 lb.
111 bu.	50 lb.
96 bu.	9 lb.
75 bu.	51 lb.
<hr/>	
600	30

6.	127 lb.	12 oz.
	56 lb.	15 oz.
	38 lb.	13 oz.
	259 lb.	13 oz.
	62 lb.	12 oz.
	111 lb.	9 oz.
	92 lb.	11 oz.
<hr/>		
	750	5

## ADDITION EXERCISES

## "Split" Method

1.	2.	3.	4.	5.
175.02	549.85	496.84	481.45	599.87
83.58	58.68	13.11	62.30	113.41
116.18	44.55	635.66	83.24	24.45
84.67	372.91	148.38	657.78	742.28
528.75	755.15	5.79	174.22	201.05
362.50	43.00	21.13	22.43	92.31
47.82	15.77	284.19	384.26	644.00
62.49	198.56	174.86	60.72	84.68
356.60	451.83	36.58	81.93	48.72
<u>11.63</u>	<u>24.35</u>	<u>562.52</u>	<u>286.58</u>	<u>205.55</u>

## ADDING AND CONVERTING COMPOUND NUMBERS

## "Cipher" Method of Division

Add and convert the following numbers. In converting the lower denomination to the higher, carry to two decimal places instead of showing the remainder in pounds, ounces, or minutes, and then total the higher denomination.

- |   |  |  |
|---|--|--|
| 6. Wheat, 60 lb.<br>72 bu. 58 lb.<br>34 bu. 46 lb.<br>68 bu. 32 lb.<br>92 bu. 12 lb.<br><u>84 bu. 48 lb.</u>  | 7. Oats, 32 lb.<br>64 bu. 26 lb.<br>81 bu. 31 lb.<br>32 bu. 15 lb.<br>29 bu. 28 lb.<br><u>36 bu. 14 lb.</u>  | 8. Corn, 56 lb.<br>56 bu. 50 lb.<br>72 bu. 46 lb.<br>66 bu. 32 lb.<br>48 bu. 18 lb.<br><u>36 bu. 20 lb.</u>  |
| 9. Barley, 48 lb.<br>112 bu. 40 lb.<br>64 bu. 32 lb.<br>72 bu. 28 lb.<br>32 bu. 35 lb.<br>108 bu. 45 lb.<br>72 bu. 13 lb.<br><u>80 bu. 9 lb.</u>          | 10. 60 min. = 1 hr.<br>14 hr. 15 min.<br>32 hr. 36 min.<br>26 hr. 45 min.<br>15 hr. 24 min.<br>38 hr. 16 min.<br>56 hr. 32 min.<br><u>12 hr. 55 min.</u> | 11. 16 oz. = 1 lb.<br>283 lb. 15 oz.<br>78 lb. 7 oz.<br>64 lb. 11 oz.<br>222 lb. 14 oz.<br>35 lb. 3 oz.<br>11 lb. 6 oz.<br><u>264 lb. 14 oz.</u>     |
| 12. 60 min. = 1 hr.<br>24 hr. 59 min.<br>96 hr. 16 min.<br>183 hr. 3 min.<br>74 hr. 52 min.<br>221 hr. 26 min.<br>93 hr. 43 min.<br><u>42 hr. 11 min.</u> | 13. 16 oz. = 1 lb.<br>114 lb. 10 oz.<br>78 lb. 9 oz.<br>64 lb. 11 oz.<br>222 lb. 15 oz.<br>7 lb. 3 oz.<br>86 lb. 14 oz.<br><u>34 lb. 7 oz.</u>           | 14. Clover, 60 lb.<br>115 bu. 51 lb.<br>205 bu. 14 lb.<br>78 bu. 9 lb.<br>111 bu. 33 lb.<br>92 by. 15 lb.<br>293 bu. 19 lb.<br><u>346 bu. 12 lb.</u> |

**PROGRESSIVE TEST NUMBER FIVE**

**Test 5A—Addition “Cross” Method—(Time 5 Min.)**

1. \$83.45	2. \$92.54	3. \$55.64	4. \$50.63	5. \$11.55	6. \$59.33	7. \$80.84	8. \$33.51
6.92	8.63	2.91	9.86	3.64	2.61	21.32	2.96
73.86	55.20	73.59	31.15	71.86	15.54	9.61	60.64
55.20	11.93	16.64	2.22	50.30	8.88	50.00	5.52
1.15	7.61	5.02	7.36	9.93	26.63	3.33	3.06
2.93	5.22	71.83	64.64	26.52	5.50	22.60	25.54
66.51	33.45	29.00	5.93	10.16	2.26	6.62	7.81
29.32	6.66	5.55	1.56	7.77	15.54	33.80	3.45
7.73	83.40	3.62	77.63	93.51	9.93	11.55	15.55
9.62	3.01	51.54	54.06	29.64	11.11	2.22	3.39

**Test 5B—Account of Sales—(Time 10 Min.)**

Find the amount of commission. Add the other expenses for total expense. Then subtract the total expense from the total sales.

Total Sales	Rate of Commission	Amount of Commission	Other Expenses	Total Expense	Owner's Net
1. \$ 242.00	2%	4.84	\$ 78.00	82.84	
2. 383.00	2 1/2%	9.58	25.25	34.83	
3. 222.64	2%	4.45	17.80	22.25	
4. 1346.00	1 1/2%	20.19	342.50	362.69	
5. 666.60	3%	19.99	93.80	113.80	
6. 3362.00	1 1/2%	50.43	800.20	850.63	
7. 776.50	3%	23.30	93.50	116.80	
8. 78.00	1 1/2%	1.17	4.24	5.41	
9. 312.25	2%	6.25	12.83	19.08	
10. 400.00	3%	12.00	16.75	28.75	
11. 5565.00	1%		800.16		
12. 384.50	2 1/2%		56.44		

**Test 5C—Percentages—(Time 10 Min.)**

Divide this year's sales by last year's sales and carry answers to 3 decimal places.

	Last Year's Sales	This Year's Sales	% of Increase or Decrease
1. Jan.	\$3242	\$5646	+ 74.15%
2. Feb.	4666	4932	
3. Mar.	5556	6666	
4. Apr.	2245	4246	
5. May	1125	1965	
6. June	4495	3380	
7. July	3364	4445	
8. Aug.	4230	3646	
9. Sept.	868	1666	
10. Oct.	2984	3556	
11. Nov.	5463	6668	
12. Dec.	7787	8844	

GOALS	TEST 5 A	TEST 5 B	TEST 5 C
Excellent	7 problems correct	10 problems correct	10 problems correct
Normal	5 problems correct	8 problems correct	7 problems correct
Fair	4 problems correct	6 problems correct	5 problems correct

*There is no other*  
"COMPTOMETER"  
*than that made by*  
FELT & TARRANT MFG. CO.

## PAY-ROLL

The principal methods of wage payment are the hourly, daily and monthly rate and the payment by piece. The bonus plan where a set standard is set up and the worker rewarded for completing the work in less time than the standard is being used, but in these lessons only the figuring of the pay-roll on the time and piece work plan will be considered.

Perform the following extensions over the permanent decimal point.

- |  |  |
|--|--|
| <ol style="list-style-type: none"> <li>1. 5 days at \$4.75 a day.</li> <li>2. 5½ days at 5.25 a day.</li> <li>3. 6 days at 4.87½ a day.</li> <li>4. 5½ days at 5.12½ a day.</li> <li>5. 2 days at 6.50 a day.</li> <li>6. 8 hrs. at .55 an hr.</li> <li>7. 13½ hrs. at .48½ an hr.</li> <li>8. 25 hrs. at .45 an hr.</li> <li>9. 35½ hrs. at .72½ an hr.</li> <li>10. 64 hrs. at .76 an hr.</li> </ol> | <ol style="list-style-type: none"> <li>11. 67 pieces at \$ .10½ a pc.</li> <li>12. 125 pieces at .05½ a pc.</li> <li>13. 46 pieces at .12¼ a pc.</li> <li>14. 438 pieces at .25 per C.</li> <li>15. 428 pieces at .17 per C.</li> <li>16. 786 articles at .01¾ each.</li> <li>17. 846 pieces at .54½ per C.</li> <li>18. 1645 pieces at .75½ per C.</li> <li>19. 328 pieces at .97 per C.</li> <li>20. 1645 pieces at 5.67 per M.</li> </ol> |
|--|--|

## PAY-ROLL TABLE

Where salaries are paid on a monthly basis, the pay-roll table showing the decimal equivalents of days for a 24 to 30-day month is an advantage.

DAYS	24-Day Month	25-Day Month	26-Day Month	27-Day Month	28-Day Month	29-Day Month	30-Day Month	31-Day Month	60ths Table
1	.04167	1 .04	1 .03846	1 .03704	1 .03571	1 .03448	1 .03333	1 .03226	MIN
2	.08333	2 .08	2 .07692	2 .07407	2 .07143	2 .06897	2 .06667	2 .06452	1 .0167
3	.125	3 .12	3 .11538	3 .11111	3 .10714	3 .10345	3 .1	3 .09677	2 .0333
4	.16667	4 .16	4 .15385	4 .14815	4 .14286	4 .13793	4 .13333	4 .12903	3 .0500
5	.20833	5 .2	5 .19231	5 .18519	5 .17857	5 .17241	5 .16667	5 .16129	4 .0667
6	.25	6 .24	6 .23077	6 .22222	6 .21429	6 .20690	6 .2	6 .19355	5 .0833
7	.29167	7 .28	7 .26923	7 .25926	7 .25	7 .24138	7 .23333	7 .22581	6 .1000
8	.33333	8 .32	8 .30769	8 .29630	8 .28571	8 .27586	8 .26667	8 .25806	7 .1167
9	.375	9 .36	9 .34615	9 .33333	9 .32143	9 .31034	9 .3	9 .29032	8 .1333
10	.41667	10 .4	10 .38462	10 .37037	10 .35714	10 .34483	10 .33333	10 .32258	9 .1500
11	.45833	11 .44	11 .42308	11 .40741	11 .39286	11 .37929	11 .36667	11 .35484	10 .1667
12	.5	12 .48	12 .46154	12 .44444	12 .42857	12 .41379	12 .4	12 .38710	11 .1833
13	.54167	13 .52	13 .5	13 .48148	13 .46429	13 .44828	13 .43333	13 .41835	12 .2000
14	.58333	14 .56	14 .53846	14 .51852	14 .5	14 .48276	14 .46667	14 .45161	13 .2167
15	.625	15 .6	15 .57692	15 .55556	15 .53571	15 .51724	15 .5	15 .48387	14 .2333
16	.66667	16 .64	16 .61538	16 .59259	16 .57143	16 .55172	16 .53333	16 .51613	15 .2500
17	.70833	17 .68	17 .65385	17 .62963	17 .60714	17 .58621	17 .56667	17 .54839	16 .2667
18	.75	18 .72	18 .69231	18 .66667	18 .64286	18 .62069	18 .6	18 .58965	17 .2833
19	.79167	19 .76	19 .73077	19 .70370	19 .67857	19 .65517	19 .63333	19 .61290	18 .3000
20	.83333	20 .8	20 .78923	20 .74974	20 .71429	20 .68286	20 .66667	20 .64516	19 .3167
21	.875	21 .84	21 .80769	21 .77778	21 .75	21 .72414	21 .7	21 .67742	20 .3333
22	.91667	22 .88	22 .84615	22 .81481	22 .78571	22 .75862	22 .73333	22 .70968	21 .3500
23	.95833	23 .92	23 .88462	23 .85185	23 .82143	23 .79310	23 .76667	23 .74194	22 .3667
		24 .96	24 .92308	24 .88889	24 .85714	24 .82759	24 .8	24 .77419	23 .3833
			25 .96154	25 .92593	25 .89286	25 .86207	25 .83333	25 .80645	24 .4000
			26 .96296	26 .92857	26 .89655	26 .86667	26 .83871	26 .81167	25 .4167
				27 .96429	27 .93103	27 .9	27 .86667	27 .83977	26 .4333
					28 .96552	28 .93333	28 .90323	28 .87444	27 .4500
						29 .96667	29 .93548	29 .90774	28 .4667
							30 .96774		29 .4833
									30 .5000
									31 .5167
									32 .5333
									33 .5500
									34 .5667
									35 .5833
									36 .6000
									37 .6167
									38 .6333
									39 .6500
									40 .6667
									41 .6833
									42 .7000
									43 .7167
									44 .7333
									45 .7500
									46 .7667
									47 .7833
									48 .8000
									49 .8167
									50 .8333
									51 .8500
									52 .8667
									53 .8833
									54 .9000
									55 .9167
									56 .9333
									57 .9500
									58 .9667
									59 .9833

EIGHTH FRACTIONS OF DAYS									
DAYS	24-Day Month	25-Day Month	26-Day Month	27-Day Month	28-Day Month	29-Day Month	30-Day Month	31-Day Month	
1/8	.0052	1/8 .005	1/8 .0048	1/8 .0046	1/8 .0045	1/8 .0043	1/8 .0042	1/8 .0040	
1/4	.0104	1/4 .01	1/4 .0096	1/4 .0093	1/4 .0089	1/4 .0086	1/4 .0083	1/4 .0081	
3/8	.0156	3/8 .015	3/8 .0144	3/8 .0139	3/8 .0134	3/8 .0129	3/8 .0125	3/8 .0121	
1/2	.0208	1/2 .02	1/2 .0192	1/2 .0185	1/2 .0179	1/2 .0172	1/2 .0167	1/2 .0161	
5/8	.0260	5/8 .025	5/8 .0240	5/8 .0231	5/8 .0223	5/8 .0216	5/8 .0208	5/8 .0202	
3/4	.0313	3/4 .03	3/4 .0288	3/4 .0278	3/4 .0268	3/4 .0259	3/4 .0250	3/4 .0242	
7/8	.0365	7/8 .035	7/8 .0337	7/8 .0324	7/8 .0313	7/8 .0302	7/8 .0292	7/8 .0282	

**Example:** What amount will a man receive working 20¼ days at \$75.50 per month of 24 days?

The decimal equivalent for 20 days of a 24-day month is .8333 and ¼ day is .0104. Then .8333 + .0104 = .8437.

$$\$75.50 \times .8437 = \$63.70 \text{ Salary.}$$

21. 25½ days at \$ 85.00 per mo. of 27 days.
22. 12¾ days at \$100.00 per mo. of 31 days.
23. 21¼ days at \$ 65.00 per mo. of 28 days.
24. 30 days at \$ 70.75 per mo. of 31 days.
25. 26¼ days at \$125.00 per mo. of 30 days.
26. 19½ days at \$ 90.50 per mo. of 28 days.
27. 22 days at \$ 50.00 per mo. of 24 days.
28. 23½ days at \$ 65.00 per mo. of 25 days.
29. 18¾ days at \$ 70.00 per mo. of 26 days.
30. 24½ days at \$110.00 per mo. of 27 days.
31. 25 days at \$100.00 per mo. of 28 days.
32. 27¼ days at \$ 95.00 per mo. of 29 days.
33. 14¾ days at \$ 60.00 per mo. of 30 days.
34. 38¼ days at \$ 80.75 per mo. of 31 days.
35. 19 days at \$ 95.00 per mo. of 30 days.

Lesson 98.

**ADDITION EXERCISES**

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
55.60	45.19	36.58	68.77	81.93	87.69	48.72	24.18	33.22	67.74
31.16	68.79	19.50	11.81	6.78	9.23	15.78	72.50	16.49	23.26
6.29	4.35	6.50	70.82	45.58	73.29	.63	6.49	4.62	4.72
22.25	68.63	18.75	4.62	35.46	52.63	98.63	16.82	75.49	72.54
1.85	4.46	92.40	14.67	4.48	71.11	16.49	5.38	16.72	38.94
65.47	35.72	.85	73.56	62.58	.82	.53	48.62	3.33	.77
6.30	56.40	25.00	70.67	50.48	38.65	47.82	3.37	18.50	5.60
75.60	1.34	64.72	6.42	1.58	46.58	6.11	16.50	90.82	57.69
11.63	24.35	5.62	52.86	58.20	.55	58.72	.69	76.52	74.50
<u>.45</u>	<u>9.80</u>	<u>10.60</u>	<u>46.80</u>	<u>6.92</u>	<u>80.96</u>	<u>95.40</u>	<u>75.99</u>	<u>1.16</u>	<u>.16</u>

**PAY-ROLL**

**Piece Work System**

Under the piece work system, the wage earned in a day depends upon the number of pieces produced. Different rates are paid for each piece of work and this is figured by the piece or by the hundred.

Find the total pieces and the amount due each workman.

Workman No.	M	T	W	T	F	S	Total Pieces	Rate Per 100 Pieces	Amount	
1	345	375	400	425	415	196	2156	\$1.25	26	75
2	333	345	325	350	335	169	1854	1.65	30	64
3	345	303	315	345	350	165	1823	1.55	28	26
4	625	635	598	630	600	300	3388	.78	26	43
5	503	525	556	556	538	223	2901	.86	24	75
6	298	275	280	256	256	112	1477	1.85	27	32
7	233	202	245	260	256	100	1296	1.90	24	62
8	334	357	366	365	360	145	1927	1.14	21	97
9	222	215	218	228	225	100	1208	2.25	27	18
10	211	209	214	200	212	101	1147	1.20	13	76
11	439	445	450	438	445	422	2439	2.31	60	96
12	564	578	570	569	570	285	2964	.88	24	32
13	693	694	656	675	600	330	3448	.76½	27	91
14	498	479	475	499	456	240	2447	1.08½	28	72
15	329	300	315	315	330	160	1749	1.55½	27	20

## PAY-ROLL

### Time Clock and Clock Cards

There are many methods of recording employees' time. One of the most popular systems is the use of the recording clock with "in" and "out" racks, and a time card for each employee. The face of the card shows the employees' name and number, date and other required information.

At the close of the pay-roll week each time card must be extended, that is, the number of hours a day which the employee worked must be figured. Sometimes the rate per hour is entered on each clock card and the amount of wages shown.

Check the cards by adding the hours worked each day. Multiply the total number of hours by the rate per hour. The daily time for each of the cards is 7:30 A.M. to 12M.; 12:30 P.M. to 5:00 P.M., and 7:30 A.M. to 1:00 P.M. Saturday. No credit is given for entering before starting time.

WEEK ENDING June 18 ..... 193.

No. 1  
NAME George Thomas

	MORNING IN	NOON OUT	NOON IN	NIGHT OUT	EXTRA IN	EXTRA OUT
M	7:28	12:01	12:29	5:02		
T	7:15	12:02	12:28	5:01		
W	7:24	12:02	12:29	5:00		
T			12:29	5:01		
F	7:30	12:01	12:30	5:03		
S	7:28	1:01				
S						

TOTAL TIME 46 ..... HRS.  
 RATE \$ .75 .....  
 TOTAL WAGES FOR WEEK \$ 33.25

WEEK ENDING June 18 ..... 193.

No. 2  
NAME S. J. Merrifield

	MORNING IN	NOON OUT	NOON IN	NIGHT OUT	EXTRA IN	EXTRA OUT
M	7:20	12:00	12:30	5:00		
T	7:28	12:01	12:29	5:02		
W	7:28	12:02	12:29	5:02		
T	7:29	12:02	12:28	5:01		
F	7:30	1:00				
S						
S						

TOTAL TIME 41.5 ..... HRS.  
 RATE \$1.00 .....  
 TOTAL WAGES FOR WEEK \$ 41.50

WEEK ENDING June 18 ..... 193.

No. 3  
NAME R. C. Williams

	MORNING IN	NOON OUT	NOON IN	NIGHT OUT	EXTRA IN	EXTRA OUT
M	7:28	12:01	12:29	5:01		
T	8:00	12:00	12:29	5:01		
W	7:28	12:01	12:29	5:02		
T	7:28	12:02	12:29	5:04		
F	7:30	12:02	12:29	5:02		
S	7:30	12:30				
S						

TOTAL TIME 49.5 ..... HRS.  
 RATE \$ .55 .....  
 TOTAL WAGES FOR WEEK \$ 27.23

WEEK ENDING June 18 ..... 193.

No. 4  
NAME Frank Green

	MORNING IN	NOON OUT	NOON IN	NIGHT OUT	EXTRA IN	EXTRA OUT
M			12:29	5:01		
T	7:28	12:01	12:30	5:02		
W	7:29	12:01	12:27	5:06		
T	7:28	12:02	12:27	5:01		
F	7:28	12:03	12:26	5:02		
S	7:20	1:00				
S						

TOTAL TIME 46 ..... HRS.  
 RATE \$ .65 .....  
 TOTAL WAGES FOR WEEK \$ 29.90

WEEK ENDING June 18 ..... 193.

No. 5  
NAME W. E. Riley

	MORNING IN	NOON OUT	NOON IN	NIGHT OUT	EXTRA IN	EXTRA OUT
M	7:28	12:01	12:29	5:02		
T	7:27	12:02	12:29	5:01		
W	7:20	12:03	12:29	5:02		
T						
F						
S						
S						

TOTAL TIME 37 ..... HRS.  
 RATE \$ .75 .....  
 TOTAL WAGES FOR WEEK \$ 27.75

WEEK ENDING June 18 ..... 193.

No. 6  
NAME Robert Hansler

	MORNING IN	NOON OUT	NOON IN	NIGHT OUT	EXTRA IN	EXTRA OUT
M	7:20	12:01	12:29	5:01		
T	7:25	12:01	12:29	5:02		
W	7:25	12:02	12:28	4:00		
T	7:26	12:02	12:29	5:01		
F	7:25	12:01	12:29	5:03		
S	7:29	12:30				
S						

TOTAL TIME 48.5 ..... HRS.  
 RATE \$ .45 .....  
 TOTAL WAGES FOR WEEK \$ 21.83

**ADDITION EXERCISES**

**Controlled-Key Review**

Find the totals of the following; then re-add making the intentional partial key-strokes and correct.

<p><b>1.</b></p> <table style="width: 100%; border-collapse: collapse;"> <tr><td>5</td><td>9</td><td>6</td><td>4</td></tr> <tr><td></td><td>7</td><td>8</td><td>3</td></tr> <tr><td>2</td><td>9</td><td>8</td><td>6</td></tr> <tr><td><sup>5</sup></td><td>0</td><td>0</td><td>4</td></tr> <tr><td></td><td>7</td><td>8</td><td>3</td></tr> <tr><td>2</td><td>9<sup>5</sup></td><td>6</td><td>3</td></tr> <tr><td><sup>5</sup></td><td>4</td><td>0</td><td>0</td></tr> <tr><td></td><td>7</td><td>8</td><td>3</td></tr> <tr><td>5</td><td>9</td><td>1</td><td>2</td></tr> <tr><td></td><td>8<sup>4</sup></td><td>4</td><td>2</td></tr> </table>	5	9	6	4		7	8	3	2	9	8	6	<sup>5</sup>	0	0	4		7	8	3	2	9 <sup>5</sup>	6	3	<sup>5</sup>	4	0	0		7	8	3	5	9	1	2		8 <sup>4</sup>	4	2	<p><b>2.</b></p> <table style="width: 100%; border-collapse: collapse;"> <tr><td>4</td><td>3</td><td>2</td><td>9<sup>5</sup></td></tr> <tr><td></td><td>7</td><td>8</td><td>4</td></tr> <tr><td>2</td><td>9</td><td>8</td><td>6</td></tr> <tr><td></td><td>3</td><td>7</td><td><sup>5</sup></td></tr> <tr><td></td><td>7</td><td>8</td><td>4</td></tr> <tr><td>5</td><td>3<sup>6</sup></td><td>6</td><td>9</td></tr> <tr><td></td><td>2</td><td>9</td><td>8</td></tr> <tr><td>5</td><td>9</td><td>1</td><td>2</td></tr> <tr><td>1</td><td><sup>3</sup></td><td>5</td><td>2</td></tr> <tr><td></td><td>3</td><td>4</td><td>2</td></tr> </table>	4	3	2	9 <sup>5</sup>		7	8	4	2	9	8	6		3	7	<sup>5</sup>		7	8	4	5	3 <sup>6</sup>	6	9		2	9	8	5	9	1	2	1	<sup>3</sup>	5	2		3	4	2	<p><b>3.</b></p> <table style="width: 100%; border-collapse: collapse;"> <tr><td>1</td><td>3</td><td>2</td><td>6</td></tr> <tr><td></td><td>7</td><td>8</td><td>0</td></tr> <tr><td>6</td><td>0</td><td>0</td><td>6</td></tr> <tr><td></td><td>7</td><td><sup>5</sup></td><td>3</td></tr> <tr><td>7<sup>4</sup></td><td>8</td><td>6</td><td>3</td></tr> <tr><td></td><td>7</td><td>8</td><td>4</td></tr> <tr><td></td><td>2</td><td>9</td><td>4</td></tr> <tr><td></td><td><sup>3</sup>7</td><td>5</td><td>6</td></tr> <tr><td>2</td><td>2</td><td>9</td><td>4</td></tr> <tr><td></td><td>5</td><td>5</td><td>5</td></tr> </table>	1	3	2	6		7	8	0	6	0	0	6		7	<sup>5</sup>	3	7 <sup>4</sup>	8	6	3		7	8	4		2	9	4		<sup>3</sup> 7	5	6	2	2	9	4		5	5	5	<p><b>4.</b></p> <table style="width: 100%; border-collapse: collapse;"> <tr><td>1</td><td>3</td><td>4</td><td>4</td></tr> <tr><td></td><td>6</td><td>9</td><td>8</td></tr> <tr><td>5</td><td>3<sup>6</sup></td><td>4</td><td>3</td></tr> <tr><td>9</td><td>0</td><td>0</td><td>4</td></tr> <tr><td></td><td>7</td><td>8</td><td>6</td></tr> <tr><td>3</td><td>2</td><td>9</td><td>2</td></tr> <tr><td></td><td>7</td><td>8<sup>4</sup></td><td>7</td></tr> <tr><td></td><td>3</td><td>8</td><td>3</td></tr> <tr><td>7</td><td><sup>5</sup></td><td>6</td><td>3</td></tr> <tr><td></td><td>4</td><td>6</td><td>2</td></tr> </table>	1	3	4	4		6	9	8	5	3 <sup>6</sup>	4	3	9	0	0	4		7	8	6	3	2	9	2		7	8 <sup>4</sup>	7		3	8	3	7	<sup>5</sup>	6	3		4	6	2
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**WEEKLY PAY-ROLL**

The following time sheet is to be figured so that the paymaster will know on payday the amount due each employee and the total amount necessary to pay all the employees.

**Time Sheet for Week Ending May 15**

Name	M	T	W	T	F	S	Total Time	Rate Per Hr.	Amount	Deductions	Pay-roll
L. M. Smith	8	8	7½	7½	8½	5		\$.55			
J. C. Jones	8½	8	7½	8	8	4		.50			
L. E. Day	5½	6	8	8½	8	5		.45			
A. Green	4	8½	8	7½	6	4		.60			
B. C. Ames	8	8	9	8	8	4		.68			
J. H. Foot	8½	7½	7½	7½	8	5		.65½			
A. M. Black	6	8	8	8	8	4		.54½			
F. Cole	7½	8½	8½	8	8½	5		.48			
R. Dean	8	9	8	9	9	5		.75			
C. Rowe	8	9	8	8½	7	4		.52½			
G. Frey	8	6	8½	7½	7	4		.68			
F. Rau	9	7	7	8½	7½	4		.47			
T. Good	7½	8	8	8	8	8		.68			
R. Williams	8	8	8	8	8	5		.45½			
							<b>TOTALS</b>				

## PAY-ROLL Overtime Work

WEEK ENDING <u>AUGUST 5</u> 19 <u>31</u>						
I. T. R. Co. Form No. 1212						
No. <u>16</u>						
NAME <u>FRANK GOODROW</u>						
	MORNING IN	NOON OUT	NOON IN	NIGHT OUT	EXTRA IN	EXTRA OUT
M	7:28	12:01	12:30	4:30		
T	7:29	12:02	12:29	4:31		
W	7:30	12:02	12:28	4:32		
T	7:22	12:02	12:28	4:31	5:00	7:30
F	7:25	12:03	12:25	4:32	4:59	7:32
S	7:29	1:00				
S						
TOTAL TIME .....HRB.						
RATE .....						
TOTAL WAGES FOR WEEK \$ .....						

Overtime is any time worked before or after the regular established working period. This overtime is figured at an agreed rate, usually time and a half, time and a quarter, or double time. Then for each hour of overtime at time and a half, the workman is credited with  $1\frac{1}{2}$  hours; for time and a quarter,  $1\frac{1}{4}$  hours; and for double time, 2 hours.

The following problems represent pay-rolls where the workmen receive additional pay for overtime work.

**Example:** 52 hours regular time  
15 hours at time and one-half  
7 hours at time and one-fourth,  
at  $28\frac{1}{2}$ c per hour.

Hold 1.5 (time and one-half) over permanent decimal and multiply by 15 hours; hold 1.25 (time and one-quarter) and multiply by 7 hours, then add 52 hours regular time. Answer, 83.25 hours.

Multiply the number of hours by the rate per hours,  $28\frac{1}{2}$ c. Answer, \$23.73.

The permanent decimal point may be placed between the 3rd and 4th columns and the three-factor multiplication used when multiplying the number of hours by rate per hour.

- |  |  |
|--|--|
| <ol style="list-style-type: none"> <li>1. 48 hrs. regular time<br/>13 hrs. time and one-half at <math>28\frac{1}{2}</math>c hr.<br/>6 hrs. time and one-quarter</li> <li>2. 56 hrs. regular time<br/>16 hrs. time and one-half at <math>36\frac{1}{2}</math>c hr.<br/>8 hrs. time and one-quarter</li> <li>3. 98 hrs. regular time<br/>64 hrs. time and one-half at <math>27\frac{1}{2}</math>c hr.<br/>32 hrs. time and one-quarter</li> <li>4. 65 hrs. regular time<br/>43 hrs. time and one-half at <math>36\frac{1}{2}</math>c hr.<br/>25 hrs. time and one-quarter</li> <li>5. 65 hrs. regular time<br/>48 hrs. time and one-half at <math>48\frac{1}{2}</math>c hr.<br/>32 hrs. time and one-quarter</li> <li>6. 49 hrs. regular time<br/>48 hrs. time and one-half at <math>28\frac{1}{2}</math>c hr.<br/>36 hrs. time and one-quarter</li> <li>7. 56 hrs. regular time<br/>48 hrs. time and one-half at <math>36\frac{1}{2}</math>c hr.<br/>32 hrs. double time</li> <li>8. 68 hrs. regular time<br/>56 hrs. time and one-half at 48c hr.<br/>45 hrs. time and one-quarter</li> <li>9. 56 hrs. regular time<br/>48 hrs. time and one-half at <math>45\frac{1}{4}</math>c hr.<br/>32 hrs. time and one-quarter</li> <li>10. 72 hrs. regular time<br/>65 hrs. time and one-half at <math>26\frac{1}{2}</math>c hr.<br/>43 hrs. time and one-quarter</li> </ol> | <ol style="list-style-type: none"> <li>11. 44 hrs. regular time<br/>34 hrs. time and one-half at <math>32\frac{1}{4}</math>c hr.<br/>12 hrs. time and one-quarter</li> <li>12. 65 hrs. regular time<br/>32 hrs. time and one-half at <math>48\frac{4}{5}</math>c hr.<br/>18 hrs. time and one-quarter</li> <li>13. 54 hrs. regular time<br/>32 hrs. time and one-half at <math>45\frac{1}{5}</math>c hr.<br/>18 hrs. time and one-quarter</li> <li>14. 32 hrs. regular time<br/>28 hrs. time and one-half at <math>36\frac{1}{2}</math>c hr.<br/>16 hrs. time and one-quarter</li> <li>15. 36 hrs. regular time<br/>22 hrs. time and one-half at <math>65\frac{1}{4}</math>c hr.<br/>16 hrs. time and one-quarter</li> <li>16. 21 hrs. regular time<br/>16 hrs. time and one-half at <math>36\frac{1}{2}</math>c hr.<br/>12 hrs. time and one-quarter</li> <li>17. 47 hrs. regular time<br/>32 hrs. time and one-half at <math>26\frac{1}{2}</math>c hr.<br/>21 hrs. time and one-quarter</li> <li>18. 48 hrs. regular time<br/>26 hrs. time and one-half at <math>32\frac{1}{2}</math>c hr.<br/>21 hrs. time and one-quarter</li> <li>19. 46 hrs. regular time<br/>32 hrs. time and one-half at <math>26\frac{1}{2}</math>c hr.<br/>28 hrs. double time</li> <li>20. 56 hrs. regular time<br/>43 hrs. time and one-half at <math>28\frac{1}{2}</math>c hr.<br/>32 hrs. double time</li> </ol> |
|--|--|

### LABOR TICKETS

Labor or job tickets of different kinds are frequently used in accounting for employees' time. These tickets, filled in with the necessary information, are kept by the workmen or foreman to show the number of hours spent on each job or the number of pieces manufactured. When the tickets are turned in they are checked by the timekeeper to see that the hours worked agrees with the attendance record. The total time accounted for by the labor tickets of each worker must agree with the total hours of attendance as shown on the time clock cards.

Clock No. 916		Date May 16	Kind of Work	Chg. No. 45		
Machine or Drop No.	Burden Centre	Hours		No. of Pieces	Rate	Amount
		Piece Work				
		Day Work	7½		\$0.65	\$4.88

After the job tickets are sorted, figured and proved, the number of hours and the amount earned is copied to a payroll sheet. This sheet is then cross totalled for the total wages of each worker.

Find each worker's weekly wage and the total weekly payroll.

Clock Number	Employee's Name	Hourly Rate	Form F-211 Week Ending							Amount	Week Ending						Amount	
			Fri.	Sat.	Mon.	Tues.	Wed.	Thur.	Fri.		Sat.	Mon.	Tues.	Wed.	Thur.			
101	William Jones	42½	3.19	1.70	3.40	3.40	3.19	3.19			3.40	1.70	3.40	3.40	3.19	3.40		
102	Frank Cross	.67	5.36	3.35	5.36	5.03	5.36	5.36			5.03	2.68	5.36	5.36	5.03	5.36		
103	J. J. Green	.45	3.83	1.80	3.83	3.60	3.60	3.38			3.38	1.80	3.83	3.60	3.60	3.38		
104	William Burns	.50	3.50	2.00	3.75	3.75	3.75	4.00			3.75	2.00	4.00	4.00	3.75	4.00		
105	H. M. Carroll	.82	4.92	3.28	6.15	6.56	6.56	6.97			6.56	3.28	6.15	6.56	6.97	6.56		
106	V. S. Lumbly	.54	4.32	2.97	4.32	4.32	4.05	4.05			4.05	2.70	4.32	4.32	4.05	4.32		
107	J. C. Cates	.47	4.00	1.88	4.00	4.23	3.76	3.76			3.76	1.88	4.00	3.76	3.76	3.53		
108	R. S. Weaver	.55½	3.89	2.22	3.89	3.89	4.44	4.44			4.44	2.22	3.89	3.89	4.44	4.16		
109	K. Valtfene	.83	3.32	3.32	6.64	6.23	6.23	6.64			6.23	3.74	6.64	6.23	5.81	6.23		
110	Ed. J. Stevens	.85	6.80	3.83	6.80	6.38	6.38	6.80			6.38	3.40	6.80	6.38	6.38	6.80		
111	J. J. Caples	.60	4.50	3.00	4.50	4.50	4.50	4.80			4.50	3.00	4.50	4.50	4.50	4.80		
112	Wm. Schindel	.65	5.53	2.60	5.20	5.20	5.20	5.53			5.20	2.60	5.53	5.20	5.20	4.88		
113	Geo. Farrest	.49	3.68	2.45	3.92	3.92	3.68	3.92			3.92	2.45	3.92	4.17	3.92	3.68		
114	H. Crowder	.70	5.60	2.80	4.90	4.90	5.25	5.60			5.60	2.80	5.60	5.60	5.25	5.60		
115	H. J. Dwyer	.58	4.35	2.90	4.35	4.64	4.35	4.64			4.64	2.61	4.35	4.64	4.64	4.35		
116	Geo. Harmon	.63	2.52	2.52	5.04	5.04	5.04	4.73			5.04	2.52	4.73	5.04	5.04	5.04		
117	H. J. Hesser	.70	5.25	2.80	5.25	5.60	5.60	5.60			4.90	2.80	5.60	5.25	5.60	5.25		
118	L. H. Baker	.57½	4.60	2.30	4.60	4.31	5.18	4.60			4.60	2.88	4.60	4.60	4.31	4.60		
119	B. Collins	.75	6.00	3.00	5.63	5.63	6.00	6.00			5.63	3.00	6.00	5.63	5.63	8.00		

## ADDITION EXERCISES

## "Cross" Method

This lesson introduces five figure addition. The index finger is used on all of the columns except the units' column; this is taken care of with the second finger.

Find the total weekly sales:

Dept.	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Totals
1.	98 34	78 56	54 32	98 40	75 25	125 26	530 13
2.	530 16	420 00	349 22	243 25	100 10	493 25	2135 98
3.	34 22	49 18	56 25	66 25	32 64	78 46	317
4.	222 40	200 10	232 14	198 33	212 44	250 40	1315 81
5.	101 25	100 14	100 10	96 42	98 94	125 16	622 01
6.	468 24	310 25	225 20	304 29	400 12	500 14	2268 24
7.	34 16	24 12	16 80	56 19	36 24	77 80	245 31
8.	99 83	80 40	78 30	66 60	78 13	99 10	502 36
9.	29 60	19 40	17 88	22 14	35 16	39 30	163 48
10.	431 11	306 59	222 14	215 29	160 64	564 13	1191 90
11.	782 49	660 16	564 32	406 18	303 61	983 64	3700 40
12.	68 74	70 56	52 13	48 78	66 03	78 34	384 58
13.	32 93	15 16	9 83	11 15	8 46	25 10	102 63
14.	156 84	111 15	101 49	99 89	96 14	176 14	741 65
15.	129 83	93 14	92 12	89 16	114 12	134 25	652 42
16.	59 64	66 14	78 13	86 11	101 12	122 29	513 43
17.	102 50	113 49	116 75	96 14	129 14	112 12	670 14
18.	222 10	178 49	185 29	129 33	112 12	240 40	1077 13
19.	164 30	136 50	129 29	150 55	149 16	175 10	944 10
20.	78 56	88 16	78 78	69 34	50 00	88 14	452 98
	3847 24	3121 69	2740 48	3553 74	3334 50	4481 52	

## MANUFACTURING PROBLEMS

### Distribution of Expense

The different expenses of manufacturing such as rent, insurance, salaries, heat, light, power, taxes, etc., are distributed over the cost of the goods manufactured in various ways. Rent is usually charged to the different departments on the basis of the space occupied.

- The rent for the following office is \$1147.50 per year. Find the total space occupied and the charge per square foot. Then find the rental charge for each office based upon the space occupied.

(a) 220 sq. ft.	(c) 500 sq. ft.	(d) 250 sq. ft.
(b) 380 sq. ft.		

- The rent for the following store is \$4965.00 per year. Find the rental charge per square foot and for each department.

Drugs	1635 sq. ft.	Hats	160 sq. ft.
Cigars	135 sq. ft.	Clothing	3250 sq. ft.
Jewelry	185 sq. ft.	Shoes	500 sq. ft.
Stationery	235 sq. ft.	Cameras	250 sq. ft.

- The rental charge for a certain store is \$550.00 per year. The grocery department occupies 2000 square feet; the dry goods department 1600 square feet; the drug department 400 square feet and the office 400 square feet. How much rental is charged to each department?
- Distribute the rental charge of \$880.00 as follows: 30% to the office, 25% to the stock department, 10% to the shipping department, 20% to the assembling department and 15% to foundry.
- The superintendent's salary is often distributed in the same method as rent except that the number of productive hours is used as a basis of distribution. J. R. Jones, Superintendent of the Chicago Machine Company, receives a monthly salary of \$720.00. The productive hours in the different departments during the month of January were as follows.

Assembling	1767 hours
Spring	456 hours
Polishing	855 hours
Drill Press	627 hours
Plating	798 hours
Press Room	855 hours
Testing	345 hours

Find the total productive hours and the expense charge per hour. Then allocate the superintendent's salary to the different departments according to the actual number of productive hours for each department.

ADDITION EXERCISES

"Cross" Method

1.	2.	3.	4.	5.
\$241.19	\$117.40	\$157.45	\$227.50	\$242.18
16.49	16.38	876.59	14.39	16.88
433.27	3.28	12.23	35.35	85.11
87.60	98.60	87.60	116.49	13.25
5.39	56.38	54.99	97.50	184.36
343.67	851.04	175.39	25.26	118.50
167.59	318.50	265.48	179.82	47.37
632.24	3.33	23.37	337.82	38.15
3.28	77.68	338.50	19.75	633.43
28.90	338.50	19.75	15.59	13.85
117.50	98.70	245.69	2.24	47.82
86.50	27.66	76.58	33.45	741.21
3.27	9.80	1.14	171.50	6.38
336.89	781.80	15.48	39.06	774.36
<u>53.30</u>	<u>37.65</u>	<u>137.81</u>	<u>27.85</u>	<u>31.21</u>

MANUFACTURING PROBLEMS

Distribution of Expense

Distribute the following on the basis of space occupied.

- |                               |                               |
|-------------------------------|-------------------------------|
| 6. Rent per year, \$5000.00   | 7. Rent per year, \$9694.50.  |
| Dept. 1 250 sq. ft.           | Drugs 1250 sq. ft.            |
| " 2 140 sq. ft.               | Cigars 380 sq. ft.            |
| " 3 190 sq. ft.               | Jewelry 400 sq. ft.           |
| " 4 235 sq. ft.               | Stationery 135 sq. ft.        |
| " 5 165 sq. ft.               | Hats 864 sq. ft.              |
| " 6 3520 sq. ft.              | Clothing 2245 sq. ft.         |
| " 7 500 sq. ft.               | Shoes 864 sq. ft.             |
| " 8 1635 sq. ft.              | Cameras 325 sq. ft.           |
| 8. Heat per year, \$20,168.00 | 9. Heat per year, \$20,923.00 |
| Dept. A 340 sq. ft.           | Foundry Dept. 2264 sq. ft.    |
| " B 3260 sq. ft.              | Etching Dept. 863 sq. ft.     |
| " C 228 sq. ft.               | Art Dept. 962 sq. ft.         |
| " D 660 sq. ft.               | Assembling Dept. 1112 sq. ft. |
| " E 554 sq. ft.               | Testing Dept. 777 sq. ft.     |
| 10. Light per year, \$473.76  | 11. Light per year, \$258.44  |
| Dept. 1 1060 sq. ft.          | Drugs 860 sq. ft.             |
| " 2 1110 sq. ft.              | Cigars 235 sq. ft.            |
| " 3 980 sq. ft.               | Stationery 304 sq. ft.        |
| " 4 888 sq. ft.               | Candy 564 sq. ft.             |
| " 5 1112 sq. ft.              | Ice Cream Parlor 1060 sq. ft. |
| " 6 772 sq. ft.               | Lunches 953 sq. ft.           |

## ADDITION EXERCISES

### "Cross" Method

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
436.75	233.30	936.59	643.13	741.18	16.50	37.68	755.45	241.22	54.19
77.55	51.20	19.20	224.43	56.75	242.33	221.22	64.78	38.90	337.89
33.75	983.35	64.40	85.31	48.95	81.70	18.59	112.00	75.40	64.30
116.59	65.70	251.18	9.84	38.33	37.59	391.00	28.50	86.00	19.40
89.57	115.50	367.82	34.34	900.64	2.27	841.38	4.46	147.88	37.98
36.59	39.67	45.72	90.64	14.37	552.83	3.38	37.76	47.50	4.47
7.68	1.05	557.68	114.37	37.56	18.50	19.50	42.58	38.50	26.50
566.20	80.15	16.82	7.56	5.53	42.54	756.81	669.02	.28	87.49
9.28	43.35	24.99	55.53	47.82	337.50	116.58	51.41	64.15	2.53
1.14	766.67	471.21	47.82	52.36	74.50	11.82	.16	477.02	4.48
870.37	24.53	14.65	552.36	648.90	62.25	38.50	2.24	71.04	890.11
3.76	175.67	2.25	749.90	3.75	185.60	.84	74.30	15.30	11.78
30.75	38.11	26.72	3.85	16.40	42.91	684.36	985.66	3.28	28.75
115.41	11.95	65.25	16.47	20.92	37.79	113.40	838.00	63.25	227.19
<u>27.76</u>	<u>742.25</u>	<u>9.74</u>	<u>28.92</u>	<u>311.19</u>	<u>558.92</u>	<u>850.83</u>	<u>13.39</u>	<u>2.26</u>	<u>6.50</u>

### DISTRIBUTION OF EXPENSE ON SALES

The expense involved in sales is often distributed in proportion to the total amount of the sales. That is, the expense is found on each dollar of sales by dividing the total expenses by the total sales. Then to find each department's share of expenses, multiply the amount of sales for that department by the expense on each dollar of sales.

Dept. A	\$ 445.00		445 x \$.12 =	\$ 53.40	— —	Dept. A's share of expense
Dept. B	356.00		356 x .12 =	42.72	— —	Dept. B's " " "
Dept. C	668.00		668 x .12 =	80.16	— —	Dept. C's " " "

Total Sales \$1469.00

Total Expenses \$176.28

$\$176.28 \div 1469 = \$.12$ , expense on each \$1.00 of sales.

Distribute the expenses in the following:

11.

	Sales	
Dept. 1	\$1250.00	
" 2	999.00	
" 3	3346.00	
" 4	5585.00	
" 5	4460.00	
	<u>15640.00</u>	
Expenses—	\$1016.60	

12.

	Sales	
Dept. A	\$ 864.00	
" B	1232.00	
" C	446.00	
" D	3558.00	
" E	8864.00	
	<u>14964.00</u>	
Expenses—	\$1728.34	

13.

	Sales	
Dept. 1	\$ 734.00	
" 2	662.00	
" 3	893.00	
" 4	556.00	
" 5	359.00	
" 6	224.00	
	<u>3428.00</u>	
Expenses—	\$162.75	

14.

	Sales	
Dept. A	\$ 262.50	
" B	135.00	
" C	563.00	
" D	405.75	
" E	700.25	
" F	909.50	
	<u>2976.00</u>	
Expenses—	\$135.41	

### ADDITION EXERCISES "Cross" Method

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
324.36	65.89	116.39	12.97	47.89	124.20	137.25	45.75	1.16	26.57
17.59	185.90	74.75	178.75	87.60	90.65	64.50	78.92	584.39	337.50
118.39	56.29	25.58	131.15	121.46	42.65	841.72	115.30	42.14	51.45
36.86	6.48	7.12	261.68	37.80	7.12	60.71	3.36	67.30	19.67
45.63	17.48	841.72	54.63	25.24	126.52	34.85	720.46	61.40	3.35
18.92	3.36	18.96	25.94	8.92	41.45	15.30	13.48	15.30	225.49
3.37	87.60	6.78	8.76	575.69	132.55	1.41	1.70	818.31	17.49
.74	20.24	13.52	13.12	53.47	98.67	259.78	52.13	5.47	9.87
765.89	64.59	52.88	58.92	3.37	42.32	11.14	371.09	74.50	226.87
<u>17.68</u>	<u>1.15</u>	<u>37.69</u>	<u>625.96</u>	<u>337.69</u>	<u>690.87</u>	<u>17.96</u>	<u>17.98</u>	<u>36.50</u>	<u>6.91</u>

### PARTNERSHIP INVESTMENT Pro-rating the profits

A partnership is an association of persons who have agreed to combine their capital, labor, and skill in a business and who agree to share the profits and losses of the business in agreed proportions.

The members of a partnership are called partners. The amount of money or property which a partner invests is called his investment. The total of the partner's investment is the capital of the partnership.

To prorate means to distribute amounts proportionately. The method of distribution is usually decided upon in the beginning.

Divide the earnings in the following in proportion to the amount invested. Find the amount earned on each dollar invested and then each man's earnings.

$$\$6500.00 \div 23340 = \$.278492, \text{ earnings on one dollar.}$$

A's investment	\$6500.00	6500 x .278492 = \$1810.20	A's share of earnings.
B's investment	4450.00	4450 x .278492 = \$1239.29	B's share of earnings.
C's investment	3250.00	3250 x .278492 = \$ 905.10	C's share of earnings.
D's investment	1350.00	1350 x .278492 = \$ 375.96	D's share of earnings.
E's investment	7790.00	7790 x .278492 = \$2169.45	E's share of earnings.

Capital	\$23340.00
Net earnings	\$6500.00

Distribute each man's share of the profits in the following:

11. Profits, \$596.25

A	\$450.00
B	300.00
C	250.00
D	650.50
E	<u>734.00</u>

Capital

12. Profits, \$9110.00

A	\$12,000.00
B	8,000.00
C	8,550.00
D	7,200.00
E	<u>3,250.00</u>

Capital

13. Profits, \$1055.00

A	\$ 870.25
B	602.25
C	740.00
D	1240.00
E	<u>320.00</u>

Capital

## ADDITION EXERCISES

### "Cross" Method

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
167.85	245.64	78.65	185.66	29.34	132.99	476.59	436.75	164.59	129.43
15.48	14.37	185.90	24.35	6.48	14.38	35.44	18.56	35.35	22.33
377.58	98.76	35.44	86.79	437.80	441.95	96.57	131.47	853.44	9.56
3.89	14.57	19.57	8.50	85.66	3.37	12.42	57.69	26.72	68.77
890.99	143.78	366.68	.23	.24	18.50	175.46	19.57	3.37	77.68
67.85	56.44	336.66	861.55	225.62	226.82	37.82	35.55	446.57	11.46
47.59	68.77	56.44	85.60	18.50	68.77	16.59	876.55	18.59	229.61
117.69	3.36	13.67	35.44	35.66	19.57	.15	14.38	20.21	37.68
35.35	775.46	477.83	6.11	3.37	75.60	44.30	6.58	135.44	63.44
<u>98.67</u>	<u>18.69</u>	<u>13.78</u>	<u>355.89</u>	<u>994.30</u>	<u>171.58</u>	<u>461.19</u>	<u>338.60</u>	<u>64.59</u>	<u>765.44</u>

## RECIPROCAL DIVISION

The reciprocal of a number is the decimal obtained by dividing one by the number. For example, the reciprocal of 4 is  $1 \div 4$  or  $.25$ ; the reciprocal of 8 is  $1 \div 8$  or  $.125$ ; the reciprocal of 25 is  $1 \div 25$  or  $.04$ . Then, instead of dividing by a number the same result is obtained by multiplying by its reciprocal.

Examples:  $48 \div 25 = 48 \times .04$  (the reciprocal of 25) = 1.92.  
 $50 \div 25 = 50 \times .04$  (the reciprocal of 25) = 2.00.  
 $80 \div 25 = 80 \times .04$  (the reciprocal of 25) = 3.20.

Find the reciprocals for each of the following numbers carrying to seven actual figures in the register; but show only six figures in the answer, forcing the sixth figure one higher if the seventh is five or over. Check reciprocals by multiplication.

**Note:** The rule for pointing off for reciprocals is the same as in division but for convenience, pay no attention to the decimal point and consider the reciprocal figures as whole numbers. The decimal point is taken care of in the multiplication.

11. 88	15. 266	19. 5280
12. 36	16. 365	20. 8764
13. 65	17. 292	21. 4466
14. 144	18. 1240	22. 2921

## Problems for Practice

Use the reciprocals already obtained and divide the following examples by multiplying the amounts over the **permanent decimal point** by the correct reciprocal of each divisor. Show 3 decimal places in answer, raising the 3rd decimal place if 4th is 5 or more.

**Decimal Point:** Move the dividend decimal point one place to the left for each whole number in the divisor.  $\$863 \div 88$  ( $863 \times 113636$ ) =  $\$9.807$

23. $\$863.00 \div 88$	27. $\$123.20 \div 266$	31. $\$468.50 \div 5280$
24. $455.50 \div 36$	28. $803.25 \div 365$	32. $42.25 \div 8764$
25. $540.25 \div 65$	29. $270.50 \div 292$	33. $78.56 \div 4466$
26. $98.00 \div 144$	30. $1500.50 \div 1240$	34. $300.90 \div 2921$

## ADDITION EXERCISES

## "Cross" Method

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
24.27	166.57	155.46	854.65	185.67	202.98	300.90	609.78	881.76	500.19
198.26	30.76	90.87	90.82	20.90	97.56	14.36	20.96	16.57	6.11
2.28	9.78	43.36	30.45	54.36	566.17	63.28	114.35	303.92	52.32
86.79	606.82	198.20	632.78	377.58	27.59	77.14	85.37	16.57	26.57
54.36	30.45	60.47	85.46	14.35	19.56	185.49	743.25	96.47	9.56
303.08	24.23	844.37	3.37	751.19	375.68	94.35	19.57	221.54	140.11
16.58	754.50	25.98	19.57	24.25	47.68	5.47	50.47	85.46	643.88
.23	18.56	435.35	48.92	19.50	19.48	447.69	303.29	452.18	75.68
90.83	3.30	60.57	202.32	6.58	435.67	994.37	15.47	19.60	11.72
<u>6.47</u>	<u>42.24</u>	<u>843.54</u>	<u>16.57</u>	<u>743.54</u>	<u>744.37</u>	<u>30.21</u>	<u>3.03</u>	<u>536.72</u>	<u>3.03</u>

## RECIPROCAL DIVISION

## Practice Problems

The reciprocal method of division is most convenient when several amounts are to be divided by the same number. The division is then shortened by multiplying each dividend by the reciprocal of the divisor. Carry reciprocals to 6 actual answer figures.

Hold each dividend over the permanent decimal point and multiply by the reciprocal of the divisor. Then move dividend decimal as many places to the left as there are whole numbers in the divisor.

Show the answers to 4 decimal places. If the 5th decimal figure is 5 or more, raise the 4th decimal place 1 higher.

11.  $438 \div 86$   
 12.  $267 \div 86$   
 13.  $5297 \div 86$   
 14.  $667 \div 86$   
 15.  $642 \div 86$

16.  $327 \div 93$   
 17.  $1374 \div 93$   
 18.  $127 \div 93$   
 19.  $4263 \div 93$   
 20.  $153 \div 93$

21.  $75.50 \div 56$   
 22.  $125.50 \div 56$   
 23.  $404.55 \div 56$   
 24.  $2150.60 \div 56$   
 25.  $1034.40 \div 56$

Find the gross

26. 790 articles  $\div$  144  
 27. 68 articles  $\div$  144  
 28. 13922 articles  $\div$  144  
 29. 555 articles  $\div$  144  
 30. 72 articles  $\div$  144

31.  $796 \div 5280$   
 32.  $1843 \div 5280$   
 33.  $894 \div 5280$   
 34.  $722 \div 5280$   
 35.  $4500 \div 5280$

36.  $390 \div 365$   
 37.  $937 \div 365$   
 38.  $88.80 \div 365$   
 39.  $360.50 \div 365$   
 40.  $4276 \div 365$

41.  $456.56 \div 112$   
 42.  $343.00 \div 112$   
 43.  $94.00 \div 112$   
 44.  $768.80 \div 112$   
 45.  $10055 \div 112$

Find the cu. ft.

46. 43992 cu. in.  $\div$  1728  
 47. 7776 cu. in.  $\div$  1728  
 48. 864 cu. in.  $\div$  1728  
 49. 2255 cu. in.  $\div$  1728  
 50. 1009 cu. in.  $\div$  1728

### ADDITION EXERCISES

#### "Cross" Method

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
141.35	161.57	176.59	335.47	998.70	241.57	194.38	775.46	227.69	665.49
76.58	40.38	18.60	70.69	23.30	19.80	65.46	30.28	60.57	37.68
98.67	554.36	977.21	175.48	335.27	775.89	337.50	992.23	115.47	338.79
223.24	30.82	15.47	20.67	64.37	23.24	19.60	15.47	30.27	59.80
998.70	404.36	626.58	885.48	606.58	775.47	100.95	646.37	442.39	116.58
261.57	30.92	19.60	20.75	15.47	23.23	3.56	10.89	4.36	6.57
16.57	546.55	202.54	375.68	663.49	969.80	454.35	23.20	19.19	30.35
9.81	21.19	15.47	54.45	75.68	11.18	14.36	27.68	53.46	14.35
779.80	443.26	3.26	3.26	9.78	2.25	6.45	3.31	775.46	3.78
<u>31.26</u>	<u>26.54</u>	<u>665.41</u>	<u>448.79</u>	<u>175.38</u>	<u>331.26</u>	<u>98.77</u>	<u>25.89</u>	<u>31.21</u>	<u>778.90</u>

### RECIPROCAL DIVISION

#### Practice Problems

The weekly sales of five novelty salesmen for the week ending November tenth are recorded below. Find the per cent each man's sales is of the total weekly sales.

		Division Method	Multiplication Method
J. Jones	\$664	$664 \div 2955 = 22.47\%$	$1 \div 2955 = 338409$ , recip. $664 \times 338409 = 22.47\%$
A. White	783	$783 \div 2955 = 26.50\%$	$783 \times 338409 = 26.50\%$
F. Gear	592	$592 \div 2955 = 20.03\%$	$592 \times 338409 = 20.03\%$
G. Frey	444	$444 \div 2955 = 15.03\%$	$444 \times 338409 = 15.03\%$
L. Smiley	472	$472 \div 2955 = 15.97\%$	$472 \times 338409 = 15.97\%$
<b>Total</b>	<b>\$2955</b>	<b>Total 100.00</b>	<b>Total 100.00</b>

Using the reciprocal method of division, find the percentage each amount is to the total. Carry each decimal one or two figures beyond the number of places required in the answer. This enables an adjustment in balancing to 100%.

<p>11. \$ 45.75 98.00 64.50 112.75 89.30 <hr/>410.30</p> <p style="text-align: right;">100.00 %</p>	<p>12. \$41.75 7.77 69.00 78.80 9.60 <hr/>206.92</p> <p style="text-align: right;">100.00 %</p>	<p>13. \$300 475 960 834 962 <hr/>3531</p> <p style="text-align: right;">100.00 %</p>
<p>14. \$ 24.75 3.33 2.22 7.75 44.34 <hr/>82.39</p> <p style="text-align: right;">100.00 %</p>	<p>15. \$21.05 47.47 7.21 555.00 32.41 <hr/>663.14</p> <p style="text-align: right;">100.00 %</p>	<p>16. \$4664 5454 7665 8087 3298 <hr/>29178</p> <p style="text-align: right;">100.00 %</p>

17. The sales of gasoline at five stations for one week are shown below. Using the reciprocal method of division, find the percentage each station's sales is to the total number of gallons sold.

Home Oil station	12,640 gallons
Goodall's station	25,333 gallons
Shell station	15,476 gallons
Standard Oil station	14,663 gallons
Independent station	<u>8,883 gallons</u>

## ADDITION EXERCISES

## "Cross" Method

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
769.86	5.66	731.91	42.73	168.24	168.24	11.34	297.06	5.66	21.59
1.21	962.10	24.13	8.62	53.28	93.51	527.60	13.56	381.56	161.58
52.96	72.60	528.12	831.84	70.14	57.80	43.27	21.59	19.60	8.79
80.12	93.65	32.30	95.46	451.16	95.87	13.86	69.25	11.37	36.98
21.66	24.37	56.05	10.85	5.29	6.67	7.96	735.46	9.50	20.11
281.09	524.60	19.75	28.68	90.12	925.63	9.40	19.58	107.11	116.59
9.50	6.76	45.62	52.16	18.56	27.83	63.45	20.11	75.60	3.37
70.14	20.19	13.21	925.48	10.57	516.77	76.59	845.33	148.65	64.79
8.62	745.94	106.58	16.77	421.83	47.27	89.47	6.24	22.50	996.50
<u>72.84</u>	<u>10.13</u>	<u>6.24</u>	<u>47.26</u>	<u>90.86</u>	<u>162.50</u>	<u>27.83</u>	<u>419.56</u>	<u>.35</u>	<u>44.35</u>

## MANUFACTURING PROBLEMS

## Distribution of Expense

The successful manufacturer must constantly study and analyze his business so as to know just where and how the money is spent. In the manufacturing business, these costs include the factory cost of an article such as (a) the cost of material, (b) the cost of labor, and (c) the factory expense such as heat, light, rent and so on until the article is completed and ready for market. The labor cost is of two kinds. Labor expended directly upon the product is called direct labor, productive labor or simply labor. Thus, the work of a machine operator would be classified as productive labor, and his wages would be chargeable directly to the parts on which he works, in proportion to the time spent.

All labor chargeable to production but which is not directly connected with some particular piece of work is called indirect or nonproductive. This includes the work of the superintendent, foreman, clerical assistants, rent, heat, light, etc., and is charged directly to factory expense. One of the problems of cost finding is to distribute the expense or burden properly and correctly so that each article manufactured will bear its own share of expense.

One method of distributing expenses such as nonproductive labor, rent, heat, light, power, etc., is on a ratio of the number of productive hours of labor on each job to the total number of productive hours.

The following report shows the number of productive hours of labor in each department during the month of May. Find the percentage that each department bears to the total. Then distribute the factory expense of \$8055 to each department.

Dept.	Productive Hours	Percentage	Distribution
1	900	9.15	737.03
2	1058	10.76	866.72
3	678	6.89	554.99
4	247	2.51	202.18
5	2345	23.84	1920.31
6	1213	12.33	993.18
7	2107	21.40	1723.77
8	735	7.47	601.71
9	341	3.47	279.51
10	213	2.17	174.79

- (a) Find total hours. (b) Find reciprocal. (c) Find percentages. (d) Distribute \$8055.

## ADDITION EXERCISES

## "Cross" Method

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
127.99	46.15	2.03	211.61	947.84	72.84	7.45	5.76	92.66	256.44
49.70	184.36	106.81	107.98	15.48	620.12	873.24	24.22	1.19	19.50
21.73	57.66	863.12	67.95	9.67	4.18	152.79	56.44	51.50	50.46
36.50	62.40	20.12	3.96	76.59	90.36	85.68	1.96	24.18	4.36
27.60	45.47	63.97	202.56	23.25	493.21	23.84	143.08	374.25	47.82
49.99	221.07	58.16	85.49	871.99	60.58	5.65	24.19	8.63	118.59
657.85	6.40	542.79	3.36	76.58	33.24	19.34	5.49	792.89	901.54
32.76	172.23	19.70	54.36	19.59	23.18	481.85	665.48	26.58	63.78
3.11	9.47	25.24	38.59	3.36	592.17	55.81	32.78	681.51	98.72
16.34	68.14	117.59	344.52	87.59	2.29	1.40	10.23	57.41	.45
182.77	958.23	35.62	196.49	116.59	30.83	693.19	26.58	6.07	10.79
30.68	2.98	226.59	50.89	225.74	27.84	49.02	108.59	85.37	50.44
8.26	28.57	19.67	573.29	67.11	116.49	17.26	42.33	183.43	78.11
213.70	74.68	443.57	11.57	57.60	227.50	80.36	6.48	18.13	324.13
<u>1.98</u>	<u>112.02</u>	<u>79.80</u>	<u>19.55</u>	<u>745.10</u>	<u>47.83</u>	<u>2.03</u>	<u>13.78</u>	<u>535.16</u>	<u>81.38</u>

## MANUFACTURING PROBLEMS

## Distribution of Expense

The general factory expense is often distributed to the different departments on a basis of fixed percentages based on past experience.

Example: Dept. No. 1 is charged 5.28% of  
the total expense of \$7450.00.

$$.0528 \times \$7450 = \$393.36, \text{ Dept. No. 1's share of expense}$$

1. Distribute \$7,450.00 to the following departments.

Dept.	%
1	5.28
2	37.02
3	8.16
4	1.95
5	2.65
6	2.17
7	9.00
8	1.54
9	1.64
10	2.68
11	4.68
12	.51
13	.30
14	1.26
15	.91
16	3.64
17	.08
18	16.53

100.00

2. Distribute \$5,045.00 to the following departments.

Dept.	%
1	2.14
2	4.07
3	7.54
4	3.27
5	2.75
6	10.42
7	5.16
8	6.33
9	11.45
10	2.92
11	4.88
12	3.09
13	5.16
14	3.48
15	2.75
16	9.40
17	10.00
18	5.19

100.00

## MANUFACTURING PROBLEMS

### Comparison of Statistical Figures

The comparison of statistical figures on a percentage basis gives the modern business executive an easy way of analyzing business conditions. These comparisons are often presented in the form of graphs or pictures which set forth the facts in a striking manner. This lesson will deal with an analysis on a percentage basis.

- The operating expense in a certain business for the year just ending is as follows. Find the per cent that each expense is of the total operating expense and then compare these figures with the year before.

	Last Year		This Year	
Buying Expense	\$ 4235.00	289 %	\$ 4468.00	%
Selling Expense	21367.00	562	20505.00	
Office Expense	5390.00	502	3368.00	
Publicity Expense	3176.00	936	2240.00	
Renting Expense	4332.00		4331.00	
Total Expense	\$38500.00	100.00	\$34912.00	100.00

How much is saved on the total operating expense? What is the percentage of saving? Find the actual percentage of saving on the selling expense, office expense and publicity expense over last year. What per cent did the buying expense increase?

- J. W. Crawford of the Acme Manufacturing Company has asked you to prepare some facts on the cost of manufacturing on a certain job. Find the total cost and the percentage each item is to the total.

Dept. No. 9	Cost	% of Cost
<b>Productive</b>		
Milling	\$137.40	
Buffing	14.60	
Grinding	3.92	
Assembling	235.26	
Woodwork	83.42	
<b>Non-Productive</b>		
Supervision	124.30	
General	72.75	
<b>Material</b>		
Bronze Cstgs.	21.88	
Gray 1 Cstgs.	1246.30	
Steel Plate	67.58	
Babbit Metal	18.20	
Oak	272.35	
Pine	80.40	
Hardware	34.64	
Total Cost		100.00

### ADDITION EXERCISES

Add by lines and by columns:

1.	275.46	197.22	794.23	196.57	279.45	532.19	_____
2.	20.17	75.46	-27.59	.31	75.17	27.59	_____
3.	197.68	885.47	118.50	4.37	445.62	243.14	_____
4.	324.33	554.36	5.46	885.47	879.80	65.48	_____
5.	8.67	18.70	553.26	30.92	30.75	175.68	_____
6.	775.01	224.36	49.78	665.49	6.57	302.87	_____
7.	23.21	337.68	337.69	244.33	557.68	65.48	_____
8.	116.45	43.67	229.80	17.58	118.61	884.38	_____
9.	96.57	996.25	15.46	558.79	32.45	29.80	_____
10.	<u>226.57</u>	<u>54.37</u>	<u>38.87</u>	<u>24.22</u>	<u>677.52</u>	<u>755.45</u>	_____

### MANUFACTURING PROBLEMS

#### Selling the Article

In figuring the selling price of a manufactured article, all of the selling expenses such as salesmen's commissions or salaries, traveling expenses, salesroom rent, advertising and any other expenses incurred must be considered and an allowance made. This allowance is usually determined by the per cent which the selling expense bears to the total sales.

The amount of sales for a certain period was \$12,000 and the selling expenses \$1680.00. What per cent is the selling expense of the total sales?

$$\$1680 \div \$12,000 = 14\%$$

Thus in determining the selling price, 14% must be added for selling expense.

Find what per cent the selling expense is of the total sales. Disregard the cents.

	Sales	Expenses
Store No. 11	\$ 50,000.00	\$10,000.00
“ “ 12	75,000.00	25,000.00
“ “ 13	125,000.00	12,500.00
“ “ 14	400,000.00	48,000.00
“ “ 15	450,000.00	67,500.00
“ “ 16	225,000.00	18,000.00
“ “ 17	250,000.00	40,000.00
“ “ 18	300,000.00	54,000.00
“ “ 19	345,000.00	75,900.00
“ “ 20	620,000.00	77,500.00
“ “ 21	3,454.00	777.15
“ “ 22	4,532.00	838.42
“ “ 23	69,756.00	10,114.62
“ “ 24	78,656.00	9,832.00
“ “ 25	78,944.00	9,078.56

### ADDITION EXERCISES

#### "Cross" Method

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
167.85	243.25	178.69	889.70	165.46	443.21	174.39	238.00	186.57	330.98
75.68	88.79	884.35	60.98	75.48	10.61	87.69	61.47	25.44	25.45
885.46	224.35	21.24	24.35	303.98	331.24	36.59	198.70	6.47	786.59
22.53	19.78	17.60	175.69	15.47	16.57	303.98	30.76	854.36	24.35
17.68	225.48	10.89	35.44	288.79	885.46	16.57	886.79	30.97	19.51
2.25	32.44	298.70	19.78	37.68	31.34	886.57	224.35	775.46	885.46
655.48	118.11	17.68	664.37	117.51	164.58	227.59	18.60	18.50	20.45
19.78	980.78	554.36	27.69	38.79	998.70	56.67	21.45	278.69	17.58
443.26	32.44	774.38	2.98	775.47	21.35	74.36	664.35	19.56	9.56
<u>27.68</u>	<u>7.68</u>	<u>19.80</u>	<u>331.45</u>	<u>10.98</u>	<u>17.58</u>	<u>553.48</u>	<u>18.69</u>	<u>226.57</u>	<u>333.21</u>

### MANUFACTURING PROBLEMS

#### Selling the Article

The net profit which the manufacturer desires to make must be considered in addition to the allowance for selling expense. Therefore, if a manufacturer desires to make a profit of 15% on an article, the selling price must be an amount large enough to yield this per cent after the factory cost and the selling expenses are deducted.

The best and most modern method of figuring the profit or loss on an article is to consider the selling price, not the cost, as a basis.

**Example:** The factory cost of an article is \$77.70, the selling expense is estimated as 15% of the selling price, and a net profit of 15% of the selling price is desired.

$$100\%, \text{ the selling price} = \$77.70 + 15\% + 15\%$$

$$\$77.70 = 100\% - (15\% + 15\%) = 70\%$$

$$\$77.70 \div .70 = \$111.00, \text{ the selling price}$$

Find the selling price of the following:

	Factory Cost of an Article		Selling Expenses		Desired Net Profit
11.	\$ 88.75		14%		15%
12.	81.25		25%		10%
13.	155.75		15%		15%
14.	26.25		15%		10%
15.	311.25		13%		12%
16.	121.50		12½%		12½%
17.	116.25		10%		15%
18.	245.00		20%		10%
19.	386.75		14%		16%
20.	218.75		15%		15%

21. The factory cost of an automobile is \$1575; the selling expense was figured at 12%, and a net profit of 16% desired. What must the dealer pay for the automobile?

22. The cost of manufacturing an article is \$56.76. The dealer wants to charge 16% for overhead, 5% for selling expenses, and desires to make a profit of 35%. What is the selling price?

**PROGRESS TEST NUMBER SIX**

**Test 6A—Addition “Cross” Method—(Time 5 Min.)**

1.	2.	3.	4.	5.	6.
\$534.69	\$204.36	\$530.00	\$583.69	\$100.59	\$903.12
22.80	31.54	29.89	75.29	78.63	72.10
155.63	22.63	711.64	83.61	22.96	164.32
9.81	562.81	3.10	100.00	563.81	15.92
2.04	32.64	.98	.87	.90	200.10
39.61	10.00	29.63	5.93	71.73	.96
554.32	773.56	552.81	222.69	59.69	555.83
11.89	39.60	.64	11.55	303.15	406.71
200.63	21.31	11.82	393.59	29.83	11.83
<u>80.04</u>	<u>111.10</u>	<u>12.63</u>	<u>16.96</u>	<u>5.61</u>	<u>17.56</u>

**Test 6B—Reciprocals—(Time 8 Min.)**

Find the reciprocals for each of the following numbers. Carry answers to 7 actual figures but show only six.

1. 44	5. 112	9. 144	13. 664
2. 86	6. 325	10. 56	14. 5280
3. 75	7. 224	11. 60	15. 36
4. 32	8. 365	12. 1728	16. 444

**Test 6C—Division—Reciprocal Method—(Time 15 Min.)**

- (a) Total amount
- (b) Find the reciprocal and prove (multiply amount by reciprocal)
- (c) Establish permanent point and multiply each amount by the reciprocal
- (d) Total percentages to 100%

<p>1. <i>250419</i></p> <p>\$55.00 9.88 26.45 302.00 6.00</p> <hr/> <p><i>137.7</i> <i>102.47</i> <i>0662</i> <i>7562</i> <i>10</i></p> <p>399.33</p> <hr/> <p>100%</p>	<p>2.</p> <p>374 hr. 298 hr. 632 hr. 78 hr. 105 hr.</p> <hr/> <p>100%</p>	<p>3.</p> <p>\$ 44.68 7.23 55.64 2.22 78.00</p> <hr/> <p>100%</p>
<p>4.</p> <p>\$ 73.00 569.00 228.00 59.00 163.00 78.00</p> <hr/> <p>100%</p>	<p>5.</p> <p>1666 sq. ft. 540 sq. ft. 2342 sq. ft. 1480 sq. ft. 1222 sq. ft. 892 sq. ft.</p> <hr/> <p>100%</p>	<p>6.</p> <p>288 hr. 304 hr. 96 hr. 322 hr. 75 hr. 367 hr.</p> <hr/> <p>100%</p>

GOALS	TEST 6 A	TEST 6 B	TEST 6 C
Excellent	5 problems correct	15 problems correct	5 problems correct
Normal	4 problems correct	13 problems correct	4 problems correct
Fair	3 problems correct	12 problems correct	3 problems correct

## “SPLIT” DIVISION

### Easy Method for Dividing by Splitting Large Divisor

When the divisor is too large to hold easily, it may be split and the first four figures used as a trial divisor, thus obtaining three answer figures at a time.

**Example:**  $4387.92 \div 342.368 = 12.8163803$

Place dividend in left of machine and set decimal pointer to agree with point in dividend. The three whole numbers in divisor places the dividend decimal between the four and three; this is the number seven pointer.

#### To Divide

Hold the first four figures of the divisor, 3423, on the small figures (not less 1), and divide until the first three quotient figures, 128, are obtained.

Remove right hand from figures, 23, and in the same columns pick up the remaining unused figures of the divisor, 68 (less 1). The left hand keeps its position and remains inactive.

- (a) Depress 68 (represented by 67) once to agree with first quotient figure.
- (b) Move to right and depress twice to agree with second quotient figure.
- (c) Move to right and depress eight times to agree with third quotient figure.

Resume position marked by left hand and continue the division holding 3423. Continue dividing running entirely off the keyboard.

It is not necessary to multiply the next three figures of quotient as these numbers would not effect a six-place answer.

**NOTE:** If the remainder during the multiplication increases to larger than the divisor, depress the complete divisor once more.

### PROBLEMS FOR PRACTICE

- |   |                               |
|---|-------------------------------|
| 1. $98758.13 \div 782.376 = 126.228456$ | 6. $6336.36 \div 3366.35 =$   |
| 2. $56821.09 \div 234.521 = 242.285601$ | 7. $85654.34 \div 324.450 =$  |
| 3. $231867.43 \div 875.665 = 264.79002$ | 8. $184997.29 \div 12.3243 =$ |
| 4. $5483.24 \div 548.687 = 9.993383$    | 9. $17620.37 \div 78.6674 =$  |
| 5. $79832.14 \div 3232.14 = 24.6994401$ | 10. $1265.42 \div 5676.48 =$  |

## ADDITION EXERCISES

## "Cross" Method

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
24.80	.24	24.25	18.29	19.60	92.14	15.72	28.50	46.57	76.65
7.90	8.43	19.20	16.66	44.38	65.74	45.61	16.50	1.13	43.22
.23	11.29	11.06	32.21	.16	33.08	33.98	9.81	98.99	9.23
81.16	29.73	2.00	2.23	2.97	25.12	1.28	35.46	.33	18.70
33.34	75.46	68.03	.75	50.06	.77	.45	64.57	15.68	65.50
19.45	60.15	61.11	10.32	81.11	9.29	3.33	25.77	54.82	4.38
1.62	8.75	93.22	57.16	37.24	10.86	98.60	.22	37.69	86.59
68.94	33.33	48.77	24.19	2.31	41.33	4.20	19.94	23.22	.37
24.12	96.07	.23	97.17	70.79	94.75	16.79	2.38	.78	16.67
18.29	44.63	1.14	24.16	21.83	26.67	57.75	.65	45.78	1.95
55.60	45.19	36.58	68.77	81.93	87.69	48.72	24.18	33.22	67.74
31.16	68.79	19.50	11.81	6.78	9.23	15.78	72.50	16.49	23.26
6.29	4.35	6.50	70.82	45.58	73.29	.63	6.49	6.49	4.72
22.25	68.63	18.75	4.62	35.46	52.63	16.82	75.49	98.63	72.54
<u>1.85</u>	<u>4.46</u>	<u>92.40</u>	<u>14.67</u>	<u>4.48</u>	<u>71.11</u>	<u>16.49</u>	<u>5.38</u>	<u>16.72</u>	<u>38.94</u>

## "SPLIT" DIVISION

Divide the following, dropping off of keyboard:

- |                        |                         |
|------------------------|-------------------------|
| 11. 5320.17 ÷ 341.268  | 21. 789231.08 ÷ 1922.83 |
| 12. 98765.34 ÷ 354.275 | 22. 8342.65 ÷ 1.27847   |
| 13. 9493.52 ÷ 3245.68  | 23. 35421.04 ÷ 860.124  |
| 14. 9754.25 ÷ 34.4274  | 24. 10732.76 ÷ 13.8923  |
| 15. 3127.97 ÷ 1220.04  | 25. 57652.38 ÷ 896.511  |
| 16. 78234.78 ÷ 3212.13 | 26. 8965.48 ÷ 324.435   |
| 17. 7655.24 ÷ 25.6847  | 27. 86598.67 ÷ 237.853  |
| 18. 51493.93 ÷ 666.879 | 28. 38421.98 ÷ 127.685  |
| 19. 76575.38 ÷ 214.424 | 29. 61405.89 ÷ 345.387  |
| 20. 8823.56 ÷ 23.8640  | 30. 59838.46 ÷ 29.5543  |

**NOTE:** Split division is rarely used in actual business practice because sufficiently accurate answers can be obtained in the ordinary division method. However, for the case where an unusual number of decimal places are required, this method is advised.

## ADDITION EXERCISES

### Controlled-Key Review

Find the totals of the following; then re-add making the intentional partial key-strokes and correct.

A.	B.	C.	D.
2 9 6 1 <sup>3</sup>	6 5 4 1 <sup>4</sup> 9	1 5 3 <sup>4</sup> 9 0	7 <sup>3</sup> 5 1 1
7 1 9 5	-3 0 1 <sup>3</sup> 6 0	5 1 6	9 1 8 6 <sup>5</sup>
48 3 2 6 1	7 8 4 2	37 6 3 2 8	3 9 6
3 1 <sup>5</sup> 7 8	6 1 <sup>4</sup> 9 3 7	48 3 8 1 8	2 2 7 5 3
7 1 0	8 3 2 1 4	4 1 <sup>3</sup> 9 2	1 0 4 3 <sup>4</sup> 8
7 <sup>4</sup> 5 5 2 9	1 0 0 <sup>5</sup> 8	2 2 9 3 1	6 5 9 3
4 <sup>4</sup> 3 1 8	6 2 6 <sup>3</sup>	6 <sup>5</sup> 9 3	7 3 9 3 0
5 <sup>4</sup> 9 4 2	5 1 9 5	4 1 8 4 8	8 1 <sup>3</sup> 6 8
1 7 <sup>3</sup> 7 3	2 2 3 2 1	3 7 4 <sup>5</sup> 9	3 4 2 2 2
<u>1 0 9 6</u>	<u>7 <sup>3</sup> 9 3 0</u>	<u>7 5 9 3</u>	<u>4 <sup>4</sup>9 4 1 4</u>

Add by lines and by columns:

1.	3470.35	8870.91	5223.83	1224.76	4450.90	1861.50	4901.06	2727.11	<u>27739.42</u>
2.	146.53	790.30	3245.20	3245.20	3280.97	536.78	6641.06	303.16	<u>17798.20</u>
3.	2980.04	9070.25	650.05	946.50	475.10	5680.19	100.97	6644.87	<u>25313.98</u>
4.	344.15	123.45	8975.26	3126.40	66.98	651.25	2498.70	3096.59	<u>18888.29</u>
5.	75.40	3265.16	731.47	475.10	1085.48	86.75	774.15	288.16	<u>6781.67</u>
6.	9112.60	99.10	123.50	66.53	4221.14	9958.11	3721.23	1869.02	<u>29171.23</u>
7.	326.50	326.10	9870.34	2986.50	593.15	447.96	8804.28	5563.29	<u>28918.12</u>
8.	97.50	3443.12	335.54	367.05	2726.24	2267.59	562.26	447.13	<u>10246.43</u>
9.	4476.34	34.21	526.25	5656.56	95.95	367.59	1191.05	7796.59	<u>20144.54</u>
10.	6591.17	196.75	1182.85	3281.18	761.66	8853.29	508.70	6061.71	<u>27437.31</u>
11.	1481.93	760.26	740.76	4926.54	485.73	1664.38	8811.78	190.76	<u>19062.14</u>
12.	758.19	4891.54	5476.11	784.37	8891.07	390.26	2864.27	4867.02	<u>28923.53</u>
13.	8831.28	165.95	309.65	7742.38	557.11	995.12	301.86	775.46	<u>19678.81</u>
14.	202.17	7743.29	7541.86	884.11	6891.45	6641.28	6853.29	8853.29	<u>45610.74</u>
15.	<u>5578.95</u>	<u>3047.69</u>	<u>265.14</u>	<u>8851.29</u>	<u>9085.47</u>	<u>285.15</u>	<u>2751.54</u>	<u>151.90</u>	<u>30017.13</u>

*49473.10*    *42126.08*    *43197.81*    *44524.47*    *119*    *43668.40*    *11687.20*    *51216.20*    *49636.06*    *36234.13*

## ADDITION EXERCISES

## "Cross" Method

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
13.45	85.66	85.40	15.15	15.20	8.23	57.82	16.72	24.52	24.00
9.87	1.44	17.58	3.22	3.37	19.57	37.19	2.24	1.17	1.42
24.22	29.89	5.57	75.47	18.50	47.28	2.26	10.11	98.70	19.50
87.77	3.36	.98	89.50	27.82	4.48	18.50	2.24	2.32	8.17
.66	16.58	23.22	4.36	4.45	23.19	24.00	.19	36.72	86.59
2.24	36.55	32.43	33.55	32.49	97.55	3.36	98.70	75.69	6.47
18.60	8.68	9.01	23.49	42.67	.35	42.58	.26	3.26	35.44
46.55	51.34	42.55	.37	5.27	32.56	6.90	53.47	47.82	76.55
5.47	.28	16.57	42.67	98.70	56.75	83.67	27.69	64.59	68.92
.37	3.33	71.68	53.68	3.37	84.38	10.19	36.72	3.37	.31
37.68	85.67	4.47	3.38	65.77	.14	.24	4.46	53.28	3.35
47.26	4.56	.37	.85	3.38	66.48	3.31	.18	9.21	48.67
3.38	19.78	53.90	.13	17.50	80.67	16.72	64.39	75.60	52.67
54.38	47.22	21.16	68.92	2.26	1.17	74.59	79.82	3.31	7.82
<u>76.11</u>	<u>6.72</u>	<u>2.27</u>	<u>80.11</u>	<u>86.58</u>	<u>38.50</u>	<u>89.00</u>	<u>5.62</u>	<u>17.59</u>	<u>14.28</u>

## BUYING AND SELLING MERCHANDISE

## Gross and Dozens

When goods are purchased by the gross or dozen and sold by the piece, the unit cost is the cost of each piece. This information is valuable in determining the selling price which will include the invoice cost, transportation charges, operating expenses and desired profit.

Find the cost of 1 article at \$76.00 a dozen.

Hold .0833, the reciprocal of 12, over the permanent decimal point and multiply by the price. Answer \$6.33 cost per article.

Find the unit cost of the following:

11. \$ 99.30 per doz.	21. \$ 78.40 per doz.	31. \$643.22 per doz.
12. 59.50 per doz.	22. 96.34 per doz.	32. 89.64 per doz.
13. 8.33 per doz.	23. 293.29 per doz.	33. 75.80 per doz.
14. 7.64 per doz.	24. 646.32 per doz.	34. 9.32 per doz.
15. 22.58 per doz.	25. 596.81 per doz.	35. 7.59 per doz.
16. 134.29 per doz.	26. 93.26 per doz.	36. 8.63 per doz.
17. 7.77 per doz.	27. 59.80 per doz.	37. 29.81 per doz.
18. 86.94 per doz.	28. 12.12 per doz.	38. 58.64 per doz.
19. 29.83 per doz.	29. 16.50 per doz.	39. 32.20 per doz.
20. 164.69 per doz.	30. 18.23 per doz.	40. 59.90 per doz.

The unit cost in the following is the cost per dozen.

41. \$64.24 per gross	46. \$ 56.12 per gross	51. \$11.12 per gross
42. 31.10 per gross	47. 93.84 per gross	52. 59.64 per gross
43. 8.59 per gross	48. 124.69 per gross	53. 73.82 per gross
44. 7.26 per gross	49. 130.10 per gross	54. 59.10 per gross
45. 3.40 per gross	50. 156.40 per gross	55. 81.40 per gross

## ADDITION EXERCISES

### "Cross" Method

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
436.75	233.30	936.59	643.13	741.18	16.50	37.68	755.45	241.22	54.19
77.55	51.20	19.20	224.43	56.75	242.33	221.22	64.78	38.90	337.89
33.75	983.35	64.40	85.31	48.95	81.70	18.59	112.00	75.40	64.30
116.59	65.70	251.18	9.84	38.33	37.59	391.00	28.50	86.00	19.40
89.57	115.50	367.82	34.34	900.64	2.27	841.38	4.46	147.88	37.98
36.59	39.67	45.72	90.64	14.37	552.82	3.38	37.76	37.50	4.47
7.68	1.05	557.68	114.37	37.56	18.50	19.50	42.58	38.50	26.50
566.20	80.15	16.82	7.56	5.53	42.54	756.81	669.02	.28	87.49
9.28	43.35	24.99	55.53	47.82	337.50	116.58	51.41	64.15	2.53
1.14	766.67	471.21	47.82	52.36	74.50	11.82	.16	477.02	4.48
870.37	24.53	14.65	552.36	648.90	62.25	38.50	2.24	71.04	890.11
3.76	175.67	2.25	749.90	3.75	185.60	.84	74.30	15.30	11.78
30.75	38.11	26.72	3.85	16.40	42.91	684.36	985.66	3.28	28.75
115.41	11.95	65.25	16.47	20.92	37.79	113.40	838.00	63.25	227.19
<u>27.76</u>	<u>742.25</u>	<u>9.74</u>	<u>28.92</u>	<u>311.19</u>	<u>558.92</u>	<u>850.83</u>	<u>13.39</u>	<u>2.26</u>	<u>6.50</u>

## BUYING AND SELLING MERCHANDISE

### Gross and Dozens

When articles are priced by the dozen, or gross, and the quantity given as gross, dozen and units, reduce to articles and multiply by the price. If priced by the dozen, divide by 12; if by gross, 144.

8 dozen and 5 articles at \$3.45 a dozen = \$29.03.

Add 5 in units' column; hold 12 and multiply by 8. Result 101. Multiply this amount by 345 using the three-factor multiplication method, then divide by 12 or multiply by the reciprocal of 12 (.0833). Prove by changing to decimal equivalent and multiplying;  $8.4167 \times \$3.45 = \$29.03$ .

11. 12 doz. 1 article @ \$ 6.45 doz.	26. 15 gross 8 doz. 1 article @ \$14.40 gross.
12. 8 doz. 3 article @ 3.23 doz.	27. 3 gross 5 doz. 3 article @ 5.25 gross.
13. 7 doz. 7 article @ 12.10 doz.	28. 7 gross 3 doz. 2 article @ 8.90 gross.
14. 11 doz. 6 article @ 4.23 doz.	29. 11 gross 4 doz. 5 article @ 11.20 gross.
15. 3 doz. 3 article @ 1.25 doz.	30. 5 gross 5 doz. article @ 6.60 gross.
16. 15 doz. 11 article @ 14.50 doz.	31. 6 gross doz. 11 article @ 11.00 gross.
17. 14 doz. 2 article @ 8.23 doz.	32. 10 gross 10 doz. 10 article @ 5.60 gross.
18. 6 doz. 9 article @ 4.90 doz.	33. 1 gross 5 doz. 4 article @ 11.00 gross.
19. 9 doz. 10 article @ 55.40 doz.	34. 12 gross 11 doz. 2 article @ 44.50 gross.
20. 18 doz. 9 article @ 45.10 doz.	35. 8 gross 10 doz. 1 article @ 54.45 gross.
21. 22 doz. 5 article @ 14.50 doz.	36. 11 gross 8 doz. 3 article @ 21.24 gross.
22. 11 doz. 3 article @ 16.70 doz.	37. 2 gross 6 doz. 5 article @ 32.25 gross.
23. 19 doz. 1 article @ 7.26 doz.	38. 4 gross 3 doz. 6 article @ 6.70 gross.
24. 15 doz. 2 article @ 1.23 doz.	39. 5 gross 1 doz. 7 article @ 5.46 gross.
25. 9 doz. 9 article @ 2.40 doz.	40. 1 gross 1 doz. 8 article @ 4.45 gross.

**NOTE:** The decimal equivalent table for Dozens and Gross may be used in this lesson.

## ADDITION EXERCISES

## "Cross" Method

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
24.19	83.00	82.90	3.77	23.91	18.59	6.77	38.45	31.09	86.50
6.57	56.57	17.58	6.10	3.77	3.26	8.86	17.11	87.60	3.25
.24	8.25	4.36	27.98	2.73	17.50	23.13	10.48	8.66	19.67
18.70	.31	.56	42.07	16.72	84.56	52.09	5.87	17.67	24.35
24.36	57.66	1.13	17.11	17.11	5.47	4.29	.33	29.81	3.36
98.79	9.40	87.69	4.36	40.24	24.27	3.57	7.37	1.09	98.70
76.67	2.24	4.35	5.68	50.97	18.50	17.68	52.09	5.77	.13
4.46	19.67	.17	.27	7.81	35.47	87.32	4.29	3.68	75.00
.81	3.35	3.39	38.45	81.66	42.87	2.85	3.25	20.00	32.44
53.44	68.93	24.33	21.10	19.47	8.70	41.14	85.14	6.51	4.35
35.44	3.37	76.59	10.63	13.11	.24	5.49	2.74	10.11	54.36
18.50	23.24	54.80	40.25	8.40	3.36	18.99	71.60	4.37	48.90
85.67	4.45	1.14	9.26	23.91	53.68	47.28	20.84	25.70	79.00
.23	38.92	.89	11.44	16.78	67.29	5.77	13.11	97.50	.63
1.51	17.68	16.49	7.40	7.40	72.45	19.82	64.04	4.37	.31
46.58	87.69	46.57	10.15	68.24	1.15	20.96	7.67	.15	2.77
17.68	15.67	4.45	4.65	3.25	38.90	53.45	.33	29.81	64.78

## BUYING AND SELLING MERCHANDISE

## Dozens

Decimal equivalents of twelfths.

$1/12 = .0833$

$4/12 = .3333$

$7/12 = .5833$

$10/12 = .8333$

$2/12 = .1667$

$5/12 = .4167$

$8/12 = .6667$

$11/12 = .9167$

$3/12 = .25$

$6/12 = .5$

$9/12 = .75$

Accumulate the following over the permanent decimal.

- |  |   |
|--|---|
| <p>11. 5 articles at \$3.45 per doz.<br/>7 articles at 1.25 per doz.<br/>4 articles at 1.44 per doz.<br/>9 articles at 2.75 per doz.<br/>11 articles at 5.55 per doz.</p> <p>13. 6 dozen 1 articles @ \$ 4.56 doz.<br/>11 dozen 3 articles @ 11.50 doz.<br/>7 dozen 5 articles @ 22.40 doz.<br/>9 dozen 4 articles @ 1.80 doz.<br/>12 dozen 2 articles @ 13.50 doz.</p> <p>15. 1 article @ \$11.50 doz.<br/>7 dozen @ 12.00 doz.<br/>5 dozen 5 articles @ 7.75 doz.<br/>11 dozen 11 articles @ 6.30 doz.<br/>2 dozen 2 articles @ 1.45 doz.</p> <p>17. 64 dozen 3 articles @ \$ .62½ doz.<br/>76 dozen 1 articles @ 8.75 doz.<br/>58 dozen 2 articles @ .75 doz.<br/>125 dozen 5 articles @ 1.25 doz.<br/>14 dozen 2 articles @ .98 doz.</p> | <p>12. 1 article at \$ 9.98 per dozen<br/>3 articles at 4.32 per dozen<br/>5 articles at 11.40 per dozen<br/>7 articles at 13.50 per dozen<br/>8 articles at 11.25 per dozen</p> <p>14. 24 dozen 5 articles @ \$ 7.40 doz.<br/>13 dozen 1 articles @ 6.60 doz.<br/>15 dozen 7 articles @ 15.42 doz.<br/>33 dozen 5 articles @ 15.00 doz.<br/>17 dozen 1 articles @ 6.45 doz.</p> <p>16. 1 dozen 1 articles @ \$ 4.12 doz.<br/>6 dozen 5 articles @ 6.34 doz.<br/>9 dozen 1 articles @ 3.95 doz.<br/>11 dozen 11 articles @ 18.50 doz.<br/>17 dozen 1 articles @ 33.50 doz.</p> <p>18. 72 dozen 1 articles @ \$ .84 dozen<br/>52 dozen 7 articles @ .37½ dozen<br/>44 dozen 3 articles @ .44 dozen<br/>15 dozen 5 articles @ .96 dozen<br/>17 dozen 2 articles @ .77 dozen</p> |
|--|---|

## MERCHANT PROBLEMS

### Sales Slips and Sales Audit

Whenever an article is sold to a customer, a sales slip or sales ticket is made out. These sales slips are generally in the form of a pad and several duplicates are made by means of carbon paper. One copy is given to the customer, and the original together with other copies, is kept by the store. The information obtained from these slips is used in compiling statistics. They are sorted and compared for totals in cash sales, charge accounts, C.O.D.'s, and "returns" for the total net sales.

The adding of these sales slips requires practice in turning. Place a bundle of slips at the left of the Comptometer. The third and fourth fingers of the left hand turn under to hold the checks in position. The thumb reaches to the corner of the check and pushes it up; the first finger straightens, catches the check and pushes it to the palm of the hand. After a number of these checks are added, they are placed in a separate pile face down with the sub-total written on the back. The right hand adds the amount in the Comptometer as the slips are being "thumbed."

**To the Teacher:** Actual sales checks may be secured for this training.

In the following, cross-add the cash, charge and C.O.D. sales and deduct the "returns." Then find the total sales for each department and the grand total.

	Cl. No.	Cash Sales	Charge Sales	C.O.D.	Less Returns	Net Sales
Dept. A	1	\$22.45	\$72.80	\$ 9.80	\$25.40	
	2	14.85	90.64			
	3	46.50	5.55	26.84		
	4	17.35	64.50			
	5	76.82	12.25	55.45		
	6	8.19	72.00		17.25	
	7	70.35	9.80	17.80		
	8	19.80	39.40		2.25	
	9	29.82	9.60			
	10	35.45	18.85	4.85	12.00	
TOTALS						
Dept. B	11	225.25	34.50	55.00		
	12	183.45	78.15		9.85	
	13	79.64	115.45	10.50		
	14	50.25	202.50		25.95	
	15	111.50	95.45			
	16	88.25	111.50	25.25		
	17	76.45	92.30		13.00	
	18	155.00	55.25	1.45		
	19	92.50	100.25		12.50	
	20	65.40	88.75	2.25		
TOTALS						
Dept. C	21	4.55	10.80	50.45		
	22	112.75	78.50			
	23	9.85	101.25	5.15		
	24	72.84	38.60		15.00	
	25	69.75		25.45		
	26	7.70	21.92		1.25	
	27	150.10		8.40		
	28	8.90	70.05	5.25		
	29	45.50				
	30	16.75	50.65		12.40	
TOTALS						

### ADDITION EXERCISES

#### "Cross" Method

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
769.86	431.18	742.67	901.94	52.88	20.89	1.44	801.19	95.17	198.65
1.68	56.72	73.82	68.29	153.67	126.57	818.31	64.59	15.92	43.58
46.27	14.69	53.29	37.73	24.20	53.44	1.16	335.65	564.52	15.37
93.26	90.57	524.82	11.38	90.72	5.11	18.99	36.59	4.92	5.29
57.60	115.48	27.33	2.81	41.73	126.52	279.61	1.16	357.79	75.60
876.90	4.48	4.11	28.30	5.61	35.73	13.52	75.69	53.70	25.26
45.21	38.60	626.81	381.90	351.33	96.57	30.79	83.29	379.12	1.14
16.50	95.47	10.71	13.27	13.52	11.49	471.25	3.38	231.81	85.47
31.75	3.37	224.25	175.10	67.37	553.78	73.06	52.14	14.38	447.82
<u>117.79</u>	<u>336.72</u>	<u>1.19</u>	<u>34.35</u>	<u>353.11</u>	<u>17.59</u>	<u>23.76</u>	<u>147.89</u>	<u>.33</u>	<u>67.59</u>

### MERCHANT PROBLEMS

#### Mark-up

The merchant determines his selling price in the same way as the manufacturer. When goods are received, a record is made showing the cost and the selling price. The selling price is figured according to a predetermined mark-up which covers the cost of the goods, the overhead, and the net profit. The cost is always expressed in dollars and cents but the selling expense and net profit are generally expressed as per cents of the selling price. In other words, the selling price is regarded as 100%.

This method of figuring the per cent of profit and loss on the selling price has come into general use in recent years to such an extent that the cost price method is rapidly becoming obsolete. There are several advantages to this selling price method.

**Example:** An article which cost \$5.60 is marked \$8.00.

Find the mark-up and the per cent of mark-up on the selling price.

$$\text{\$8.00} - \text{\$5.60} = \text{\$2.40 mark-up.}$$

$$\text{\$2.40} \div \text{8.00} = 30\% \text{ mark-up.}$$

In the following find the per cent of mark-up on the retail selling price. Carry to 3 decimal places.

	Cost	Retail Selling Price	Amount of Mark-up	Per Cent of Mark-up
11.	\$ 5.75	\$ 8.84		
12.	48.50	66.50		
13.	4.20	6.25		
14.	120.50	160.00		
15.	52.50	75.50		
16.	22.40	35.50		
17.	76.50	84.50		
18.	175.00	225.00		
19.	84.25	110.25		
20.	76.10	92.50		
21.	96.60	135.50		
22.	75.00	125.00		
23.	9.85	14.25		
24.	24.60	30.40		
25.	.78	.92		

## ADDITION EXERCISES

## "Cross" Method

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
342.25	257.22	35.40	167.42	192.18	1.98	108.93	248.96	620.13	225.95
19.65	47.32	817.23	35.74	36.55	105.64	1.42	60.64	14.38	36.57
78.83	43.67	267.80	67.66	5.11	755.90	248.37	1.13	71.58	194.31
.63	14.35	10.56	346.71	167.42	600.90	4.10	98.85	98.39	3.75
60.71	51.56	26.79	4.27	13.53	60.58	628.96	23.70	4.80	60.72
30.68	5.61	419.86	29.84	60.71	1.11	197.58	9.01	731.16	19.50
15.39	37.55	30.47	53.88	15.30	93.56	2.87	141.45	14.37	420.30
570.57	267.85	71.07	195.25	52.88	58.45	83.54	62.82	111.84	16.48
8.00	126.52	37.87	17.58	603.19	.75	171.48	39.11	38.81	131.56
12.97	42.64	79.11	47.59	2.02	60.23	47.16	58.75	77.23	7.11
134.50	64.59	178.92	35.22	106.71	9.77	3.97	447.37	385.96	43.67
52.64	35.54	1.41	761.96	92.54	2.85	66.75	9.82	74.36	19.75
411.37	3.05	38.50	111.48	65.13	129.96	479.23	33.61	19.44	4.50
85.67	720.98	132.55	33.71	76.28	132.01	.54	11.38	64.75	63.79
<u>4.72</u>	<u>22.52</u>	<u>25.94</u>	<u>279.78</u>	<u>573.56</u>	<u>3.36</u>	<u>64.73</u>	<u>887.05</u>	<u>447.81</u>	<u>3.38</u>

## MERCHANT PROBLEMS

## Mark Down

When goods are marked and put in stock sometimes both the cost and selling prices are shown either in code or in actual figures on the sales tag. This is an advantage in taking inventory or in "marking down" goods that do not sell.

**Example:** An article marked \$12.50 is marked down to \$9.00. What is the per cent of mark down?

$$\$9.00 \div \$12.50 = 72\%$$

$$100\% - 72\% = 28 \text{ Per cent of mark down.}$$

To eliminate the subtraction, mentally subtract each percentage figure in the dials from 9 except the last which is subtracted from 10. Answer, 28%.

Carry the following percentages 4 decimal places but show only 3 in the answer, as 14.6%.

	Original Selling Price	Actual Selling Price		Original Selling Price	Actual Selling Price
11.	\$ 9.60	\$ 8.20	21.	\$345.00	\$225.00
12.	7.50	6.25	22.	93.10	79.90
13.	75.50	62.75	23.	25.00	14.40
14.	9.64	8.24	24.	222.20	188.00
15.	87.50	77.50	25.	.12	.08
16.	9.46	3.50	26.	59.50	45.00
17.	.85	.75	27.	7.75	7.25
18.	125.00	112.00	28.	1.49	1.29
19.	79.85	45.50	29.	2.25	1.75
20.	15.00	11.50	30.	49.50	35.00

## ADDITION EXERCISES

### "Cross" Method

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
324.36	65.89	116.39	12.97	47.89	124.20	137.25	45.75	1.16	26.57
17.59	185.90	74.75	178.75	87.60	90.65	64.50	78.92	584.39	337.50
118.39	56.29	25.58	131.15	121.46	42.65	841.72	115.30	42.14	51.45
36.86	6.48	7.12	261.68	37.80	7.12	60.71	3.36	67.30	19.67
45.63	17.48	841.72	54.63	25.24	126.52	34.85	720.46	61.40	3.35
18.92	3.36	18.96	25.94	8.92	41.45	15.30	13.48	15.30	225.49
3.37	87.60	6.78	8.76	575.69	132.55	1.41	1.70	818.31	17.49
.74	20.24	13.52	13.12	53.47	98.67	359.78	52.13	5.47	9.87
765.89	64.59	52.88	57.92	3.37	42.32	11.14	371.09	74.50	226.87
<u>17.68</u>	<u>1.15</u>	<u>37.69</u>	<u>625.96</u>	<u>337.69</u>	<u>690.87</u>	<u>17.96</u>	<u>17.98</u>	<u>36.50</u>	<u>6.91</u>

## MERCHANT PROBLEMS

### Extending the Cost and Retail Prices on Invoices

An invoice may be sent with the merchandise or by mail. When the purchaser receives the invoice, he checks to see that the merchandise agrees with the items listed on the invoice. As each item is compared, it is checked for proper charges and errors in extensions.

Frequently the retail selling prices are listed on the invoice and then the cost and selling price extended at one time.

Extend each of the following items and then total for the cost and retail value of each bill:

		Cost	Retail			Cost	Retail
11.	3 articles at	\$ .24	\$ .36	16.	18 items at	\$ .08	\$ .15
	15 articles at	1.20	1.40		9 items at	.12	.20
	7 articles at	.78	1.10		56 items at	.01½	.05
	2 articles at	1.00	1.50		2 items at	15.00	18.00
12.	15 items at	\$ .11	\$ .20	17.	27 items at	\$ .11	\$ .18
	24 items at	.55	.75		15 items at	.09	.15
	78 items at	.03½	.05		33 items at	.22	.33
	26 items at	.45	.55		6 items at	1.25	1.65
13.	33 articles at	\$ .13	\$ .18	18.	8 articles at	\$ .13	\$ .21
	4 articles at	1.25	1.35		14 articles at	.12½	.20
	9 articles at	2.12	2.50		77 articles at	.15	.22½
	75 articles at	.17	.22		15 articles at	.22	.32
14.	18 items at	\$ .42	\$ .55	19.	3 articles at	\$3.00	\$4.25
	29 items at	.04	.10		1 article at	5.25	7.00
	64 items at	.03½	.08½		28 articles at	1.20	1.35
	32 items at	1.10	1.35		11 articles at	1.10	1.25
15.	15 articles at	\$ .15	\$ .22	20.	6 articles at	\$4.25	\$7.50
	76 articles at	.11½	.20		11 articles at	6.02	7.75
	37 articles at	.19	.24		69 articles at	13.45	19.00
	23 articles at	.13¼	.19		74 articles at	3.82	6.17

### SALES ANALYSIS FIGURES

J. A. Williams and T. L. Jones of the Butke Wholesale sold the following lists of merchandise on May 12th. The selling price, department, and profit is shown for each item of sale.

Salesman .....				
Sales		Dept.	Profit	
		1		
		2		

Rule 2 "strips" similar to form at left showing 8 departments and then—

- (a) Total by salesman the amount of sales for each department and enter upon strip.
- (b) Total by salesman the profits for each department and enter upon strip.
- (c) Find the total sales and totals profits for each salesman.

J. A. Williams

SALES	DEPT.	PROFIT
\$ 34 80	1	\$ 12 20
9 34	5	75
16 62	7	1 85
74 80	3	16 80
139 64	8	34 75
10 10	2	92
7 90	4	58
38 62	6	10 12
7 00	7	1 10
100 50	1	42 50
19 98	4	3 85
25 45	6	4 40
72 50	1	18 85
129 60	2	40 40
3 45	3	25
11 84	7	1 62
16 92	3	3 84
156 14	4	50 55
88 00	2	22 20
4 45	1	85
25 25	8	5 05
202 80	5	101 10
64 60	3	8 80
73 16	7	25 90
8 88	1	4 00
68 49	8	22 00
3 82	5	25
70 70	6	15 90
9 90	4	1 10
55 25	8	10 20

T. L. Jones

SALES	DEPT.	PROFIT
\$111 10	4	\$ 68 00
72 64	2	12 85
9 62	8	1 00
55 50	3	13 40
64 64	1	8 36
125 30	2	33 16
2 10	6	12
96 64	1	50 50
7 77	6	1 14
55 54	5	10 10
222 90	8	96 90
12 36	2	2 02
69 64	3	9 80
9 83	7	1 01
304 16	1	72 00
7 83	5	15
5 05	6	75
16 16	3	4 00
24 83	8	5 05
112 16	1	68 20
59 80	5	5 04
32 40	7	5 16
9 63	3	2 00
11 84	1	1 58
2 20	1	80
77 10	4	25 00
8 96	7	1 10
29 20	5	4 40
45 50	8	9 95
9 98	4	1 25

## SALES ANALYSIS FIGURES

The unit or "strip" method of compiling sales analysis figures is a modern and simple procedure. Instead of posting detail figures to a work sheet, all essential information is posted to strips and from these, every sort of statistical information is easily obtained. These strips may be arranged on a peg board in the form of a balance sheet and then footed and cross-footed for totals.

Find the total sales for each department and for each man.

Dept.	Salesman Dean		Salesman Bolger		Salesman Thomas		Salesman Austin		Salesman Ward	
1	\$ 74	90	\$ 15	93	\$ 112	40			\$ 9	64
2	138	64	9	84			\$ 303	14		
3	7	60	112	54	303	12	114	20	100	12
4	220	00			9	98			414	64
5	12	50	38	42	92	44	8	93	55	40
6	56	44	75	64	59	83	66	72	111	75
7			222	14			93	82	55	90
8	111	55	18	18			72	85		
9	68	42	55	62	110	84	9	90		
10	5	50			15	15			75	63
11	205	93			73	84	122	14		
12			300	45	112	19	86	10		
13	64	15	16	75	6	42	8	85		
14	95	00	35	19	99	25	29	93	17	64
15	16	16	89	90			7	70		
16	7	77	115	32			100	10		
17			96	10	16	64			93	80
18	101	10	41	12	38	85	2	16		
19	5	16			220	40	28	45		
20	39	40	7	93	73	86				
21	155	21	18	96	4	92			156	14
22	18	93	5	14			45	64	29	83
23	75	76	121	00					256	25
24	200	10			92	10	101	25		
25			18	25			25	64	101	14

## SELLING MERCHANDISE

### Weekly Sales Summary by Departments

The management of any business must be in absolute control at all times. He must know what goods are selling, what clerks are producing, what departments are weak, what prices fluctuate, whether or not certain articles should be pushed, etc.

All of this information which may be obtained from an analysis of sales may be studied more closely when compiled in summary form. These summaries may be made on a daily, weekly, monthly, or yearly basis. In this way the business is studied with little or no effort.

Complete the following weekly sales summary and using the reciprocal method, find the per cent each day's sales are of the total sales. Then find the % each department's sales are of the total.

#### WEEK ENDING JUNE 6th—

Date	Dry Goods	Clothing	Groceries	Notions	Daily Totals	Per Cent of Weekly Sales
June 1	\$468.00	\$240.00	\$125.00	\$98.00		
2	302.00	150.00	202.00	75.00		
3	395.00	293.00	195.00	68.00		
4	806.00	402.00	322.00	99.00		
5	434.00	125.00	101.00	73.00		
6	724.00	364.00	240.00	50.00		
Weekly Totals						
Per Cent						

#### WEEK ENDING JUNE 13th—

June 8	\$240.75	\$120.34	\$ 75.25	\$50.00		
9	400.00	180.69	220.00	88.25		
10	300.50	275.00	188.10	70.10		
11	620.00	388.25	312.55	98.50		
12	480.06	312.00	304.04	75.10		
13	726.90	403.10	222.00	66.75		
Weekly Totals						
Per Cent						

### ADDITION EXERCISES "Cross" Method

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
127.99	46.15	2.03	211.61	947.84	72.84	7.45	5.76	92.66	256.44
49.70	184.36	106.81	107.98	15.48	620.12	873.24	24.22	1.19	19.50
21.73	57.66	863.12	67.95	9.67	4.18	152.79	56.44	51.50	50.46
36.50	62.40	20.12	3.96	76.59	90.36	85.68	1.96	24.18	4.36
27.60	45.47	63.97	202.56	23.25	493.21	23.84	143.08	374.25	47.82
49.99	221.07	58.16	85.49	871.99	60.58	5.65	24.19	8.63	118.59
657.85	6.40	542.79	3.36	76.58	33.24	19.34	5.49	792.89	901.54
32.76	172.23	19.70	54.36	19.59	23.18	481.85	665.48	26.58	63.78
3.11	9.47	25.24	38.59	3.36	592.17	55.81	32.78	686.51	98.72
16.34	68.14	117.59	344.52	87.59	2.29	1.40	10.23	57.41	.45
182.77	958.23	35.62	196.49	116.59	30.83	693.19	26.58	6.07	10.79
30.68	2.98	226.59	50.89	225.74	27.84	49.02	108.59	85.37	50.44
8.26	28.57	19.67	573.29	67.11	116.49	17.26	42.33	183.43	78.11
213.70	74.68	443.57	11.57	57.60	227.50	80.36	6.48	18.13	324.13
<u>1.98</u>	<u>112.02</u>	<u>79.80</u>	<u>19.55</u>	<u>745.10</u>	<u>47.83</u>	<u>2.03</u>	<u>13.78</u>	<u>535.16</u>	<u>81.38</u>

### SELLING MERCHANDISE Yearly Departmental Sales Summary

The following tabulation is a summary of the yearly sales by departments.

Compute the total sales for each month and the total year's sales for all departments. Then find the per cent each month's sales are of the year's sales and the per cent made by each department.

	Dept. 30	Dept. 31	Dept. 32	Dept. 33	Total Sales	Per Cent of Yearly Sales
Jan.	\$4364.00	\$864.00	\$693.00	\$125.00	\$6046.00	10.50
Feb.	3540.00	732.00	504.00	200.00		
Mar.	2868.00	680.00	728.00	90.00		
Apr.	2000.00	688.00	846.00	222.00		
May	2424.00	682.00	500.00	104.00		
June	2886.00	784.00	324.00	124.00		
July	3340.00	886.00	308.00	300.00		
Aug.	3340.00	890.00	424.00	290.00		
Sept.	3968.00	424.00	484.00	180.00		
Oct.	2246.00	800.00	593.00	125.00		
Nov.	3212.00	878.00	786.00	221.00		
Dec.	4864.00	964.00	880.00	222.00		
<b>Totals</b>						
<b>Per Cents</b>						

## ADDITION EXERCISES

### "Cross" Method

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
98.70	554.38	348.08	470.95	775.48	449.80	415.36	478.90	769.01	226.58
337.69	119.02	20.98	95.46	47.68	30.29	48.00	24.33	17.49	13.27
154.37	60.58	17.59	225.48	18.50	164.18	16.58	60.59	443.29	981.19
16.58	94.37	774.38	16.58	931.65	40.93	3.27	533.12	64.36	48.90
876.90	338.77	53.28	41.38	446.57	3.27	989.72	98.70	32.24	17.67
47.68	16.57	442.35	534.78	65.47	885.49	25.43	155.41	118.69	551.16
36.57	59.77	98.79	68.59	97.60	15.38	115.34	231.54	60.94	35.42
557.60	555.38	231.62	25.48	198.00	98.70	98.70	42.36	79.82	11.32
19.65	117.59	111.58	774.37	36.57	553.24	266.42	86.59	6.48	165.48
30.92	73.29	9.08	63.48	226.59	118.70	43.68	614.39	895.40	20.96
886.57	885.47	437.69	118.70	164.35	65.46	45.44	21.43	24.36	15.48
75.46	10.98	68.57	74.39	23.41	30.85	884.39	352.18	664.39	318.79
227.59	42.35	87.69	37.69	743.20	995.46	68.91	74.39	63.79	42.78
47.69	773.28	185.46	664.38	17.48	332.23	335.90	11.23	92.22	116.52
4.37	19.70	38.60	961.85	975.49	16.57	21.32	197.60	57.68	70.32
117.69	115.26	42.23	24.33	33.25	447.59	48.90	17.56	222.17	686.72
448.79	76.58	339.60	35.58	25.46	217.69	668.93	894.39	42.32	27.43
24.35	559.80	84.39	559.80	336.57	52.23	21.58	6.43	3.27	9.75
<u>331.28</u>	<u>98.70</u>	<u>886.57</u>	<u>18.70</u>	<u>11.67</u>	<u>616.91</u>	<u>331.28</u>	<u>33.21</u>	<u>514.37</u>	<u>775.46</u>

## SELLING MERCHANDISE

### Expenses

The merchant and the manufacturer have the same problem in that both must watch carefully at all times to be in control of their selling expense. This selling expense may include such items as salesmen's salaries and commissions, traveling expenses, rental of salesrooms, advertising costs, and several other items depending upon the nature of the business.

The selling expense ratio is found by dividing the total selling expense for a given period by the total amount of sales for that period. Carry results to hundredths of a per cent as 84.11%.

Selling Expense	Amount of Sales	Per Cent	Selling Expense	Amount of Sales	Per Cent
11. \$ 3264.00	\$ 12996.00		21. \$ 78.00	\$ 326.00	
12. 785.00	6645.00		22. 25.00	110.00	
13. 92.00	764.00		23. 8864.00	16880.00	
14. 8473.00	45800.00		24. 1235.00	5646.00	
15. 120.00	888.00		25. 16888.00	40800.00	
16. 8888.00	23988.00		26. 110555.00	292464.00	
17. 455.00	1225.00		27. 333.00	1200.00	
18. 1250.00	3580.00		28. 1964.00	8864.00	
19. 34440.00	193320.00		29. 125.00	775.00	
20. 9575.00	18880.00		30. 222324.00	480000.00	

## INVENTORY SHEET

An inventory is an itemized statement of the quantity and value of the stock or merchandise on hand. Inventories are usually taken at regular intervals, or at any time when it is necessary to determine the condition of a business.

The inventory contains a list of the merchandise and the price at which it is invoiced. The use of proper forms similar to the following and the observance of simple precautions in taking an inventory is a decided aid to an operator.

Note perforated strip on right of form headed "Proof Extension." Original extensions are set down in this column and strip is detached; second figuring results are set down in column headed "Extension." Comparison of total of each column proves accuracy—if two totals do not agree, compare each extension to find error.

QUANTITY	DESCRIPTION	PRICE	UNIT	EXTENSION	PROOF EXTENSION	✓
49	Beans (A & D)	11	1/2			
84	Peas #2 "	09	Can			
78	Peaches "	13	1/2 "			
35	Pears "	18	"			
17	Asparagus "	20	"			
57	Pineapple "	22	1/2 "			
63	Apricots "	15	"			
116	Coffee A & P	43	1/2 lb.			
72	Apples (Dried)	08	1/4 "			
18	Apricots "	08	1/2 "			
70-1/2	Mixed Candy	24	"			
58	Oranges	32	1/2 "			
32	Grapes (White)	12	1/2 "			
38	Fresh Eggs	31	doz.			
52	Gold Medal Flour	1 31	sack			
101	Strawberry Jam	29	jar			
32	Gelatine	09	1/2 pkg.			
202	Corn Meal	02	lb.			
79	Chocolate	14	pkg.			
48	Java Coffee	41	1/2 lb.			
29	Sugar (100 lb.)	6 25	sack			
78	Rice	07	lb.			
32	Cheese	28	1/2 lb.			
59	Crackers	17	box			
28	Butter	42	lb.			
33	Oat meal	27	1/2 sack			
50	Vinegar	13	qt.			
3	Grapefruit	1 15	doz.			
7	Dates	30	box			
4	Figs	32	box			
70	Salt	10	bag			
29	Powdered Sugar	29	box			

## GROCERY INVENTORY

Audit the extensions and the addition of the following inventory. Correct the errors in the extensions and find the correct value of merchandise on hand. Check by accumulation.

### INVENTORY SHEET

audit

DATE December 31

CALLED BY J R DEPARTMENT Grocery SHEET NO. 11 SHEET NO. 211  
 ENTERED BY E. S. W. PRICED BY D R CALCULATED BY E. J. W. DEPARTMENT Grocery

QUANTITY	DESCRIPTION	PRICE	UNIT	EXTENSION	PROOF EXTENSION	
4215 <sup>±</sup>	Granulated Sugar	57 <sup>1</sup> / <sub>2</sub>	cwt		215.81	✓
56 <sup>1</sup> / <sub>2</sub>	Ivory Soap	46	doz		26.99	✓
72 <sup>1</sup> / <sub>2</sub>	Arm Family Soap	31 <sup>1</sup> / <sub>2</sub>	..		22.93	✓
22	Ortiz Crackers	07 <sup>1</sup> / <sub>2</sub>	lb		1.65	✓
29 <sup>1</sup> / <sub>2</sub>	Ham smoked	30	..		8.85	✓
38	Sliced Bacon	36 <sup>1</sup> / <sub>2</sub>	..		13.87	✓
44 <sup>1</sup> / <sub>2</sub>	Smoked Boneless Butts	34	..		15.13	✓
35 <sup>1</sup> / <sub>2</sub>	Country Sausage	26 <sup>1</sup> / <sub>2</sub>	..		9.41	✓
40	Chicken (whole can)	1.59	can		63.60	✓
17	Spiced Ham	42 <sup>1</sup> / <sub>2</sub>	lb		7.27	✓
9 <sup>1</sup> / <sub>2</sub>	Sausage	48 <sup>1</sup> / <sub>2</sub>	..		4.80	
36	Raspberry Jam	1.96	doz		70.56	
32	Strawberry Jam	1.84	..		58.88	
18	Potatoes (Michigan)	1.72	bag		30.96	
35	Potatoes (Sweet)	13 <sup>1</sup> / <sub>2</sub>	lb		4.73	
22	New Orleans Melance	67 <sup>1</sup> / <sub>2</sub>	gal		14.85	
12	Eggs	42 <sup>1</sup> / <sub>2</sub>	doz		5.04	
4 <sup>1</sup> / <sub>2</sub>	Lemons	35 <sup>1</sup> / <sub>2</sub>	..		1.60	
8 <sup>1</sup> / <sub>2</sub>	Oranges	41 <sup>1</sup> / <sub>2</sub>	..		3.63	
15	Flour	32.5	lb		48.75	
29	Butter	42 <sup>1</sup> / <sub>2</sub>	lb		12.33	
70	American Cheese	31	..		23.01	
15	Swiss Cheese	39	..		5.85	
39	Kraft Sandwich Spread	19 <sup>1</sup> / <sub>2</sub>	jar		7.61	
40	Kraft Cereals	22	..		8.8	
15	Jello	09 <sup>1</sup> / <sub>2</sub>	box		1.43	
18 <sup>1</sup> / <sub>2</sub>	Star Prunes	11	lb		2.01	
25 <sup>1</sup> / <sub>2</sub>	Raisins (Seedless)	18 <sup>1</sup> / <sub>2</sub>	..		4.63	
400 <sup>±</sup>	Domino Sugar	6.25	cwt		25.00	
42	Table Milk	1.14	doz		47.88	
19	Baking Powder	18	can		3.42	
Value of Merchandise on hand					748.59	

### ADDITION EXERCISES

#### "Cross" Method

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
650.90	650.56	27.10	106.71	182.71	2.19	21.06	311.95	25.88	25.82
42.56	42.22	498.71	60.75	72.85	924.53	47.68	3.97	9.68	9.70
195.67	186.59	67.39	100.28	98.56	501.04	545.89	92.54	117.89	47.69
62.30	13.26	4.35	13.82	16.59	2.02	51.35	10.17	.23	443.77
19.56	544.92	9.81	40.79	180.94	3.52	240.21	60.57	3.75	96.58
30.46	67.58	81.76	58.17	20.46	75.86	79.37	6.27	60.59	11.37
3.33	18.50	29.60	211.34	63.92	23.83	75.38	553.78	98.70	137.82
74.38	3.36	432.02	321.54	158.92	58.91	185.11	19.57	37.11	75.19
876.50	28.57	2.98	911.19	16.49	5.43	27.86	24.33	645.78	64.59
35.62	90.58	196.46	.23	36.72	795.34	3.19	9.57	35.36	3.37
10.98	33.35	90.63	3.87	11.13	73.23	30.78	116.49	7.56	336.72
459.37	378.98	57.48	87.50	573.11	223.23	113.28	3.37	12.24	75.49
76.58	115.38	23.94	43.50	54.68	73.25	47.36	71.19	32.66	6.48
3.27	30.86	87.56	60.48	223.24	19.86	524.92	224.85	433.19	226.85
<u>18.50</u>	<u>1.19</u>	<u>157.17</u>	<u>118.50</u>	<u>69.00</u>	<u>102.66</u>	<u>11.85</u>	<u>13.67</u>	<u>27.50</u>	<u>45.45</u>

### PERIODIC INVENTORIES

A merchant or dealer must know at all times the value of the stock on hand. Sometimes the inventory shows the cost of the goods as well as the selling price and in this case the cost and selling prices are extended.

Audit the following inventory and foot for totals.

Article	Quantity	Unit	Cost	Extension	Selling Price	Extension
Button Dies	59	ea.	\$ .40		\$ .59	
Alundum Wheels	5	ea.	1.24		1.45	
1 $\frac{3}{4}$ " Standard Steel	12	lb.	.16		.25	
7 $\frac{7}{8}$ " Standard Steel	26	lb.	.16		.25	
Misc. Bronze	81	lb.	.55		.60	
Hexagon Head Screws	163	C	9.30		11.50	
Hexagon Head Screws	172	C	13.45		15.00	
Hexagon Head Screws	123	C	16.70		22.80	
Cotter Pins	10	doz. M	.47		.59	
Cotter Pins	34	doz. M	.99		1.24	
Thumb Screws	25	doz. M	1.30		1.50	
Thumb Screws	18	doz. C	1.30		1.65	
Thumb Screws	11	doz. C	1.60		1.95	
Thumb Screws	19 $\frac{1}{2}$	doz. C	1.45		1.90	
Washers	5 $\frac{3}{4}$	lb.	.074		.12	
Washers	4 $\frac{1}{2}$	lb.	.075		.13	
Washers	10 $\frac{1}{2}$	lb.	.08		.14	
Belting (Leather)	460	ft.	.30		.45	
Belting (Leather)	665	ft.	.132		.20	
Belting (Raw Hide)	92	ft.	.27		.38	
Castor Oil (Red Seal)	1 $\frac{1}{2}$	gal.	1.65		2.00	
Turpentine	5 $\frac{1}{2}$	gal.	.70		1.10	
Sheet Rubber Packing	1 $\frac{1}{4}$	yd.	1.25		1.65	
Canvas for Steam Tables	3	yd.	1.13		1.62	
Hydrated Lime (100# to bag)	450	bag	.40		.65	

**BALANCE SHEET**

Add the columns down by the split method. Add horizontally without splitting.

1.	756.10	175.60	960.57	133.25	545.25	990.15	<u>3560.92</u>
2.	448.79	60.11	1.14	775.60	503.28	15.80	<u>1804.72</u>
3.	15.49	855.46	408.97	53.11	40.98	855.46	<u>2229.47</u>
4.	801.84	15.48	53.48	967.82	966.57	301.45	<u>3106.64</u>
5.	40.73	436.57	388.79	54.19	43.25	19.80	<u>983.33</u>
6.	533.21	15.48	16.57	204.35	607.85	204.33	<u>1581.79</u>
7.	67.58	855.47	389.70	15.46	37.89	37.68	<u>1403.78</u>
8.	304.25	25.46	20.97	389.70	117.59	404.67	<u>1262.64</u>
9.	165.47	186.57	775.68	606.78	38.67	202.67	<u>1975.84</u>
10.	75.68	20.68	53.48	30.28	757.44	153.49	<u>1091.05</u>
11.	202.98	866.57	375.68	854.38	30.97	67.58	<u>2398.14</u>
12.	15.46	39.78	63.48	75.68	49.80	74.36	<u>318.56</u>
13.	987.98	176.58	448.79	967.68	338.79	884.31	<u>3804.13</u>
14.	224.33	2.21	774.36	227.68	164.58	134.11	<u>1527.27</u>
15.	54.18	443.56	500.00	75.46	85.44	20.36	<u>1179.00</u>
16.	<u>866.57</u>	<u>15.48</u>	<u>27.68</u>	<u>185.67</u>	<u>390.18</u>	<u>956.78</u>	<u>2442.36</u>
Totals	<u>5560.64</u>	<u>4191.06</u>	<u>5259.34</u>	<u>5617.09</u>	<u>4718.53</u>	<u>5373.00</u>	<u>30669.66</u>

PROGRESS TEST NUMBER SEVEN

Test 7A—Addition—(Time 5 Min.)

1.	2.	3.	4.	5.	6.
\$464.25	\$646.20	\$382.45	\$168.10	\$700.10	\$569.83
83.20	1.69	22.41	31.55	83.49	72.68
1.64	20.95	.98	.34	105.55	383.16
222.95	563.81	500.73	222.56	38.93	9.99
.98	5.96	8.32	39.60	111.29	884.63
38.73	56.93	88.75	73.86	.93	.59
56.54	700.59	.80	.93	.81	500.69
.70	89.34	159.93	593.29	200.00	1.54
550.10	434.29	.76	86.59	.73	73.81
77.77	.70	12.49	.93	.86	3.82
.59	.93	339.64	.10	59.64	4.96
55.40	11.54	15.59	11.25	73.81	29.83
69.63	2.98	83.86	666.73	100.59	100.71
.21	300.59	550.49	2.96	263.72	93.84
<u>1.56</u>	<u>15.69</u>	<u>15.60</u>	<u>15.15</u>	<u>9.84</u>	<u>6.96</u>

Test 7B—Dozens—(Time 3 Min.)

Use decimal equivalents for each fractional part of a dozen.

- |                                     |                                      |
|-------------------------------------|--------------------------------------|
| 1. 8 doz. 1 article at \$ 3.12 doz. | 7. 15 doz. 1 article at \$14.50 doz. |
| 2. 4 doz. 6 articles at .88 doz.    | 8. 24 doz. 3 articles at 16.00 doz.  |
| 3. 9 doz. 7 articles at 14.00 doz.  | 9. 16 doz. 1 article at 7.00 doz.    |
| 4. 5 doz. 3 articles at .98 doz.    | 10. 5 doz. 5 articles at 8.30 doz.   |
| 5. 4 doz. 6 articles at 5.56 doz.   | 11. 4 doz. 7 articles at 2.54 doz.   |
| 6. 24 doz. 9 articles at 23.40 doz. | 12. 3 doz. 8 articles at 1.16 doz.   |

Test 7C—Invoices—(Time 10 Min.)

Extend the following and then total the cost and retail value of each bill.

<b>Invoice No. 1</b>	<b>Cost</b>	<b>Retail</b>	<b>Invoice No. 4</b>	<b>Cost</b>	<b>Retail</b>
4 articles at \$ .18	<u>.72</u>	\$ .32	5 articles at \$ 7.00	_____	\$15.00
15 articles at 1.40	<u>21.00</u>	2.35	4 articles at 5.50	_____	12.00
2 articles at .75	_____	1.25	3 articles at 14.50	_____	25.00
5 articles at .88½	_____	1.35	1 article at 9.30	_____	20.00
<b>Invoice No. 2</b>	<b>Cost</b>	<b>Retail</b>	<b>Invoice No. 5</b>	<b>Cost</b>	<b>Retail</b>
12 articles at \$ .03	_____	\$ .05	9 articles at \$ .04¼	_____	\$ .10
18 articles at .05½	_____	.12	15 articles at .16½	_____	.25
12 articles at .07½	_____	.15	24 articles at .23½	_____	.50
24 articles at .15	_____	.25	12 articles at .10	_____	.15
<b>Invoice No. 3</b>	<b>Cost</b>	<b>Retail</b>	<b>Invoice No. 6</b>	<b>Cost</b>	<b>Retail</b>
112 articles at \$1.11	_____	\$2.25	3 articles at \$12.00	_____	\$20.00
78 articles at .56½	_____	1.10	1 article at 15.00	_____	22.50
56 articles at .73	_____	1.00	15 articles at 12.50	_____	18.50
7 articles at 2.40	_____	3.50	24 articles at 14.50	_____	21.50

GOALS	TEST 7A	TEST 7B	TEST 7C
Excellent	5 problems correct	10 problems correct	5 problems correct
Normal	4 problems correct	8 problems correct	4 problems correct
Fair	3 problems correct	6 problems correct	3 problems correct

## ADDITION EXERCISES

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
645.29	186.59	344.19	955.12	114.37	856.27	911.26	342.85	225.49	302.56
14.37	30.27	14.37	164.35	75.46	94.35	26.57	38.79	64.57	96.57
435.26	776.58	775.48	20.98	3.27	164.58	539.80	153.48	663.28	339.80
85.49	1.99	53.47	743.56	889.70	531.11	15.48	59.46	27.59	188.69
3.24	25.43	443.25	50.37	64.57	12.34	64.57	84.26	5.46	95.46
116.57	775.48	112.23	223.25	335.24	226.45	185.67	252.45	186.50	287.61
286.70	227.68	265.11	421.35	276.89	524.37	265.47	447.69	386.57	551.32
37.68	505.98	94.35	65.47	455.19	39.78	37.68	75.48	42.39	487.69
598.70	36.58	674.27	327.68	62.25	47.18	486.29	527.69	447.69	17.59
<u>11.96</u>	<u>376.57</u>	<u>52.16</u>	<u>52.67</u>	<u>100.00</u>	<u>885.47</u>	<u>608.67</u>	<u>750.57</u>	<u>16.06</u>	<u>698.05</u>

## GRAIN FIGURING

Grain is usually shipped in sacks and priced per bushel, so in grain billing it is customary to show the quantity in pounds and the price per bushel. The weights per bushel of these commodities—wheat, rye, oats, corn, and barley, etc.—are fixed by law.

Wheat, beans, peas, clover, potatoes	60 lb. to bu.
Corn, rye, flax	56 lb. to bu.
Barley	48 lb. to bu.
Timothy	45 lb. to bu.
Oats	32 lb. to bu.

*apples 48*  
*malt 38*

$$64525 \text{ lb. beans at } \$3.15 \text{ per bu.} \\ 64525 \times 3.15 \div 60 \text{ (wgt. per bu.)} = \$3387.56$$

Multiply the number of pounds by the price per bushel from the right of the keyboard and then divide by the weight per bushel. Extend each item and then total the bill.

11. 64,325 lb. beans	at \$3.25	bu.	17. 6,425 lb. rye	at \$ .73	bu.
6,455 lb. Red K. beans	" 3.50	bu.	13,450 lb. corn	" .65	bu.
64,320 lb. corn	" .68½	bu.	6,430 lb. wheat	" .76¼	bu.
8,645 lb. clover	" 7.55	bu.	6,430 lb. oats	" .45	bu.
12. 4,590 lb. timothy	" 11.20	bu.	18. 98,645 lb. potatoes	" .74½	bu.
86,435 lb. rye	" .72½	bu.	8,634 lb. corn	" .64	bu.
98,640 lb. oats	" .49½	bu.	6,430 lb. clover	" 7.35	bu.
8,640 lb. flax	" 3.50	bu.	6,485 lb. oats	" .55¼	bu.
13. 5,430 lb. wheat	" .78½	bu.	19. 86,430 lb. rye	" .70	bu.
8,650 lb. apples	" .65	bu.	9,865 lb. barley	" .65	bu.
8,645 lb. clover	" 7.45	bu.	48,650 lb. flax	" 3.50	bu.
32,810 lb. oats	" .48½	bu.	6,430 lb. beans	" 3.19½	bu.
14. 8,640 lb. barley	" .78	bu.	20. 86,420 lb. Red K beans	" 3.50	bu.
6,540 lb. potatoes	" .78½	bu.	6,430 lb. malt	" .86½	bu.
86,435 lb. rye	" .75	bu.	8,640 lb. apples	" .85	bu.
6,420 lb. wheat	" .75	bu.	3,645 lb. rye	" .76½	bu.
15. 9,865 lb. flax	" 3.43	bu.	21. 8,640 lb. oats	" .56½	bu.
8,640 lb. corn	" .64½	bu.	6,540 lb. timothy	" 11.30	bu.
3,250 lb. beans	" 2.50½	bu.	4,305 lb. malt	" .87	bu.
86,430 lb. malt	" .85½	bu.	21,865 lb. beans	" 2.55	bu.
16. 86,425 lb. Red K. beans	" 3.48	bu.	22. 6,430 lb. flax	" 3.45	bu.
8,640 lb. clover	" 7.46	bu.	86,405 lb. beans	" 2.26	bu.
64,320 lb. peas	" 1.54½	bu.	35,460 lb. beans	" 3.18½	bu.
6,430 lb. barley	" .76½	bu.	8,640 lb. peas	" 1.55½	bu.

## ADDITION EXERCISES

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
448.79	154.37	885.49	443.27	990.56	665.47	775.68	773.26	822.18	403.11
75.11	85.46	34.25	19.78	54.36	308.79	165.17	25.46	38.67	898.87
186.79	885.46	117.25	885.47	289.79	246.00	15.46	118.79	221.29	38.79
533.26	36.57	35.46	44.27	35.46	30.98	302.89	79.80	331.56	771.12
889.70	225.46	779.80	7.58	115.47	117.56	156.47	664.57	967.13	63.48
42.22	71.14	225.46	227.50	35.26	8.67	53.44	30.28	29.80	176.58
225.34	387.69	64.57	997.60	378.69	996.57	997.68	208.79	118.79	387.61
376.58	552.48	387.69	531.11	87.68	261.13	302.56	11.54	779.80	18.66
15.48	15.47	978.60	75.46	11.57	48.70	78.89	375.68	225.46	667.14
558.90	448.79	13.26	16.58	486.57	555.38	224.33	36.57	28.79	447.68
90.78	775.68	86.57	115.24	552.37	16.57	448.79	448.79	662.22	58.70
6.50	19.51	302.25	89.70	16.59	79.80	52.56	52.22	64.35	558.70
775.46	623.24	886.57	387.69	604.36	663.25	116.74	589.70	331.20	165.45
606.57	991.80	48.79	511.79	865.77	46.55	30.98	16.57	886.57	85.11
<u>10.18</u>	<u>12.24</u>	<u>16.57</u>	<u>60.58</u>	<u>75.46</u>	<u>776.82</u>	<u>885.67</u>	<u>884.23</u>	<u>30.11</u>	<u>967.58</u>

## GRAIN FIGURING

Using the cipher method of division (Lesson 93) find the number of bushels and pounds in each of the following:

1. Wheat  
60 lb.  
36 bu. 45 lb.  
115 bu. 36 lb.  
92 bu. 22 lb.  
84 bu. 40 lb.  
15 bu. 30 lb.

344 53

2. Oats  
32 lb.  
112 bu. 30 lb.  
222 bu. 28 lb.  
134 bu. 14 lb.  
261 bu. 15 lb.  
111 bu. 13 lb.

3. Wheat  
60 lb.  
114 bu. 55 lb.  
78 bu. 35 lb.  
92 bu. 12 lb.  
26 bu. 45 lb.  
15 bu. 56 lb.

4. Corn  
56 lb.  
55 bu. 12 lb.  
46 bu. 50 lb.  
120 bu. 36 lb.  
92 bu. 20 lb.  
75 bu. 18 lb.

5. Barley  
48 lb.  
68 bu. 12 lb.  
74 bu. 40 lb.  
32 bu. 35 lb.  
96 bu. 20 lb.  
54 bu. 18 lb.

6. Oats  
32 lb.  
76 bu. 16 lb.  
34 bu. 30 lb.  
16 bu. 24 lb.  
115 bu. 20 lb.  
92 bu. 14 lb.

7. Rye  
56 lb.  
22 bu. 49 lb.  
64 bu. 21 lb.  
222 bu. 15 lb.  
45 bu. 24 lb.  
25 bu. 36 lb.

8. Timothy  
45 lb.  
404 bu. 40 lb.  
614 bu. 36 lb.  
722 bu. 24 lb.  
308 bu. 15 lb.  
466 bu. 12 lb.

9. Corn  
56 lb.  
312 bu. 16 lb.  
464 bu. 32 lb.  
118 bu. 40 lb.  
222 bu. 40 lb.  
563 bu. 12 lb.

### ADDITION EXERCISES

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
492.88	73.36	26.21	375.00	136.40	219.80	938.20	86.79	141.67	415.11
51.63	117.19	2.40	30.25	10.19	15.40	71.16	838.10	98.50	94.33
25.50	23.85	984.40	41.84	61.80	73.68	8.47	170.17	224.35	113.78
104.25	303.12	46.70	420.80	95.95	285.19	198.50	35.23	98.66	43.33
97.50	51.67	617.98	23.30	838.10	384.66	17.59	18.71	3.25	66.57
3.26	75.22	27.34	117.19	14.97	3.36	42.50	45.27	481.11	181.44
269.56	64.90	437.50	62.50	75.68	.98	998.11	380.04	83.22	75.66
82.81	1.13	16.40	78.63	49.80	685.82	26.49	72.15	57.66	36.55
412.25	937.60	29.80	231.30	878.18	11.19	57.66	63.92	11.19	664.55
<u>3.19</u>	<u>367.20</u>	<u>832.43</u>	<u>75.68</u>	<u>66.48</u>	<u>35.20</u>	<u>134.33</u>	<u>458.20</u>	<u>606.77</u>	<u>19.50</u>

### GRAIN FIGURING

Grain invoices show the total weight in pounds. These pounds are converted to bushels and pounds. The Grain Decimal Card shows the decimal equivalent for any number of pounds less than a bushel. Multiply from the left of the keyboard the price per bushel by the number of bushels, reading the decimal equivalent for pounds from the table.

**Example:** 156 bu. 18 lb. wheat at \$1.25 per bu.  
 $156.3 \times \$1.25 = \$195.38$

DECIMALS OF A BUSHEL									
WHEAT BEANS PEAS CLOVER POTATOES 40 LBS. TO BU.		CORN RYE FLAX 56 LBS. TO BU.		BARLEY 48 LBS. TO BU.		TIMOTHY 48 LBS. TO BU.		OATS 32 LBS. TO BU.	
LBS.	DEC. OF BU.	LBS.	DEC. OF BU.	LBS.	DEC. OF BU.	LBS.	DEC. OF BU.	LBS.	DEC. OF BU.
1	.017	1	.018	1	.021	1	.022	1	.031
2	.033	2	.036	2	.042	2	.044	2	.063
3	.050	3	.054	3	.063	3	.067	3	.094
4	.067	4	.071	4	.083	4	.089	4	.125
5	.083	5	.089	5	.104	5	.111	5	.156
6	.100	6	.107	6	.125	6	.133	6	.188
7	.117	7	.125	7	.146	7	.156	7	.219
8	.133	8	.143	8	.167	8	.178	8	.25
9	.150	9	.161	9	.188	9	.2	9	.281
10	.167	10	.179	10	.208	10	.222	10	.313
11	.183	11	.196	11	.229	11	.244	11	.344
12	.200	12	.214	12	.25	12	.267	12	.375
13	.217	13	.232	13	.271	13	.289	13	.406
14	.233	14	.25	14	.292	14	.311	14	.438
15	.25	15	.268	15	.313	15	.333	15	.469
16	.267	16	.286	16	.333	16	.356	16	.5
17	.283	17	.304	17	.354	17	.378	17	.531
18	.3	18	.321	18	.375	18	.4	18	.563
19	.317	19	.339	19	.396	19	.422	19	.594
20	.333	20	.357	20	.417	20	.444	20	.625
21	.350	21	.375	21	.438	21	.467	21	.656
22	.367	22	.393	22	.459	22	.489	22	.688
23	.383	23	.411	23	.479	23	.511	23	.719
24	.4	24	.429	24	.5	24	.533	24	.75
25	.417	25	.446	25	.521	25	.556	25	.781
26	.433	26	.464	26	.542	26	.578	26	.813
27	.45	27	.482	27	.563	27	.6	27	.844
28	.467	28	.5	28	.583	28	.622	28	.875
29	.483	29	.518	29	.604	29	.644	29	.906
30	.5	30	.536	30	.625	30	.667	30	.938
31	.517	31	.554	31	.646	31	.689	31	.969
32	.533	32	.571	32	.667	32	.711		
33	.550	33	.589	33	.688	33	.733		
34	.567	34	.607	34	.708	34	.756		
35	.583	35	.625	35	.729	35	.778		
36	.6	36	.643	36	.75	36	.8		
37	.617	37	.661	37	.771	37	.822		
38	.633	38	.679	38	.792	38	.844		
39	.65	39	.696	39	.813	39	.867		
40	.667	40	.714	40	.833	40	.889		
41	.683	41	.732	41	.854	41	.911		
42	.7	42	.75	42	.875	42	.933		
43	.717	43	.768	43	.896	43	.966		
44	.733	44	.786	44	.917	44	.978		
45	.75	45	.804	45	.938				
46	.767	46	.821	46	.958				
47	.783	47	.839	47	.979				
48	.8	48	.857						
49	.817	49	.875						
50	.833	50	.893						
51	.85	51	.911						
52	.867	52	.929						
53	.883	53	.946						
54	.9	54	.964						
55	.917	55	.982						
56	.933								
57	.95								
58	.967								
59	.983								

11. 1657 bu. 43 lb. Flax at \$3.45 per bu.
12. 1278 bu. 25 lb. Clover at 7.45 per bu.
13. 59 bu. Peas at 1.50 per bu.
14. 108 bu. 52 lb. Beans at 2.25 per bu.
15. 192 bu. 15 lb. Timothy at 9.50 per bu.
16. 160 bu. 45 lb. Wheat at .95 per bu.
17. 960 bu. 15 lb. Potatoes at .75 per bu.
18. 115 bu. 18 lb. Barley at .85 per bu.
19. 120 bu. 12 lb. Oats at .50<sup>1</sup>/<sub>2</sub> per bu.
20. 252 bu. 14 lb. Rye at .74 per bu.
21. 8 bu. 17 lb. Flax at 3.20 per bu.
22. 202 bu. 52 lb. Clover at 8.50 per bu.
23. 98 bu. 45 lb. Corn at .56<sup>1</sup>/<sub>2</sub> per bu.
24. 111 bu. 31 lb. Wheat at .84 per bu.
25. 16 bu. 16 lb. Oats at .61<sup>1</sup>/<sub>2</sub> per bu.
26. 144 bu. 10 lb. Corn at .65 per bu.
27. 176 bu. 9 lb. Wheat at 1.35 per bu.
28. 1147 bu. 18 lb. Oats at .49 per bu.
29. 82 bu. 22 lb. Barley at .82 per bu.
30. 12 bu. 24 lb. Clover at 8.25 per bu.

**ADDITION EXERCISES**

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
257.68	116.57	154.36	577.78	743.56	146.57	665.48	181.19	176.58	535.46
98.70	98.70	76.58	19.78	89.28	30.28	30.92	30.29	20.01	3.27
320.10	303.25	30.22	361.82	223.24	89.76	143.56	56.00	886.57	40.38
17.68	16.15	865.47	277.90	15.46	536.78	60.57	308.67	18.67	689.78
97.68	198.79	45.45	60.57	195.46	29.80	98.71	4.45	.41	46.57
303.14	30.26	355.46	19.67	65.48	81.57	23.21	186.79	751.21	37.89
13.25	644.57	811.10	3.36	19.82	557.61	554.36	26.67	152.38	689.71
554.36	18.69	25.49	885.46	303.28	388.79	60.57	19.67	32.71	96.71
19.68	646.57	65.46	329.80	67.82	10.92	211.96	505.78	303.26	116.57
<u>845.46</u>	<u>26.57</u>	<u>134.35</u>	<u>16.57</u>	<u>2.25</u>	<u>557.69</u>	<u>648.92</u>	<u>40.37</u>	<u>98.70</u>	<u>76.58</u>

**GRAIN FIGURING**  
Proving Purchase Invoices

In proving grain invoices, check the bushels, the extension, and the freight charges.

**Example:** 1 car wheat 74606 lb.  
1243 bu. 26 lb. at \$0.97 per bu. \$1206.13  
Freight, \$0.24½ per 100 lb. 182.78

**Prove the bushels:** Multiply the number of bushels by 60 (wgt. of 1 bu. wheat) and add 26 lb. Total, 74606 lb.

**Prove the extension:** Hold 97 at left of keyboard and multiply 1243 continuing toward the right by .433 (decimal for 26 lb.) Total, \$1206.13.

**Prove freight:** Hold \$0.245 at right of keyboard and multiply by 746.06 (cwt.) \$182.78, freight. Check the following for errors:

11.	1 car Corn	34040 lb.		18.	8655 lb. Timothy		
	607 bu. 48 lb. at \$0.65 per bu.	\$305.11			192 bu. 25 lb. at \$11.20 per bu.	\$2156.63	
	Freight, \$0.22 per cwt.	74.89			Freight, \$0.22 per 100 lb.	19.04	
12.	1 car Flax	98435 lb.		19.	9645 lb. Wheat		
	1757 bu. 43 lb. at \$3.45 per bu.	\$6064.30			160 bu. 45 lb. at \$1.10½ bu.	\$117.63	
	Freight, \$0.21½ per cwt.	221.48			Freight, \$0.23½ per 100 lb.	22.67	
13.	1 car Clover	64705 lb.		20.	98460 lb. Potatoes		
	1050 bu. 25 lb. at \$3.45 per bu.	\$7930.65			1643 bu. at \$0.75 per bu.	\$1230.75	
	Freight, \$0.20 per cwt.	129.41			Freight, \$0.15 per 100 lb.	157.54	
14.	3540 lb. Peas			21.	45450 lb. Rye		
	59 bu. at \$1.56 per bu.	\$91.45			811 bu. 34 lb. at \$0.75½ bu.	\$612.76	
	Freight, \$0.25 per cwt.	8.85			Freight \$0.18 per 100 lb.	81.81	
15.	6545 lb. Red K. Beans			22.	5425 lb. Clover		
	109 bu. 5 lb. at \$3.45 per bu.	\$376.34			85 bu. 25 lb. at \$7.50 per bu.	\$640.63	
	Freight, \$0.24½ per 100 lb.	16.04			Freight, \$0.25 per 100 lb.	135.63	
16.	2550 lb. Timothy			23.	1 car Oats	84480 lb.	
	56 bu. 30 lb. at \$11.25 per bu.	\$637.50			2640 bu. at \$0.48 per bu.	\$1240.80	
	Freight, \$0.20 per 100 lb.	5.36			Freight, \$0.22½ per cwt.	1900.80	
17.	8650 lb. Potatoes			24.	4550 lb. Barley		
	142 bu. 10 lb. at \$0.85½ bu.	\$123.26			94 bu. 38 lb. at \$0.75 per bu.	\$74.41	
	Freight, \$0.15 per 100 lb.	12.98			Freight, \$0.24 per cwt.	10.92	

## GRAIN MERCHANTS

## Invoices

Dockage shown in per cent represents the foreign material in the grain and must be accounted for in estimating the value of a shipment. This may be deducted from the gross pounds before the selling price is calculated or from the gross amount of the invoice. The freight at so much a hundredweight is then subtracted to find the net amount.

**Example:** 60,000 lb. Rye at \$ .50½ bu.  
Dockage 2%, Freight \$ .27 per cwt.

Dockage figured on gross amount of money.

60,000 lb. ÷ 56	= 1071 bu. 24 lb.
1071.429 x \$ .50½	= \$541.07
Less dockage 2%	= 10.82
	\$530.25
600.00 x \$ .27 (freight)	= 162.00
	\$368.25 Net Amount

Dockage figured on gross pounds.

Gross weight	60000 lb.
Dockage 2%	1200 lb.
	58800 lb. ÷ 56 = 1050 bu.
1050 bu. x \$ .50½	= \$530.25 Gross Amount
600.00 x \$ .27 (freight)	= 162.00
	\$368.25 Net Amount

Figure the dockage on the first ten problems on the gross pounds and on the gross amount for the remainder. Find the net amount of each problem.

Car No.	Dockage	Grain and Grade	Weight	Bushels	√	Price	Amount	FREIGHT		Net Amount
								Rate	Amount	
158201	2%	Rye No. 2	94000 lb.			.55		.27		
342902	3%	Wheat No. 2	93000 lb.			.84		.18		
209603	2%	Wheat No. 1	60000 lb.			.91		.07½		
132504	1½%	Oats No. 1	93000 lb.			.46½		.32		
59605	3%	Rye No. 3	92000 lb.			.39		.24		
199806	2½%	Barley No. 2	92120 lb.			.62½		.17		
111607	2%	Wheat No. 2	94660 lb.			.80		.20		
132408	2%	Rye No. 1	93300 lb.			.56		.18½		
99809	3%	Rye No. 3	60000 lb.			.32		.08		
201010	2%	Wheat No. 2	72286 lb.			.86½		.22		
155011	2%	Wheat No. 2	84160 lb.			.85		.28		
183012	2½%	Wheat No. 2	94000 lb.			.83½		.32		
211013	2%	Oats No. 2	93000 lb.			.42		.23½		
121014	2%	Oats No. 1	93000 lb.			.39½		.27		
156015	2%	Rye No. 1	94000 lb.			.55½		.19		
163016	2½%	Wheat No. 2	82220 lb.			.98		.09½		
171017	3%	Oats No. 3	60120 lb.			.35½		.21		
184018	1½%	Rye No. 2	60000 lb.			.54		.24		
138019	2%	Wheat No. 2	91000 lb.			.88½		.32		
156020	1½%	Oats No. 2	89660 lb.			.40		.15		

## ADDITION EXERCISES

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
\$296.13	\$153.19	\$975.68	\$ 20.89	\$742.28	\$398.70	\$164.57	\$476.59	\$275.46	\$995.01
71.95	7.16	15.48	532.24	10.91	21.37	52.61	16.58	30.98	64.97
832.61	77.42	663.29	186.79	342.35	886.57	995.47	303.21	886.57	28.79
312.78	853.28	243.25	65.48	75.41	75.48	38.90	74.38	160.92	773.26
7.10	939.19	942.17	661.38	217.68	226.57	854.36	776.28	96.59	397.68
755.29	413.92	19.70	227.68	884.26	991.69	301.98	275.68	476.57	84.35
10.96	229.31	3.28	84.57	13.26	445.36	84.37	229.81	660.90	164.31
443.10	66.93	181.70	396.58	171.59	11.75	289.67	18.70	33.26	29.80
49.53	521.76	885.47	15.13	38.72	664.21	45.38	558.92	386.70	489.70
173.74	942.44	48.21	662.25	587.89	43.26	598.70	75.46	552.33	202.99
654.19	374.59	386.79	441.98	498.70	116.57	21.98	664.58	35.46	75.81
301.60	7.51	881.50	793.26	64.98	885.46	664.39	37.69	20.89	6.58
77.42	60.95	64.39	37.59	823.24	52.11	3.28	886.57	776.47	488.37
619.37	176.68	707.68	909.67	911.21	775.46	448.70	116.58	42.37	176.89
<u>832.17</u>	<u>53.29</u>	<u>18.70</u>	<u>45.86</u>	<u>27.68</u>	<u>38.79</u>	<u>29.67</u>	<u>15.48</u>	<u>885.47</u>	<u>991.58</u>

## GRAIN FIGURING

When the price is per ton of 2000 pounds and the quantity given in pounds, either number may be divided mentally by 2 and then extended.

**Example:** 5844 lb. Hay at \$24.00 per net ton of 2000 lb.

$$5.844 \text{ (3 decimal places divides by 1000)} \times 12 = \$70.13$$

- |                                       |                                       |
|---------------------------------------|---------------------------------------|
| 11. 15640 lb. at \$16.50 per net ton. | 26. 62448 lb. at \$ 9.98 per net ton. |
| 12. 6290 lb. at 4.80 per net ton.     | 27. 60643 lb. at 5.35 per net ton.    |
| 13. 9289 lb. at 9.30 per net ton.     | 28. 43340 lb. at 9.40 per net ton.    |
| 14. 16280 lb. at 14.00 per net ton.   | 29. 42675 lb. at 3.45 per net ton.    |
| 15. 22300 lb. at 7.50 per net ton.    | 30. 9625 lb. at 6.50 per net ton.     |
| 16. 16800 lb. at 19.50 per net ton.   | 31. 6599 lb. at 4.35 per net ton.     |
| 17. 2264 lb. at 3.75 per net ton.     | 32. 98346 lb. at 3.40 per net ton.    |
| 18. 382 lb. at 16.60 per net ton.     | 33. 7348 lb. at 4.35 per net ton.     |
| 19. 99840 lb. at 15.50 per net ton.   | 34. 49831 lb. at 9.05 per net ton.    |
| 20. 12660 lb. at 8.88 per net ton.    | 35. 9266 lb. at 10.98 per net ton.    |
| 21. 89385 lb. at 6.66 per net ton.    | 36. 9444 lb. at 18.30 per net ton.    |
| 22. 39455 lb. at 3.17 per net ton.    | 37. 6292 lb. at 9.75 per net ton.     |
| 23. 4345 lb. at 21.79 per net ton.    | 38. 14622 lb. at 9.22 per net ton.    |
| 24. 10935 lb. at 7.05 per net ton.    | 39. 95400 lb. at 6.44 per net ton.    |
| 25. 36405 lb. at 19.30 per net ton.   | 40. 9346 lb. at 3.40 per net ton.     |

ADDITION EXERCISES

1. 16.30	2. 91.77	3. 42.38	4. 86.43	5. 6.90	6. 25.25	7. 20.50	8. 93.80	9. 20.00	10. 60.58
3.25	3.24	3.37	9.86	24.30	5.39	9.84	7.60	10.10	7.70
17.57	.19	96.50	10.50	19.80	94.35	10.40	16.50	3.36	18.50
.26	17.60	2.25	6.90	5.37	3.36	83.20	35.33	98.75	5.40
4.35	57.68	17.85	.32	37.82	16.57	2.24	78.67	25.48	46.24
91.13	3.29	55.62	22.05	47.60	36.59	.47	.27	.58	10.40
35.44	24.35	29.80	32.50	55.87	1.18	46.24	4.33	2.32	29.60
.29	80.11	.33	4.50	.16	3.24	7.70	22.64	38.60	3.35
5.37	3.34	31.54	11.25	3.25	.17	8.50	6.90	47.22	43.26
23.24	75.69	80.15	76.80	86.50	75.69	57.89	46.57	3.38	6.90
47.82	24.33	4.47	2.23	79.00	32.42	11.13	57.80	.91	83.20
2.29	27.76	.29	42.38	6.20	5.49	91.15	.36	53.67	14.89
.34	61.44	62.33	90.91	14.56	47.60	.37	1.91	67.11	2.26
57.49	.29	79.55	5.23	28.55	53.67	46.59	62.33	3.38	28.57
75.17	2.66	1.11	55.73	54.38	68.70	37.55	15.78	90.80	1.19

WHOLESALE AND RETAIL

Net Tons

In the following problems mentally change the number of pounds to tons, and then find by accumulation the total cost.

- |   |  |
|---|--|
| <p>11. 9284 lb. Coke at \$ 8.75 net ton. <i>4.642</i><br/>         12204 lb. Coke at 9.45 net ton. <i>6.102</i><br/>         8645 lb. Coke at 10.50 net ton. <i>4.3225</i><br/>         10242 lb. Coke at 11.25 net ton. <i>5.121</i><br/>         11645 lb. Coke at 12.20 net ton. <i>5.8225</i></p> <p>13. 32250 lb. Salt at \$28.00 net ton. <i>1.6125</i><br/>         14890 lb. Salt at 25.50 net ton. <i>7.445</i><br/>         25720 lb. Salt at 30.20 net ton. <i>12.860</i><br/>         15980 lb. Salt at 24.10 net ton. <i>7.890</i><br/>         28640 lb. Salt at 22.10 net ton. <i>14.320</i></p> <p>15. 12640 lb. Hay at \$15.50 net ton. <i>0.320</i><br/>         8320 lb. Hay at 16.00 net ton. <i>4.160</i><br/>         4624 lb. Hay at 16.50 net ton. <i>2.312</i><br/>         2246 lb. Hay at 17.00 net ton. <i>1.123</i><br/>         11040 lb. Hay at 17.00 net ton. <i>5.520</i></p> <p>✓ 17. 3264 lb. Coal at \$6.60 net ton. <i>1.032</i><br/>         6483 lb. Coal at 5.75 net ton. <i>3.2415</i><br/>         2960 lb. Coal at 7.70 net ton. <i>1.480</i><br/>         7846 lb. Coal at 6.90 net ton. <i>3.923</i><br/>         9328 lb. Coal at 8.40 net ton. <i>4.644</i></p> <p>19. 2500 lb. Straw at \$2.30 net ton. <i>1.250</i><br/>         8640 lb. Straw at 1.75 net ton. <i>4.320</i><br/>         5040 lb. Straw at 2.00 net ton. <i>2.520</i><br/>         14100 lb. Straw at 2.15 net ton. <i>7.050</i><br/>         4400 lb. Straw at 1.50 net ton. <i>2.200</i></p> | <p>12. 8643 lb. Coal at \$7.45 net ton. <i>4.3215</i><br/>         986 lb. Coal at 6.90 net ton. <i>.498</i><br/>         840 lb. Coal at 8.40 net ton. <i>.420</i><br/>         2200 lb. Coal at 9.25 net ton. <i>1.100</i><br/>         3240 lb. Coal at 7.70 net ton. <i>1.620</i></p> <p>14. 12640 lb. Salt at \$22.00 net ton. <i>6.320</i><br/>         8320 lb. Salt at 19.75 net ton. <i>4.160</i><br/>         7592 lb. Salt at 23.40 net ton. <i>3.796</i><br/>         9864 lb. Salt at 24.00 net ton. <i>4.932</i><br/>         2246 lb. Salt at 25.15 net ton. <i>1.123</i></p> <p>16. 3246 lb. Hay at \$18.00 net ton. <i>1.623</i><br/>         9830 lb. Hay at 18.50 net ton. <i>4.115</i><br/>         7640 lb. Hay at 20.00 net ton. <i>3.820</i><br/>         2264 lb. Hay at 20.50 net ton. <i>1.132</i><br/>         984 lb. Hay at 21.00 net ton. <i>.492</i></p> <p>18. 4326 lb. Coke at \$8.10 net ton. <i>2.163</i><br/>         8090 lb. Coke at 9.00 net ton. <i>4.045</i><br/>         5832 lb. Coke at 5.80 net ton. <i>2.916</i><br/>         8046 lb. Coke at 7.10 net ton. <i>4.023</i><br/>         7930 lb. Coke at 8.20 net ton. <i>3.965</i></p> <p>20. 10100 lb. Hay at \$15.00 net ton. <i>5.050</i><br/>         3420 lb. Hay at 15.50 net ton. <i>1.710</i><br/>         7150 lb. Hay at 14.50 net ton. <i>3.575</i><br/>         8640 lb. Hay at 14.00 net ton. <i>6.160</i><br/>         6640 lb. Hay at 18.50 net ton. <i>3.320</i></p> |
|---|--|

## ADDITION EXERCISES

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
421.21	53.44	3.17	376.55	2.28	664.39	338.92	557.86	241.35	165.46
16.57	192.37	775.49	16.44	80.72	18.50	14.38	15.49	16.58	90.87
211.42	37.50	24.25	87.66	447.58	35.35	995.40	32.33	980.67	3.26
3.26	2.27	85.44	3.38	17.40	7.50	3.37	5.46	36.57	775.69
19.57	557.20	6.82	554.39	4.39	775.48	43.35	188.49	27.82	36.22
.16	75.40	322.42	87.69	338.90	22.33	10.11	336.59	9.11	2.27
980.11	953.21	19.40	200.10	54.37	1.15	.16	.15	553.44	901.24
534.25	38.92	441.38	16.11	9.71	666.57	3.18	49.70	26.48	16.39
67.58	442.20	16.59	137.60	775.49	22.11	85.33	809.00	448.70	40.29
<u>70.92</u>	<u>15.49</u>	<u>338.60</u>	<u>81.77</u>	<u>92.39</u>	<u>438.62</u>	<u>100.94</u>	<u>15.49</u>	<u>35.11</u>	<u>3.27</u>

## WHOLESALE AND RETAIL

## Long or Gross Ton—2240 Lb.

Coal is invoiced by the pound and priced by the gross or net tons. Frequently it is purchased at the mine by the long ton and retailed by the short ton.

Find the number of long tons and remaining pounds.

**Example:**  $3462 \text{ lb.} \div 2240 = 1 \text{ gross ton—}1222 \text{ lb.}$

- |              |              |                  |
|--------------|--------------|------------------|
| 1. 4690 lb.  | 6. 34600 lb. | <i>11 - 2200</i> |
| 2. 12960 lb. | 7. 4560 lb.  |                  |
| 3. 22980 lb. | 8. 3648 lb.  |                  |
| 4. 9360 lb.  | 9. 88640 lb. | <i>32 - 1440</i> |
| 5. 7550 lb.  | 10. 2784 lb. |                  |

Where it is not necessary to show the number of gross tons, multiply from right of keyboard and divide by 2240.

**Example:**  $89364 \text{ lb. at } \$6.25 \text{ gross ton.}$   
 $89364 \times \$6.25 \div 2240 = \$249.34$

- |                                       |                                       |
|---------------------------------------|---------------------------------------|
| 11. 62938 lb. at \$6.25 per gross ton | 26. 19211 lb. at \$9.30 per gross ton |
| 12. 8766 lb. at .85 per gross ton     | 27. 62340 lb. at 2.45 per gross ton   |
| 13. 2931 lb. at .70 per gross ton     | 28. 43699 lb. at 3.10 per gross ton   |
| 14. 93642 lb. at .96 per gross ton    | 29. 34678 lb. at 1.25 per gross ton   |
| 15. 36944 lb. at 2.65 per gross ton   | 30. 62482 lb. at 1.90 per gross ton   |
| 16. 60309 lb. at 9.15 per gross ton   | 31. 45660 lb. at .60 per gross ton    |
| 17. 64520 lb. at 1.50 per gross ton   | 32. 3644 lb. at 1.20 per gross ton    |
| 18. 12895 lb. at .78 per gross ton    | 33. 12900 lb. at .95 per gross ton    |
| 19. 21463 lb. at 3.14 per gross ton   | 34. 10090 lb. at 7.25 per gross ton   |
| 20. 6133 lb. at 4.50 per gross ton    | 35. 46218 lb. at 6.25 per gross ton   |
| 21. 96429 lb. at 6.20 per gross ton   | 36. 63340 lb. at 1.05 per gross ton   |
| 22. 36108 lb. at 6.65 per gross ton   | 37. 8344 lb. at .44 per gross ton     |
| 23. 90044 lb. at 1.00 per gross ton   | 38. 43216 lb. at 4.04 per gross ton   |
| 24. 23575 lb. at 1.05 per gross ton   | 39. 19008 lb. at 3.40 per gross ton   |
| 25. 92346 lb. at .95 per gross ton    | 40. 36452 lb. at 1.25 per gross ton   |

## ADDITION EXERCISES

## BALANCE SHEET

Add by lines and by columns:

241.35	187.90	788.96	367.58	578.92	197.59	224.75	_____
665.95	443.26	75.48	90.67	20.67	20.75	16.58	_____
34.11	18.53	336.57	772.39	186.57	303.24	889.70	_____
5.27	24.98	154.37	266.57	553.46	97.69	30.65	_____
446.57	553.42	60.57	40.85	27.68	505.47	16.57	_____
16.57	24.34	1.12	57.01	89.70	35.46	86.57	_____
498.75	154.37	806.57	403.25	186.57	786.58	185.67	_____
116.57	755.46	18.56	16.57	35.44	98.00	10.20	_____
204.23	27.58	55.66	456.72	941.11	167.58	543.39	_____
19.74	757.56	156.78	98.67	23.27	43.36	21.98	_____
313.05	21.46	98.67	435.46	553.27	886.57	386.70	_____
16.58	865.67	853.45	18.50	64.37	33.27	16.57	_____
523.23	15.46	19.60	538.90	176.58	255.67	555.47	_____
14.14	818.67	324.23	155.46	255.67	81.79	23.26	_____
757.46	24.89	16.57	24.23	89.70	153.47	151.15	_____
<u>16.11</u>	<u>151.47</u>	<u>332.67</u>	<u>687.92</u>	<u>163.69</u>	<u>336.58</u>	<u>919.88</u>	_____

TOTALS

## ADDITION EXERCISES

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
241.19	117.40	17.50	75.48	68.25	227.50	53.48	163.80	242.18	121.19
16.49	16.38	876.59	115.39	115.48	14.39	118.59	14.38	16.88	86.57
3.27	3.28	12.23	35.35	35.35	37.69	35.34	840.11	85.68	775.48
87.60	98.60	87.60	98.60	98.60	116.49	6.27	6.27	13.28	63.25
5.39	56.38	54.99	3.26	3.26	97.50	84.36	.84	5.27	995.47
43.67	851.04	175.39	21.11	21.11	25.26	37.59	56.74	118.50	74.39
67.59	18.50	65.48	.98	.98	79.82	1.16	17.39	47.37	186.59
632.24	3.33	3.37	46.78	46.78	337.82	75.39	3.37	39.15	30.68
3.28	77.68	338.50	19.75	19.75	38.90	28.95	38.92	633.43	885.76
28.90	114.48	116.57	245.69	245.69	18.59	338.72	225.25	13.83	303.79
117.50	98.70	38.64	67.58	57.58	2.24	38.90	76.58	47.82	16.58
86.50	27.66	76.58	33.45	33.45	.82	18.57	14.38	13.38	553.29
3.27	9.80	1.14	171.50	171.50	181.59	447.28	84.39	6.38	20.96
336.89	781.80	15.48	39.06	39.06	2.24	886.50	171.38	774.36	774.35
53.30	37.65	37.81	27.85	27.85	338.72	14.36	68.92	31.21	27.68

**BUYING AND SELLING  
IRON AND STEEL**

Steel is frequently priced by the gross ton of 2240 pounds. Multiply the pounds from the right of keyboard by the price per ton and then divide by 2240.

Find the cost of the following:

11. 34645 lb. at \$43.50 per gross ton
12. 8934 lb. " 75.00 " " "
13. 12564 lb. " 55.00 " " "
14. 6482 lb. " 52.50 " " "
15. 32322 lb. " 38.00 " " "
16. 43683 lb. " 76.60 " " "
17. 11164 lb. " 58.80 " " "
18. 32021 lb. " 78.00 " " "
19. 5684 lb. " 40.60 " " "
20. 9238 lb. " 55.40 " " "
21. 2964 lb. " 55.30 " " "
22. 54642 lb. " 77.00 " " "
23. 68647 lb. " 40.13 " " "
24. 129384 lb. " 33.00 " " "
25. 112649 lb. " 80.00 " " "
26. 77642 lb. " 54.30 " " "
27. 3829 lb. " 45.50 " " "
28. 5648 lb. " 56.60 " " "
29. 31114 lb. " 82.00 " " "
30. 42645 lb. " 73.40 " " "

## ADDITION EXERCISES

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
27.58	117.19	197.60	980.59	324.56	971.00	29.00	175.46	304.22	976.58
118.79	303.26	305.31	24.33	16.59	21.58	305.21	86.57	19.70	46.57
74.36	18.50	15.38	995.67	775.41	118.60	16.59	302.25	3.27	13.28
25.48	46.57	20.98	15.49	20.87	15.37	38.79	886.57	27.56	775.46
225.33	885.48	997.68	997.68	209.11	553.47	754.68	53.46	987.05	228.60
31.26	442.36	19.80	53.67	16.58	20.75	64.39	81.11	64.78	90.78
775.48	15.48	775.46	35.46	20.86	37.68	15.48	226.57	30.25	36.75
443.36	225.47	96.11	553.28	991.68	553.11	664.49	443.35	118.59	115.49
574.11	774.36	20.76	315.36	65.46	116.57	475.68	52.29	38.79	553.46
28.69	191.44	224.35	64.58	19.67	25.44	86.59	18.60	20.97	39.80
664.59	20.79	316.49	117.50	202.31	18.69	302.25	557.68	225.22	24.33
18.70	41.98	19.70	554.37	43.25	304.51	181.67	663.28	30.27	664.35
49.68	664.37	206.57	17.56	116.47	14.37	24.22	75.46	16.59	443.27
664.38	26.57	28.79	775.46	464.57	443.26	275.68	889.70	441.35	20.86
19.67	19.88	664.38	221.35	16.57	16.57	489.70	302.25	114.11	4.35
23.24	751.23	119.70	45.36	533.26	327.68	14.36	54.37	30.97	175.46
332.24	553.48	18.60	664.36	165.48	164.58	552.25	17.68	64.35	303.27
186.70	15.46	476.58	18.70	84.35	34.25	665.47	403.26	311.21	55.11
741.37	20.11	30.45	225.44	14.37	886.57	18.60	116.47	64.35	648.92
<u>11.10</u>	<u>996.57</u>	<u>751.37</u>	<u>25.36</u>	<u>843.24</u>	<u>42.35</u>	<u>302.24</u>	<u>40.37</u>	<u>86.57</u>	<u>17.69</u>

## IRON AND STEEL

## Invoices

Finished parts such as rivets, washers, and nuts are priced per hundredweight, bolts per hundred, and screws per thousand.

Accumulate in groups of five:

- |   |   |
|---|---|
| 11. 545 lb. $\frac{7}{16}$ Nuts at \$9.80 cwt.                    | 21. 12343 Bolts at \$6.60 M.                        |
| 12. 128 lb. $\frac{3}{4}$ x 4 Rivets at \$5.40 cwt.               | 22. 345 lb. Nuts at \$8.85 cwt.                     |
| 13. 1542 lb. $\frac{1}{2}$ x $3\frac{1}{2}$ Rivets at \$6.65 cwt. | 23. 3250 lb. Rivets at \$4.46 cwt.                  |
| 14. 888 $\frac{3}{4}$ x 5 Bolts at \$9.90 C.                      | 24. 21250 Screws at \$25.00 M.                      |
| 15. 1250 $\frac{1}{2}$ x $3\frac{1}{2}$ Bolts at \$4.85 C.        | 25. 11325 Screws at \$29.70 M.                      |
| 16. 12734 st. Screws at \$18.80 M.                                | 26. 675 lb. $\frac{5}{8}$ Nuts at \$7.55 cwt.       |
| 17. 10945 st. Screws at \$24.50 M.                                | 27. 12432 Screws at \$24.60 M.                      |
| 18. 7864 st. Screws at \$27.50 M.                                 | 28. 990 $\frac{3}{4}$ x 6 Bolts at \$8.50 C.        |
| 19. 1225 Bolts at \$5.54 C.                                       | 29. 777 lb. $\frac{7}{8}$ x 6 Rivets at \$6.15 cwt. |
| 20. 1362 Bolts at \$5.75 C.                                       | 30. 350 lb. $\frac{7}{16}$ Nuts at \$5.40 cwt.      |

## ADDITION EXERCISES

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
428.75	633.49	200.98	606.59	23.19	439.12	646.49	404.92	114.36	401.19
16.75	19.40	15.47	24.35	.11	98.67	90.76	30.46	224.33	16.57
6.37	303.52	49.60	186.47	31.98	6.48	4.35	251.78	6.45	3.21
231.90	19.40	3.03	31.13	664.38	65.77	191.60	11.47	19.51	50.48
33.27	843.11	254.37	366.52	186.57	446.55	21.11	76.58	60.59	665.48
191.80	30.51	196.46	88.19	2.26	225.34	606.39	202.18	856.47	10.11
57.68	40.98	33.24	909.56	997.69	113.25	29.89	15.48	25.19	60.87
89.21	3.25	86.47	30.25	27.89	60.57	303.27	75.46	303.25	741.11
557.86	339.80	.23	335.41	661.45	3.98	34.76	119.86	15.49	33.00
833.21	60.45	533.43	76.59	38.90	277.27	112.66	26.57	155.47	633.24

## IRON AND STEEL

## Figuring Sheet Steel

Sheet steel is listed below showing the dimensions and the weight per square foot. Therefore, it is necessary to convert the total number of square inches to square feet by dividing by 144.

8 sheets 12" x 84" (weight .7224 lb. per sq. ft.) at \$9.50 cwt.  
 $(8 \times 12 \times 84 \times .7224 \times .0950) \div 144 = \$3.84$

Make all the multiplications and then the division. If register fills up before the multiplication is completed, point-off and reset, dropping the unnecessary figures.

	Sheets	Size	Weight per sq. ft.	Price cwt.
11.	22	30" x 96"	2.666 lb.	\$ 7.80
12.	8	36" x 73"	.2188 lb.	9.88
13.	15	11" x 90"	.7665 lb.	10.20
14.	7	24" x 96"	.1875 lb.	7.25
15.	12	20½" x 96"	.1888 lb.	5.45
16.	16	48" x 96"	.6654 lb.	8.90
17.	15	4½" x 4½"	40.5 lb.	6.65
18.	9	6½" x 2"	35.2 lb.	7.51
19.	3	24" x 120"	1.654 lb.	11.50
20.	6	12" x 74"	.1432 lb.	4.95
21.	5	11½" x 90"	.7666 lb.	10.33
22.	11	36" x 92"	2.188 lb.	5.55
23.	4	30" x 84"	.2666 lb.	6.64
24.	6	24" x 48"	.1435 lb.	8.80
25.	12	9½" x 3½"	40.2 lb.	5.60

## ADDITION EXERCISES

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
142.57	197.68	335.44	898.11	425.00	2.24	19.57	443.55	982.01	154.66
53.44	30.98	5.38	2.24	3.28	677.11	301.76	20.98	14.38	13.27
75.99	67.58	72.50	176.58	38.92	35.34	89.00	16.58	3.28	89.79
103.37	225.48	334.34	15.47	3.27	4.28	775.47	886.79	532.47	2.27
.18	16.59	42.22	53.29	13.22	98.00	11.75	52.22	75.48	64.55
774.38	33.21	10.10	1.87	338.92	345.45	693.29	161.41	75.69	848.92
98.60	2.28	553.28	447.68	16.48	3.30	25.24	27.68	202.98	15.48
534.77	664.39	75.60	801.57	505.92	76.48	186.79	56.61	10.91	3.25
10.98	10.92	5.27	35.46	31.52	184.38	25.25	664.55	86.57	639.08
<u>3.24</u>	<u>166.58</u>	<u>338.60</u>	<u>303.98</u>	<u>104.60</u>	<u>30.03</u>	<u>3.03</u>	<u>20.35</u>	<u>121.53</u>	<u>12.42</u>

## IRON AND STEEL

## Invoices

Find the lineal feet by multiplying the number of pieces by the length. Then multiply by the weight per lineal foot and price per hundredweight.

4 Tees ( $3 \times 3 \times \frac{1}{2}$ ) length  $8' 3''$ , weight 4.2 lb. per ft. at \$4.48 cwt.  
 $4 \times 8.25 \times 4.2 \times .0448 = \$6.21$

Find the value of each of the following:

	Pieces	Description.	Length	Weight per ft.	Price cwt.
11.	8	Channels, 5"	8' 3"	3.68 lb.	\$4.43
12.	12	Channels, 6"	8' 9"	9.8 lb.	4.75
13.	16	Channels, 4"	22' 4"	8.2 lb.	4.24
14.	32	Angles, $3 \times 3 \times \frac{1}{2}$	20' 4"	7.7 lb.	4.01
15.	2	Angles, $3 \times 3 \times \frac{3}{8}$	21' 6 $\frac{1}{2}$ "	7.2 lb.	4.22
16.	24	Angles, $4 \times 5 \times \frac{1}{2}$	18' 3"	12.5 lb.	4.34
17.	55	Beams, 4"	20' 5"	10.25 lb.	4.55
18.	5	Beams, 5"	24'	11.5 lb.	3.95
19.	14	Tees, $3\frac{1}{2} \times 3 \times \frac{1}{2}$	12' 6"	8.4 lb.	4.75
20.	7	Tees, $4 \times 3 \times \frac{1}{2}$	19' 5"	3.55 lb.	4.44
21.	25	Tees, $4 \times 3 \times \frac{3}{8}$	17' 4"	8.8 lb.	5.55
22.	10	Angles, $3 \times 3 \times \frac{1}{2}$	16' 2"	3.54 lb.	5.35
23.	15	Beams, 4"	16' 1 $\frac{1}{2}$ "	3.88 lb.	3.80
24.	4	Channels, 4"	7' 3"	8.2 lb.	4.20
25.	6	Tees, $2 \times 2 \times \frac{1}{2}$	15' 7"	7.7 lb.	4.86

## ADDITION EXERCISES

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
241.36	445.18	336.58	119.78	989.00	23.78	664.35	227.68	449.80	330.11
19.80	63.27	20.99	888.00	30.30	756.03	37.68	75.47	30.29	60.57
775.68	119.78	67.58	20.21	38.90	84.36	75.69	14.37	87.69	12.12
20.97	20.09	118.79	403.98	605.77	987.00	2.23	663.28	4.50	667.85
331.25	775.48	67.58	61.58	30.91	15.46	225.46	67.58	309.21	14.37
117.68	304.30	406.72	23.19	775.48	185.48	335.41	775.48	144.78	980.11
98.79	17.68	908.79	165.65	16.57	30.45	19.81	24.34	54.67	31.27
24.23	9.81	27.68	3.31	198.60	336.57	774.38	229.80	775.68	404.36
.39	552.23	19.67	887.59	30.25	15.48	18.60	28.70	23.23	78.69
<u>889.10</u>	<u>49.98</u>	<u>465.12</u>	<u>223.24</u>	<u>338.79</u>	<u>406.35</u>	<u>890.14</u>	<u>155.67</u>	<u>303.54</u>	<u>164.36</u>

## THE LUMBER BUSINESS

## Figuring Board Feet

Lumber is usually sold by the board foot, and priced by the thousand board feet.  
2463 bd. ft. at \$28.00 per M. = \$68.96.

Hold the price over the permanent decimal point and multiply by the number of feet. When lumber is priced by the thousand, divide mentally by 1000.

Find the cost of the following:

- |  |   |
|--|---|
| 11. 48,650 bd. ft. lumber @ 13.50 per M. ft. | 26. 936 bd. ft. lumber @ 12.65 per M. ft.   |
| 12. 36,456 bd. ft. lumber @ 21.35 per M. ft. | 27. 98 bd. ft. lumber @ 20.33 per M. ft.    |
| 13. 64,365 bd. ft. lumber @ 13.50 per M. ft. | 28. 64 bd. ft. lumber @ 64.25 per M. ft.    |
| 14. 82,986 bd. ft. lumber @ 46.55 per M. ft. | 29. 76 bd. ft. lumber @ 18.70 per M. ft.    |
| 15. 64,290 bd. ft. lumber @ 12.24 per M. ft. | 30. 54 bd. ft. lumber @ 19.00 per M. ft.    |
| 16. 64,258 bd. ft. lumber @ 13.30 per M. ft. | 31. 33 bd. ft. lumber @ 16.50 per M. ft.    |
| 17. 36,470 bd. ft. lumber @ 25.40 per M. ft. | 32. 786 bd. ft. lumber @ 14.50 per M. ft.   |
| 18. 36,485 bd. ft. lumber @ 12.30 per M. ft. | 33. 2,348 bd. ft. lumber @ 12.33 per M. ft. |
| 19. 6,548 bd. ft. lumber @ 11.65 per M. ft.  | 34. 654 bd. ft. lumber @ 43.45 per M. ft.   |
| 20. 94,364 bd. ft. lumber @ 26.50 per M. ft. | 35. 864 bd. ft. lumber @ 40.50 per M. ft.   |
| 21. 87,643 bd. ft. lumber @ 46.50 per M. ft. | 36. 454 bd. ft. lumber @ 50.55 per M. ft.   |
| 22. 8,632 bd. ft. lumber @ 48.70 per M. ft.  | 37. 1,342 bd. ft. lumber @ 12.45 per M. ft. |
| 23. 986 bd. ft. lumber @ 26.50 per M. ft.    | 38. 2,464 bd. ft. lumber @ 15.40 per M. ft. |
| 24. 618 bd. ft. lumber @ 13.50 per M. ft.    | 39. 8,963 bd. ft. lumber @ 55.50 per M. ft. |
| 25. 321 bd. ft. lumber @ 16.50 per M. ft.    | 40. 7,463 bd. ft. lumber @ 15.40 per M. ft. |

Certain kinds of finishing lumber such as moldings and quarter round are sold by the lineal foot and priced by the hundred.

- |   |   |
|---|---|
| 41. 583 lin. ft. moulding at \$3.50 per C.    | 45. 2,975 lin. ft. chair rails at \$2.00 per C. |
| 42. 1,385 lin. ft. moulding at 4.35 per C.    | 46. 3,509 lin. ft. chair rails at 4.25 per C.   |
| 43. 1,163 lin. ft. plate rails at 6.00 per C. | 47. 475 lin. ft. lattice work at .38 per C.     |
| 44. 4,357 lin. ft. plate rails at 6.00 per C. | 48. 250 lin. ft. lattice work at .38 per C.     |

## ADDITION EXERCISES

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
141.35	161.57	176.59	335.47	998.70	241.57	194.38	775.46	227.69	665.49
76.58	40.38	18.60	70.69	23.30	19.80	65.46	30.28	60.57	37.68
98.67	554.36	977.21	175.48	335.27	775.89	337.50	992.23	115.47	338.79
223.24	30.82	15.47	20.67	64.37	23.24	19.60	15.47	30.27	59.80
998.70	404.36	626.58	885.48	606.58	775.47	100.95	646.37	442.39	116.58
261.57	30.92	19.60	20.75	15.47	23.23	3.56	10.89	4.36	6.57
16.57	546.55	202.54	375.68	663.49	968.80	454.35	23.20	19.19	30.35
9.81	21.19	15.47	54.45	75.68	11.18	14.36	27.68	53.46	14.35
789.80	443.26	3.26	2.26	9.78	2.25	6.45	3.31	775.46	3.78
<u>31.26</u>	<u>26.54</u>	<u>665.41</u>	<u>448.79</u>	<u>175.38</u>	<u>331.26</u>	<u>98.77</u>	<u>25.89</u>	<u>31.21</u>	<u>778.90</u>

## THE LUMBER BUSINESS

To figure the number of board feet in a piece of lumber, multiply the thickness, by the width, by the length, and divide by 12. (Divide mentally by 12 whenever possible.)

$$\frac{2'' \times 6'' \times 8'}{12} = 8 \text{ Board Feet}$$

Find the number of board feet in each of the following and multiply by the price per M.

11. 25 pieces 6" x 8½" x 12' at \$30.45 per M. bd. ft.
12. 36 pieces 3½" x 8" x 18' at 15.00 per M. bd. ft.
13. 140 pieces 2" x 12" x 24' at 40.55 per M. bd. ft.
14. 56 pieces 9" x 11" x 10' at 7.50 per M. bd. ft.
15. 72 pieces 6" x 9" x 18' at 12.23 per M. bd. ft.
16. 125 pieces 2½" x 5½" x 3' at 36.50 per M. bd. ft.
17. 90 pieces 6" x 8½" x 12' at 12.90 per M. bd. ft.
18. 64 pieces 3½" x 5" x 24' at 34.45 per M. bd. ft.
19. 84 pieces 1" x 6" x 18½' at 27.50 per M. bd. ft.
20. 32 pieces 2" x 5" x 12' at 55.60 per M. bd. ft.
21. 76 pieces 1½" x 5½" x 24' at 32.23 per M. bd. ft.
22. 90 pieces 2" x 4½" x 18' at 41.00 per M. bd. ft.
23. 101 pieces 2½" x 3" x 24' at 9.34 per M. bd. ft.
24. 25 pieces 1" x 8½" x 6' at 8.85 per M. bd. ft.
25. 78 pieces 1½" x 5" x 8' at 77.00 per M. bd. ft.
26. 64 pieces 2" x 5½" x 24' at 34.34 per M. bd. ft.
27. 83 pieces 2½" x 4" x 12' at 68.00 per M. bd. ft.
28. 92 pieces 3" x 6½" x 16' at 44.34 per M. bd. ft.
29. 112 pieces 3½" x 4" x 10' at 10.00 per M. bd. ft.
30. 36 pieces 4" x 5½" x 14' at 8.85 per M. bd. ft.
31. 70 pieces 4" x 8½" x 15' at 21.00 per M. bd. ft.
32. 52 pieces 5" x 10" x 18' at 40.56 per M. bd. ft.
33. 46 pieces 6" x 9" x 28' at 70.78 per M. bd. ft.
34. 24 pieces 8" x 8" x 16' at 22.00 per M. bd. ft.
35. 93 pieces 9" x 9" x 14' at 9.35 per M. bd. ft.

429.68

## ADDITION EXERCISES

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
241.35	187.90	304.25	157.68	887.69	443.25	505.78	266.57	175.47	186.59
54.36	90.78	65.46	90.78	27.68	16.57	45.63	43.25	68.79	43.56
167.56	867.68	197.68	774.35	303.34	775.46	606.78	988.79	303.19	16.57
10.98	25.44	76.58	33.26	47.68	84.36	29.67	30.77	17.68	885.11
404.76	16.57	24.55	19.00	68.77	37.86	87.99	21.24	98.00	14.33
69.78	21.24	715.46	38.76	2.23	8.21	646.36	109.89	305.46	548.91
221.99	443.26	25.46	228.90	775.48	996.57	110.11	50.67	75.48	26.57
15.46	198.79	19.98	9.35	61.57	30.29	75.44	100.85	16.57	3.27
889.77	75.46	6.57	854.46	446.50	617.82	202.34	304.66	980.79	642.67
<u>30.29</u>	<u>6.48</u>	<u>443.67</u>	<u>19.80</u>	<u>20.98</u>	<u>85.46</u>	<u>53.49</u>	<u>53.48</u>	<u>16.58</u>	<u>51.41</u>

## LUMBER CARD

Decimals of a Foot for Each  $\frac{1}{8}$  Inch

The following card shows the decimal of a foot of one dimension; then in finding the number of board feet, merely multiply the decimal equivalent on the card by the other two dimensions.

	0"	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"
		.0833	.1667	.2500	.3333	.4167	.5000	.5833	.6667	.7500	.8333	.9167
$\frac{1}{8}$ "	.0104	.0938	.1771	.2604	.3438	.4271	.5104	.5938	.6771	.7604	.8438	.9271
$\frac{1}{4}$ "	.0208	.1042	.1875	.2708	.3542	.4375	.5208	.6042	.6875	.7708	.8542	.9375
$\frac{3}{8}$ "	.0313	.1146	.1979	.2813	.3646	.4479	.5313	.6146	.6979	.7813	.8646	.9479
$\frac{1}{2}$ "	.0417	.1250	.2083	.2917	.3750	.4583	.5417	.6250	.7083	.7917	.8750	.9583
$\frac{5}{8}$ "	.0521	.1354	.2188	.3021	.3854	.4688	.5521	.6354	.7188	.8021	.8854	.9688
$\frac{3}{4}$ "	.0625	.1458	.2292	.3125	.3958	.4792	.5625	.6458	.7292	.8125	.8958	.9792
$\frac{7}{8}$ "	.0729	.1563	.2396	.3229	.4063	.4896	.5729	.6563	.7396	.8229	.9063	.9896

46 pieces,  $2\frac{3}{4}$ " x 5" x 10'.

The table shows that  $2\frac{3}{4}$ " divided by 12 = .2292.

46 x .2292 x 5 x 10 = 527.16 bd. ft.

**Note:** If decimal is equal to one-half or more, call it an extra bd. ft.

Find the number of board feet:

- |   |  |
|---|--|
| 11. 98 pieces 1 " x 7 " x 10'                           | 19. 202 pieces 2 " x $6\frac{1}{2}$ " x 14'                            |
| 12. 64 pieces $2\frac{1}{2}$ " x $4\frac{3}{4}$ " x 7'  | 20. 360 pieces 3 " x $3\frac{1}{4}$ " x 16'                            |
| 13. 57 pieces $3\frac{1}{2}$ " x $7\frac{1}{4}$ " x 5'  | 21. 125 pieces $2\frac{1}{2}$ " x $6\frac{3}{4}$ " x 15'               |
| 14. 15 pieces $2\frac{3}{4}$ " x $5\frac{1}{4}$ " x 17' | 22. 325 pieces $3\frac{1}{4}$ " x $3\frac{1}{4}$ " x $18\frac{1}{2}$ ' |
| 15. 20 pieces $1\frac{1}{4}$ " x $3\frac{1}{2}$ " x 12' | 23. 298 pieces $1\frac{1}{2}$ " x $1\frac{1}{2}$ " x $15\frac{1}{2}$ ' |
| 16. 36 pieces $2\frac{3}{4}$ " x $7\frac{3}{4}$ " x 16' | 24. 179 pieces $2\frac{1}{4}$ " x $3\frac{1}{4}$ " x 16'               |
| 17. 44 pieces $5\frac{1}{2}$ " x $8\frac{1}{4}$ " x 18' | 25. 342 pieces $1\frac{1}{4}$ " x $3\frac{1}{4}$ " x $14\frac{1}{2}$ ' |
| 18. 57 pieces $2\frac{3}{4}$ " x $4\frac{1}{4}$ " x 14' | 26. 148 pieces 2 " x 5 " x 16'   |

**ADDITION EXERCISES**

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
231.98	167.85	220.11	28.70	271.68	891.67	116.58	175.69	164.58	187.69
16.75	30.29	909.80	226.58	19.57	40.76	50.46	21.00	95.47	34.35
198.70	664.38	65.47	19.80	331.28	218.69	887.69	980.79	30.75	897.89
776.59	116.73	19.47	30.56	550.90	4.37	26.57	30.26	774.37	85.46
20.11	20.98	303.67	775.68	52.36	85.48	19.80	53.47	18.17	30.67
19.78	6.47	56.47	19.70	9.78	119.80	2.41	404.36	317.68	246.57
449.80	446.57	9.81	443.54	117.59	57.69	664.35	775.46	46.21	19.80
116.57	19.70	25.47	225.47	994.35	231.53	30.92	19.67	25.48	354.26
90.89	20.89	167.68	20.98	52.24	198.79	224.35	26.58	558.70	867.58
14.37	3.35	20.57	16.57	17.68	32.87	553.68	585.79	15.38	13.24
301.78	774.37	3.21	885.47	553.29	23.16	14.37	198.70	2.26	64.57
905.46	998.70	398.70	116.48	661.58	553.67	90.87	25.45	338.90	856.47
52.35	28.79	27.68	29.80	18.50	16.89	164.57	16.57	443.37	17.68
84.59	36.57	19.56	393.09	30.29	95.47	303.87	228.79	67.58	6.41
2.28	606.58	489.70	16.47	775.48	749.02	27.68	16.58	3.38	331.17
550.90	90.89	13.25	774.38	18.50	387.69	408.70	26.58	880.79	41.36
114.37	30.29	74.37	841.54	30.28	14.38	951.87	885.21	75.48	446.21
20.89	453.24	40.98	38.79	101.87	447.60	16.58	190.00	643.54	790.29
19.70	115.47	668.79	15.44	56.47	661.11	775.48	26.57	14.27	15.47
<u>202.02</u>	<u>60.57</u>	<u>84.37</u>	<u>665.49</u>	<u>867.89</u>	<u>90.78</u>	<u>243.25</u>	<u>465.37</u>	<u>115.49</u>	<u>505.89</u>

**LUMBER BILLING**

Figure each item separately; then add the results for the total of the invoice.

Pieces	Description	Size	Feet	Price per M	Amount
11. 27 pcs.	Ga. Pine	3 x 6 x 16	<u>648</u>	\$28.70	<u>18.60</u>
12. 65 pcs.	Ga. Pine	1 1/4 x 10 x 16	<u>1283.33</u>	32.45	<u>35.14</u>
13. 132 ft.	Hemlock		<u>132</u>	24.50	<u>3.23</u>
14. 14,763 ft.	Spruce		<u>14763</u>	28.70	<u>423.70</u>
15. 1,024 ft.	Oak		<u>1024</u>	42.00	<u>43.01</u>
16. 6 doors	at \$8.60 a piece, less 55-5%		<u>51.60</u>		<u>22.06</u>
17. 5 doors	at 12.50 a piece, less 55-5%		<u>62.50</u>		<u>26.72</u>
18. 42 pieces 2" x 4" x 24'	40 pieces 2" x 4" x 32'				
36 pieces 2" x 4" x 26'	29 pieces 2" x 4" x 34'				
38 pieces 2" x 4" x 28'	29 pieces 2" x 4" x 38'		<u>425.0</u>	27.90	<u>1185.75</u>

Handwritten calculations and corrections:

- 672
- 853.2
- 624
- 651.2
- 709.2
- 734.4
- 16

### ADDITION EXERCISES

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
651.19	165.47	756.83	19.75	556.73	775.48	559.02	164.58	986.50	303.25
21.87	26.57	32.75	775.48	89.16	995.26	10.98	16.19	25.46	85.69
114.38	307.67	19.82	195.25	175.48	32.43	14.38	871.77	16.59	2.25
980.79	64.59	184.39	3.27	32.24	7.48	6.75	6.58	95.46	63.48
46.34	23.21	63.28	.98	45.75	559.01	75.68	447.59	224.35	809.71
10.10	94.25	20.98	64.25	996.57	16.57	14.39	20.97	35.46	16.85
6.57	3.21	3.28	333.24	332.45	90.87	60.98	85.46	10.91	25.64
95.46	865.46	443.26	106.57	65.47	403.25	186.59	336.57	775.48	498.00
861.75	225.86	10.81	53.44	186.50	16.00	4.21	40.57	36.57	13.29
553.67	7.54	223.65	85.46	20.78	389.70	48.79	18.60	45.46	84.39
48.93	38.79	991.56	2.23	479.01	43.25	15.47	227.69	413.56	687.55
207.68	74.36	64.37	43.35	226.75	15.40	4.28	9.21	86.70	24.35
325.46	951.13	32.24	336.22	18.79	266.57	29.80	75.46	18.79	13.13
17.58	448.72	1.58	26.19	30.67	38.90	16.57	12.12	90.78	87.79
85.46	13.15	664.37	546.67	65.49	118.59	885.47	743.90	629.08	775.46
4.37	576.82	15.47	10.33	901.82	897.56	994.56	15.47	12.20	43.25
171.71	60.85	598.22	743.94	35.62	63.28	15.48	251.64	65.23	64.38
80.18	27.68	64.35	98.21	118.60	605.48	76.49	64.35	84.37	333.29
423.99	752.11	197.60	62.57	443.25	18.70	666.58	36.59	775.47	13.28
<u>25.34</u>	<u>18.56</u>	<u>33.27</u>	<u>198.11</u>	<u>18.10</u>	<u>224.35</u>	<u>272.82</u>	<u>921.42</u>	<u>21.98</u>	<u>449.00</u>

### FOREIGN EXCHANGE

Foreign exchange is the process of making remittances between this country and another. The methods of transfer and collection are much the same as for similar cases of domestic exchange.

**Par of Exchange:** The standard unit of exchange in any country is called the monetary unit. Thus the monetary unit in the United States is the dollar; in England the pound sterling and in France the franc. The par of exchange is the value of the standard gold coin of the country expressed in terms of the standard gold coin of the other.

The following tables show the systems of money in use in England and France. These rates of exchange are subject to fluctuations.

#### ENGLAND

4 farthings = 1 penny (D)  
 12 pence = 1 shilling (S)  
 20 shillings = 1 pound (£)  
 Par value in U. S. money, \$4.8665

#### FRANCE

100 centimes (c) = 1 franc (fr.)  
 Par value in U. S. money, \$.0392

In the following problems find the value in United States money at given rate and at current rate of exchange as shown in daily papers.

11. £ 55	16. 55 fr.	21. 100 fr.	26. 200 fr.
12. £ 11	17. 25 fr.	22. 66 fr.	27. £ 125
13. £ 15	18. £ 57	23. £ 125	28. £ 223
14. £ 75	19. £ 23	24. 76 fr.	29. 16 fr.
15. £ 10	20. 66 fr.	25. 83 fr.	30. 17 fr.

## ADDITION EXERCISES

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
543.27	117.98	443.26	187.69	959.67	400.98	153.47	187.69	643.21	187.00
14.38	65.47	37.68	16.58	97.68	39.80	56.37	75.48	17.68	98.77
227.68	986.00	175.49	443.27	14.38	95.40	18.50	63.25	58.90	43.25
85.47	25.74	52.34	96.25	336.57	153.26	667.58	985.49	324.35	891.87
16.18	19.78	19.70	255.46	3.26	24.98	48.98	15.48	86.50	10.61
202.15	226.57	775.46	19.70	17.56	16.58	164.89	332.67	169.80	301.79
15.98	53.42	995.48	43.26	561.76	776.59	74.38	28.68	42.56	39.80
43.56	98.01	15.47	87.67	981.42	341.52	547.89	996.70	663.29	707.89
79.80	483.25	3.82	175.80	131.58	6.57	15.48	30.28	84.20	35.46
774.38	197.68	553.67	29.80	5.58	38.90	164.59	224.35	616.78	358.90
118.95	553.67	42.67	223.19	87.59	98.70	45.67	17.59	74.35	96.78
3.38	16.58	16.59	867.69	637.50	15.47	431.44	57.68	28.79	75.48
982.91	7.58	964.37	365.49	225.47	887.69	63.29	885.49	441.38	653.29
442.56	338.70	587.69	10.97	19.78	115.48	85.47	98.70	63.49	33.78
37.68	661.59	16.58	465.39	45.46	3.26	774.39	772.20	168.79	774.39
86.57	70.94	97.60	590.90	98.70	19.70	225.47	91.10	20.67	28.79
1.17	12.16	303.25	57.58	303.25	443.27	10.97	16.59	28.60	30.46
886.59	809.78	15.49	681.23	15.49	49.80	886.79	43.25	775.48	908.79
665.19	64.35	506.48	76.58	76.58	132.57	74.56	3.27	54.37	23.27
20.97	710.10	54.36	954.11	449.80	415.49	111.75	575.57	226.57	195.47

FOREIGN EXCHANGE  
British Currency

In the following exercises find the value in United States money.

£37 7s 5d, exchange rate \$4.865. .05

20 shillings = £1

1 shilling = 1-20 or .05 of £1.

7 shillings = 7 x .05 or .35 of £1.

Then £37 7s =  $37.35 \times \$4.865$  or \$181.71 value in U. S. Money.

Since £1 = 240 pence and the rate of exchange is near \$4.80 consider each pence the equivalent of \$0.02 in U. S. money. Then 5 pence = \$.10 in U. S. money.

$37.35 \times \$4.865 + (5 \times .02) \$.10 = \$181.81.$

- 15-40
11. Reduce £15 8s 3d to U. S. currency, exchange rate \$4.85
  12. Reduce £20 10s 10d to U. S. currency, exchange rate  $4.83\frac{1}{2}$
  13. Reduce £25 3s 8d to U. S. currency, exchange rate 4.84
  14. Reduce £ 9 15s 11d to U. S. currency, exchange rate  $4.83\frac{1}{4}$
  15. Reduce £24 17s 1d to U. S. currency, exchange rate 4.83
  16. Reduce £ 8 19s to U. S. currency, exchange rate  $4.84\frac{1}{2}$
  17. Reduce £16 15s to U. S. currency, exchange rate  $4.85\frac{1}{2}$
  18. Reduce £33 10s to U. S. currency, exchange rate 4.86
  19. Reduce £10 8s to U. S. currency, exchange rate  $4.87\frac{1}{2}$
  20. Reduce £50 5s to U. S. currency, exchange rate  $4.83\frac{3}{4}$
  21. Reduce £ 8 3d to U. S. currency, exchange rate 4.87
  22. Reduce £12 10d to U. S. currency, exchange rate  $4.86\frac{1}{2}$
  23. Reduce £48 7d to U. S. currency, exchange rate  $4.84\frac{3}{4}$
  24. Reduce £27 2d to U. S. currency, exchange rate  $4.85\frac{1}{2}$
  25. Reduce £25 5d to U. S. currency, exchange rate  $4.87\frac{1}{2}$
  26. Reduce 12s 8d to U. S. currency, exchange rate  $4.87\frac{3}{4}$
  27. Reduce 17s 4d to U. S. currency, exchange rate 4.85
  28. Reduce 10s 1d to U. S. currency, exchange rate 4.84
  29. Reduce 9s 11d to U. S. currency, exchange rate  $4.86\frac{1}{2}$
  30. Reduce 5s 10d to U. S. currency, exchange rate  $4.83\frac{3}{4}$

**PROGRESS TEST NUMBER EIGHT**

**Test 8A—Balance—(Time 5 Min.)**

	1.	2.	3.	4.	5.
6.	\$764.56	\$322.59	\$212.54	\$ 69.34	\$312.59
7.	73.82	7.86	9.20	129.83	80.40
8.	.96	39.40	351.69	59.64	9.99
9.	54.32	593.22	8.34	70.56	205.13
10.	<u>986.54</u>	<u>7.96</u>	<u>2.22</u>	<u>.98</u>	<u>2.96</u>

**Test 8B—Net Ton—2000 lb.—(Time 5 Min.)**

Accumulate each of the following examples. (Divide mentally by 2 and point off 3 places.)

- |  |   |
|--|---|
| 1. 8645 lb. Pig Iron at \$ 7.00 net ton.<br>12220 lb. Pig Iron at 10.50 net ton.<br>6640 lb. Pig Iron at 8.80 net ton.<br>14666 lb. Pig Iron at 7.80 net ton.<br>3245 lb. Pig Iron at 11.00 net ton. | 3. 10640 lb. Coal at \$6.60 net ton.<br>9880 lb. Coal at 6.40 net ton.<br>7345 lb. Coal at 8.80 net ton.<br>6666 lb. Coal at 6.90 net ton.<br>12222 lb. Coal at 7.00 net ton.     |
| 2. 12260 lb. Hay at \$12.00 net ton.<br>9864 lb. Hay at 14.50 net ton.<br>12240 lb. Hay at 12.10 net ton.<br>8340 lb. Hay at 16.00 net ton.<br>8880 lb. Hay at 14.40 net ton.                        | 4. 8336 lb. Salt at \$18.00 net ton.<br>7856 lb. Salt at 20.50 net ton.<br>12640 lb. Salt at 22.00 net ton.<br>8936 lb. Salt at 25.00 net ton.<br>7664 lb. Salt at 20.40 net ton. |

**Test 8C—Gross Ton—2240 lb.—(Time 15 Min.)**

Multiply from right of keyboard and divide by 2240.

- |                                      |  |
|--------------------------------------|--|
| 1. 8864 lb. at \$4.50 per gross ton. | 11. 2450 lb. at \$43.00 per gross ton. |
| 2. 62345 lb. at 1.12 per gross ton.  | 12. 9864 lb. at 55.30 per gross ton.   |
| 3. 60309 lb. at 3.14 per gross ton.  | 13. 12863 lb. at 20.00 per gross ton.  |
| 4. 7346 lb. at .85 per gross ton.    | 14. 7642 lb. at 64.00 per gross ton.   |
| 5. 3264 lb. at 1.50 per gross ton.   | 15. 2946 lb. at 75.50 per gross ton.   |
| 6. 23575 lb. at 1.90 per gross ton.  | 16. 12888 lb. at 45.50 per gross ton.  |
| 7. 7133 lb. at 2.80 per gross ton.   | 17. 3265 lb. at 36.00 per gross ton.   |
| 8. 5586 lb. at 2.45 per gross ton.   | 18. 9873 lb. at 76.50 per gross ton.   |
| 9. 18645 lb. at 5.64 per gross ton.  | 19. 10500 lb. at 66.60 per gross ton.  |
| 10. 22096 lb. at 3.40 per gross ton. | 20. 5562 lb. at 82.00 per gross ton.   |

GOALS	TEST 8A	TEST 8B	TEST 8C
Excellent	Balance	4 problems correct	18 problems correct
Normal	9 problems correct	3 problems correct	15 problems correct
Fair	7 problems correct	2 problems correct	12 problems correct

### ADDITION EXERCISES

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
174.56	984.57	24.56	176.00	2.07	186.40	900.10	76.59	225.46	377.89
16.48	42.90	868.79	32.45	498.00	30.11	16.49	554.90	16.49	20.30
86.70	37.50	13.77	87.66	11.58	26.40	48.60	75.66	27.59	42.55
3.31	1.19	60.57	.85	45.36	98.60	4.37	6.29	96.50	3.27
546.78	338.60	720.00	30.67	19.57	3.25	157.83	225.49	3.38	172.23
1.60	21.85	37.59	337.82	437.60	243.16	150.72	64.39	768.92	35.44
83.43	64.38	74.26	982.31	11.86	57.46	36.59	38.60	18.50	63.28
34.34	87.23	538.60	42.22	177.84	744.39	781.65	49.70	37.50	9.24
62.18	2.21	45.87	42.35	85.40	38.92	690.50	97.51	2.03	986.67
35.16	186.59	5.29	.75	79.92	1.26	47.60	3.21	143.08	2.09
1.60	48.92	53.49	38.60	3.37	553.79	26.58	505.41	93.26	45.81
163.89	963.42	26.40	115.39	.57	37.82	362.80	16.40	12.20	17.26
7.90	11.71	495.17	442.69	95.38	17.82	42.59	32.07	7.65	9.80
621.22	33.75	63.80	19.66	76.38	87.69	24.67	203.06	57.23	57.23
<u>24.67</u>	<u>166.57</u>	<u>73.29</u>	<u>37.50</u>	<u>111.83</u>	<u>775.48</u>	<u>787.21</u>	<u>109.67</u>	<u>41.88</u>	<u>513.65</u>

### INTEREST

Money paid for the use of money is called interest. The amount borrowed is called the principal. The per cent charged for one year's use of the principal is called the rate. The sum of the principal and the interest is called the amount.

Time may be expressed in years, months or days. Sometimes a year is considered to be 360 days, and sometimes 365 although in common business practice a year of 360 days, or 12 months of 30 days each is used.

In computing the interest for any number of days on a basis of 360 days to the year, simply divide the interest for one year by 360 and multiply by the number of days.

$$\text{Thus, } \frac{\text{principal} \times \text{rate} \times \text{days}}{360} = \text{interest}$$

Find the interest on \$246 for 130 days at 6%.

$$\frac{\$246 \times 130 \times .06}{360} = \$5.33 \text{ interest}$$

Multiply from right of keyboard and divide without clearing the machine. Find the interest on:

360 days per yr.

11. \$960.00 for 72 days at 6%
12. 124.00 for 140 days at 5½%
13. 835.00 for 96 days at 5%
14. 910.00 for 45 days at 6%
15. 375.24 for 35 days at 6½%
16. 140.50 for 220 days at 4%
17. 2400.00 for 122 days at 4%
18. 2960.00 for 84 days at 4¾%
19. 784.20 for 96 days at 3%
20. 860.00 for 75 days at 4¼%

365 days per yr.

21. \$310.00 for 48 days at 5%
22. 340.50 for 330 days at 6%
23. 760.00 for 15 days at 5½%
24. 1246.20 for 100 days at 4%
25. 3240.00 for 44 days at 5¾%
26. 1260.50 for 12 days at 4½%
27. 3540.00 for 19 days at 7%
28. 4000.00 for 75 days at 6%
29. 2110.00 for 255 days at 5½%
30. 1690.50 for 56 days at 4%

## ADDITION EXERCISES

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
147.82	76.48	339.00	433.17	195.41	310.98	853.59	11.75	981.59	165.48
1.43	3.35	23.35	48.92	19.57	16.48	13.58	176.49	16.59	14.37
.85	14.50	914.50	25.18	52.05	3.36	37.59	64.35	33.45	47.84
337.50	87.69	98.57	17.26	17.25	75.69	6.38	19.57	7.56	97.59
75.48	118.59	118.66	536.90	338.90	11.17	186.59	351.44	164.59	366.38
46.59	14.38	14.68	13.78	38.60	756.21	30.77	97.99	22.32	58.49
337.50	338.09	338.09	23.45	66.57	79.80	89.01	110.00	6.47	3.27
21.19	6.45	16.45	89.46	981.41	116.58	5.51	16.47	95.66	18.55
3.34	98.76	798.74	775.90	36.72	32.44	558.29	3.25	46.55	981.14
68.59	60.84	50.84	18.13	64.38	45.62	14.89	566.42	554.69	64.38
774.50	158.70	158.92	224.36	557.86	8.76	56.73	18.59	2.24	14.38
19.56	45.91	46.91	45.44	11.75	.21	3.35	.54	75.44	2.28
20.21	38.02	448.02	91.16	2.28	471.98	756.21	35.34	32.39	57.48
6.39	58.92	68.94	3.21	228.59	13.67	531.11	75.57	553.11	98.88
<u>133.33</u>	<u>765.68</u>	<u>765.68</u>	<u>339.00</u>	<u>16.58</u>	<u>68.79</u>	<u>33.98</u>	<u>14.36</u>	<u>68.90</u>	<u>768.11</u>

## INTEREST

In the following exercise change the months to days, using 30 days to each month, and find the total number of days mentally. Then multiply principal times rate times days and divide by 360.

Find the interest and amount:

	Principal	Rate	Time		Interest	Amount
			Months	Days		
11.	\$ 834.00	5%	5	6		
12.	224.00	5½%	4	12		
13.	188.00	6%	7	6		
14.	222.00	5%	8	4		
15.	190.00	4%	9	8		
16.	243.00	7%	4	12		
17.	240.25	6%	1	6		
18.	178.75	6½%	2	12		
19.	99.00	5%	5	6		
20.	78.50	4½%	4	12		
21.	77.50	3%	7	20		
22.	1200.00	4%	8	4		
23.	1500.00	5%	10	6		
24.	1984.00	6%	3	3		
25.	725.00	6%	5	4		

## INTEREST

### Bankers' 60-day Method

Most business loans are made through banks, usually for periods of 30 days, 60 days, or 90 days. When money is needed for a longer period, the loan is extended by renewing the note. The usual rate of interest in these cases is 6% and the bankers' 60-day method of computation is used. This is based on the fact that the commercial year contains 360 days, so that a rate of 6% a year is equivalent to a rate of 1% for 60 days.

$$\frac{60}{360} \text{ or } \frac{1}{6} \text{ of } 6\% = .01$$

**Rule 1.** To find the interest at 6% for 60 days, move the decimal point in the principal two places to the left.

Find the interest on \$240 for 60 days at 6%  
 $\$240 \times .01$  (rate for 60 days) = \$2.40 interest on 60 days

**Rule 2.** To find the interest at 6% for 6 days, move the decimal point in the principal three places to the left.

6 days is 1/10 of the 60-day period, therefore, 1/10  
of 1% (rate for 60 days) = .001, the rate for 6 days.

Find the interest on \$240 for 6 days at 6%  
 $\$240 \times .001$  (rate for 6 days) = \$.24 interest for 6 days

Figuring interest by the 6%—60-day method is very simple on the Comptometer. To find the interest on any principal for 6% for any number of days, it is only necessary to separate the time into periods or parts of periods, and then use that period as a basis.

#### Use 6 Days' Interest as a Basis

Since the rate of interest for 6 days is .001, point off 3 places in the principal; divide the given number of days by 6 and multiply the two results.

Find the interest on \$356.00 for 30 days at 6%  
 $\$356 \times .001 \times 5$  (30 days  $\div$  6) = \$1.78 interest for 30 days  
Hold .356 in permanent decimal position and multiply by 5.

The decimal point in the principal is always moved 3 places to the left and the given number of days divided mentally by 6.

Commit to memory the aliquots of 6.

1 day	1/6 of 6 days	—	.1667
2 days	2/6 or 1/3 of 6 days	—	.3333
3 days	3/6 or 1/2 of 6 days	—	.5
4 days	4/6 or 2/3 of 6 days	—	.6667
5 days	5/6 of 6 days	—	.8333

Compute the interest at 6% on each of the following:

- |                         |                         |
|-------------------------|-------------------------|
| 1. \$375.50 for 24 days | 11. \$189.00 for 3 days |
| 2. 546.00 for 12 days   | 12. 255.00 for 5 days   |
| 3. 298.00 for 18 days   | 13. 605.50 for 4 days   |
| 4. 75.50 for 24 days    | 14. 225.50 for 1 day    |
| 5. 85.70 for 36 days    | 15. 1640.00 for 2 days  |
| 6. 105.50 for 45 days   | 16. 2555.00 for 3 days  |
| 7. 850.50 for 33 days   | 17. 68.50 for 5 days    |
| 8. 1075.00 for 27 days  | 18. 98.50 for 1 day     |
| 9. 2405.00 for 45 days  | 19. 75.50 for 4 days    |
| 10. 225.50 for 6 days   | 20. 88.80 for 5 days    |

### INTEREST TABLE

In banks and insurance offices where a great many computations of interest have to be made, interest tables are used.

### INTEREST TABLE 360-Day Basis

Interest on \$1,000.00 for 1 day at from 1% to 12 7/8%

		1/8%	1/4%	3/8%	1/2%	5/8%	3/4%	7/8%	
1%	.0277778	.03125	.0347222	.0381944	.0416667	.0451389	.0486111	.0520833	1%
2%	.0555556	.0590278	.0625	.0659722	.0694444	.0729167	.0763889	.0798611	2%
3%	.0833333	.0868056	.0902778	.09375	.0972222	.1006944	.1041667	.1076389	3%
4%	.1111111	.1145833	.1180556	.1215278	.125	.1284722	.1319444	.1354167	4%
5%	.1388889	.1423611	.1458333	.1493056	.1527778	.15625	.1597222	.1631944	5%
6%	.1666667	.1701389	.1736111	.1770833	.1805556	.1840278	.1875	.1909722	6%
7%	.1944444	.1979167	.2013889	.2048611	.2083333	.2118056	.2152778	.21875	7%
8%	.2222222	.2256944	.2291667	.2326389	.2361111	.2395833	.2430556	.2465278	8%
9%	.25	.2534722	.2569444	.2604167	.2638889	.2673611	.2708333	.2743056	9%
10%	.2777778	.28125	.2847222	.2881944	.2916667	.2951389	.2986111	.3020833	10%
11%	.3055556	.3090278	.3125	.3159722	.3194444	.3229167	.3263889	.3298611	11%
12%	.3333333	.3368056	.3402778	.34375	.3472222	.3506944	.3541667	.3576389	12%

Find the interest on \$475 for 48 days at 5%

Interest on \$1000 for 1 day at 5% is \$.1388889  

$$.475 \frac{(475)}{1000} \times \$.13888 = \$.06597 \text{ interest on } \$475 \text{ for 1 day}$$

$$48 \times \$.06597 = \$3.17 \text{ interest}$$

In long multiplications, it is best to multiply from the left of keyboard and then clear register before multiplying by the days.

Use only the five numbers of the decimals.

1. Find the interest on \$ 264.00 for 90 days at 5%.
2. Find the interest on 598.00 for 72 days at 4%.
3. Find the interest on 345.00 for 83 days at 4 1/2%.
4. Find the interest on 435.00 for 65 days at 7%.
5. Find the interest on 505.50 for 81 days at 6%.
6. Find the interest on 324.40 for 56 days at 6 1/2%.
7. Find the interest on 434.50 for 39 days at 5 1/2%.
8. Find the interest on 1200.00 for 96 days at 4 3/4%.
9. Find the interest on 1450.00 for 82 days at 5%.
10. Find the interest on 2300.00 for 75 days at 8%.
11. Find the interest on 676.50 for 54 days at 6%.
12. Find the interest on 345.50 for 85 days at 5 1/2%.
13. Find the interest on 504.50 for 76 days at 6 1/2%.
14. Find the interest on 430.45 for 89 days at 4%.
15. Find the interest on 980.50 for 76 days at 7%.
16. Find the interest on 988.80 for 88 days at 4 1/2%.
17. Find the interest on 766.70 for 92 days at 5%.
18. Find the interest on 5445.50 for 45 days at 5 1/2%.
19. Find the interest on 4304.50 for 72 days at 6%.
20. Find the interest on 2145.00 for 56 days at 6 1/2%.

*Handwritten calculations:*  
 .03206  
 .066444  
 .043125  
 .084583  
 .084167  
 .052572  
 .066382  
 .158333  
 .01389  
 .151111  
 .11275  
 .052785  
 .09169  
 .047828  
 .190653  
 .1236  
 .05416  
 .03195  
 .71742  
 .38729

## ADDITION EXERCISES

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
492.88	73.36	26.21	375.00	136.40	219.80	938.20	86.79	141.67	415.11
51.63	117.19	2.40	30.25	10.19	15.40	71.16	838.10	98.50	94.33
25.50	23.85	984.40	41.83	61.80	73.68	8.47	170.17	224.35	113.78
104.25	303.12	46.70	420.80	95.95	285.19	198.50	35.23	98.66	43.33
97.50	51.67	617.98	23.30	838.10	384.66	17.59	18.71	3.25	66.57
3.26	75.2	27.34	117.19	14.97	3.36	42.50	45.27	481.11	181.44
269.56	64.90	437.50	62.50	75.68	.98	998.11	380.04	83.22	75.66
82.81	1.13	16.40	78.63	49.80	685.82	26.49	72.15	57.66	36.55
412.25	937.60	29.80	231.30	878.18	11.19	57.66	63.92	11.19	664.55
<u>3.19</u>	<u>367.20</u>	<u>832.43</u>	<u>75.68</u>	<u>66.48</u>	<u>35.20</u>	<u>134.33</u>	<u>458.20</u>	<u>606.77</u>	<u>19.50</u>

## INTEREST TABLE

## Permanent Decimal Point

The interest problems in the previous lesson may be worked over the permanent decimal point.

Find the interest on \$475 for 48 days at 5%.

Turn down the permanent decimal point between the 6th and 7th columns; this is the number 6 pointer.

Hold \$.475 in permanent decimal position and multiply toward the right by .1388889, dropping off the key-board. Result, 065958 interest on \$475 for one day. Multiply the amount in the machine by 48 using the three-factor multiplication method. Answer, \$3.17.

11. Find the interest on \$164.00 for 96 days at 5%
12. Find the interest on 345.00 for 70 days at  $6\frac{1}{2}\%$
13. Find the interest on 430.50 for 69 days at  $6\frac{3}{4}\%$
14. Find the interest on 567.00 for 66 days at 7%
15. Find the interest on 260.60 for 72 days at  $7\frac{1}{2}\%$
16. Find the interest on 205.50 for 75 days at 4%
17. Find the interest on 466.00 for 84 days at  $4\frac{1}{2}\%$
18. Find the interest on 280.00 for 15 days at  $5\frac{1}{2}\%$
19. Find the interest on 1230.00 for 12 days at  $6\frac{1}{2}\%$
20. Find the interest on 2550.00 for 36 days at  $7\frac{1}{2}\%$
21. Find the interest on 766.60 for 45 days at 5%
22. Find the interest on 855.70 for 54 days at 6%
23. Find the interest on 908.90 for 62 days at  $5\frac{1}{2}\%$
24. Find the interest on 533.50 for 77 days at 7%
25. Find the interest on 344.40 for 84 days at 5%
26. Find the interest on 354.50 for 92 days at 6%
27. Find the interest on 455.60 for 38 days at  $5\frac{1}{2}\%$
28. Find the interest on 155.50 for 42 days at 6%
29. Find the interest on 399.00 for 89 days at  $6\frac{1}{2}\%$
30. Find the interest on 588.80 for 64 days at 7%

## ADDITION EXERCISES

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
421.21	53.44	3.17	376.55	2.28	664.39	338.92	557.66	241.35	164.46
16.57	192.37	775.49	16.44	80.72	18.50	14.38	15.49	16.58	90.87
211.42	37.50	24.25	87.66	447.58	35.35	995.40	32.33	980.67	3.26
3.26	2.27	85.44	3.38	17.40	7.50	3.37	5.46	36.57	775.69
19.57	557.20	6.82	554.39	4.39	775.48	43.35	188.49	27.82	36.22
.16	75.40	322.42	87.69	338.90	22.33	10.11	336.59	9.11	2.27
980.11	953.21	19.40	200.10	54.37	1.15	.16	.15	553.44	901.24
534.25	38.92	441.38	16.11	9.71	666.57	3.18	49.70	26.48	16.39
67.58	442.20	16.59	137.60	775.49	22.11	85.33	809.00	448.70	40.29
<u>70.92</u>	<u>15.49</u>	<u>338.60</u>	<u>81.77</u>	<u>92.39</u>	<u>438.62</u>	<u>100.94</u>	<u>15.49</u>	<u>35.11</u>	<u>3.27</u>

## EXACT INTEREST

In computing interest it is often necessary to find the exact number of days between two dates. The time is then based on 365 days to a year or 366 days for a leap year. The number of days is then found by counting the number of days from the beginning date to the ending date, including the ending day but not counting the beginning day.

Find the number of days from April 6 to August 5th.

Remaining days in April	24
Remaining days in May	31
Remaining days in June	30
Remaining days in July	31
Remaining days in August	5

Total 121 days

Find the exact number of days between the following dates:

- |                                   |                                      |
|-----------------------------------|--------------------------------------|
| 11. March 5th to May 16th.        | 21. March 11th to November 10th.     |
| 12. January 10th to June 10th.    | 22. August 20th to December 1st.     |
| 13. April 14th to August 28th.    | 23. September 26th to December 19th. |
| 14. February 11th to June 15th.   | 24. October 28th to November 30th.   |
| 15. May 1st to November 10th.     | 25. July 14th to September 26th.     |
| 16. August 3rd to December 16th.  | 26. August 5th to October 16th.      |
| 17. July 4th to December 20th.    | 27. February 17th to August 5th.     |
| 18. February 4th to December 4th. | 28. April 8th to December 31st.      |
| 19. January 15th to June 15th.    | 29. March 28th to October 16th.      |
| 20. June 25th to December 11th.   | 30. January 2nd to July 24th.        |

How many days during a leap year between the following dates:

- |                                  |                                   |
|----------------------------------|-----------------------------------|
| 31. January 10th to April 4th.   | 34. January 20th to October 26th. |
| 32. January 15th to August 11th. | 35. February 14th to June 11th.   |
| 33. February 1st to July 14th.   | 36. February 3rd to July 16th.    |

### ADDITION EXERCISES

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
142.57	197.68	335.44	898.11	425.00	2.24	18.57	443.55	982.01	154.66
53.44	30.98	5.38	2.24	3.28	667.11	301.76	20.98	14.38	13.27
75.99	67.58	75.20	176.58	38.92	35.34	89.00	16.58	3.28	98.79
103.37	225.48	334.34	15.47	3.27	4.28	775.47	886.79	532.47	2.27
.18	16.59	42.22	53.29	13.22	98.00	11.75	52.22	75.48	64.55
774.38	33.21	10.10	1.87	338.92	345.45	693.29	161.41	75.69	848.92
98.60	2.28	553.28	447.68	16.48	3.30	25.24	27.68	202.98	15.48
534.77	664.39	75.60	801.57	505.92	76.48	186.79	56.61	10.91	3.25
10.98	10.92	5.27	35.46	31.52	184.38	25.25	664.55	86.57	639.08
<u>3.24</u>	<u>166.58</u>	<u>338.60</u>	<u>303.98</u>	<u>104.60</u>	<u>30.03</u>	<u>3.03</u>	<u>20.35</u>	<u>121.53</u>	<u>12.42</u>

### EXACT INTEREST

Exact interest is used by Federal, State and City governments and by some banks, or in any case of agreement. Interest tables based on 365 or 366 days are often used for reference.

The time is found by counting the actual number of days or from a time table which shows the exact number of days between any two dates.

The interest is then computed thus,  $\frac{\text{principal} \times \text{rate} \times \text{days (exact number)}}{365}$

Find the exact interest on \$777.00 at 5% from  
January 10th to May 15th.

$$\frac{\$777 \times .05 \times 125 \text{ (days between Jan. 10 and May 15)}}{365} = \$13.30 \text{ interest.}$$

Multiply from right of keyboard and divide without clearing the machine, whenever possible.

Find the interest on the following, using 365 days to the year.

11. \$556.00, 5% , from January 15 to December 20. 339
12. 235.00, 7% , from April 10 to October 14. 127
- ✓ 13. 335.45, 6½%, from May 15 to September 20. 28
14. 445.50, 4% , from February 12 to December 15. 506
15. 506.50, 4½%, from March 28 to September 20. 176
- ✓ 16. 540.50, 6% , from June 15 to November 15. 153
17. 660.50, 6½%, from April 15 to October 28. 196
18. 450.00, 7% , from July 14 to December 25. 164
- ✓ 19. 344.50, 8% , from May 8 to December 10. 216
20. 78.50, 5½%, from January 28 to November 15. 291

**ADDITION EXERCISES**

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
428.75	633.49	200.98	606.59	23.19	439.12	646.49	404.92	114.36	401.19
16.75	19.40	15.47	24.35	.11	98.67	90.76	30.46	224.33	16.57
6.37	303.52	49.60	186.47	31.98	6.48	4.35	251.78	6.45	3.21
231.90	19.40	3.03	31.13	664.38	65.77	191.60	11.47	19.51	50.48
33.27	843.11	254.37	366.52	186.57	446.55	21.11	76.58	60.59	665.48
191.80	30.51	196.46	88.19	2.26	225.34	606.39	202.18	856.47	10.11
57.68	40.98	33.24	909.56	997.69	113.25	29.89	15.48	25.19	60.87
89.21	3.25	86.47	30.25	27.89	60.57	303.27	75.46	303.25	741.11
557.86	339.80	.23	335.41	661.45	3.98	34.76	119.86	15.49	33.00
<u>833.21</u>	<u>60.45</u>	<u>533.43</u>	<u>76.59</u>	<u>38.90</u>	<u>277.27</u>	<u>112.66</u>	<u>26.57</u>	<u>155.47</u>	<u>633.24</u>

**INTEREST TABLE**

**365-Day Basis**

Interest on \$1,000.00 for 1 day at from 1% to 12<sup>7</sup>/<sub>8</sub>%.

		1/8%	1/4%	3/8%	1/2%	5/8%	3/4%	7/8%	
1%	.0273973	.0308219	.0342466	.0376712	.0410959	.0445205	.0479452	.0513699	1%
2%	.0547945	.0582192	.0616438	.0650685	.0684932	.0719178	.0753425	.0787671	2%
3%	.0821918	.0856164	.0890411	.0924658	.0958904	.0993151	.1027397	.1061644	3%
4%	.1095890	.1130137	.1164384	.1198630	.1232877	.1267123	.1301370	.1335616	4%
5%	.1369863	.1404110	.1438356	.1472603	.1506849	.1541096	.1575342	.1609589	5%
6%	.1643836	.1678082	.1712329	.1746575	.1780822	.1815068	.1849315	.1883562	6%
7%	.1917808	.1952055	.1986301	.2020548	.2054795	.2089041	.2123288	.2157534	7%
8%	.2191781	.2226027	.2260274	.2294521	.2328767	.2363014	.2397260	.2431507	8%
9%	.2465753	.2500000	.2534247	.2568493	.2602740	.2636986	.2671233	.2705479	9%
10%	.2739726	.2773973	.2808219	.2842466	.2876712	.2910959	.2945205	.2979452	10%
11%	.3013699	.3047945	.3082192	.3116438	.3150685	.3184932	.3219178	.3253425	11%
12%	.3287671	.3321918	.3356164	.3390411	.3424658	.3458904	.3493151	.3527397	12%

Find the interest on \$325.00 for 72 days at 5%.

The table shows the interest on \$1000.00 for one day at 5% to be \$.1369863. Then the interest on \$325 = .325 x .1369863 x 72 = \$3.20 interest.

Turn down the No. 6 decimal pointer. Hold .325 as the keyboard factor and multiply by \$.1369863. Leave this amount in the register and hold 72 in three-factor multiplication position and multiply.

Find the interest on the following:

- |  |   |
|--|---|
| 11. \$240.00 for 84 days at 7%.                            | 21. \$324.00 for 45 days at 5%.                             |
| 12. 766.00 for 92 days at 5 <sup>1</sup> / <sub>2</sub> %. | 22. 545.50 for 99 days at 4%.                               |
| 13. 340.50 for 125 days at 6%.                             | 23. 576.00 for 132 days at 7%.                              |
| 14. 125.00 for 76 days at 4 <sup>1</sup> / <sub>2</sub> %. | 24. 890.00 for 144 days at 7 <sup>1</sup> / <sub>2</sub> %. |
| 15. 780.00 for 27 days at 6 <sup>1</sup> / <sub>2</sub> %. | 25. 667.00 for 80 days at 8%.                               |
| 16. 550.50 for 72 days at 5%.                              | 26. 544.50 for 36 days at 5%.                               |
| 17. 754.50 for 60 days at 6%.                              | 27. 436.50 for 56 days at 7%.                               |
| 18. 666.70 for 54 days at 7%.                              | 28. 999.00 for 78 days at 7 <sup>1</sup> / <sub>2</sub> %.  |
| 19. 799.00 for 82 days at 5 <sup>1</sup> / <sub>2</sub> %. | 29. 899.80 for 90 days at 5 <sup>1</sup> / <sub>2</sub> %.  |
| 20. 867.60 for 77 days at 6 <sup>1</sup> / <sub>2</sub> %. | 30. 125.50 for 66 days at 6 <sup>1</sup> / <sub>2</sub> %.  |

## ADDITION EXERCISES

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
548.92	620.10	188.70	355.11	278.95	114.39	438.92	664.38	611.48	998.70
6.28	9.28	33.26	32.19	93.25	57.17	73.44	19.26	3.27	6.11
98.60	32.55	2.11	7.49	22.11	3.37	186.70	227.60	38.60	74.36
175.49	6.38	664.58	427.59	765.00	104.62	14.39	15.49	303.11	.98
2.27	19.50	18.59	17.59	18.50	75.47	2.28	909.80	19.50	234.32
86.57	336.48	302.24	3.11	321.55	13.26	887.60	4.37	45.46	27.27
35.43	553.27	56.47	335.28	65.40	987.60	2.23	116.47	3.03	261.76
433.54	3.37	13.31	19.58	19.55	30.27	18.50	20.75	981.04	45.45
870.69	185.67	662.24	202.48	775.48	175.49	303.60	309.61	16.57	789.00
<u>2.27</u>	<u>64.59</u>	<u>443.35</u>	<u>20.20</u>	<u>3.37</u>	<u>75.60</u>	<u>20.75</u>	<u>111.45</u>	<u>1.11</u>	<u>33.00</u>

## INTEREST TABLE

## 365-Day Basis

Compute the interest on the following on the basis of a 365-day year.

	Principal	Rate	Time		Days	Interest
			From	To		
11.	\$387.00	6%	Jan. 10	Nov. 15		
12.	298.00	6½%	Feb. 2	Oct. 12		
13.	117.80	5%	Mar. 15	Dec. 10		
14.	335.60	6%	Jan. 26	Sept. 17		
15.	406.50	5½%	Apr. 10	Nov. 2		
16.	765.00	4%	May 4	Dec. 26		
17.	145.50	4½%	Feb. 16	Aug. 10		
18.	566.00	7%	Feb. 14	Nov. 12		
19.	505.50	8%	June 6	Dec. 10		
20.	820.00	7½%	July 4	Dec. 28		
21.	910.00	6%	Mar. 28	Oct. 30		
22.	95.00	5%	Mar. 16	Sept. 10		
23.	88.00	5½%	May 2	Dec. 12		
24.	1450.00	7%	Apr. 12	Oct. 14		
25.	2200.00	7½%	July 8	Nov. 4		

## ADDITION EXERCISES

### Controlled-Key Review

Find the totals of the following; then re-add making the intentional partial key-strokes and correct.

A.	B.	C.	D.
3 6 <sup>4</sup> 5 2	9 0 6 4 2	2 9 6 4 2	7 8 3 2 9
8 9 0 4	<sup>3</sup> 7 8 3 7	7 <sup>4</sup> 0 0 8	1 <sup>5</sup> 6 0
3 6 2 9 8	5 9 6 2	1 3 2 9 6	1 2 0 0 <sup>5</sup>
1 5 2 9 <sup>5</sup> 3	1 2 0 0 <sup>4</sup>	<sup>4</sup> 9 6 4	7 8 3 6
6 7 8	9 8 3 9	5 9 9 8 <sup>4</sup>	5 <sup>4</sup> 9 2
<sup>*</sup> 9	7 <sup>4</sup> 5 6	3 8 6 9 2	7 4 2 2 9
2 2 5 6 3	8 <sup>4</sup> 9 3	7 <sup>5</sup> 6 3	1 3 8 <sup>4</sup> 0 0
8 9 <sup>5</sup> 0 4 1	1 7 2 9 <sup>4</sup>	<sup>4</sup> 8 4 2	5 9 <sup>3</sup> 7
2 9 <sup>3</sup> 6 4 5	6 9 8 3 2	9 9 8 <sup>3</sup>	7 <sup>4</sup> 8 6 4
<u>7 8 6 4 2</u>	<u>7 <sup>5</sup> 6 9</u>	<u>8 7 6 4</u>	<u>2 2 9 8 3</u>

Add by lines and by columns:

1. 354.87	43.55	954.37	186.70	751.00	16.59	553.66	10.11	157.66	<u>3028.51</u>
2. 18.59	654.82	20.02	337.55	653.78	377.58	643.19	885.20	60.57	<u>3651.30</u>
3. 437.96	87.60	197.60	25.46	27.90	231.11	16.59	29.02	511.28	<u>1564.52</u>
5. 76.66	35.46	30.28	756.90	3.26	78.66	90.87	554.33	85.41	<u>1711.83</u>
5. 45.24	180.43	776.58	48.38	74.59	886.50	174.89	183.29	404.37	<u>2774.27</u>
6. 336.70	57.66	331.28	19.58	91.28	30.27	35.33	74.29	58.92	<u>1035.31</u>
7. 47.55	64.22	17.69	38.99	479.01	885.11	885.49	225.48	38.79	<u>2682.33</u>
8. 337.50	161.59	224.35	663.59	26.57	49.00	196.58	64.57	551.45	<u>2275.20</u>
9. 25.46	17.48	75.48	24.33	95.67	339.01	42.26	338.70	994.35	<u>1752.74</u>
10. 774.50	338.60	559.72	168.44	190.45	10.90	552.23	191.56	75.26	<u>2861.66</u>
11. 25.48	21.86	20.98	43.33	24.68	448.02	228.60	492.26	221.73	<u>1526.94</u>
12. 75.31	4.48	442.11	988.21	644.39	50.96	606.57	769.80	682.11	<u>4243.94</u>
13. 447.62	89.57	18.70	30.27	53.33	175.48	85.48	19.75	20.75	<u>911.95</u>
14. 19.60	138.92	774.29	225.46	175.48	404.89	742.36	867.69	303.98	<u>3652.67</u>
15. <u>356.58</u>	<u>57.69</u>	<u>16.57</u>	<u>998.07</u>	<u>13.22</u>	<u>889.09</u>	<u>38.03</u>	<u>15.45</u>	<u>552.02</u>	<u>2936.72</u>

*3379.62*  
*1933.93*  
*4460.02*  
*4555.26*  
*3304.61*  
*166*  
*4873.17*  
*4892.13*  
*4721.50*  
*4718.65*  
*36858.89*

## INTEREST ON SAVINGS ACCOUNTS

Most banks receive deposits under checking accounts and savings accounts. Money deposited in checking accounts can be drawn out by checks; this money usually does not bear interest. Money deposited in a savings account cannot be drawn out by check, but the deposits are payable to the depositor, or to his order, upon demand. The money on deposit bears interest at some rate fixed by the bank. 3%, 3½% and 4% are common rates.

Interest is computed on savings on monthly balances, quarterly balances, or semi-annual balances; and the interest added to the amount on deposit at stated intervals—usually semi-annually or quarterly. Interest periods are usually from January 1 to July 1 and from July 1 to January 1. The rules applying to the interest computations of any bank may be found in the by-laws of the bank. To encourage thrift, it is a common practice to allow interest from the first of the month on deposits made during the first 15 days of January or July and during the first ten days of any other month. Deposits made after the above named days of each month will be allowed interest from the first day of the month following the deposits.

The following is a record of A. M. Dawson's savings account in the First National Bank. This bank computes the interest on monthly balances and credits the interest semi-annually at a rate of 3% per annum.

On a 3% basis the interest rates per month are as follows:

6 months = .015	3 months = .0075
5 months = .0125	2 months = .005
4 months = .01	1 month = .0025

Hold the monthly rate in the permanent decimal point position and multiply by the deposits credited to that month. The amounts are allowed to accumulate in the machine so that at the end of the last operation the entire amount of interest due on the deposits is shown.

$\$540.00 \times .015$  (rate for 6 months)  
 $75.00 \times .015$  (rate for 6 months)  
 $666.00 \times .0125$  (rate for 5 months)

NAME .....		<i>A. M. Dawson</i>				
ADDRESS .....		<i>293 E. Dunn St.</i>				
<b>In account with FIRST NATIONAL BANK</b>						
Year	Date	Withd'ls.	Deposits	Interest	Balance	
	<i>Jan. 1</i>		<i>540</i>			
	<i>10</i>		<i>75</i>			
	<i>Feb. 4</i>		<i>666</i>			
	<i>Mar. 8</i>		<i>125</i>			
	<i>10</i>		<i>333</i>			
	<i>Apr. 4</i>		<i>345</i>			
	<i>7</i>		<i>885</i>			
	<i>May 6</i>		<i>770</i>			
	<i>8</i>		<i>555</i>			
	<i>June 1</i>		<i>84</i>			

**ADDITION EXERCISES**

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
24.27	166.57	155.46	854.65	185.67	202.98	300.90	609.78	881.76	500.19
198.26	30.76	90.87	90.82	20.90	97.56	14.36	20.96	16.57	6.11
2.28	9.78	43.36	30.45	54.36	566.17	63.28	114.35	303.92	52.32
86.79	606.82	198.20	632.78	377.58	27.59	77.14	85.37	16.57	26.57
54.36	30.45	60.47	85.46	14.35	19.56	185.49	743.25	96.47	9.56
303.08	24.23	844.37	3.37	751.19	375.68	94.35	19.57	221.54	140.11
16.58	754.50	25.98	19.57	24.25	47.68	5.47	50.47	85.46	643.88
.23	18.56	435.35	48.92	19.50	19.48	447.69	303.29	452.18	75.68
90.83	3.30	60.57	202.32	6.58	435.67	994.37	15.47	19.60	11.72
6.47	42.24	843.54	16.57	743.54	744.37	30.21	3.03	536.72	3.03
7.64	1.54	.96	.75	.50	1.40	.76	.21	.20	.64
329.80	700.00	.73	.61	111.29	22.73	.54	2.12	6.16	20.15
.68	.93	1.21	231.59	.93	800.69	312.16	400.15	20.44	881.14
73.41	.46	200.59	.69	6.51	5.21	9.98	7.76	.50	.98
<u>222.20</u>	<u>552.12</u>	<u>2.63</u>	<u>.70</u>	<u>29.83</u>	<u>2.02</u>	<u>.73</u>	<u>.93</u>	<u>11.69</u>	<u>2.22</u>

**INTEREST ON SAVINGS ACCOUNT**

The following account was opened July 1. Note carefully that deposits made between the first and tenth of any month are credited with a full month's interest. Deposits made after the tenth do not draw interest until the next month.

In computing interest, savings banks disregard the cents and figure interest only on the dollars.

Interest on the following account is paid on monthly balances at a rate of 3% per annum.

Year	Date	Withd'ls	Deposits	Interest	Balance
	July 1		\$225 15		
	8		45 00		
	Aug. 2		198 10		
	8		77 50		
	15		85 00		
	20		340 25		
	Sept. 1		155 00		
	2		455 50		
	Oct. 4		88 00		
	Nov. 3		346 00		
	5		555 00		
	11		115 50		
	15		750 75		
	Dec. 2		78 80		
	4		466 60		
	8		386 50		

### ADDITION EXERCISES

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
156.72	665.47	534.11	787.67	186.57	175.68	879.00	756.28	389.00	17.68
33.25	86.59	16.57	30.27	30.92	30.98	16.58	80.79	91.14	306.54
867.56	25.24	90.87	19.80	754.67	6.58	244.35	743.21	4.46	98.79
2.24	2.27	3.26	3.25	80.67	366.57	30.26	16.57	58.90	3.27
19.70	196.57	909.80	355.46	30.26	15.47	164.38	224.35	998.70	221.19
336.58	33.26	16.57	45.90	858.11	276.58	30.25	26.77	45.46	16.58
77.99	775.35	33.26	25.25	116.57	19.57	186.58	554.39	117.56	443.25
442.35	11.17	153.28	19.80	30.45	336.57	27.59	16.57	22.11	64.28
20.98	303.21	434.18	505.98	276.57	27.59	644.35	905.46	327.89	743.00
<u>13.22</u>	<u>7.56</u>	<u>50.46</u>	<u>16.58</u>	<u>20.86</u>	<u>735.48</u>	<u>14.18</u>	<u>9.21</u>	<u>31.26</u>	<u>16.57</u>

### INTEREST ON SAVINGS ACCOUNT

When withdrawals of money are made, the amounts are deducted from the first deposits and then the interest figured for that period on the amount remaining after the deductions have been made.

	Withdrawals	Deposits
Jan. 1		\$335.00
Feb. 8		445.00
Mar. 1	\$246.00	

Subtract \$246 from \$335.00, the first credit, and figure the January interest on \$89.

The interest term on the following account extends from January 1st to July 1st, credit being given for deposits made between the first and tenth of each month.

Deposits made after the tenth do not draw interest until the next month.

Find the interest and the total balance at the end of period. Rate of interest 3%.

Year	Date	Withd'ls	Deposits	Interest	Balance
	Jan. 2		\$357 25		
	7		344 00		
	Feb. 4		450 00		
	9		777 50		
	15		505 25		
	20		346 00		
	Mar. 5	100 00			
	Apr. 1	175 00			
	3	66 00			
	15		455 15		
	20		346 40		
	25		130 00		
	May 1		444 40		
	June 1		505 50		
	20		660 00		

### INTEREST ON SAVINGS ACCOUNTS

The following account from January 1st to July 1st is to be figured at the rate of 4% (.3333 monthly rate on \$100). Deposits made on or before the fifth of the month bear interest from the first. When there are withdrawals, interest is paid on the lowest balance in the month. If there are no withdrawals, interest is paid on the balance on the fifth of the month.

#### Account No. 1.

Date	Withdrawal	Deposit	Interest	Balance
Jan. 1				√\$200.00
Jan. 10		\$ 50.00		250.00
Feb. 1		100.00		350.00
Feb. 12	\$25.00			√325.00
Mar. 1		125.00		√450.00
Apr. 3	40.00			√√410.00
June 3		125.00		√535.00

Analyze the account and select the smallest balance for the entire period which in this case is \$200.00 on January 1st. Place a red check before this amount. Now check the smallest balance for each of the five succeeding months—January, \$200; February, \$325; March, \$450; April, \$410; May, \$410, and June, \$535. Total, \$2330.  $\$23.30 \times .3333$ . With 2330 in the register dials, multiply by .3333 (three-factor multiplication method). Interest, \$7.77.

#### Account No. 2. Interest rate 4% from July 1st to January 1st.

Date	Withdrawal	Deposit	Interest	Balance
June 1				\$375.00
June 4		\$156.00		531.00
July 5		224.00		755.00
Aug. 5		440.00		1195.00
Aug. 15	\$325.00			870.00
Sept. 10	245.00			625.00
Nov. 15		224.00		849.00
Dec. 5		200.00		1049.00

1. Analyze and check the lowest balance in each month.
2. Total the lowest monthly balances.
3. To find interest, multiply by the monthly interest rate.

#### Account No. 3. Interest rate 4% from January 1st to July 1st.

Date	Withdrawal	Deposit	Interest	Balance
Jan. 1				\$300.00
Jan. 8		\$500.00		800.00
Feb. 4		216.00		1016.00
Feb. 25		96.00		1112.00
Mar. 1		125.00		1237.00
Mar. 10		65.00		1302.00
Mar. 15		10.00		1312.00
April 1	\$500.00			812.00
May 5		222.00		1034.00
June 1		75.00		1109.00

SUB-TOTALS

1.	2.	3.	4.	5.	6.
345.56	200.10	83.90	166.54	78.32	122.35
73.82	5.93	100.00	580.67	135.45	7.11
.96	2.80	.73	11.11	9.90	14.23
400.10	553.16	72.00	312.54	66.54	2.80
22.29	54.54	9.99	.16	7.77	205.19
156.45	2.20	133.54	210.72	500.16	.75
8.83	400.16	.93	7.70	92.34	3.47
201.59	333.54	446.59	.49	69.73	.82
<u>.88</u> 1210.48	<u>.92</u> 1553.35	<u>77.18</u> 924.86	<u>563.22</u> 1853.05	<u>312.59</u> 1272.80	<u>63.41</u> 420.13
70.10	17.56	5.93	9.93	.76	1.15
563.49	312.09	2.10	461.62	404.21	.96
11.11	5.55	319.73	77.83	22.25	319.73
29.38	16.34	5.09	212.59	16.93	5.09
666.32	222.14	111.73	6.93	555.89	16.60
.93	7.71	5.62	2.10	.96	7.00
469.22	159.83	69.83	593.60	49.93	11.12
<u>312.54</u> 5123.09	<u>.21</u> 741.43	<u>1.00</u> 521.03	<u>76.10</u> 1440.70	<u>1.15</u> 1052.08	<u>159.04</u> 520.69
16.64	664.20	416.73	555.55	345.31	38.00
73.81	100.10	703.20	11.69	7.00	2.94
.12	.77	212.49	73.64	.34	17.25
161.64	83.10	16.60	200.10	21.79	.87
6.66	500.64	200.10	17.97	222.14	.34
7.00	2.22	2.11	693.82	17.56	15.46
303.49	312.56	304.69	50.00	303.49	3.12
<u>11.12</u> 580.48	<u>73.70</u> 1737.09	<u>156.40</u> 2012.32	<u>69.32</u> 1672.08	<u>.83</u> 918.46	<u>123.21</u> 261.19
3914.05	4032.07	3458.21	4965.94	3273.34	1142.01

## ADDITION EXERCISES

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
289.00	165.47	447.68	228.69	775.47	134.25	886.57	990.43	142.56	330.89
553.27	28.79	16.58	75.48	40.63	45.00	14.37	10.57	75.46	16.57
16.57	854.67	196.01	886.58	64.37	38.26	153.68	775.48	885.38	265.47
86.57	186.57	32.76	211.08	175.48	197.68	77.11	186.57	16.59	119.56
198.70	37.69	85.49	53.49	30.29	24.65	226.57	14.37	303.26	40.45
335.46	275.46	885.47	185.47	75.36	6.57	19.80	65.48	85.67	976.48
22.11	663.21	42.57	775.48	311.76	884.36	332.54	3.26	446.57	57.46
65.47	21.47	19.80	19.80	663.28	331.27	41.37	226.57	13.28	3.26
989.70	86.57	606.47	2.26	19.80	17.59	899.08	881.58	2.86	481.15
121.21	338.79	28.79	64.57	537.68	5.48	446.57	57.68	227.59	775.48
30.28	505.89	597.68	84.37	19.70	997.60	86.57	98.70	557.60	23.21
676.59	58.79	14.38	443.67	64.37	27.58	15.47	331.25	10.89	86.49
75.46	753.57	164.58	116.21	449.80	80.97	557.48	47.89	636.26	559.70
90.89	74.37	20.89	52.43	18.47	225.32	60.47	101.98	75.48	411.21
25.46	16.57	202.57	16.57	25.48	332.48	71.68	16.57	38.69	85.48
404.17	664.38	28.79	76.47	980.70	800.10	884.38	24.25	745.19	14.38
446.57	95.48	387.69	587.69	221.35	54.38	19.70	.31	89.70	649.80
16.58	446.57	74.59	62.35	81.69	19.80	664.38	448.69	108.98	858.11
331.82	303.28	86.57	781.56	30.95	441.36	17.68	21.27	85.47	96.50

## TRANSPORTATION CHARGES

Merchandise may be shipped by freight, express, or parcel post. Each method of shipment has its advantages and disadvantages from the standpoint of speed and security. However, large quantities of goods are generally sent by freight and the railroads charge according to the quantity and character of the shipment. Commodities are classified into different classes and rates given for each class. The rates depend upon the type of goods, quantity, method of packing and risk involved in transportation.

Except for coal, and other commodities shipped by the ton, the rate is quoted by the 100 lb. Any shipment weighing less than 100 lb. is charged as 100 lb.

	Description articles & marks	Weight	Rate	Freight
11	Brick	79,846	.025 Cwt.	
12	Bit. Coal (2240)	88,645	1.25 G. T.	
13	Egg Coal (2240)	120,646	1.30 G. T.	
14	Coke (2000)	43,464	1.56 N. T.	
15	Flour	75,820	.205 Cwt.	
16	Lumber	56,646	.224 Cwt.	
17	Furniture	5,832	.78 Cwt.	
18	Furniture	4,264	.64 Cwt.	
19	Steel	88,132	.15 Cwt.	
20	Flour	56,044	.225 Cwt.	
21	Meat	1,678	.555 Cwt.	
22	Box merchandise	3,246	.28 Cwt.	
23	Box groceries	196	.112 Cwt.	
24	Box groceries	178	.145 Cwt.	
25	Box merchandise	504	.255 Cwt.	

## ADDITION EXERCISES

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
98.70	554.38	348.08	470.95	775.48	449.80	415.36	478.90	769.01	226.58
337.69	119.02	20.98	95.46	47.68	30.29	48.00	24.33	17.49	13.27
154.37	60.58	17.59	225.48	18.50	164.18	16.58	60.59	443.29	981.19
16.58	94.37	774.38	16.58	931.65	40.93	3.27	533.12	64.36	48.90
876.90	338.77	53.28	41.38	446.57	3.27	989.72	98.70	32.24	17.67
47.68	16.57	442.35	534.78	65.47	885.49	25.43	155.41	118.69	551.16
36.57	59.77	98.79	68.59	97.60	15.38	115.34	231.54	60.94	35.42
557.60	555.38	231.62	25.48	198.00	98.70	98.70	42.36	79.82	11.32
19.65	117.59	111.58	774.37	36.57	553.24	266.42	86.59	6.48	165.48
30.92	73.29	9.08	63.48	226.59	118.70	43.68	614.39	895.40	20.96
886.57	885.47	437.69	118.70	164.35	65.46	45.44	21.43	24.36	15.48
75.46	10.98	68.57	74.39	23.41	30.85	884.39	352.18	664.39	318.79
227.59	42.35	87.69	37.69	743.20	995.46	68.91	74.39	63.79	42.78
47.69	773.28	185.46	664.38	17.48	332.23	335.90	11.23	92.22	116.52
4.37	19.70	38.60	961.85	975.49	16.57	21.32	197.60	57.68	70.32
117.69	115.26	42.23	24.33	33.25	447.59	48.90	17.56	222.17	686.72
448.79	76.58	339.60	36.58	25.46	217.69	668.93	894.39	42.32	27.43
24.35	559.80	84.39	559.80	336.57	52.23	21.58	6.43	3.27	9.75
331.28	98.70	886.57	18.60	11.67	616.91	331.28	33.21	514.37	775.46

## TRANSPORTATION CHARGES

## Way-Bill

Extend the following freight-bill and find the total cost. Prove by accumulation over the permanent decimal.

No. Packages	Description of articles and special marks	Weight	Class or rate per cwt.	Freight charges
16	bbls. flour	3480	\$ .21	<u>731</u>
6	cases tomatoes	365	.16	<u>58</u>
1	bbl. sugar	470	.09	<u>42</u>
1	box prunes	100	.28	<u>28</u>
1	bag coffee	162	.30	<u>49</u>
12	boxes shoes	1620	.78	<u>1264</u>
6	crates mdse.	2175	1.25	<u>2719</u>
15	boxes groceries	8000	.80	<u>6400</u>
1	crate tinware	95	.31	<u>29</u>
2	boxes hardware	375	1.14	<u>428</u>
4	kegs spikes	480	.46	<u>221</u>
2	boxes shoes	104	.80	<u>83</u>
12	cases corn	720	.22	<u>158</u>
15	cases peas	720	.24½	<u>176</u>
22	cases pineapple	600	.23½	<u>141</u>
6	bags coffee	972	.29	<u>282</u>
				<u>126.09</u>

## ADDITION EXERCISES

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
27.58	117.19	197.60	980.59	324.56	971.00	29.00	175.46	304.22	976.58
118.79	303.26	305.31	24.33	16.59	21.58	305.21	86.57	19.70	46.57
74.36	18.50	15.38	995.67	775.41	118.60	16.59	302.25	3.27	13.28
25.48	46.57	20.98	15.49	20.87	15.37	38.79	886.57	27.56	775.46
225.33	885.48	997.68	997.68	209.11	553.47	754.68	53.46	987.05	228.60
31.26	442.36	19.80	53.67	16.58	20.75	64.39	18.11	64.78	90.78
775.48	15.48	775.46	35.46	20.86	37.68	15.48	226.57	30.25	36.75
443.36	225.47	96.11	553.28	991.68	553.11	664.49	443.35	118.59	115.49
574.11	774.36	20.76	315.36	65.46	116.57	475.68	52.29	38.79	553.46
28.69	191.44	224.35	64.58	19.67	25.44	86.59	18.60	20.97	39.80
664.59	20.79	316.49	117.50	202.31	18.69	302.25	557.68	225.22	24.33
18.70	41.98	19.70	554.37	43.25	304.51	181.67	663.28	30.27	664.35
49.68	664.37	206.57	17.56	116.47	14.37	24.22	75.46	16.59	443.27
664.38	26.57	28.79	775.46	464.57	443.26	275.68	889.70	441.35	20.86
19.67	19.88	664.38	221.35	16.57	16.57	489.70	302.25	114.11	4.35
23.24	751.23	119.70	45.36	533.26	327.68	14.36	54.37	30.97	175.46
332.24	553.48	18.60	664.36	165.48	164.58	552.25	17.68	64.35	303.27
186.70	15.46	476.58	18.70	84.35	34.25	665.47	403.26	311.21	55.11
741.37	20.11	30.45	225.44	14.37	886.57	18.60	116.47	64.35	648.92
<u>11.10</u>	<u>996.57</u>	<u>751.37</u>	<u>25.36</u>	<u>843.25</u>	<u>42.35</u>	<u>302.24</u>	<u>40.37</u>	<u>86.57</u>	<u>17.69</u>

## WHOLESALE PAPER

Writing or Bond paper is sold by the ream of 500 sheets and the quire of 25 sheets, but is priced by the pound. The weight per ream is then the basis of figuring the extensions.

Find the cost of 4 reams, 132 sheets of 18 lb. paper at  $14\frac{1}{2}c$  a lb.

4 reams and 132 sheets =  $4\frac{132}{500}$  or 4.264 reams. Then  $4.264 \times 18 \times \$.14\frac{1}{2} = \$11.13$  cost.

Turn down the permanent decimal point between the third and fourth columns. This is the number 3 decimal pointer. Hold the number of sheets to the right of the decimal point and multiply by 2 (the reciprocal of 500). Add the number of reams to the left of the decimal point. Result 4.264. Then multiply by the weight per ream and the price per pound using the three-factor multiplication method.

	Reams	Sheets	Weight per ream lb.	Price per lb.		Reams	Sheets	Weight per ream lb.	Price
11.	3	132	17	\$0.03	21.	10	120	46	\$1.48 Cwt.
12.	7	164	35	.04 $\frac{3}{4}$	22.	12	138	19	1.95 Cwt.
13.	10	120	46	.23	23.	13	184	22	1.47 Cwt.
14.	24	—	50	.19	24.	24	165	165	8.55 M.
15.	4	179	150	.07 $\frac{1}{2}$	25.	17	156	12	1.64 Cwt.
16.	14	164	26	.05	26.	32	—	120	1.37 Cwt.
17.	5	165	18	.14 $\frac{1}{2}$	27.	8	130	35	1.00 Cwt.
18.	10	—	17	.18	28.	13	64	26	1.15 Cwt.
19.	4	65	120	.13 $\frac{1}{2}$	29.	14	138	120	1.10 Cwt.
20.	34	68	155	.02 $\frac{1}{2}$	30.	3	248	155	1.15 Cwt.

## ADDITION EXERCISES

1.	2.	3.	4	5.	6.	7.	8.	9.	10.
296.13	153.19	975.68	20.98	742.28	398.70	164.57	476.59	275.46	995.01
71.95	7.16	15.48	532.24	10.91	21.37	52.61	16.58	30.98	64.97
832.61	77.42	663.29	186.79	342.35	886.57	995.47	303.21	886.57	28.79
312.78	853.28	243.25	65.48	75.41	75.48	38.90	74.38	160.92	773.26
7.10	939.19	942.17	661.38	217.68	226.57	854.36	776.28	96.59	397.68
755.29	413.92	19.70	227.68	884.26	991.69	301.98	275.68	476.57	84.35
10.96	229.31	3.28	84.57	13.26	445.36	84.37	229.81	660.90	164.31
443.10	66.93	181.70	396.58	171.59	11.75	289.67	18.70	33.26	29.80
49.53	521.76	885.47	15.13	38.72	664.21	45.38	558.92	386.70	489.70
173.74	942.44	48.21	662.25	587.89	43.26	598.70	75.46	552.33	202.99
654.19	374.59	386.79	441.98	498.70	116.57	21.98	664.58	35.46	75.81
301.60	7.51	881.50	793.26	64.98	885.46	664.39	37.69	20.89	6.58
77.42	60.95	64.39	37.59	823.24	52.11	3.28	886.57	776.47	884.37
619.37	176.68	707.68	909.67	911.21	775.46	448.70	116.58	42.37	176.89
832.17	53.29	18.70	45.86	27.68	38.79	29.67	15.48	885.47	991.58
100.56	664.38	423.25	5.92	431.27	661.58	8.67	553.26	668.78	40.78
739.30	49.78	555.19	875.68	36.78	884.28	771.48	47.68	31.27	552.78
51.95	798.70	90.14	115.48	884.36	15.48	54.13	886.57	331.79	365.41
936.77	26.57	645.27	79.43	332.56	444.17	885.47	175.68	85.44	27.68
<u>223.21</u>	<u>848.13</u>	<u>73.11</u>	<u>85.41</u>	<u>16.59</u>	<u>75.46</u>	<u>15.46</u>	<u>84.15</u>	<u>20.78</u>	<u>203.46</u>

## WHOLESALE PAPER

The size of the sheet is usually given on the invoice but does not affect the extension.

Extend the following:

	Reams	Sheets	Size	Weight per ream	Price
11.	4	165	65 x 34	65 lb.	\$0.18 lb. cash 3% off
12.		756	38 x 24	37 lb.	.16 lb.
13.	1	65	32 x 32	120 lb.	.12 lb.
14.	4	85	16 x 32	160 lb.	1.45 Cwt.
15.	2	165	64 x 12	32 lb.	11.65 Cwt.
16.		551	30 x 12	19 lb.	5.00 Cwt.
17.	12		12 x 18	30 lb.	.28 lb. C.O.D. less 33 1/3%
18.	1	149	24 x 28	20 lb.	.32 lb.
19.	9	369	20 x 30	50 lb.	.24 lb.
20.		8764			6.50 C.
21.	11	4	12 x 24	20 lb.	.06 <sup>3</sup> / <sub>4</sub> lb.
22.	1 <sup>1</sup> / <sub>2</sub>		18 x 32	32 lb.	.08 <sup>1</sup> / <sub>4</sub> lb.
23.	1	412	20 x 30	22 lb.	.10 <sup>1</sup> / <sub>2</sub> lb. C.O.D. 3%
24.	13	169	16 x 12	14 lb.	.08 lb. 33 1/3% off
25.		7645			7.65 C less 33 1/3 and 10%
26.				4676 lb.	.03 <sup>1</sup> / <sub>2</sub> lb.
27.				8963 lb.	.04 lb.
28.				950 lb.	.05 lb.
29.				7075 lb.	.04 <sup>1</sup> / <sub>2</sub> lb.
30.				10763 lb.	5.75 Cwt.
31.				12050 lb.	6.00 Cwt.
32.				1188 lb.	.03 lb.
33.				3045 lb.	.04 lb.
34.				21089 lb.	3.50 Cwt.
35.				15643 lb.	4.75 Cwt.

**PROGRESS TEST NUMBER NINE**

**Test 9A—Balance—(Time 10 Min.)**

	<b>1.</b>	<b>2.</b>	<b>3.</b>	<b>4.</b>	<b>5.</b>
6.	312.45	204.15	78.16	311.59	212.50
7.	2.19	7.64	2.22	90.10	28.45
8.	80.44	159.63	212.10	4.45	6.16
9.	.96	.93	1.11	1.00	.29
10.	500.00	406.60	70.45	346.59	111.50
11.	78.11	.22	.34	11.11	2.92
12.	2.22	500.10	711.15	140.45	414.55
13.	44.63	2.93	3.88	.22	.78
14.	150.70	11.59	.38	9.93	293.11
15.	<u>7.77</u>	<u>.64</u>	<u>115.55</u>	<u>664.59</u>	<u>7.76</u>

1118.85  
 130.60  
 462.78  
 4.29  
 1425.14  
 27.70  
 1768.47  
 53.44  
 465.41  
 796.31 29  
 6327.

**Test 9B—Interest, 360-day Basis—(Time 10 Min.)**

Use Interest Table on page 160 and work over permanent point.

- Find the interest on \$880.00 for 78 days at 6%.
- Find the interest on 150.00 for 60 days at 7%.
- Find the interest on 500.00 for 30 days at 5 1/2%.
- Find the interest on 650.00 for 120 days at 6%.
- Find the interest on 720.00 for 72 days at 7%.
- Find the interest on 800.00 for 56 days at 5 1/2%.
- Find the interest on 1200.00 for 45 days at 5%.
- Find the interest on 360.00 for 60 days at 6%.
- Find the interest on 450.00 for 75 days at 7%.
- Find the interest on 1100.00 for 36 days at 5 1/2%.
- Find the interest on 350.00 for 180 days at 6 1/2%.
- Find the interest on 1000.00 for 30 days at 7%.

146.647  
 291.847  
 763.889  
 102.353  
 139.412  
 122.222  
 166.666  
 6000000  
 879.9998  
 168.056  
 631.945  
 197.944

**Test 9C—Interest, 365-day Basis—(Time 10 Min.)**

Use Interest Table on page 164 and work over permanent point.

- Find the interest on \$2300.00 for 80 days at 6%.
- Find the interest on 345.00 for 72 days at 5 1/2%.
- Find the interest on 405.00 for 60 days at 6%.
- Find the interest on 988.00 for 120 days at 6%.
- Find the interest on 1200.00 for 66 days at 5 1/2%.
- Find the interest on 720.00 for 45 days at 6 1/2%.
- Find the interest on 100.00 for 90 days at 7%.
- Find the interest on 1500.00 for 90 days at 6%.
- Find the interest on 345.00 for 60 days at 7%.
- Find the interest on 700.00 for 36 days at 6 1/2%.
- Find the interest on 888.00 for 50 days at 6%.
- Find the interest on 900.00 for 45 days at 5%.

328.012  
 519.843  
 665.754  
 162.411  
 788.822  
 128.219  
 191.781  
 244.575  
 461.644  
 124.658  
 445.973  
 123.280

GOALS	TEST 9A	TEST 9B	TEST 9C
Excellent	Balance	10 problems correct	10 problems correct
Normal	14 problems correct	8 problems correct	8 problems correct
Fair	12 problems correct	7 problems correct	7 problems correct

**ADDITION EXERCISES**

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
632.41	287.50	584.32	699.72	811.18	698.57	255.94	800.85	736.68	536.28
500.37	694.58	511.32	375.34	536.79	741.38	755.99	490.62	411.35	29.85
487.69	4.00	300.74	933.47	997.83	433.38	52.33	631.52	7.53	7.58
210.75	860.49	62.57	88.95	47.81	850.91	607.21	372.65	962.46	768.31
999.61	4.00	290.71	112.41	328.60	.95	41.11	.41	379.14	480.87
732.49	668.88	800.00	912.30	5.94	809.71	821.63	503.10	47.26	768.28
84.26	.97	423.86	421.38	438.21	.35	48.53	253.11	325.36	.50
376.41	954.33	4.80	70.00	6.21	114.48	585.21	768.31	4.38	590.00
5.90	502.33	699.72	983.26	74.28	745.62	756.83	43.19	971.80	390.98
<u>431.89</u>	<u>8.46</u>	<u>.38</u>	<u>843.66</u>	<u>729.36</u>	<u>212.58</u>	<u>5.80</u>	<u>735.59</u>	<u>641.17</u>	<u>47.58</u>

**PACKING HOUSE**  
**Out-Going Invoices**

In many of the large cities, stockyards are maintained to which cattle, hogs, sheep and poultry are shipped from the country. Commission merchants usually sell the shipments to packers or other concerns on a commission basis. The wholesale markets then sell the commodities to the various markets.

Extend and foot the following invoice:

		GENERAL PACKING COMPANY				
		WOODSTOCK, ILLINOIS				
Order 2238				Sold by T. J. W.		
Ship 2/5				Terms 2/c		
Via 211/11				Car 134692		
Sold to JOHN DOE						
COAL CITY, ILL.						
Ship to				Sold		
			Weight	Price		
11.	100# PREM BACON 6/8 P P		103	.16		
12.	20# No. 8 FRANKS		19 $\frac{1}{2}$	.31		
13.	20# GEM FRANKS P ROLLS		20 $\frac{1}{2}$	.21		
14.	5# PREM LONG BOLO		5	.21		
15.	2 PCS LIBERTY SPEC		8 $\frac{1}{4}$	.24		
16.	1 PC HEAD CHEESE CRYSTAL		12 $\frac{1}{2}$	.19		
17.	25# KEG BEEF MIDDLE CASTINGS		25	.18 $\frac{3}{4}$		
18.	2 PCS GOOD #3 CALF SADDLES 75/90#		167	.25 $\frac{3}{4}$		
19.	50# DNSF PORK LOINS 8/10		53 $\frac{1}{4}$	.22		
20.	50# DNSF BOSTON BUTTS 6/9		48	.21		
21.	15# DNSF SPARE RIBS		15	.14 $\frac{3}{4}$		
22.	1 PC FRESH SKD HAMS 24/28		26 $\frac{1}{2}$	.19 $\frac{1}{2}$		
23.	1 PC DNSF STEER LIVERS 8/9		9 $\frac{3}{4}$	.17 $\frac{1}{2}$		
24.	3 PCS DNSF PK PLUX		15 $\frac{1}{4}$	.08		
25.	2 PCS LIBERTY SPEC		8 $\frac{1}{4}$	.24		
JM 2238						

## ADDITION EXERCISES

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
186.59	640.96	770.96	226.59	990.54	186.70	225.49	180.25	996.57	553.46
45.27	303.87	18.45	19.70	16.58	54.36	10.96	29.01	75.07	106.58
190.78	15.46	226.57	442.00	303.82	426.57	995.06	557.68	180.76	96.58
60.82	41.25	308.68	108.11	29.80	86.90	25.00	65.04	44.09	202.78
200.87	197.68	520.18	170.92	250.84	804.37	195.40	440.92	554.10	39.06
900.15	75.48	85.68	30.97	16.40	170.94	550.97	50.00	630.96	105.49
42.54	267.85	180.00	443.27	300.97	202.56	14.30	280.75	10.95	906.57
10.11	186.79	64.37	16.58	116.57	30.98	290.86	180.95	225.08	300.98
770.45	47.89	775.65	26.59	40.98	16.57	47.03	30.76	13.02	64.57
40.86	29.80	45.18	330.96	266.57	774.30	550.98	772.29	880.96	580.97
509.11	489.07	992.24	52.47	42.36	380.79	902.24	19.06	101.64	142.37
64.37	297.08	471.62	660.92	508.79	12.45	15.40	606.75	64.35	85.46
108.79	10.85	17.55	75.40	42.33	885.11	240.98	85.02	406.27	608.67
446.13	152.38	881.05	885.06	90.46	906.57	121.97	907.56	14.29	25.16
808.08	49.08	25.00	95.03	326.78	14.36	300.65	80.15	880.56	440.75

## PACKING HOUSE

## Average Weight Per Head

The total weight of a number of cattle is given in the following problems.

Find the average weight per head to even pounds.

- Find the average weight of 245 head of cattle weighing 84764 lb.
- Find the average weight of 158 head of cattle weighing 65430 lb.
- Find the average weight of 98 head of cattle weighing 54430 lb.
- Find the average weight of 248 head of cattle weighing 78976 lb.
- Find the average weight of 176 head of cattle weighing 95640 lb.
- Find the average weight of 68 head of cattle weighing 49640 lb.
- Find the average weight of 1784 head of cattle weighing 1048764 lb.
- Find the average weight of 198 head of cattle weighing 104876 lb.
- Find the average weight of 96 head of cattle weighing 64350 lb.
- Find the average weight of 178 head of cattle weighing 19487 lb.
- Find the average weight of 177 head of cattle weighing 78940 lb.
- Find the average weight of 65 head of cattle weighing 8633 lb.
- Find the average weight of 73 head of cattle weighing 56240 lb.
- Find the average weight of 87 head of cattle weighing 63760 lb.
- Find the average weight of 145 head of cattle weighing 114300 lb.
- Find the average weight of 316 head of cattle weighing 182460 lb.
- Find the average weight of 2243 head of cattle weighing 279477 lb.
- Find the average weight of 3246 head of cattle weighing 860955 lb.

### ADDITION EXERCISES

Add by lines and by columns:

1.	275.46	197.22	794.23	196.57	279.45	532.19	_____
2.	20.17	75.46	27.59	.31	75.17	27.59	_____
3.	197.68	885.47	118.50	4.37	445.62	243.14	_____
4.	324.33	554.36	5.46	885.47	879.80	65.48	_____
5.	8.67	18.70	553.26	30.92	30.75	175.68	_____
6.	775.01	224.36	49.78	665.49	6.57	302.87	_____
7.	23.21	337.68	337.69	244.33	557.68	65.48	_____
8.	116.45	43.67	229.80	17.58	118.61	884.38	_____
9.	86.57	996.25	15.46	558.79	32.45	29.80	_____
10.	<u>226.57</u>	<u>54.37</u>	<u>38.87</u>	<u>24.22</u>	<u>667.52</u>	<u>755.45</u>	_____

### PACKING HOUSE

#### Average Price

A great deal of the packing house billing requires only the average price per pound.

- (a) Find the total weight.
- (b) Accumulate the extensions for the total value.
- (c) Divide the total value by the total weight.

Find the average price per pound for each lot.

11. 658# at  $\$.12\frac{1}{2}$  lb.  
 975# at  $.08\frac{3}{4}$  lb.  
 1648# at  $.07\frac{1}{2}$  lb.  
 954# at  $.08\frac{3}{4}$  lb.  
928# at  $.13\frac{1}{2}$  lb.

Totals  
 Average price per lb.

13. 876# at  $\$.11\frac{1}{4}$  lb.  
 1568# at  $.16\frac{1}{2}$  lb.  
 855# at  $.09\frac{1}{4}$  lb.  
 643# at  $.08\frac{3}{4}$  lb.  
746# at  $.12\frac{1}{2}$  lb.

Totals  
 Average price per lb.

15. 793# at  $\$.08\frac{1}{2}$  lb.  
 134# at  $.11\frac{1}{2}$  lb.  
 746# at  $.16\frac{1}{2}$  lb.  
 459# at  $.18$  lb.  
608# at  $.09\frac{1}{4}$  lb.

Totals  
 Average price per lb.

12. 487# at  $\$.14\frac{1}{2}$  lb.  
 1354# at  $.15\frac{1}{4}$  lb.  
 977# at  $.16$  lb.  
 876# at  $.17\frac{1}{2}$  lb.  
948# at  $.19$  lb.

Totals  
 Average price per lb.

14. 786# at  $\$.09\frac{1}{2}$  lb.  
 579# at  $.11\frac{1}{2}$  lb.  
 1234# at  $.15\frac{1}{2}$  lb.  
 94# at  $.109$  lb.  
173# at  $.08\frac{3}{4}$  lb.

Totals  
 Average price per lb.

16. 1248# at  $\$.07\frac{1}{2}$  lb.  
 792# at  $.12\frac{1}{4}$  lb.  
 1344# at  $.16\frac{1}{2}$  lb.  
 695# at  $.15\frac{3}{4}$  lb.  
78# at  $.16$  lb.

Totals  
 Average price per lb.

## ADDITION EXERCISES

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
265.47	186.79	997.68	254.36	996.57	665.57	455.36	176.58	202.35	176.51
45.23	403.27	75.46	17.58	16.59	67.21	47.69	28.71	53.26	84.35
197.60	20.75	122.32	885.67	302.87	44.82	114.35	854.36	175.68	756.48
43.26	223.28	53.47	443.22	25.46	186.57	302.98	65.40	304.55	21.58
854.37	980.90	225.46	65.47	43.37	29.78	76.58	900.45	76.58	448.79
28.79	30.42	779.80	35.46	118.57	775.46	225.43	243.25	487.68	21.45
154.87	397.68	24.33	117.46	397.68	855.49	978.11	76.58	15.47	302.56
667.58	451.12	376.58	885.49	87.11	30.26	53.48	376.58	30.82	16.57
303.25	64.57	400.01	28.79	554.76	226.58	597.68	67.89	532.24	25.67
5.59	572.24	65.47	15.46	20.65	376.57	13.45	441.98	15.48	305.62
996.57	13.41	866.57	393.80	115.19	98.79	687.12	56.74	622.31	18.79
286.79	687.59	505.98	52.26	75.38	404.11	75.15	572.24	76.58	42.11
75.69	28.70	42.37	669.42	332.78	575.68	743.25	606.92	186.40	997.54
43.25	154.36	186.57	71.19	11.87	77.82	855.35	16.57	40.37	304.25
890.78	754.98	632.24	995.22	286.50	942.23	15.16	707.95	809.78	16.57

## PACKING HOUSE

## Cold Weight

Cattle and hogs are weighed when killed and the hot weight recorded. The cold weight is then found and the shrinkage deducted from the hot weight.

4560 lb. = hot weight

78 lb. = shrinkage

4482 lb. = cold weight      \$4.25 = price per Cwt. of cold weight.

Subtract the shrinkage from the hot weight and multiply by the price using the three-factor multiplication method. Result, \$190.49.

- |   |   |
|---|---|
| 11. Cold weight, \$3.65 per Cwt.<br>Hot weight            64380#<br>Shrinkage <u>960#</u> | 12. Cold weight, \$5.00 per Cwt.<br>Hot weight            948640#<br>Shrinkage <u>9460#</u> |
| 13. Cold weight, \$6.55 per Cwt.<br>Hot weight            95680#<br>Shrinkage <u>130#</u> | 14. Cold weight, \$7.50 per Cwt.<br>Hot weight            78490#<br>Shrinkage <u>590#</u>   |
| 15. Cold weight, \$3.55 per Cwt.<br>Hot weight            48760#<br>Shrinkage <u>140#</u> | 16. Cold weight, \$2.95 per Cwt.<br>Hot weight            94870#<br>Shrinkage <u>790#</u>   |
| 17. Cold weight, \$3.85 per Cwt.<br>Hot weight            14260#<br>Shrinkage <u>180#</u> | 18. Cold weight, \$6.50 per Cwt.<br>Hot weight            10640#<br>Shrinkage <u>160#</u>   |
| 19. Cold weight, \$8.65 per Cwt.<br>Hot weight            36400#<br>Shrinkage <u>630#</u> | 20. Cold weight, \$9.76 per Cwt.<br>Hot weight            64090#<br>Shrinkage <u>860#</u>   |
| 21. Cold weight, \$3.68 per Cwt.<br>Hot weight            63590#<br>Shrinkage <u>160#</u> | 22. Cold weight, \$3.75 per Cwt.<br>Hot weight            13847#<br>Shrinkage <u>990#</u>   |

### ADDITION EXERCISES

Add by lines and by columns:

1.	624.35	115.48	990.67	774.25	118.20	227.10	<i>2850.05</i>
2.	19.80	43.08	15.46	16.04	30.97	280.93	<i>406.27</i>
3.	35.08	775.46	180.65	198.70	996.57	38.90	<i>2225.36</i>
4.	195.00	339.80	300.76	446.00	20.95	185.46	<i>1187.77</i>
5.	750.00	552.04	52.44	70.95	440.92	90.82	<i>1157.17</i>
6.	16.40	86.90	20.98	224.10	553.20	880.56	<i>1782.14</i>
7.	220.53	224.03	154.67	880.45	15.46	40.70	<i>1535.84</i>
8.	387.06	53.47	289.70	30.95	770.58	550.94	<i>2082.70</i>
9.	10.00	442.06	14.07	150.92	27.61	20.00	<i>664.66</i>
10.	443.04	16.58	497.80	557.69	660.23	600.17	<i>2772.51</i>
	<i>2701.26</i>	<i>2046.70</i>	<i>5377.20</i>	<i>3350.00</i>	<i>3634.69</i>	<i>2772.51</i>	<i>1767.68</i>

### PACKING HOUSE Pro-Rating Freight

Often several dealers combine their shipments to make one or more carloads. The freight is then figured on the total weight and each man charged with his proportion.

- A 42,560 lb.
- B 68,750 lb.
- C 23,470 lb.

Total weight      134,788 lb.  
Freight charges \$114.28

Find the freight rate for 100 lb.  $\$114.28 \div 1347.88 = \$.084785$  price per Cwt. (Carry to 6 decimal places.) Then,

- A's share is  $425.60 \times .084785 = \$ 36.08$
- B's share is  $687.50 \times .084785 = 58.29$
- C's share is  $234.78 \times .084785 = 19.91$

            
\$114.28

Pro-rate the freight in the following problems:

- |   |   |   |
|---|---|---|
| <p>11. Freight \$ 75.35<br/>A — 65480#<br/>B — 3560#<br/>C — 7570#</p> <p>12. Freight \$275.38<br/>A — 4840#<br/>B — 96160#<br/>C — 8640#</p> <p>13. Freight \$132.48<br/>A — 78470#<br/>B — 4930#<br/>C — 12840#</p> <p>14. Freight \$125.45<br/>A — 76540#<br/>B — 9630#<br/>C — 12840#</p> | <p>15. Freight \$115.15<br/>A — 3640#<br/>B — 36400#<br/>C — 96580#</p> <p>16. Freight \$165.35<br/>A — 498640#<br/>B — 347960#<br/>C — 478250#</p> <p>17. Freight \$ 75.95<br/>A — 94860#<br/>B — 48340#<br/>C — 24650#</p> <p>18. Freight \$ 68.37<br/>A — 8640#<br/>B — 95680#<br/>C — 8390#</p> | <p>19. Freight \$115.17<br/>A — 28460#<br/>B — 9470#<br/>C — 74860#</p> <p>20. Freight \$135.45<br/>A — 68470#<br/>B — 9870#<br/>C — 3850#</p> <p>21. Freight \$167.75<br/>A — 289760#<br/>B — 92750#<br/>C — 48340#</p> <p>22. Freight \$ 78.68<br/>A — 65480#<br/>B — 9360#<br/>C — 8560#</p> |
|---|---|---|

**ADDITION EXERCISES**

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
421.21	53.44	3.17	376.55	2.28	664.39	338.92	557.86	241.35	165.46
16.57	192.37	775.49	16.44	80.72	18.50	14.38	15.49	16.58	90.87
211.42	37.50	24.25	87.66	447.58	35.35	995.40	32.33	980.67	3.26
3.26	2.27	85.44	3.38	17.40	7.50	3.37	5.46	36.57	775.69
19.57	557.20	6.82	554.39	4.39	775.48	43.35	188.49	27.82	36.22
.16	75.40	322.42	87.69	338.90	22.33	10.11	336.59	9.11	2.27
980.11	953.21	19.40	200.10	54.37	1.15	.16	.15	553.44	901.24
534.25	38.92	441.38	16.11	9.71	666.57	3.18	49.70	26.48	16.39
67.58	442.20	16.59	137.60	775.49	22.11	85.33	809.00	448.70	40.29
70.92	15.49	338.60	81.77	92.39	438.62	100.94	15.49	35.11	3.27

**PACKING HOUSE**

Figure extensions and then total the inventory sheet.

Extend By		J. T.		<b>INVENTORY</b>				108		Plant	
Checked By		W. M.		Sheet No.				6			
Footed By		L. C.									
Footings Checked By		M. H.		Powder		DEPT. No. 41		Date		Dec. 31st 19	
Pieces	Size	Est. Time Supplies Will Last	Description	Avg.	Weight	Price	Amount				
<b>RAW STOCK</b>											
			Magnet Powder		16 864	.70 cwt.					
			Break-O-Powder		13 242	1.10 cwt.					
			Pride Powder		13 645	.34 cwt.					
			" "		2 006	.30 cwt.					
			" "		5 846	.33 cwt.					
<b>MANUFACTURED STOCK</b>											
189	Bbl.		300 Magnet Powder	200	37 800	1.54 cwt.					
5	Kegs		Spec. Magnet Powder	125	625	1.53 cwt.					
29	Kegs		" " "	125	3 625	1.79 cwt.					
64	Kegs		Perlman Powder	85	5 440	2.15 cwt.					
24	Pails		" "	20	480	.56 ea.					
9	Bbl.		303 Hercules Powder	300	2 700	1.73 cwt.					
131	Bbl.		Fruit Growers Powder	275	36 025	2.01 cwt.					
1	Bbl.		Ham Pan Powder	250	250	1.92 cwt.					
99	Bbl.		305 Break-O-Powder	300	29 700	1.91 cwt.					
1	"		4 Head Break-O-Powder	300	300	1.73 cwt.					
1	"		Spec. " " "	300	300	1.80 cwt.					
14	Pails		Break-O-Powder	25	350	.66 ea.					
624	Pails		305 Pride Powder	25	15 600	.62 ea.					
201	"		Spec. " " "	25	5 025	.60 ea.					
149	"		Mohawk Powder	25	3 725	.62 ea.					
<b>BLUE BONE TONNAGE SUPPLIES</b>											
500	Bags	1 wk.	Branded B. F. Bags Tonnage			82.50 M.					
50	"	"	Plain " " " "			79.00 M.					
75	"	"	" " " " "			81.85 M.					
800	"	"	Branded " " " "			85.35 M.					
750	"	"	Paper Bag linings			27.10 M.					

GENERAL REVIEW

Addition—

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
3462.98	7630.24	9832.64	1239.00	6421.25	8932.56	1200.24	1234.66	1382.98	6410.29
786.32	156.32	138.00	246.93	786.32	88.92	839.92	152.93	100.15	549.30
78.96	78.00	29.75	178.96	9.64	55.64	783.42	89.64	78.39	662.29
593.22	92.14	665.12	87.44	.78	7.83	93.88	222.55	66.42	88.64
9.39	1693.25	246.83	32.15	1254.60	9.22	1.51	3864.72	222.55	862.59
8.42	64.72	1596.00	2963.75	10.15	6.44	1.00	7.86	783.66	16.75
642.98	15.93	780.49	560.10	12.54	893.22	382.66	6.64	964.22	28.34
10.04	762.14	96.83	76.64	980.61	154.16	982.00	981.55	1598.66	986.22
22.21	893.82	224.89	89.32	788.22	786.22	400.17	80.45	33.32	7.83
783.64	964.16	593.00	404.93	466.98	2246.39	98.16	75.76	41.45	8.00
6.69	1.76	.54	.93	4.22	2.66	.22	3.14	80.00	22.49
755.43	786.42	786.49	864.62	64.39	78.16	46.14	298.66	346.22	1380.16
298.68	359.00	93.82	785.25	78.56	88.42	2664.14	428.55	77.45	22.64
54.32	72.84	66.66	34.93	9.39	93.89	155.93	7.64	9.22	2.96
79.84	39.62	115.90	142.00	1554.92	564.22	92.96	.88	554.66	76.00
6.25	240.75	885.95	156.98	778.36	893.29	63.24	38.93	783.24	441.11
7864.39	111.12	643.92	293.25	984.22	468.13	139.29	8.84	800.25	783.66
960.25	59.00	8.64	56.84	9.66	3.29	64.86	596.72	78.16	4.29
893.29	296.71	78.32	9.99	793.24	66.72	78.22	444.15	16.64	73.00
<u>5.64</u>	<u>555.93</u>	<u>92.64</u>	<u>1000.55</u>	<u>555.62</u>	<u>174.89</u>	<u>396.55</u>	<u>1234.69</u>	<u>2239.88</u>	<u>800.45</u>

Subtraction—

Find the balances:

Debit	Credit	Balance	Debit	Credit	Balance
11. \$4573.88	\$ 99.78		12. \$4652.29	\$ 38.24	
930.20			542.26	562.20	
7642.22	9600.89		7834.00	83.46	
938.64			392.24	79.79	
20.50			69.80	99.60	
<u>14105.44</u>	<u>9900.67</u>	<u>4194.77</u>			

Division—

- 13. Divide 495757.75 by 55
- 14. Divide 186.425 by 188
- 15. Divide \$963.40 by .034
- 16. Divide 927000 by 234.425

Multiplication—

- 17. 56.75 x 813.45
- 18. 129.755 x 84.3864
- 19. 843.22 x .00899
- 20. 26.09 x .04569
- 21. 45.62 x 245½
- 22. 2875 x 4030
- 9329 x 4025
- 7166 x 9008
- 8090 x 8100
- 7600 x 8008

Accumulate over the permanent decimal point:

- 23. 145½ x \$ .35½ per C.
- 2108 x .55½ per M.
- 46¾ x 3.75 per C.
- 155½ x 7.75 per C.
- 4484 x 5.75½ per M.
- 24. 16½ yd. at \$1.75 a yd.
- 205 yd. at .39 a yd.
- 12½ yd. at .09¾ a yd.
- 77¼ yd. at 1.05½ a yd.
- 7¾ yd. at .07¾ a yd.

## GENERAL REVIEW

### Payroll—

(Continued)

Find the total wage due each workman and the sum of the payroll:

- |                                       |   |
|---------------------------------------|---|
| 25. 52 hr. regular time               | 26. 43 hr. regular time                 |
| 56 16 hr. time & one half @ \$.60 hr. | 77.5 17 hr. time & one half @ \$.54 hr. |
| 8 hr. time & one quarter              | 8 hr. time & one quarter                |

### Interest—

Find the interest on each of the following accounts:

- |                                |                                |
|--------------------------------|--------------------------------|
| 360 days basis                 | 365 bays basis                 |
| 27. \$256.00 for 72 days at 6% | 31. \$440.50 for 54 days at 6% |
| 28. 175.50 for 124 days at 5%  | 32. 270.50 for 92 days at 6%   |
| 29. 850.40 for 69 days at 5%   | 33. 342.25 for 84 days at 5%   |
| 30. 777.00 for 45 days at 6½%  | 34. 660.00 for 136 days at 5%  |

### Discounts—

Find the net amount of each of the following and the sum of the results:

35. \$ 85.55 less 45- 5-5% *41.038*  
 36. 91.50 less 65- 5-5% *81.211*  
 37. 44.92 less 40-10-7½% *40.85*  
 38. 812.00 less 20-10-2½% *702*

Accumulate over the permanent decimal:

39. 125 yd. at \$1.14 per yd.  
 175 yd. at 2.43 per yd.  
 146 yd. at 1.57 per yd.  
 75 yd. at 1.15 per yd.  
 Less 25-10-5%

### Lumber—

Find the total cost of the following:

40. 16 pieces 3" x 12" x 18' at \$23.70 per M.  
 41. 125 pieces 4" x 8" x 22' at 32.45 per M.  
 42. 88 pieces 6" x 12" x 18½' at 24.55 per M.  
 43. 64 pieces 2" x 2" x 15½' at 42.00 per M.  
 44. 35 pieces 4" x 4½" x 20½' at 55.25 per M.  
 45. Find total cost.

### Reciprocals—

46. Find the reciprocal of 344 to six answer figures.  
 47. Find the reciprocal of 6755 to six answer figures.  
 48. Using the reciprocal method of division determine the percentage of sales to each department.

DRUGS	\$ 435.00
GROCERIES	648.00
HARDWARE	242.00
DRY GOODS	864.00
NOTIONS	246.00
	\$2435.00

*0029069249*

	17%
	<i>11.29 08032</i>
	<i>7.93 43178</i>
	<i>35.46 79276</i>
	<i>22.04 25214</i>
	100%

*410509*

### Distribution—

49. Distribute \$76,455.00 to the following partners:

Frey	21.08%	<i>16116.71</i>
Green	25.00%	<i>19113.75</i>
Jones	22.02%	<i>16833.99</i>
Smith	20.50%	<i>15673.28</i>
Conn	11.40%	<i>8715.27</i>

50. Pro-rate the rental charges \$6660.00 according to space:

250 sq. ft.	<i>307.50</i>
2225 sq. ft.	<i>2736.75</i>
750 sq. ft.	<i>922.50</i>
1228 sq. ft.	<i>1510.44</i>
972 sq. ft.	<i>1195.56</i>

*5425*

*122765*

## SUPPLEMENTARY WORK

The following exercises in addition afford splendid drill in key-location.

1.	2.	3.	4.	5.	6.	7.	8.	9.
11	22	33	44	55	66	77	88	99
12	21	31	41	51	61	71	81	91
21	23	13	14	15	16	17	18	39
13	32	32	42	52	62	72	85	97
31	24	23	24	25	26	27	58	79
14	42	34	43	53	63	73	83	95
41	25	43	34	35	36	37	38	59
15	52	35	45	56	63	74	86	96
51	26	53	54	65	46	47	68	69
16	62	36	46	57	65	75	84	92
61	27	63	64	75	56	57	58	29
17	72	37	43	58	67	76	89	98
71	28	73	34	85	76	67	98	89
18	82	38	47	59	68	78	82	95
81	29	83	74	95	86	87	28	59
19	92	39	48	56	69	79	86	94
91	25	93	84	65	96	97	68	49
15	29	34	49	53	64	73	87	91
51	52	43	94	35	46	37	78	19
13	24	31	41	52	63	74	84	93
<u>31</u>	<u>42</u>	<u>13</u>	<u>14</u>	<u>25</u>	<u>36</u>	<u>47</u>	<u>48</u>	<u>39</u>

## SUPPLEMENTARY WORK

Drill on the following exercises until each column can be added in a few seconds.

1.	2.	3.	4.	5.	6.	7.	8.	9.
111	222	333	444	555	666	777	888	999
121	242	313	414	515	626	717	828	989
131	282	363	484	535	696	787	838	939
141	232	343	434	575	636	737	848	919
151	262	393	454	595	626	767	838	949
161	252	373	424	565	686	727	828	969
171	232	383	464	525	676	797	818	989
181	212	323	484	585	646	747	868	939
191	272	353	434	545	616	737	858	959
121	292	393	494	515	676	797	878	969
171	282	363	424	535	636	767	868	929
161	252	343	474	595	686	747	898	919
151	232	373	464	555	626	757	838	949
181	252	393	414	565	696	737	818	979
131	262	363	434	545	636	717	878	969
141	272	323	484	525	646	727	868	929
191	212	343	424	585	656	767	848	939
151	232	373	464	535	626	747	838	969
161	242	313	474	565	686	727	868	929
141	262	353	434	545	646	737	856	979
<u>151</u>	<u>282</u>	<u>363</u>	<u>484</u>	<u>525</u>	<u>656</u>	<u>797</u>	<u>878</u>	<u>919</u>

## SUPPLEMENTARY WORK

The following exercises afford splendid drill in four figure additions.

1.	2.	3.	4.	5.	6.	7.	8.	9.
1111	2222	3333	4444	5555	6666	7777	8888	9999
1212	2323	3131	4343	5858	6464	7373	8484	9494
1313	2424	3636	4747	5656	6363	7878	8383	9696
1414	2525	3434	4646	5252	6161	7676	8989	9797
1515	2626	3838	4545	5757	6767	7474	8787	9292
1616	2727	3737	4949	5151	6969	7979	8686	9898
1717	2828	3939	4848	5858	6565	7575	8181	9393
1818	2929	3232	4343	5959	6868	7272	8383	9191
1919	2828	3333	4646	5757	6464	7171	8282	9696
1212	2727	3737	4242	5353	6262	7676	8989	9292
1717	2626	3131	4343	5151	6363	7575	8181	9797
1919	2525	3636	4141	5252	6767	7373	8585	9191
1515	2424	3939	4848	5353	6464	7474	8888	9494
1414	2323	3838	4444	5858	6565	7979	8282	9898
1313	2222	3232	4545	5959	6161	7878	8787	9696
1616	2121	3434	4949	5757	6262	7171	8181	9797
1515	2525	3737	4747	5656	6363	7575	8686	9595
1414	2626	3131	4343	5858	6464	7979	8484	9191
1313	2727	3232	4242	5454	6767	7373	8787	9898
1212	2828	3636	4141	5252	6868	7171	8383	9393
<u>1414</u>	<u>2424</u>	<u>3737</u>	<u>4646</u>	<u>5151</u>	<u>6969</u>	<u>7272</u>	<u>8181</u>	<u>9797</u>

## SUPPLEMENTARY WORK

## Permanent Decimal Point

Keep a record of your time on each group of problems.

- |                              |                                  |                                |  |
|------------------------------|----------------------------------|--------------------------------|--|
| 1. $31 \times 2.65$          | 6. $230 \times .75$              | 11. $12 \times .05\frac{1}{2}$ | 16. $65\frac{1}{2} \times 12.3$        |
| 2. $470 \times 9\frac{1}{2}$ | 7. $12.35 \times .62\frac{1}{2}$ | 12. $14 \times 12.05$          | 17. $5\frac{1}{2} \times 2\frac{1}{2}$ |
| 3. $36 \times 10.05$         | 8. $800 \times .25$              | 13. $30 \times 3.65$           | 18. $\frac{1}{2} \times 2.5$           |
| 4. $117 \times 6\frac{1}{4}$ | 9. $43 \times \frac{1}{4}$       | 14. $565 \times 3.50$          | 19. $121 \times \frac{3}{4}$           |
| 5. $42 \times 42$            | 10. $1\frac{1}{2} \times 323$    | 15. $57 \times 1\frac{1}{4}$   | 20. $262 \times .75$                   |

## Accumulation—

- |  |   |  |
|--|---|--|
| 1. $3652 \times 2.50$ per M.<br>$1211 \times .07\frac{1}{2}$ each<br>$250 \times .75$ per C.<br>$304 \times 10.05$ per M.      | 2. $643$ lbs. at $\$.37$ per Cwt.<br>$2010$ lbs. at $1.35$ per Cwt.<br>$560\frac{1}{2}$ lbs. at $2.50$ per Cwt.<br>$7584$ lbs. at $.87\frac{1}{2}$ per Cwt. | 3. $39 \times .00\frac{1}{2}$ each<br>$401 \times 3.50$ per M.<br>$71 \times .85$ per C.<br>$2389 \times .10$ each |
| 4. $1100 \times 3.75$ per M.<br>$21 \times .60$ per C.<br>$1\frac{1}{2} \times .05$ each<br>$300 \times .20\frac{1}{2}$ per C. | 5. $520 \times 1.03\frac{1}{2}$ each<br>$67 \times .75$ each<br>$456 \times 2.50\frac{1}{2}$ each<br>$9591 \times .05$ each                                 | 6. $.723 \times .75$<br>$4\frac{1}{2} \times 10.00$<br>$360 \times .22\frac{1}{2}$<br>$4500 \times .45$            |

## Single Extensions—

- |   |   |
|---|---|
| 1. 7 lbs. @ $\$.35$                         | 26. 501 yds. @ $\$.40\frac{1}{2}$           |
| 2. $4\frac{1}{2}$ lbs. @ $.10$              | 27. 12 yds. @ $1.30\frac{1}{2}$             |
| 3. 27 lbs. @ $.03$                          | 28. 465 yds. @ $.10$                        |
| 4. 60 lbs. @ $.02\frac{1}{2}$               | 29. $37\frac{1}{4}$ yds. @ $.03$            |
| 5. $5\frac{1}{2}$ lbs. @ $.17$              | 30. 206 yds. @ $.70\frac{1}{2}$             |
| 6. 210 lbs. @ $.05\frac{1}{2}$              | 31. $5\frac{1}{2}$ yds. @ $10.05$           |
| 7. 400 lbs. @ $.12$                         | 32. 32 yds. @ $3.27\frac{1}{2}$             |
| 8. $140\frac{1}{2}$ lbs. @ $.70$            | 33. 115 yds. @ $.35$                        |
| 9. 110 lbs. @ $.0\frac{1}{2}$               | 34. $10\frac{1}{2}$ yds. @ $.37\frac{1}{2}$ |
| 10. $33\frac{1}{4}$ lbs. @ $.12$            | 35. 200 yds. @ $.06$                        |
| 11. $20\frac{1}{2}$ lbs. @ $1.30$           | 36. 430 yds. @ $1.10$                       |
| 12. 32 lbs. @ $.85$                         | 37. 313 yds. @ $.13$                        |
| 13. 312 lbs. @ $.10\frac{1}{4}$             | 38. $9\frac{1}{4}$ yds. @ $.95\frac{1}{2}$  |
| 14. 82 lbs. @ $.30$                         | 39. 207 yds. @ $.11$                        |
| 15. 350 lbs. @ $.0\frac{1}{4}$              | 40. 30 yds. @ $.30$                         |
| 16. $55\frac{1}{2}$ lbs. @ $.20$            | 41. $100\frac{1}{2}$ yds. @ $.05$           |
| 17. $11\frac{1}{4}$ lbs. @ $.65$            | 42. 372 yds. @ $.35\frac{1}{2}$             |
| 18. 240 lbs. @ $.70$                        | 43. 83 yds. @ $1.04\frac{1}{2}$             |
| 19. $13\frac{1}{2}$ lbs. @ $.50\frac{1}{2}$ | 44. 600 yds. @ $.0\frac{1}{4}$              |
| 20. 43 lbs. @ $2.50$                        | 45. 111 yds. @ $.11$                        |
| 21. 36 lbs. @ $.0\frac{1}{2}$               | 46. $28\frac{3}{4}$ yds. @ $.09$            |
| 22. 108 lbs. @ $.05$                        | 47. 6 yds. @ $6.00$                         |
| 23. 243 lbs. @ $.60$                        | 48. $20\frac{1}{4}$ yds. @ $.75$            |
| 24. 19 lbs. @ $8.50$                        | 49. $\frac{3}{4}$ yds. @ $20.00$            |
| 25. $20\frac{1}{2}$ lbs. @ $.06$            | 50. 221 yds. @ $.33\frac{3}{4}$             |

## SUPPLEMENTARY WORK

1.	2.	3.	4.	5.	6.	7.	8.	9.
45.63	12.25	82.71	82.02	35.64	57.56	28.35	23.56	71.11
37.16	3.26	36.27	75.15	28.71	21.13	7.10	.89	28.35
1.27	17.58	44.35	.25	12.35	.27	83.26	5.11	7.10
85.09	9.27	26.28	12.12	43.26	3.15	31.24	24.35	83.26
73.62	83.26	10.13	32.12	12.34	62.27	53.35	71.26	31.24
7.20	33.43	2.81	5.94	56.78	.85	24.65	.89	31.66
.35	50.50	32.05	8.56	92.29	93.26	3.21	3.33	24.65
82.26	6.57	.17	29.58	75.48	75.18	4.04	75.68	6.53
35.35	18.70	8.36	45.73	39.62	32.72	21.27	83.26	12.86
71.26	33.27	27.56	39.62	75.58	8.15	.35	.50	3.21
89.43	24.43	42.81	75.57	8.56	26.47	81.26	84.24	4.04
73.64	7.58	73.58	83.26	29.58	60.01	93.57	56.76	21.28
27.26	.32	9.62	54.87	45.63	.15	8.18	.89	.35
59.86	92.24	23.51	32.24	37.11	72.38	36.63	7.05	84.26
17.38	16.57	19.25	17.62	2.50	99.59	22.34	94.26	93.57
6.58	75.46	5.48	34.54	.35	5.49	96.57	3.21	8.18
86.57	23.21	98.70	3.28	3.76	85.47	3.27	16.58	36.73
11.19	45.36	4.36	64.35	83.43	2.27	85.46	7.50	22.34
5.57	8.69	53.49	7.78	56.67	84.37	3.39	86.70	2.28
86.57	85.80	5.48	86.70	4.38	3.28	18.60	3.27	43.25
1.11	6.57	86.70	11.18	75.69	68.75	44.35	17.59	78.90
22.97	75.66	16.59	28.79	20.98	7.69	3.28	86.70	4.38
20.15	4.10	5.64	.50	1.88	2.22	.78	7.80	14.86
9.83	22.14	10.98	16.84	20.64	14.64	16.44	16.44	9.93
4.45	6.93	.24	1.55	3.33	7.32	.50	5.63	20.10
12.69	8.22	.63	10.64	10.10	25.55	77.63	22.10	5.94

## SUPPLEMENTARY WORK

1.	2.	3.	4.	5.	6.	7.	8.
632.41	.87	993.47	74.28	621.11	511.36	590.11	632.24
500.37	412.25	88.95	889.36	82.63	7.53	664.37	18.70
498.69	3.26	112.41	698.57	48.53	562.46	962.46	357.89
210.75	17.58	912.30	741.39	585.20	379.14	47.26	852.70
999.61	9.27	421.38	421.38	756.83	447.26	325.36	615.80
732.39	83.26	70.00	850.91	5.80	325.36	64.38	114.67
85.28	33.43	983.26	1.95	800.85	4.38	971.80	213.81
387.41	13.24	873.56	809.71	631.52	971.80	511.17	731.25
5.90	62.43	16.79	.27	372.65	641.17	536.28	485.26
431.99	741.04	536.79	114.48	.41	129.85	536.11	3.85
297.58	.53	997.83	745.62	503.10	7.68	29.85	311.20
594.58	71.26	5.93	212.53	253.11	768.31	997.68	768.50
4.00	663.98	553.29	5.94	768.31	480.79	768.31	752.36
860.48	2.19	21.57	253.11	736.68	.50	480.79	8.62
33.19	75.46	196.40	52.33	30.25	15.49	768.29	952.20
668.88	83.26	388.79	5.11	176.89	376.11	16.58	548.67
28.96	441.78	16.58	607.21	665.48	98.70	995.47	10.11
441.37	168.59	870.19	32.67	20.96	664.33	752.23	732.89
18.79	964.20	85.49	855.49	233.21	303.26	87.69	27.50
90.54	18.89	700.00	47.60	76.57	19.70	664.33	302.24
777.48	464.30	175.46	843.21	954.23	768.31	20.95	119.80
3.11	755.48	545.90	427.60	231.21	75.00	19.77	55.46
464.29	14.86	9.84	3.40	7.56	5.64	5.62	2.12
700.10	100.00	16.75	76.84	200.10	201.29	21.73	70.50
<u>96.54</u>	<u>.95</u>	<u>111.24</u>	<u>222.15</u>	<u>9.98</u>	<u>7.73</u>	<u>155.96</u>	<u>116.84</u>

## SUPPLEMENTARY WORK

Accumulation of whole numbers. Keep a record of the time required to work the following problems and the per cent of accuracy.

- |    |  |     |   |     |  |
|----|--|-----|---|-----|--|
| 1. | $86 \times 55$<br>$32 \times 62$<br>$96 \times 96$<br>$82 \times 54$<br><u><math>63 \times 60</math></u>         | 9.  | $60 \times 59$<br>$63 \times 37$<br>$88 \times 88$<br>$74 \times 74$<br><u><math>55 \times 52</math></u>            | 17. | $886 \times 135$<br>$542 \times 352$<br>$216 \times 551$<br>$135 \times 266$<br><u><math>352 \times 264</math></u>                     |
| 2. | $60 \times 60$<br>$333 \times 222$<br>$653 \times 29$<br>$665 \times 431$<br><u><math>657 \times 313</math></u>  | 10. | $32 \times 32$<br>$48 \times 50$<br>$60 \times 99$<br>$53 \times 39$<br><u><math>67 \times 79</math></u>            | 18. | $228 \times 995$<br>$135 \times 954$<br>$259 \times 894$<br>$121 \times 940$<br><u><math>167 \times 916</math></u>                     |
| 3. | $66 \times 54$<br>$72 \times 30$<br>$88 \times 92$<br>$66 \times 73$<br><u><math>77 \times 55</math></u>         | 11. | $368 \times 113$<br>$355 \times 235$<br>$101 \times 536$<br>$210 \times 394$<br><u><math>486 \times 327</math></u>  | 19. | $275 \times 595$<br>$282 \times 551$<br>$543 \times 761$<br>$795 \times 541$<br><u><math>338 \times 347</math></u>                     |
| 4. | $60 \times 52$<br>$77 \times 89$<br>$86 \times 54$<br>$90 \times 99$<br><u><math>77 \times 82</math></u>         | 12. | $121 \times 536$<br>$215 \times 815$<br>$448 \times 875$<br>$315 \times 112$<br><u><math>280 \times 242</math></u>  | 20. | $187 \times 319$<br>$237 \times 285$<br>$111 \times 108$<br>$336 \times 102$<br>$114 \times 830$<br><u><math>318 \times 117</math></u> |
| 5. | $99 \times 51$<br>$67 \times 67$<br>$54 \times 52$<br>$69 \times 87$<br><u><math>77 \times 97</math></u>         | 13. | $294 \times 546$<br>$782 \times 358$<br>$324 \times 493$<br>$136 \times 449$<br><u><math>105 \times 816</math></u>  | 21. | $328 \times 431$<br>$56 \times 478$<br>$223 \times 521$<br>$998 \times 766$<br><u><math>51 \times 118</math></u>                       |
| 6. | $666 \times 666$<br>$884 \times 862$<br>$675 \times 545$<br>$672 \times 33$<br><u><math>689 \times 99</math></u> | 14. | $293 \times 340$<br>$293 \times 208$<br>$245 \times 161$<br>$490 \times 432$<br><u><math>442 \times 492</math></u>  | 22. | $452 \times 673$<br>$256 \times 54$<br>$339 \times 3683$<br>$58 \times 1377$<br><u><math>35 \times 214</math></u>                      |
| 7. | $65 \times 35$<br>$82 \times 92$<br>$73 \times 49$<br>$67 \times 50$<br><u><math>500 \times 60</math></u>        | 15. | $242 \times 449$<br>$202 \times 284$<br>$789 \times 176$<br>$825 \times 1012$<br><u><math>289 \times 295</math></u> | 23. | $9733 \times 454$<br>$486 \times 635$<br>$887 \times 356$<br>$29 \times 832$<br><u><math>439 \times 323</math></u>                     |
| 8. | $89 \times 89$<br>$67 \times 74$<br>$63 \times 82$<br>$64 \times 64$<br><u><math>55 \times 99</math></u>         | 16. | $122 \times 452$<br>$235 \times 520$<br>$157 \times 185$<br>$811 \times 318$<br><u><math>107 \times 604</math></u>  | 24. | $758 \times 445$<br>$329 \times 36$<br>$718 \times 856$<br>$25 \times 321$<br><u><math>45 \times 872</math></u>                        |

## SUPPLEMENTARY WORK

## Permanent Decimal Point

Accumulate the following:

- |  |  |  |
|--|--|--|
| 1. $260 \times \$15.30$ per C.<br>$995 \times 7.75$ per C.<br><u><math>3450 \times 4.50</math> per C.</u>  | 2. $20 \times \$ .50$ ea.<br>$5040 \times 1.35$ per C.<br><u><math>200 \times .87\frac{1}{2}</math> per C.</u>   | 3. $645 \times \$ .85$ per M.<br>$1525 \times .35$ per Cwt.<br><u><math>940 \times 1.35</math> per M.</u>  |
| 4. $87 \times \$3.00$ ea.<br>$500 \times .15$ ea.<br><u><math>454 \times .87\frac{1}{2}</math> ea.</u>   | 5. $465 \times \$3.50$ per M.<br>$5362 \times .14$ per M.<br><u><math>95 \times 7.50</math> per M.</u>   | 6. $4234 \times \$ .35$ per M.<br>$3006 \times 6.55$ per M.<br><u><math>25 \times 9.00</math> per M.</u>   |
| 7. $\frac{1}{2} \times \$ 35.00$ ea.<br>$75 \times 100.00$ per C.<br>$30 \times 100.00$ per M.<br><u><math>89 \times 64.00</math> per C.</u>   | 8. $346 \times \$1.50$ per C.<br>$4234 \times .75$ per C.<br>$6450 \times .12\frac{1}{2}$ per C.<br><u><math>750 \times .18</math> per C.</u>  | 9. $35 \times \$37.50$ per M.<br>$650 \times 10.00$ per M.<br>$435 \times 7.00$ per M.<br><u><math>565 \times 12.00</math> per M.</u>  |
| 10. $583 \times \$16.50$ per M.<br>$3256 \times 8.00$ per M.<br><u><math>94 \times 13.00</math> per M.</u>   | 11. $3541 \times \$ .67\frac{1}{2}$ per C.<br>$700 \times 3.25$ per M.<br><u><math>3234 \times 1.10</math> per M.</u>  | 12. $756 \times \$ .15$ per C.<br>$885 \times 3.75$ per C.<br><u><math>900 \times .12\frac{1}{2}</math> per C.</u>   |
| 13. $500 \times \$50.00$ per C.<br>$50 \times 50.00$ per C.<br>$5 \times 50.00$ per C.<br><u><math>\frac{1}{2} \times 50.00</math> per C.</u>  | 14. $6121 \times \$ .50$ per C.<br>$5040 \times 6.40$ per C.<br>$200 \times .87\frac{1}{2}$ per C.<br><u><math>980 \times .27</math> per C.</u>  | 15. $3561 \times \$ .90$ per C.<br>$10 \times 10.00$ per C.<br>$451 \times 7.25$ per C.<br><u><math>6000 \times 4.30</math> per C.</u>   |
| 16. $831 \text{ lb.} \times \$ .10$ per C.<br>$95 \text{ lb.} \times 3.60$ per C.<br>$4100 \text{ lb.} \times 5.00$ per C.<br><u><math>27 \text{ lb.} \times 1.70</math> per C.</u>    | 17. $300 \text{ lb.} \times \$10.00$ per C.<br>$1101 \text{ lb.} \times .37\frac{1}{2}$ per C.<br>$626 \text{ lb.} \times 1.00$ per C.<br><u><math>9870 \text{ lb.} \times .35</math> per C.</u> | 18. $765 \text{ lbs.} \times \$ .50$ per Cwt.<br>$2424 \text{ lbs.} \times .25$ per Cwt.<br>$5000 \text{ lbs.} \times 3.50$ per Cwt.<br><u><math>2222 \text{ lbs.} \times 2.25</math> per Cwt.</u>                                 |
| 19. $97 \text{ lb.} \times \$7.50$ per C.<br>$335 \text{ lb.} \times 15.00$ per Cwt.<br>$454 \text{ lb.} \times 70.00$ per C.<br><u><math>438 \text{ lb.} \times .75</math> per C.</u> | 20. $35 \text{ lb.} \times \$30.00$ per C.<br>$763 \text{ lb.} \times 1.88$ per C.<br>$2345 \text{ lb.} \times .75$ per C.<br><u><math>1352 \text{ lb.} \times 3.00</math> per C.</u>            | 21. $242 \text{ lb.} \times \$ .42\frac{1}{2}$ per lb.<br>$669 \text{ lb.} \times .50\frac{1}{4}$ per lb.<br>$783 \text{ lb.} \times .01\frac{1}{2}$ per lb.<br><u><math>1246 \text{ lb.} \times .02\frac{1}{2}</math> per lb.</u> |
| 22. $225$ at $\$6.45$ ea.<br>$1234$ at $17.50$ per C.<br>$264$ at $18.80$ per M.<br><u><math>2246</math> at <math>19.70</math> per C.</u>  | 23. $642$ at $\$23.00$ per M.<br>$784$ at $25.50$ per M.<br>$6422$ at $18.50$ per M.<br><u><math>9860</math> at <math>.75</math> per M.</u>  | 24. $1242$ at $\$17.50$ per C.<br>$2246$ at $15.50$ per C.<br>$78$ at $7.50$ per C.<br><u><math>8</math> at <math>25.00</math> per C.</u>  |

## SUPPLEMENTARY WORK

## Permanent Decimal Point

Accumulate the following:

- |     |   |     |  |     |   |
|-----|---|-----|--|-----|---|
| 1.  | $17 \times .10$<br>$3.5 \times .65$<br><hr/> $8\frac{1}{4} \times 5\frac{1}{2}$               | 2.  | $362 \times 7\frac{1}{2}$<br>$80 \times 45$<br><hr/> $303 \times .25$  | 3.  | $3240 \times \frac{1}{2}$<br>$17 \times 22$<br><hr/> $320\frac{1}{2} \times .60$              |
| 4.  | $1.25 \times 65$<br>$345 \times .75$<br>$30\frac{1}{4} \times .10$<br><hr/> $38 \times 2.11$  | 5.  | $42.50 \times 1.35$<br>$\frac{3}{4} \times 80$<br>$26 \times 35$<br><hr/> $50 \times 3.50$                       | 6.  | $4 \times 1.50$<br>$7\frac{1}{2} \times 600$<br>$831 \times 2.5$<br><hr/> $44 \times 85$      |
| 7.  | $1\frac{1}{4} \times 500$<br>$26 \times 2\frac{1}{2}$<br><hr/> $703 \times \frac{1}{4}$       | 8.  | $636 \times .24$<br>$24 \times .636$<br><hr/> $40 \times .40$  | 9.  | $445 \times 7$<br>$31 \times 2\frac{1}{4}$<br><hr/> $610 \times .10$                          |
| 10. | $1.21 \times 7\frac{3}{4}$<br>$5650 \times \frac{1}{2}$<br><hr/> $97 \times 26$               | 11. | $256 \times \frac{3}{4}$<br>$99 \times 85$<br><hr/> $2\frac{1}{2} \times 1.50$                                   | 12. | $462 \times .05$<br>$25 \times 3.60$<br><hr/> $73 \times 1.65$                                |
| 13. | $435 \times \frac{3}{4}$<br>$47 \times 60$<br>$7.56 \times 8.11$<br><hr/> $320 \times .15$    | 14. | $123\frac{3}{4} \times .75$<br>$94 \times .50$<br>$7 \times 500$<br><hr/> $11 \times .85$                        | 15. | $2\frac{1}{4} \times 500$<br>$45.6 \times 43$<br>$32 \times 1.54$<br><hr/> $388 \times .17$   |
| 16. | $40 \times 3.20$<br>$6\frac{1}{2} \times 7.75$<br><hr/> $546 \times \frac{1}{2}$              | 17. | $\frac{1}{2} \times 678$<br>$40 \times .10$<br><hr/> $356 \times \frac{3}{4}$                                    | 18. | $54\frac{1}{2} \times 1.10$<br>$35 \times .85$<br><hr/> $60 \times 2\frac{1}{4}$              |
| 19. | $676 \times .25$<br>$48 \times .50$<br>$782 \times .05$<br><hr/> $10 \times \frac{1}{2}$      | 20. | $20\frac{1}{4} \times \frac{3}{4}$<br>$714 \times .085$<br>$45\frac{1}{2} \times .60$<br><hr/> $951 \times 2.35$ | 21. | $6.45 \times 1.05$<br>$2.55 \times .88$<br>$6 \times 1.01$<br><hr/> $.233 \times 888$         |
| 22. | $13.46 \times 4.22$<br>$42.43 \times 6.4$<br>$38.24 \times 2.02$<br><hr/> $1.202 \times 8.99$ | 23. | $28.64 \times 5.05$<br>$254.31 \times 7.8$<br>$642.12 \times .48$<br><hr/> $125.01 \times 7.89$                  | 24. | $3.463 \times 8.41$<br>$64.41 \times 1.24$<br>$6.101 \times .384$<br><hr/> $84.05 \times 555$ |

## SUPPLEMENTARY WORK

### Chain Discount

Figure the net of each chain of discounts; then multiply each amount by the different nets. Balance and prove the additions.

Net of Chain Discounts	\$48.95	\$895.40	\$75.48	\$236.50	\$20.63	Totals
45-10-10%						
Net-						
46-72-38%						
Net-						
66 $\frac{2}{3}$ -14-5%						
Net-						
30-10-10%						
Net-						
5-10-15%						
Net-						
25-5-5%						
Net-						
Totals						

## SUPPLEMENTARY WORK

1.  $50 \times 50 \div 25 + 370 - 65 + 9.30 \div 15 - 7.62$
2.  $3.82 \times 65 \times 300$
3.  $275 + 325 - 200 \div 20 + 56 - 18 + 50 - 7$
4.  $1625 - 12 - 300 - 6 - 71 - 13 - 2 - 36$
5.  $13 \times 6.5 \div 13 + 3312 - 18.5 \div 25 \times 4$
6.  $18.50 + 75 + 1.60 + 100.01 + 76 + 5.25$
7.  $678 \times 72 + 144 \div 36 \times \frac{1}{2} - 500 \div 4 + 79$
8.  $1200 \times 50 \times 121$
9.  $37.20 + 5.00 - 1.23 + 67 + .151 - 2.00$
10.  $2.13 \times 6.7 \times 5 + 2.645 - 16 \times 400 - 160 \div 80$
11.  $12\frac{1}{2} \times 370 \times .82$
12.  $3.50 + 275.60 + .25 + 1.18 + 3.62 + 7.00 + .50$
13.  $17 \times 5 \times 10 - 150 + 225 \times 3\frac{1}{2} - 40 + 7.5$
14.  $830 \times .65 \times 4 \times 3.5$
15.  $310 - 290 + 700 - 60 - 7 + 30 - 100 + 25$
16.  $225 \times 5 \div 15 + 25 - 12\frac{1}{2} \times 6 - 20 - 15$
17.  $1200 - 17 - 905 - 10 - 36 + 59 - 5$
18.  $1001 + 347 - 250 \times 2 \div 9 - 100 \times 12 + 50$
19.  $71 \times 4 \times 300 \times 11 \times 6$
20.  $716 - 516 + 11 \times 51 \div 22 + 491 \times 6 - 2100$
21.  $3.60 + 14 - .50 + 1.50 - 7 + 325 + .6 - 7.27$
22.  $845 \times 21 - 600 + 72 \times .04 - 320.56 + 2.26 \div 35$
23.  $46 \times 21 \times 1200 + 95$
24.  $33 + 65 \div 7 \times 30 - 113 + 50 \times 6.5 - 1500$
25.  $750 - 137 \times 11 + 300 - 5000 - 8 \div 65$

## STUDENT'S RECORD OF PROGRESS IN COMPTOMETER TESTS

Name \_\_\_\_\_ School \_\_\_\_\_

Test	First Trial		Second Trial		Third Trial		Fourth Trial	
	Goal Reached	Problems Correct						
1	A	67	10					
	B	normal	7					
	C	87	12					
2	A	81						
	B	fair						
	C	fair						
3	A	67						
	B	fair						
	C	87						
4	A	87						
	B	fair						
	C	87						
5	A							
	B							
	C							
6	A							
	B							
	C							
7	A	87						
	B	fair						
	C	87						
8	A							
	B							
	C							
9	A							
	B							
	C							

### TO THE STUDENT:

There are three standards for each of the tests. Set your goal and do not be satisfied until you have reached it. Keep a record of each trial and show the goal reached and the number of examples you have done correctly

