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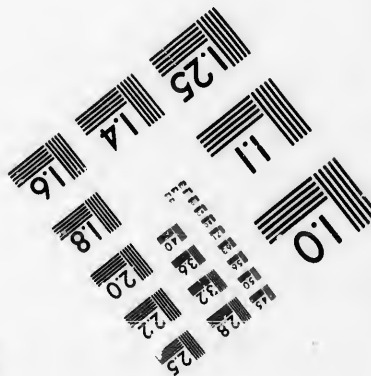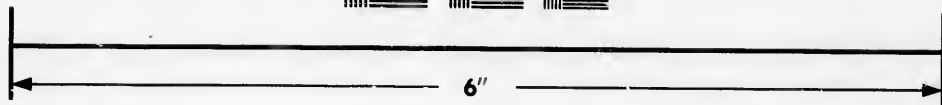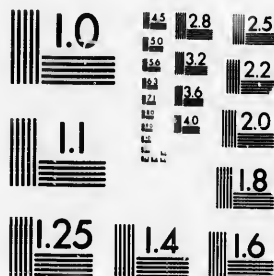
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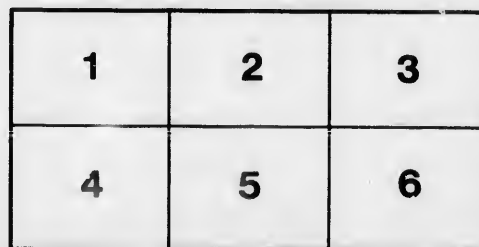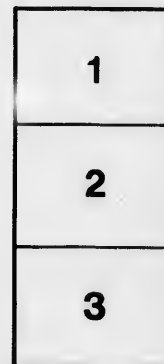
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1
2
3

1	2	3
4	5	6

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MENTAL ARITHMETIC;

AN INTRODUCTION TO THE

"AMERICAN INTELLECTUAL ARITHMETIC."

BY JOHN F. STODDARD, A.M.,

AUTHOR OF THE "NORMAL MATHEMATICAL SERIES," ETC.

PREFACE.

THE foundation for a thorough education is laid in youth. The habits of thought and modes of reasoning then acquired will exert an influence favorable or unfavorable to intellectual development in after years. It is hoped that this little book, in its scope and arrangement, and in the discussion of the subjects of which it treats, is adapted to the capacity of young pupils ; and that by proper instruction and careful study, it will produce the desired effect upon the mind, and afford the information it is designed to impart.

Addition, Subtraction, Multiplication, Division, the Tables of Weights and Measures, and the elementary parts of Common Fractions have been introduced and illustrated by appropriate examples.

SUGGESTIONS TO TEACHERS.

For the benefit of those whose experience is limited, I make the following suggestions in regard to the most approved methods of teaching this important branch of study :

The lesson should be assigned previous to recitation, to afford the pupils an opportunity for its examination : the use of the book, by the pupil, during class exercise, should be prohibited.

A question should be read slowly and distinctly, and the pupil required to repeat and analyse it without interruption, unless it be to make a necessary criticism or correction.

The pupils should not be called upon promiscuously and not in rotation, to take part in the recitation.

Care should be taken that the language they use be strictly correct as to construction and articulation.

If not carefully guarded, pupils, in their hurried solutions, pronounce many simple words incorrectly. For instance, the words—*and, of, if, for, with, what, which, where, when, costs, quarts,* &c., are not unfrequently pronounced—*an, off, ef, fur, withe, wat, witch, ware, wen, coss, quats,* &c.

By careful attention to these particulars, a lesson in Mental Arithmetic is a practical lesson in elocution, grammar, rhetoric and logic, as well as a lesson in the science of numbers.

It is respectfully suggested that the particular forms given for the analysis of questions be adhered to, unless *better* ones should be devised by the teacher. J. F. S,

☞ Those wishing to become thoroughly acquainted with *Fractions* and arithmetical questions of almost every kind, are referred to Stoddard's "American Intellectual Arithmetic."

ARITHMETIC.

A *number* expresses how many.

Numbers are expressed in three ways:

1. By words; as one, two, three, four, &c.
2. By figures; as 1, 2, 3, 4, 5, 6, 7, 8, 9, and 0.
3. By letters; as, I, V, X, L, C, D, and M.

The method of expressing numbers by figures is called the ARABIC METHOD.

The method of expressing numbers by letters is called the ROMAN METHOD.

Count the number of stars in each row, also, the number in each column, and express the number in each by the different methods:

One.										*	1.
Two.									*	*	2.
Three.								*	*	*	3.
Four.							*	*	*	*	4.
Five.						*	*	*	*	*	5.
Six.					*	*	*	*	*	*	6.
Seven.				*	*	*	*	*	*	*	7.
Eight.			*	*	*	*	*	*	*	*	8.
Nine.		*	*	*	*	*	*	*	*	*	9.
Ten.	*	*	*	*	*	*	*	*	*	*	10.

I, II, III, IV, V, VI, VII, VIII, IX, X.

1 2, 3, 4, 5, 6, 7, 8. 9, 10.

ARABIC AND ROMAN NUMBERS.

The Arabic and Roman Methods of expressing numbers are as follows:

ARABIC FIGURES.	ROMAN LETTERS.	NUMBERS.	ARABIC FIGURES.	ROMAN LETTERS.	NUMBERS.
0		Naught.	20	XX	Twenty.
1	I	One.	21	XXI	Twenty-one.
2	II	Two.	22	XXII	Twenty-two.
3	III	Three.	23	XXIII	Twenty-three.
4	IV	Four.	24	XXIV	Twenty-four.
5	V	Five.	25	XXV	Twenty-five.
6	VI	Six.	26	XXVI	Twenty-six.
7	VII	Seven.	27	XXVII	Twenty-seven.
8	VIII	Eight.	28	XXVIII	Twenty-eight.
9	IX	Nine.	29	XXIX	Twenty-nine.
10	X	Ten.	30	XXX	Thirty
11	XI	Eleven.	40	XL	Forty.
12	XII	Twelve.	50	L	Fifty.
13	XIII	Thirteen.	60	LX	Sixty.
14	XIV	Fourteen.	70	LXX	Seventy.
15	XV	Fifteen.	80	LXXX	Eighty.
16	XVI	Sixteen.	90	XC	Ninety.
17	XVII	Seventeen.	100	C	One Hundred.
18	XVIII	Eighteen.	500	D	Five Hundred.
19	XIX	Nineteen.	1000	M	One Thousand.

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6 a

ADDITION.

Lesson I.

1. How many are 2 and 1 ?

ANALYSIS.—Two and one are 3.

2. How many are 2 and 2 ?
3. How many are 2 and 3 ?
4. How many are 2 and 4 ?
5. How many are 2 and 5 ?
6. How many are 2 and 6 ?
7. How many are 2 and 7 ?
8. How many are 2 and 8 ?
9. How many are 2 and 9 ?
10. How many are 2 and 10 ?

11. 2 and 2 are how many ?
12. 2 and 5 are how many ?
13. 2 and 9 are how many ?
14. 2 and 8 are how many ?
15. 2 and 6 are how many ?
16. 5 and 4 are how many ?
17. 2 and 3 are how many ?
18. 2 and 7 are how many ?
19. 2 and 10 are how many ?

Lesson II.

1. Henry had 4 apples, and bought 2 more; how many did he then have ?

ANALYSIS.—If Henry had 4 apples, and should buy 2 more, he would then have 4 apples and 2 apples, which are 6 apples.

2. Harvey had 5 books, and James had 2 ; how many books did both have ?

3. Mary has 3 peaches, and John gave her 2 more ; how many peaches did she then have ?

4. Moses had 2 cents, and his father gave him 8 more ; how many cents did he then have ?

5. Edwin had 10 marbles, and found two more ; how many marbles did he then have ?

6. Catharine had 6 pinks, and Mary gave her 2 more ; how many had Catharine then ?

7. Alice found 9 pins, and her mother gave her 2 more ; how many did Alice then have ?

8. Francis spelled 7 words correctly and 2 incorrectly ; how many words were given to him ?

Lesson III.

1.	How	many	are	3	and 1 ?
2.	How	many	are	3	and 2 ?
3.	How	many	are	3	and 3 ?
4.	How	many	are	3	and 4 ?
5.	How	many	are	3	and 5 ?
6.	How	many	are	3	and 6 ?
7.	How	many	are	3	and 7 ?
8.	How	many	are	3	and 8 ?
9.	How	many	are	3	and 9 ?
10.	How	many	are	3	and 10 ?
11.	4	and	3	are	how many ?
12.	3	and	3	are	how many ?
13.	2	and	3	are	how many ?
14.	6	and	3	are	how many ?

15.	8	and	3	are	how	many ?
16.	3	and	10	are	how	many ?
17.	3	and	7	are	how	many ?
18.	5	and	3	are	how	many ?
19.	11	and	3	are	how	many ?

Lesson IV.

1. If a ball cost 6 cents, and a top cost 3 cents, how much will both cost?

ANALYSIS.—If a ball cost 6 cents, and a top cost 3 cents, both will cost the sum of 6 cents and 3 cents, which is 9 cents.

2. A boy paid 3 cents for a cake, and 2 cents for an orange; how much did he pay for both?

3. Emily bought a melon for 10 cents, and a lemon for 3 cents; what did she give for both?

4. There were 9 boys on one bench, and 3 on another; how many boys were on both?

5. Harriet had 8 sweet apples and 3 sour ones; how many apples had she in all?

6. Hezekiah shot 5 red squirrels and 3 gray ones; how many squirrels did he shoot in all?

7. Darius had 3 books, and his father gave him 3 more; how many books had he then?

8. Fanny had 6 plums, and her sister gave her 3 more; how many plums had she then?

9. Betsy gave 7 cents for tape, and 3 cents for thread; what did she pay for both?

10. Theda gave 11 cents for a comb, and 3 cents for some hair pins; how many cents did she pay for all?

1.	How	many	are	4	and	1 ?
2.	How	many	are	4	and	2 ?
3.	How	many	are	4	and	3 ?
4.	How	many	are	4	and	4 ?
5.	How	many	are	4	and	5 ?
6.	How	many	are	4	and	6 ?
7.	How	many	are	4	and	7 ?
8.	How	many	are	4	and	8 ?
9.	How	many	are	4	and	9 ?
10.	How	many	are	4	and	10 ?

11.	4	and	3	are	how	many ?
12.	4	and	6	are	how	many ?
13.	2	and	4	are	how	many ?
14.	4	and	4	are	how	many ?
15.	7	and	4	are	how	many ?
16.	4	and	8	are	how	many ?
17.	5	and	4	are	how	many ?
18.	10	and	4	are	how	many ?
19.	9	and	4	are	how	many ?
20.	4	and	11	are	how	many ?

Lesson VI.

1. Sarah had 4 rings on one finger, and 3 on another; how many had she on both fingers?

2. Walter has 9 chickens, and William 4; how many have both?

3. Bought a pencil for 6 cents, and a piece of rubber for 4 cents; what did I pay for both?

4. Bought a bottle of ink for 10 cents, and a pen for 4 cents; what was the cost of both?

5. If a lemon cost 4 cents, and a peach cost 2 cents; what was the cost of both?

6. Gave 4 dollars for a hat, and 4 dollars for a vest; what was the cost of both?

7. Jane gave 7 cents for raisins, and 4 cents for cinnamon; what did she pay for all?

8. If a writing-book cost 5 cents, and a box of pens cost 4 cents, what did all cost?

9. After a cat caught four of Nancy's chickens, she had but 11 left; how many had she at first?

10. A boy, after losing 4 marbles, had only 12 remaining; how many had he at first?

Lesson VII.

1. How many are 5 and 1?
2. How many are 5 and 2?
3. How many are 5 and 3?
4. How many are 5 and 4?
5. How many are 5 and 5?
6. How many are 5 and 6?
7. How many are 5 and 7?
8. How many are 5 and 8?
9. How many are 5 and 9?
10. How many are 5 and 10?

11. 3 and 5 are how many?
12. 2 and 5 are how many?
13. 6 and 5 are how many?

14.	5	and	4	are	how	many ?
15.	5	and	5	are	how	many ?
16.	7	and	5	are	how	many ?
17.	9	and	5	are	how	many ?
18.	5	and	8	are	how	many ?
19.	10	and	5	are	how	many ?
20.	11	and	5	are	how	many ?

Lesson VIII.

1. If Charles walk 4 miles in one day, and 5 miles in another, how far does he walk in the two days ?

2. If Rebecca has 5 roses, and Mary gives her 3 more, how many will she have then ?

3. If Joshua has 5 cakes, and Jane gives him 2 more, how many will he then have ?

4. Thomas gave 8 apples to his companions, and had 5 remaining; how many had he at first ?

5. Gave 5 dollars for a pair of pantaloons, and 6 dollars for a hat; what did both cost ?

6. Andrew caught 9 birds, and Anthony 5; how many did both catch ?

7. Baldwin, after spending 5 cents, had only 7 cents remaining; how many had he at first ?

8. Martha bought a ribbon for 10 cents, and thread for 5 cents; what was the cost of both ?

9. Caroline had 5 flowers, and Clarinda had 5; how many did both have ?

10. Bought a book for 11 cents, and had 5 cents remaining; how much had I at first?

Lesson IX.

1.	How	many	are	6	and	1 ?
2.	How	many	are	6	and	2 ?
3.	How	many	are	6	and	3 ?
4.	How	many	are	6	and	4 ?
5.	How	many	are	6	and	5 ?
6.	How	many	are	6	and	6 ?
7.	How	many	are	7	and	6 ?
8.	How	many	are	8	and	6 ?
9.	How	many	are	9	and	6 ?
10.	How	many	are	6	and	10 ?

11.	3	and	6	are	how many ?
12.	6	and	4	are	how many ?
13.	6	and	8	are	how many ?
14.	6	and	2	are	how many ?
15.	6	and	5	are	how many ?
16.	7	and	6	are	how many ?
17.	9	and	6	are	how many ?
18.	10	and	6	are	how many ?
19.	6	and	6	are	how many ?
20.	6	and	11	are	how many ?

Lesson X.

1. Augustus killed 6 birds, and John 2; how many did both kill?

2. Gave 5 cents to Franklin, and 6 cents to Foster; how many cents did both receive?

3. Granville gave me 4 apples, and Mary gave me 6; how many did both give me?

4. A farmer having 6 cows, purchased 3 more; how many had he then?

5. Jackson bought 8 papers, and found 6 more; how many had he then?

6. Anna had 6 pictures, and her brother gave her 6 more; how many had she then?

7. A farmer sold 9 horses, and had 6 remaining; how many had he at first?

8. A market-woman sold 6 oranges, and had 7 remaining; how many had she at first?

9. A boy sold 10 apples, and had 6 remaining; how many had he at first?

10. After losing 6 chestnuts I had 11 remaining; how many had I at first?

Lesson XI.

1. How many are 7 and 1?
2. How many are 7 and 2?
3. How many are 7 and 3?
4. How many are 7 and 4?
5. How many are 7 and 5?
6. How many are 7 and 6?
7. How many are 7 and 7?
8. How many are 7 and 8?
9. How many are 7 and 9?
10. How many are 7 and 10?
11. 7 and 4 are how many?
12. 2 and 7 are how many?
13. 7 and 5 are how many?

14.	3	and	7	are	how	many ?
15.	7	and	6	are	how	many ?
16.	7	and	9	are	how	many ?
17.	7	and	7	are	how	many ?
18.	10	and	7	are	how	many ?
19.	8	and	7	are	how	many ?
20.	7	and	11	are	how	many ?

Lesson XII.

1. A merchant bought 4 barrels of sugar, and 7 barrels of molasses; how many barrels did he then have?

2. Albert is 7 years old, and Austin is 6; what is the sum of their ages?

3. Alfred solved 8 questions in arithmetic, and Abraham 7; how many did both solve?

4. If it take 7 yards of calico for a dress, and 2 yards of cloth for a cloak, how many will it take for both?

5. Isaac bought 7 sheets of paper, and 3 more were given to him; how many had he then?

6. If a peck of apples cost 7 cents, and a peck of pears 10 cents, what did both cost?

7. Jacob walked 9 miles and rode 7; how far did he go?

8. In a certain class there are 7 boys and 7 girls; how many pupils are there in the class?

9. Jeremiah found 5 quills, and John found 7; how many did both find?

10. In a certain recitation there were 11 questions correctly answered, and 7 incorrectly answered; how many questions were asked?

Lesson XIII.

1. How many are 8 and 1 ?
2. How many are 8 and 2 ?
3. How many are 8 and 3 ?
4. How many are 8 and 4 ?
5. How many are 8 and 5 ?
6. How many are 8 and 6 ?
7. How many are 8 and 7 ?
8. How many are 8 and 8 ?
9. How many are 8 and 9 ?
10. How many are 8 and 10 ?

11. 8 and 2 are how many ?
12. 8 and 5 are how many ?
13. 8 and 3 are how many ?
14. 8 and 7 are how many ?
15. 8 and 4 are how many ?
16. 8 and 6 are how many ?
17. 8 and 9 are how many ?
18. 8 and 10 are how many ?
19. 8 and 8 are how many ?
20. 11 and 8 are how many ?

Lesson XIV.

1. A beggar met two boys; one gave him 7 cents, and the other gave him 8 cents; how many cents did both give him ?

2. A man bought a hat for 5 dollars, and a vest for 8 dollars; what was the cost of both ?

3. There were 8 boys sitting, and 3 standing; how many boys were there in all ?

4. Rachel gave her teacher 8 pinks, and 2 roses; how many flowers did she give her?

5. Barlow caught 8 squirrels, and Benton caught 4; how many did both catch?

6. If we learn 6 pages this week, and 8 the next, how many shall we learn in the two weeks?

7. If in one field there are 8 sheep, and in another 9, how many are in both?

8. Charles caught 8 fish, and Matthew caught 8; how many did both catch?

9. George shot 10 pigeons, and James shot 8; how many did both shoot?

10. If one insect has 6 legs, and another insect has 8, how many legs are on both insects?

Lesson XV.

1. How many are 9 and 1?
2. How many are 9 and 2?
3. How many are 9 and 3?
4. How many are 9 and 4?
5. How many are 9 and 5?
6. How many are 9 and 6?
7. How many are 9 and 7?
8. How many are 9 and 8?
9. How many are 9 and 9?
10. How many are 9 and 10?

11. 9 and 3 are how many?
12. 9 and 5 are how many?
13. 7 and 9 are how many?
14. 9 and 9 are how many?
15. 9 and 4 are how many?

2

16.	9	and	6	are	how	many ?
17.	8	and	9	are	how	many ?
18.	9	and	2	are	how	many ?
19.	9	and	10	are	how	many ?
20.	9	and	11	are	how	many ?

Lesson XVI.

1. Two boys, John and James, gave some money to a beggar; John gave him 9 cents, and James gave him 4 cents; how many cents did both give him?

2. Gave 6 cents to Henry, and 9 cents to Hiram; how many cents were given to both?

3. Gave 7 nuts to one boy, and 9 to another; how many nuts did both receive?

4. Bought strawberries for 9 cents, and plums for 5 cents; what did both cost?

5. Bought a knife for 11 cents, and a whistle for 9 cents; what was the cost of both?

6. Gave 10 cents for an arithmetic, and 9 cents for a slate; what did both cost?

7. Euphemia learned 9 lessons, and Maria learned 8; how many did both learn?

8. A boy bought raisins for 9 cents, and a cake for 3 cents; what was the whole cost?

9. A lady bought some tape for 9 cents, and some thread for 2 cents; how much did both cost?

10. Gave 12 dollars for a cow, and 9 dollars for a sheep; what was given for both?

Lesson XVII.

1. How many are 10 and 1 ?
2. How many are 10 and 2 ?
3. How many are 10 and 3 ?
4. How many are 10 and 4 ?
5. How many are 10 and 5 ?
6. How many are 10 and 6 ?
7. How many are 10 and 7 ?
8. How many are 10 and 8 ?
9. How many are 10 and 9 ?
10. How many are 10 and 10 ?

11. 3 and 10 are how many ?
12. 5 and 10 are how many ?
13. 10 and 2 are how many ?
14. 10 and 4 are how many ?
15. 8 and 10 are how many ?
16. 9 and 10 are how many ?
17. 10 and 6 are how many ?
18. 10 and 10 are how many ?
19. 10 and 7 are how many ?
20. 10 and 11 are how many ?

21. How many are 11 and 2 ?
22. How many are 11 and 5 ?
23. How many are 6 and 11 ?
24. How many are 11 and 3 ?
25. How many are 11 and 4 ?
26. How many are 11 and 7 ?
27. How many are 9 and 11 ?
28. How many are 11 and 10 ?
29. How many are 11 and 12 ?
30. How many are 11 and 14 ?

Lesson XVIII.

1. Mary bought a pencil for 6 cents, a book for 8 cents, and a slate for 10 cents; how much did all cost?

2. Joseph had 3 marbles, John 6, and James 10; how many did all have?

3. Bought a cow for 14 dollars, and a calf for 6 dollars; what did both cost?

4. Bought a bottle of ink for 6 cents, some paper for 5 cents, and some pens for 10 cents; what was paid for all?

5. Susan is 11 years old, and Nancy is 9; what is the sum of their ages?

6. If a pound of beef cost 8 cents, and a pound of pork 11 cents, what did the two pounds cost?

7. A lady bought pins for 11 cents, and ribbon for 7 cents; what was the whole cost?

8. B. sold 9 cows to one man, and 7 cows to another; how many did he sell to both?

9. A drover bought 4 cows of one man, 6 of another, and 11 of another; how many did he buy?

10. A boy gave 10 cents for a whistle, 8 cents for a whip, and 6 cents for a top; how much did he give for all?

11. A merchant sold 12 barrels of flour one week, and 8 the next week; how many barrels did he sell during the two weeks?

12. A farmer bought sugar for 14 dollars, and molasses for 6 dollars; what cost both?

13. Simeon gave 8 cents for a melon, 6 cents for a pine-apple, and had 6 cents remaining; how much had he at first?

14. Abner found 12 eggs, and Alice found 10; how many did both find?

15. A boy saw 7 pigeons on one tree, 8 on another, and 5 on another; how many did he see in all?

16. A man bought a watch for 15 dollars, and had 10 dollars remaining; how many dollars had he at first?

17. Egbert gave 4 cherries to Oliver, 7 to Edwin, and kept 12 himself; how many had he at first?

18. Elizabeth picked 8 quarts of blackberries, Ellen 5 quarts, and Helen 7 quarts; how many quarts did all pick?

19. Samuel gave 2 dimes for his breakfast, 4 dimes for his dinner, and had 14 dimes left; how much had he at first?

20. A boy travelled 14 miles one day, and 11 the next; how far did he travel in the two days?

21. Henry gave 4 roses to Anna, 6 roses to Mary, and had 5 roses remaining; how many roses had Henry at first?

22. James picked 6 quarts of blackberries, John picked 8 quarts, and Maggie picked 12 quarts; how many quarts did all pick?

23. Moses bought 7 marbles of John, 9 of Albert, and 11 of Jackson; how many did he buy in all?

SUBTRACTION.

Lesson I.

1.   3 less 1 are how many?

ANALYSIS.—Three less one are two.

2.   4 less 1 are how many?
3.   5 less 1 are how many?
4.   6 less 1 are how many?
5.   7 less 1 are how many?
6.   8 less 1 are how many?
7.   9 less 1 are how many?
8. 10 less 1 are how many?

9.   3 less 2 are how many?
10. 4 less 2 are how many?
11. 5 less 2 are how many?
12. 6 less 2 are how many?
13. 7 less 2 are how many?
14. 8 less 2 are how many?
15. 9 less 2 are how many?
16. 10 less 2 are how many?

17. 4 less 3 are how many?
18. 5 less 3 are how many?
19. 6 less 3 are how many?
20. 7 less 3 are how many?
21. 8 less 3 are how many?
22. 9 less 3 are how many?
23. 10 less 3 are how many?

24. 4 less 4 are how many?
25. 5 less 4 are how many?

Lesson II.

1. If I have 3 apples, and give 1 of them to James, how many have I left?

ANALYSIS.—If I have 3 apples, and give one of them to James, I will have remaining the difference between 3 apples and 1 apple, which is 2 apples.

2. A boy had 4 chestnuts, and gave 1 away how many had he left?

3. Catharine had 6 pins, and gave 1 away; how many had she left?

4. Rebecca bought 6 cakes, and ate 2 of them; how many had she left?

5. Rachel had 4 apples, and gave 2 of them to George; how many had she left?

6. Alice bought 5 cakes, and ate 3 of them for her dinner; how many had she left?

7. Agnes had 6 quarts of berries, and sold 2 quarts of them; how many had she remaining?

8. Anna had 5 books, and lost 3 of them; how many had she remaining?

9. Weston had 9 marbles, and gave 2 of them to John; how many had he remaining?

10. Eliza had 8 oranges, and gave her sister 2 of them; how many had she remaining?

11. Sarah had 9 pinks, and gave her teacher 2 of them; how many had she left?

12. Isaac saw 10 pigeons on a tree; 2 of them flew away; how many remained?

13. David had 6 apples, and gave 3 to his brother; how many had he remaining?

14. Sold some apples for 9 cents, and some

pears for 4 cents; how much more did I get for the apples than for the pears?

15. Louise had 8 roses, and gave 4 of them to Ann; how many had she remaining?

16. Walter gave 9 cents for a book, and 4 cents for a pencil; how much more did the book cost than the pencil?

17. A farmer sold a calf for 12 dollars, and a sheep for 4 dollars; how much more did he receive for the calf than the sheep?

18. Jane is 10 years old, and Susan is 6; how many years older than Susan is Jane?

19. Mary found 12 quills, and lost 5 of them; how many had she remaining?

20. Pamella gave 13 cents for a comb, and 9 cents for scme tape? how much more did the comb cost than the tape?

Lesson III.

1.   5   less   5   are   how   many ?
2.   6   less   5   are   how   many ?
3.   7   less   5   are   how   many ?
4.   8   less   5   are   how   many ?
5.   9   less   5   are   how   many ?
6.   10   less   5   are   how   many ?
7.   12   less   5   are   how   many ?

8.   6   less   6   are   how   many ?
9.   7   less   6   are   how   many ?
10.   8   less   6   are   how   many ?
11.   9   less   6   are   how   many ?
12.   10   less   6   are   how   many ?

13.	11	less	6	are	how	many ?
14.	6	less	3	are	how	many ?
15.	7	less	5	are	how	many ?
16.	10	less	7	are	how	many ?
17.	9	less	7	are	how	many ?
18.	8	less	5	are	how	many ?
19.	12	less	7	are	how	many ?
29.	14	less	6	are	how	many ?
21.	12	less	2	are	how	many ?
22.	13	less	3	are	how	many ?
23.	14	less	4	are	how	many ?
24.	15	less	5	are	how	many ?
25.	12	less	9	are	how	many ?
26.	12	less	10	are	how	many ?
27.	12	less	7	are	how	many ?
28.	12	less	5	are	how	many ?
29.	9	less	7	are	how	many ?
30.	13	less	7	are	how	many ?

Lesson IV.

1. Edward had 9 oranges, and gave 5 of them to his sister; how many had he left?

2. A boy had 11 rabbits, 3 of which were killed by a dog; how many had he left?

3. A farmer, having 8 bushels of apples, sold 5 bushels of them; how many were left?

4. A boy had 9 birds and 4 squirrels; how many more birds had he than squirrels?

5. There were 15 questions asked during a recitation, 5 of which were answered incorrectly; how many were correctly answered?

3

6. Julia, finding 14 roses on her bush, picked off 5 ; how many remained on the bush ?

7. There were 7 passengers in a stage, 3 of whom got out; how many remained in ?

8. A boy, having 6 cents, spent 2 cents for candies; how many cents had he remaining ?

9. Henry bought 8 quill pens, and used 3 of them in a week; how many remained unused ?

10. George sold some marbles for 11 cents, which was 4 cents more than their cost; what was their cost ?

11. A merchant bought sugar for 14 dollars, and sold it for 11 dollars; how much did he lose ?

12. Walter gave 14 cents for a slate, and 4 cents for a sponge; how much more did the slate cost than the sponge ?

13. Bought a book for 8 cents, and sold it for 11 cents; how many cents did I gain ?

14. Bought a book for 10 cents, and sold it for 15 cents; how many cents did I gain ?

15. James bought a pair of boots for 7 dollars, and handed the shopkeeper a 10 dollar bill; how much ought he to receive back ?

16. Jacob bought a sled for 15 cents, and sold it for 9 cents; how much did he lose ?

17. If 8 boys are taken out of a class of 18 boys, how many boys will there be left ?

18. A lady bought 17 eggs, and broke 7 of them; how many had she left ?

19. If a window have 16 panes of glass, and 7 of them are broken, how many whole panes will be left ?

MULTIPLICATION.

Lesson I.

TABLE.

2	times	1	are	2.		3	times	1	are	3.
2	"	2	"	4.		3	"	2	"	6.
2	"	3	"	6.		3	"	3	"	9.
2	"	4	"	8.		3	"	4	"	12.
2	"	5	"	10.		3	"	5	"	15.
2	"	6	"	12.		3	"	6	"	18.
2	"	7	"	14.		3	"	7	"	21.
2	"	8	"	16.		3	"	8	"	24.
2	"	9	"	18.		3	"	9	"	27.
2	"	10	"	20.		3	"	10	"	30.
2	"	11	"	22.		3	"	11	"	33.
2	"	12	"	24.		3	"	12	"	36.

1. How many are 2 times 2 ?

ANALYSIS.—Two times two are four.

2. How many are two times 4 ?
3. How many are two times 8 ?
4. How many are two times 3 ?
5. How many are two times 5 ?
6. How many are two times 7 ?
7. How many are two times 9 ?
8. How many are two times 7 ?
9. How many are two times 11 ?
10. How many are two times 10 ?
11. How many are two times 12 ?

12.	How	many	are	three	times	4 ?
13.	How	many	are	three	times	2 ?
14.	How	many	are	three	times	3 ?
15.	How	many	are	three	times	5 ?
16.	How	many	are	three	times	8 ?
17.	How	many	are	three	times	7 ?
18.	How	many	are	three	times	10 ?
19.	How	many	are	three	times	12 ?
20.	How	many	are	three	times	11 ?
21.	How	many	are	three	times	6 ?
22.	How	many	are	three	times	9 ?

Lesson II.

1. What cost 2 lemons, at 4 cents each?

ANALYSIS.—If 1 lemon costs 4 cents, 2 lemons will cost two times 4 cents, which are 8 cents.

2. What cost 2 apples, at 4 cents each?

3. What cost 2 peaches, at 3 cents each?

4. What cost 2 caps, at 5 dimes each?

5. What cost 3 melons, at 11 cents each?

6. What cost 3 books, at 12 cents each?

7. What cost 2 slates, at 9 cents each?

8. What cost 2 pencils, at 6 cents each?

9. What cost 2 pounds of raisins, at 12 cents a pound?

10. What cost 3 pine-apples, at 9 cents each?

11. What cost 3 lamps, at 4 dimes each?

12. What cost 3 looking-glasses, at 6 dimes each?

13. What cost 3 writing-books, at 3 dimes each?

es 4 ?
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cents a

each ?
1 ?
6 dimes

3 dimes

14. What cost 3 candlesticks, at 5 dimes each?

15. What cost 3 inkstands, at 7 cents each?

16. What cost 2 balls of tape, at 10 cents a ball?

17. What cost 2 hammers, at 11 cents each?

18. What cost 3 papers of needles, at 8 cents a paper?

19. What cost 2 baskets of strawberries, at 7 cents a basket?

Lesson III

TABLE.

4	times	1	are	4.	5	times	1	are	5.
4	"	2	"	8.	5	"	2	"	10.
4	"	3	"	12.	5	"	3	"	15.
4	"	4	"	16.	5	"	4	"	20.
4	"	5	"	20.	5	"	5	"	25.
4	"	6	"	24.	5	"	6	"	30.
4	"	7	"	28.	5	"	7	"	35.
4	"	8	"	32.	5	"	8	"	40.
4	"	9	"	36.	5	"	9	"	45.
4	"	10	"	40.	5	"	10	"	50.
4	"	11	"	44.	5	"	11	"	55.
4	"	12	"	48.	5	"	12	"	60.

1. Four times 3 are how many?
2. Four times 6 are how many?
3. Four times 8 are how many?
4. Four times 7 are how many?
5. Four times 4 are how many?
6. Four times 2 are how many?

3*

7. Four times 11 are how many?
8. Five times 3 are how many?
9. Five times 5 are how many?
10. Five times 4 are how many?
11. Five times 6 are how many?
12. Four times 10 are how many?
13. Five times 2 are how many?
14. Four times 2 are how many?
15. Five times 9 are how many?
16. Five times 8 are how many?
17. Five times 10 are how many?
18. Four times 11 are how many?
19. Five times 11 are how many?
20. Four times 12 are how many?
21. Five times 12 are how many?

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Lesson IV.

1. What cost 4 pair of shoes, at 3 dollars a pair?

2. What cost 5 pounds of mutton, at 6 cents a pound?

3. What cost 4 barrels of sugar, at 8 dollars a barrel?

4. What cost 5 pounds of sturgeon, at 10 cents a pound?

5. What cost 4 pounds of almonds, at 11 cents a pound?

6. What cost 5 barrels of pork, at 9 dollars a barrel?

7. What cost 4 pounds of candles, at 10 cents a pound?

8. What cost 5 coats, at 4 dollars each?

9. What cost 4 handkerchiefs, at 5 dimes each?

10. What cost 5 lamps, at 3 dimes each?

11. What cost 4 plows, at 7 dollars each?

12. What cost 5 boxes of caps, at 11 cents a box?

13. What cost 4 quires of paper, at 12 cents a quire?

14. What cost 5 letter-folders, at 11 cents each?

15. What cost 4 oranges, at 7 cents each?

16. What cost 5 pen-knives, at 12 cents each?

17. What cost 4 bunches of grapes, at 9 cents a bunch?

18. What cost 5 pine-apples, at 8 cents each?

19. What cost 4 spools of cotton, at 6 cents each?

20. What cost 5 pounds of ginger, at 7 cents a pound?

Lesson V.

TABLE.

6	times	1	are	6.	6	times	7	are	42.
6	"	2	"	12.	6	"	8	"	48.
6	"	3	"	18.	6	"	9	"	54.
6	"	4	"	24.	6	"	10	"	60.
6	"	5	"	30.	6	"	11	"	66.
6	"	6	"	36.	6	"	12	"	72.

7	times	1	are	7.		7	times	7	are	49.
7	"	2	"	14.		7	"	8	"	56.
7	"	3	"	21.		7	"	9	"	63.
7	"	4	"	28.		7	"	10	"	70.
7	"	5	"	35.		7	"	11	"	77.
7	"	6	"	42.		7	"	12	"	84.

1. Six times 2 are how many?
2. Six times 5 are how many?
3. Seven times 5 are how many?
4. Seven times 2 are how many?
5. Six times 8 are how many?
6. Six times 7 are how many?
7. Six times 10 are how many?
8. Seven times 7 are how many?
9. Seven times 8 are how many?
10. Seven times 10 are how many?
11. Six times 3 are how many?
12. Six times 6 are how many?
13. Six times 4 are how many?
14. Seven times 6 are how many?
15. Seven times 3 are how many?
16. Seven times 4 are how many?
17. Six times 9 are how many?
18. Six times 12 are how many?
19. Six times 21 are how many?
20. Seven times 11 are how many?
21. Seven times 9 are how many?
22. Seven times 12 are how many?
23. Seven times 13 are how many?
24. Seven times 15 are how many?
25. Six times 15 are how many?
26. Six times 20 are how many?

Lesson VI.

1. What cost 6 quarts of cherries, at 4 cents a quart?

2. What cost 7 quarts of raspberries, at 4 cents a quart?

3. What cost 6 lead pencils, at 5 cents each?

4. What cost 7 pens, at 3 cents each?

5. What cost 7 lead pencils, at 5 cents each?

6. What cost 5 cakes, at 3 cents each?

7. What cost 7 figs. at 2 cents each?

8. What cost 5 pictures, at 6 cents each?

9. What cost 5 tomatoes, at 2 cents each?

10. What cost 6 ounces of cinnamon, at 6 cents an ounce?

11. What cost 5 pounds of cheese, at 8 cents a pound?

12. What cost 7 pounds of prunes, at 9 cents a pound?

13. What cost 5 fish-hooks, at 9 cents each?

14. What cost 7 yards of calico, at 8 cents a yard?

15. What cost 6 skeins of silk, at 8 cents a skein?

16. What cost 6 pounds of starch, at 12 cents a pound?

17. What cost 7 barrels of flour, at 10 dollars a barrel?

18. What cost 6 bushels of potatoes, at 9 dimes a bushel?

19. What cost 7 primers, at 11 cents each?

20. What cost 7 coats, at 12 dollars each?

Lesson VII.

TABLE.

8	times	1	are	8.	9	times	1	are	9.
8	"	2	"	16.	9	"	2	"	18.
8	"	3	"	24.	9	"	3	"	27.
8	"	4	"	32.	9	"	4	"	36.
8	"	5	"	40.	9	"	5	"	45.
8	"	6	"	48.	9	"	6	"	54.
8	"	7	"	56.	9	"	7	"	63.
8	"	8	"	64.	9	"	8	"	72.
8	"	9	"	72.	9	"	9	"	81.
8	"	10	"	80.	9	"	10	"	90.
8	"	11	"	88.	9	"	11	"	99.
8	"	12	"	96.	9	"	12	"	108

1. Eight times 4 are how many ?
2. Eight times 6 are how many ?
3. Eight times 3 are how many ?
4. Eight times 2 are how many ?
5. Eight times 5 are how many ?
6. Nine times 4 are how many ?
7. Nine times 3 are how many ?
8. Nine times 6 are how many ?
9. Nine times 5 are how many ?
10. Nine times 2 are how many ?
11. Eight times 12 are how many ?
12. Nine times 7 are how many ?
13. Eight times 11 are how many ?
14. Nine times 8 are how many ?
15. Nine times 10 are how many ?
16. Eight times 10 are how many ?

17. Eight times 9 are how many ?
18. Nine times 11 are how many ?
19. Eight times 8 are how many ?
20. Nine times 12 are how many ?

Lesson VIII.

1. What cost 9 sticks of tape, at 4 cents a stick ?
2. What cost 8 yards of calico, at 12 cents a yard ?
3. What cost 9 combs, at 2 cents each ?
4. What cost 8 pine-apples, at 11 cents each ?
5. What cost 9 spools of thread, at 11 cents a spool ?
6. What cost 8 brushes, at 10 cents each ?
7. What cost 9 cakes of paint, at 5 dimes a cake ?
8. What cost 8 yards of musiln, at 9 cents a yard ?
9. What cost 9 citrons, at 9 cents each ?
10. What cost 8 boxes of caps, at 8 cents a box ?
11. What cost 9 orange., at 6 cents each ?
12. What cost 8 boxes of figs, at 7 dimes a box ?
13. What cost 9 lemons, at 7 cents each ?
14. What cost 9 feet of boards, at 8 cents a foot ?
15. What cost 9 bushels of oats, at 11 cents a bushel ?

16. What cost 8 yards of merino, at 3 dimes a yard ?

17. What cost 9 yards of broadcloth, at 5 dollars a yard ?

18. What cost 9 plows, at 10 dollars each ?

19. What cost 8 chickens, at 5 cents each ?

20. What cost 9 pigeons, at 12 cents each ?

Lesson IX.

TABLE.

10	times	1	are	10.	11 times	1	are 11.
10	"	2	"	20.	11	" 2	" 22.
10	"	3	"	30.	11	" 3	" 33.
10	"	4	"	40.	11	" 4	" 44.
10	"	5	"	50.	11	" 5	" 55.
10	"	6	"	60.	11	" 6	" 66.
10	"	7	"	70.	11	" 7	" 77.
10	"	8	"	80.	11	" 8	" 88.
10	"	9	"	90.	11	" 9	" 99.
10	"	10	"	100.	11	" 10	" 110.
10	"	11	"	110.	11	" 11	" 121.
10	"	12	"	120.	11	" 12	" 132.

Lesson X.

1. If a boy travel 5 miles in one day, how far will he go in 10 days ?

2. If a boy earn 5 cents a day, how many cents will he earn in 11 days ?

3. If James has 3 marbles, and John has 11 times as many, how many has he ?

4. If a hare run 3 rods in a second, how far will she run in 10 seconds?

5. Jacob is 7 years old, and Josiah is 11 times as old as Jacob; how old is Josiah?

6. If I pay 7 cents for riding, one mile, how much must I pay for riding 10 miles?

7. Mary has 2 roses, and Sarah has 10 times as many; how many has she?

8. Albert killed 2 birds, and saw 11 times as many more; how many did he see?

9. Rachel has 4 pins, and George 10 times as many? how many has he?

10. Moses gave 4 cents for a piece of pie; what would 11 pieces cost at the same rate?

11. If a stage-coach go 6 miles in one hour, how far will it go in 11 hours?

12. If a man shear 6 sheep in one day, how many can he shear in 10 days?

13. Henry is worth 8 dollars, and Hiram is worth 11 times as much; how much is Hiram worth?

14. What will 8 tons of hay cost, at 10 dollars a ton?

15. What will 9 firkins of butter cost, at 11 dollars a firkin?

16. What will 9 pounds of fish cost, at 11 cents a pound?

17. Munson caught 10 fish, and Marvin 10 times as many; how many did Marvin catch?

18. What cost 11 quarts of walnuts, at 10 cents a quart?

19. A farmer sold 11 cattle, at 11 dollars each; what did he receive for them all?

4

Lesson XI.

TABLE.

12	times	1	are	12.
12	"	2	"	24.
12	"	3	"	36.
12	"	4	"	48.
12	"	5	"	60.
12	"	6	"	72.
12	"	7	"	84.
12	"	8	"	96.
12	"	9	"	108.
12	"	10	"	120.
12	"	11	"	132.
12	"	12	"	144

1. How many are 12 times 3 ?
2. How many are 12 times 5 ?
3. How many are 12 times 4 ?
4. How many are 12 times 2 ?
5. How many are 12 times 6 ?
6. How many are 12 times 7 ?
7. How many are 12 times 9 ?
8. How many are 12 times 11 ?
9. How many are 12 times 12 ?
10. How many are 12 times 10 ?

Twelve times 8 are how many ?
Twelve times 12 are how many ;
Twelve times 7 are how many ?
Twelve times 11 are how many ?
Twelve times 5 are how many ?
Twelve times 9 are how many ?
Twelve times 6 are how many ?

Lesson XII.

1. In a certain school there were 8 girls, and 12 times as many boys; how many boys were there in the school?

ANALYSIS.—If in the school there are 8 girls, and 12 times as many boys, there must be 12 times 8 boys, which are 96 boys.

2. In a school-room are 12 benches, and 9 boys on each bench; how many boys in the school?

3. In a corn-field are 12 rows, and 12 hills in each row; how many hills in the field?

4. Bought 5 pounds of beef at 6 cents a pound, and 8 pounds of rice at 5 cents a pound; what was the whole cost?

5. A's house is 5 rods from the meeting-house, B's is 3 times as far as A's, and C's is twice as far as B's; how far are B's and C's houses from the meeting-house?

6. A farmer sold 11 bushels of potatoes, and had 12 times as many bushels remaining; how many bushels had he remaining?

7. In a school-room are 12 rows of seats, and 9 seats in each row; how many seats are there?

8. What cost 8 pounds of chocolate, at 12 cents a pound?

9. A boy earned 35 cents a day, and paid 25 cents a day for his board; how much had he left at the expiration of 6 days?

10. A farmer bought 9 acres of land, at 11 dollars an acre; what did it all cost?

MULTIPLICATION.

NOTE.—The sign of Multiplication is ×, and is read *multiplied by,* or *times.* The sign of equality is =, and is read *equals,* or *equal to.*

1 × 1 = 1	1 × 2 = 2	1 × 3 = 3	1 × 4 = 4
2 × 1 = 2	2 × 2 = 4	2 × 3 = 6	2 × 4 = 8
3 × 1 = 3	3 × 2 = 6	3 × 3 = 9	3 × 4 = 12
4 × 1 = 4	4 × 2 = 8	4 × 3 = 12	4 × 4 = 16
5 × 1 = 5	5 × 2 = 10	5 × 3 = 15	5 × 4 = 20
6 × 1 = 6	6 × 2 = 12	6 × 3 = 18	6 × 4 = 24
7 × 1 = 7	7 × 2 = 14	7 × 3 = 21	7 × 4 = 28
8 × 1 = 8	8 × 2 = 16	8 × 3 = 24	8 × 4 = 32
9 × 1 = 9	9 × 2 = 18	9 × 3 = 27	9 × 4 = 36
10 × 1 = 10	10 × 2 = 20	10 × 3 = 30	10 × 4 = 40
11 × 1 = 11	11 × 2 = 22	11 × 3 = 33	11 × 4 = 44
12 × 1 = 12	12 × 2 = 24	12 × 3 = 36	12 × 4 = 48

1 × 5 = 5	1 × 6 = 6	1 × 7 = 7	1 × 8 = 8
2 × 5 = 10	2 × 6 = 12	2 × 7 = 14	2 × 8 = 16
3 × 5 = 15	3 × 6 = 18	3 × 7 = 21	3 × 8 = 24
4 × 5 = 20	4 × 6 = 24	4 × 7 = 28	4 × 8 = 32
5 × 5 = 25	5 × 6 = 30	5 × 7 = 35	5 × 8 = 40
6 × 5 = 30	6 × 6 = 36	6 × 7 = 42	6 × 8 = 48
7 × 5 = 35	7 × 6 = 42	7 × 7 = 49	7 × 8 = 56
8 × 5 = 40	8 × 6 = 48	8 × 7 = 56	8 × 8 = 64
9 × 5 = 45	9 × 6 = 54	9 × 7 = 63	9 × 8 = 72
10 × 5 = 50	10 × 6 = 60	10 × 7 = 70	10 × 8 = 80
11 × 5 = 55	11 × 6 = 66	11 × 7 = 77	11 × 8 = 88
12 × 5 = 60	12 × 6 = 72	12 × 7 = 84	12 × 8 = 96

1 × 9 = 9	1 × 10 = 10	1 × 11 = 11	1 × 12 = 12
2 × 9 = 18	2 × 10 = 20	2 × 11 = 22	2 × 12 = 24
3 × 9 = 27	3 × 10 = 30	3 × 11 = 33	3 × 12 = 36
4 × 9 = 36	4 × 10 = 40	4 × 11 = 44	4 × 12 = 48
5 × 9 = 45	5 × 10 = 50	5 × 11 = 55	5 × 12 = 60
6 × 9 = 54	6 × 10 = 60	6 × 11 = 66	6 × 12 = 72
7 × 9 = 63	7 × 10 = 70	7 × 11 = 77	7 × 12 = 84
8 × 9 = 72	8 × 10 = 80	8 × 11 = 88	8 × 12 = 96
9 × 9 = 81	9 × 10 = 90	9 × 11 = 99	9 × 12 = 108
10 × 9 = 90	10 × 10 = 100	10 × 11 = 110	10 × 12 = 120
11 × 9 = 99	11 × 10 = 110	11 × 11 = 121	11 × 12 = 132
12 × 9 = 108	12 × 10 = 120	12 × 11 = 132	12 × 12 = 144

DIVISION.

Lesson I.

1.   4 are how many times 2 ?
ANALYSIS.—4 are as many times 2, as 2 is contained times in 4, which are 2 times.

2.	2	are	how	many	times	2 ?
3.	6	are	how	many	times	2 ?
4.	8	are	how	many	times	2 ?
5.	10	are	how	many	times	2 ?
6.	12	are	how	many	times	2 ?
7.	14	are	how	many	times	2 ?
8.	16	are	how	many	times	2 ?
9.	3	are	how	many	times	3 ?
10.	9	are	how	many	times	3 ?
11.	6	are	how	many	times	3 ?
12.	12	are	how	many	times	3 ?
13.	15	are	how	many	times	3 ?
14.	18	are	how	many	times	3 ?
15.	21	are	how	many	times	3 ?
16.	18	are	how	many	times	2 ?
17.	20	are	how	many	times	2 ?
18.	22	are	how	many	times	2 ?

Lesson II.

1. If I give for one apple 2 cents, how many apples can I buy for 4 cents ?
ANALYSIS.—If for 2 cents I can buy 1 apple, for 4 cents I can buy as many apples as 2 is contained times in 4, which are 2 times. Therefore, at 2 cents each, for 4 cents I can buy 2 apples.

2. At 2 cents each, how many pears can I buy for 6 cents?

3. At 2 cents each, how many oranges can I buy for 8 cents?

4. At three dimes a yard, how many yards of calico can be had for 12 dimes?

5. At 3 cents each, how many lemons can be had for 9 cents?

6. At 2 cents a yard, how many yards of tape can be bought for 10 cents?

7. At 2 dimes a bushel, how many bushels of apples may be had for 12 dimes?

8. How many baskets of strawberries, at 3 cents a basket, can be had for 15 cents?

9. How many pounds of ginger, at 2 dimes a pound, may be had for 14 dimes?

10. For 18 dollars, how many yards of cloth can be had, at 2 dollars a yard?

11. For 16 apples, how many oranges can be had, by giving 2 apples for 1 orange?

12. How many primers, at 2 cents each, can be had for 26 cents?

13. How many barrels of flour, at 2 dollars a barrel, can be bought for 24 dollars?

14. For 22 dollars, how many sheep may be bought, at 2 dollars each?

15. How many melons, at 3 dimes each, may be had for 18 dimes?

16. At 3 cents each, how many tops may be had for 6 cents?

17. If 1 peck of beans cost 3 dimes, how many pecks can be bought for 21 dimes?

Lesson III.

1.	8	are	how	many	times	4 ?
2.	12	are	how	many	times	4 ?
3.	16	are	how	many	times	4 ?
4.	5	are	how	many	times	5 ?
5.	10	are	how	many	times	5 ?
6.	20	are	how	many	times	4 ?
7.	15	are	how	many	times	5 ?
8.	28	are	how	many	times	4 ?
9.	20	are	how	many	times	5 ?
10.	32	are	how	many	times	4 ?
11.	36	are	how	many	times	2 ?
12.	28	are	how	many	times	2 ?
13.	30	are	how	many	times	5 ?
14.	25	are	how	many	times	5 ?
15.	35	are	how	many	times	5 ?
16.	36	are	how	many	times	4 ?
17.	27	are	how	many	times	3 ?
18.	36	are	how	many	times	3 ?
19.	48	are	how	many	times	4 ?
20.	48	are	how	many	times	3 ?

Lesson IV.

1. If 4 books cost 8 cents, what will 1 book cost?

ANALYSIS.—If 4 books cost 8 cents, 1 book will cost one-fourth of 8 cents, which is 2 cents.

2. If 4 oranges cost 12 cents, what will 1 orange cost?

3. If 4 lemons cost 16 cents, what will 1 lemon cost?

4. If a boy walk 20 miles in 4 days, how far does he walk in 1 day?

5. If a boy divide 10 apples equally among 5 of his playmates, how many will each receive?

6. A boy distributed 15 walnuts equally among 5 of his playmates; how many did each receive?

7. A man gave 28 dollars for 4 hogs; how much did they cost each?

8. A boy sold 5 baskets of berries for 20 cents; how much did he get for one basket?

9. Mary gave 35 cents for 5 pencils; how much were they each?

10. Margaret gave 36 cents for 4 spools of thread; how much did she pay for each;

11. Thornton walked 27 miles in 3 days; how far did he walk each day?

12. If 3 inkstands cost 36 cents, what will 1 inkstand cost?

13. If 2 yards of calico cost 36 cents, how much will one yard cost;

14. If 4 pounds of beef cost 32 cents, what will 1 pound cost?

15. If 2 balls of cotton cost 28 cents, what will 1 ball cost?

16. If 3 melons cost 30 cents, what will 1 melon cost?

17. A man sold 3 cows for 48 dollars; how much was that for each?

18. Albert gave 36 marbles for 4 oranges; how many marbles did he give for 1 orange?

Lesson V.

Multiplication and Division Combined.

1. 3 times 4 are how many times 2?

ANALYSIS.—3 times 4 are 12. 12 is as many times 2 as 2 is contained times in 12, which are 6 times.

2. 3 times 6 are how many times 2?
3. 3 times 8 are how many times 2?
4. 3 times 10 are how many times 2?
5. 3 times 12 are how many times 2?
6. 3 times 12 are how many times 2?
7. 4 times 4 are how many times 2?
8. 4 times 5 are how many times 2?
9. 4 times 6 are how many times 3?
10. 4 times 7 are how many times 2?
11. 4 times 8 are how many times 2?
12. 4 times 9 are how many times 6?
13. 4 times 10 are how many times 5?
14. 4 times 11 are how many times 2?
15. 4 times 12 are how many times 6?
16. 4 times 12 are how many times 3?
17. 5 times 6 are how many times 3?
18. 5 times 8 are how many times 4?
19. 5 times 9 are how many times 3?
20. 5 times 10 are how many times 2?

21. How many times 4 are 5 times 12?
22. How many times 3 are 6 times 4?
23. How many times 3 are 6 times 7?
24. How many times 3 are 6 times 5?
25. How many times 4 are 6 times 8?
26. How many times 3 are 6 times 10?

27.   How many times 3 are 6 times 11 ?
28.   How many times 10 are 8 times 5 ?
29.   How many times 4 are 8 times 7 ?
30.   How many times 6 are 8 times 9 ?
31.   How many times 5 are 8 times 10 ?
32.   How many times 3 are 9 times 6 ?
33.   How many times 6 are 9 times 8 ?
34.   How many times 15 are 9 times 10 ?
35.   How many times 6 are 9 times 12 ?
36.   How many times 7 are 2 times 14 ?
37.   How many times 5 are 10 times 7 ?
38.   How many times 7 are 3 times 14 ?
39.   How many times 9 are 12 times 6 ?
40.   How many times 4 are 12 times 9 ?

Lesson VI.

Practical Questions, combining Multiplication and Division.

1. If 2 pears cost 4 cents, what will 3 pears cost ?

ANALYSIS.—If 2 pears cost 4 cents, 1 pear will cost one-half of 4 cents, which is 2 cents.   If 1 pear cost 2 cents, 3 pears will cost 3 times 2 cents, which are 6 cents.

2. If 2 pens cost 6 cents, what will 5 pens cost ?

3. If 2 melons cost 24 cents, what will 3 melons cost ?

4. If 2 lemons cost 8 cents, what will 4 lemons cost ?

5. If 2 books cost 10 dimes, what will 6 books cost ?

6. If 2 oranges cost 6 cents, what will 10 oranges cost?

7. If 3 pine-apples cost 36 cents, what will 7 pine-apples cost?

8. If 3 slates cost 30 cents, what will 5 cost?

9. If 3 pencils cost 18 cents, what will 6 pencils cost?

10. If 3 pens cost 9 cents, what will 8 cost?

11. If 3 caps cost 12 dimes, what will 10 caps cost?

12. If 3 pairs of shoes cost 6 dollars, what will 8 pairs cost?

13. If 3 men can earn 18 dollars a week, how many dollars can 8 men earn in a week?

14. If 3 candies cost 6 cents, what will 12 candies cost?

15. If 4 calves cost 16 dollars, what will 9 calves cost?

16. If 4 sheep cost 12 dollars, what will 12 sheep cost?

17. If 4 men cut 8 cords of wood, how many cords will 9 men cut?

18. If 7 quarts of milk cost 35 cents, what will 8 quarts cost?

19. How many coats can be cut out of 36 yards of cloth, if 4 coats can be cut out of 12 yards of the same kind of cloth?

20. What will 30 pounds of sugar cost, if 6 pounds cost 30 cents?

21. What will 18 pounds of veal cost, if 6 pounds cost 42 cents?

22. What will 13 pounds of pork cost, if 6 pounds cost 48 cents?

23. What will 20 weeks' board come to, if 6 weeks' board comes to 12 dollars?

24. What will be the cost of 25 bushels of apples, if 9 bushels cost 90 cents?

25. What will 14 pounds of cheese cost, if 8 pounds cost 40 cents?

26. If 6 men can do a certain piece of work in 18 days, in how many days can 12 men do the same work?

27. Gave for a quantity of cotton 72 dollars, and sold it for 12 yards of cloth; how much did the cloth cost a yard?

28. What cost 10 cows, if 3 cows cost 45 dollars?

29. If 4 oranges are worth 16 apples, how many apples are 12 oranges worth?

30. How many men can, in 4 days, do as much work as 8 men can in 7 days?

31. How many men can, in 3 days, do as much work as 9 men in 5 days?

32. How many days will it take 5 men to do what it takes 6 men 10 days to perform?

33. What will 12 pounds of fish cost, if 8 pounds cost 72 cents?

34. What will 15 yards of cloth cost, if 7 yards cost 35 dollars?

35. What cost 14 geese, if 9 cost 72 dimes?

36. What cost 13 locks, if 7 cost 70 cents?

37. What cost 16 ducks, if 5 cost 100 cents?

38. How far can a boy travel in 9 days, if in 7 days he travel 63 miles?

39. How far could a man ride for 120 cents, if for 40 cents he could ride 8 miles?

COMPOUND DENOMINATE NUMBERS.

Lesson I.

TABLE OF UNITED STATES CURRENCY.

10 Mills	make 1 Cent,	marked	*ct.*
10 Cents	" 1 Dime,	"	*di.*
10 Dimes, or } 100 Cents	" 1 Dollar,	"	$.
10 Dollars	" 1 Eagle,	"	*E.*

NOTE.—The Canadian Currency is the same as that of the United States, and has, in addition, a shilling, which equals 20 cents, and 5 shillings make 1 dollar.

1. How many mills in 6 cents?

ANALYSIS 1ST.—In 1 cent there are 10 mills, therefore 10 times the number of cents equal the number of mills. 10 times 6 are 60 mills.

ANALYSIS 2ND.—In 1 cent there are 10 mills, and in 6 cents there are 6 times 10, which are 60 mills.

2. How many mills in 1 cent? in 2 cents? in 3 cents? in 4 cents? in 5 cents?

3. How many cents in 1 dime? in 3 dimes? in 4 dimes? in 2 dimes? in 5 dimes? in 6 dimes?

4. How many dimes in 1 dollar? in 2 dollars? in 4 dollars? in 3 dollars? in 7 dollars? in 8 dollars? in 9 dollars? in 6 dollars?

5. How many dollars in 1 eagle? in 4 eagles? in 3 eagles? in 5 eagles? in 9 eagles?

6. In 50 mills how many cents?

ANALYSIS.—There are 10 mills in 1 cent, therefore one-tenth of the number of mills equals the number of cents. One-tenth of 50 is 5 cents.

    7. In 20 mills how many cents?
    8. In 30 cents how many dimes?
    9. In 60 cents how many dimes?
  10. In 70 cents how many dimes?
  11. In 80 cents how many dimes?
  12. In 90 cents how many dimes?
  13. In 20 dimes how many dollars?
  14. In 30 dimes how many dollars?
  15. In 90 dimes how many dollars?
  16. In 80 dimes how many dollars?
  17. In 40 dollars how many eagles?
  18. In 60 dollars how many eagles?

Lesson II.

TABLE OF ENGLISH MONEY.

4 Farthings [qr.] make	1 Penny,	marked	d.
12 Pence	"	1 Shilling,	"	s.
20 Shillings	"	1 Pound,	"	£.

1. How many pence in 5 shillings?

ANALYSIS.—In one shilling there are 12 pence, therefore 12 times the number of shillings equal the number of pence. 12 times 5 are 60 pence.

2. How many farthings in 2 pence? in 4 pence? in 7 pence? in 5 pence? in 9 pence?

3. How many pence in 4 shillings? in 3 shillings? in 7 shillings? in 8 shillings?

4. How many shillings in 2 pounds? in 4 pounds? in 3 pounds? in 7 pounds? in 8 pounds?

5. How many farthings in 2 shillings, 2 pence and 2 farthings?

6. How many pence in 1 pound, 6 shillings?

7. How many farthings in 1 pound, 2 shillings and 3 pence?

Lesson III.

TABLE OF TROY WEIGHT.

24 Grains [gr.]	make	1 Pennyweight,	marked	dwt.
20 Pennyweights	"	1 Ounce,	"	oz.
12 Ounces	"	1 Pound,	"	lb.

1. How many grains in 2 pennyweights?

ANALYSIS.—There are 24 grains in 1 pennyweight, therefore, 24 times the number of pennyweights equal the number of grains. 24 times 2 are 48 pennyweights.

2. How many pennyweights in 2 ounces? in 3 ounces? in 6 ounces?

3. How many ounces in 2 pounds? in 4 pounds? in 5 pounds?

4. How many pounds in 60 ounces?

ANALYSIS.—There are 12 ounces in 1 pound, therefore one-twelfth of the number of ounces equals the number of pounds. One-twelfth of 60 is 5 pounds.

5. How many ounces in 80 pennyweights?

6. How many pounds in 84 ounces?

Lesson IV.

TABLE OF APOTHECARIES' WEIGHT.

20 Grains [*gr.*]	make	1 Scruple,	marked	Ə
3 Scruples	"	1 Dram,	"	ℨ
8 Drams	"	1 Ounce,	"	℥
12 Ounces	"	1 Pound,	"	℔

1. In 3 scruples how many grains?

2. In 4 drams how many scruples?

3. In 3 pounds how many scruples?

4. In 5 drams and 2 scruples how many grains?

5. In 1 pound 3 scruples, how many grains

6. In 2 drams, 3 scruples and 4 grains, how many grains?

7. In 48 drams, how many ounces?

8. In 96 drams, how many pounds?

Lesson V.

TABLE OF ADVOIRDUPOIS WEIGHT.

16 Drams [*dr.*]	make	1 Ounce,	marked	oz.
16 Ounces	"	1 Pound,	"	lb.
25 Pounds	"	1 Quarter,	"	qr.
4 Quarters	"	1 Hundred-weight,	"	cwt.
20 Hundred-weight	"	1 Ton,	"	T.

1. How many drams in 1 ounce? in 2 ounces? in 5 ounces? in 4 ounces?

2. How many ounces in 2 pounds? in 3 pounds? in 4 pounds? in 5 pounds?

3. How many pounds in 2 quarters? in 3 quarters? in 4 quarters? in 8 quarters?

4. How many quarters in 2 hundred-weight?

5. How many hundred-weight in 4 tons? in 3 tons? in 5 tons?

6. How many ounces in 32 drams?

7. How many pounds in 48 ounces?

8. How many quarters in 75 pounds?

9. How many hundred-weight in 12 quarters?

10. How many tons in 60 hundred weight?

Lesson VI.

TABLE OF CLOTH MEASURE.

2¼ Inches [in.] make 1 Nail,			marked	na.
4 Nails	"	1 Quarter of a yard,	"	qr.
4 Quarters	"	1 Yard,	"	yd.

NOTE.—The Flemish, English and French ells are no longer used.

1. In 1 yard how many quarters?

2. In 3 yards and 3 quarters how many quarters?

3. In 3 quarters how many nails?

4. In 2 qr. and 3 na. how many nails?

5. In 2 yards how many nails?

6. In 3 yards how many quarters?

7. In 32 nails how many yards?

8. In 64 nails how many yards?

9. In 3 yards and 3 quarters how many quarters?

10. In 4 yards and 2 quarters how many quarters

11. In 4 yards and 3 quarters how many quarters?

5

Lesson VII.

TABLE OF LONG MEASURE.

3	Barley-corns [bc.]	make 1 Inch,	marked	in.
12	Inches	" 1 Foot,	"	ft.
3	Feet	" 1 Yard,	"	yd.
5½	Yards, or 16½ Feet	" 1 Rod.	"	rd.
40	Rods, or 220 yards	" 1 Furlong	"	fur.
8	Furlongs	" 1 Mile,	"	mi.
3	Miles	" 1 League,	"	le.
60	Geographic, or }	" 1 Degree,	"	deg. or °
69½	Statute Miles }			
360	Degrees	the Circumference of the earth.		

1. In 2 yards how many inches?
2. In 4 rods how many yards?
3. In 3 feet how many barley-corns?
4. In 2 furlongs how many yards?
5. In 4 miles how many rods?
6. In 190 inches how many yards?
7. In 320 rods how many miles?
8. In 48 furlongs how many leagues?
9. In 5280 feet how many miles?
10. In one mile how many feet?

Lesson VIII.

TABLE OF LAND OR SQUARE MEASURE.

144	Square in. [sq. in.]	make 1 Square foot.	marked	sq. ft.
9	Square feet	" 1 Square yard,	"	sq. yd.
30¼	Sq. yd., or 272¼ ft.	" 1 Square rod,	"	sq. rd.
40	Sq. rod, or poles	" 1 Rood,	"	R.
4	Roods	" 1 Acre,	"	A.
640	Acres	" 1 Square mile,	"	sq. M.

1. In 2 square feet how many square inches?

2. In 2 square feet how many square inches?
3. In 27 sq. ft. how many square yards?
4. In 1 square rod how many square feet?
5. In 1 acre how many rods?
6. In 4 acres how many rods?

Lesson IX.

TABLE OF SOLID OR CUBIC MEASURE.

1728 Cubic in. [*cu. in.*]	make	1 Cubic foot, marked	*cu. ft.*	
27 Cubic feet	"	1 Cubic yard, "	*cu. yd.*	
40 ft. round tim., or⎫ 50 ft. hewn timber ⎭	"	1 Ton, "	*T.*	
16 Cubic feet	"	1 Cord foot, "	*c. ft.*	
8 Cord feet, or⎫ 128 Cubic feet ⎭	"	1 Cord of wood, "	*cd.*	

A pile of wood 8 feet long, 4 feet wide, and 4 feet high, is a cord.

1. In 2 cords how many cord feet?
2. In 2 cords how many cubic feet?
3. In 3 cubic yards how many cubic feet?
4. In 256 feet how many cords?
5. In 54 cubic feet how many cubic yards?

Lesson X.

TABLE OF WINE MEASURE.

4 Gills [*gi.*]	make	1 Pint,	marked	*pt.*
2 Pints	"	1 Quart,	"	*qt.*
4 Quarts	"	1 Gallon,	"	*gal.*
31½ Gallons	"	1 Barrel,	"	*bbl.*
42 Gallons	"	1 Tierce,	"	*ti.*
63 Gallons, or 2 barrels	"	1 Hogshead,	"	*hhd.*
2 Hogsheads (126 gallons)	"	1 Pipe,	"	*pi.*
2 Pipes, 4 hhds., or 252 gals.	"	1 Tun,	"	*T.*

1. How many gills in 4 pt.? in 5 pt.? in 3 pt.?

2. How many pints in 3 qt.? in 2 qt.? in 5 qt.?

3. How many quarts in 2 gal.? in 4 gal.? in 5 gal.?

4. How many gallons in 2 tier.? in 3 tier.?

5. How many gallons in 2 hhd.? in 3 hhd.?

6. How many hogsheads in 2 pipes? in 4 pipes?

7. How many gills in 1 qt.? in 3 qt.? in 5 qt.?

8. How many pints in 3 gal.? in 4 gal.?

9. How many pints in 1 pipe?

10. How many qts. in 32 gills? in 64 gills?

11. How many gallons in 32 pt.? in 16 pt.?

12. How many gallons in 64 gills?

13. How many hogsheads in 504 qts.?

Lesson XI.

TABLE OF DRY MEASURE.

2 Pints [*pt.*]	make	1 Quart,	marked	*qt.*
8 Quarts	"	1 Peck,	"	*pk.*
4 Pecks	"	1 Bushel,	"	*bu.*
8 Bushels	"	1 Quarter,	"	*qr.*
36 Bushels	"	1 Chaldron,	"	*ch.*

1. In 2 quarts how many pints?

2. How many pints in 3 qt.? in 4 qt.?

3. How many pints in 1 pk.? in 2 pk.?

4. How many qt. in 3 pk.? in 5 pk.?

5. How many qt. in 2 bu.? in 3 bu.?

6. How many bu. in 8 pk. in 20 pk.?

7. How many pecks in 16 qt.? in 24 qt.?
8. How many qt. in 12 pt.? in 18 pt.?
9. How many pecks in 64 pt.? in 32 pt.
10. How many bu. in 32 qt.? in 64 qt.?
11. How many pecks in 1 chaldron?
12. How many quarts in 1 chaldron?

Lesson XII.

60 Seconds [*sec.*]	make	1 Minute,	marked	*mi.*
60 Minutes	"	1 Hour,	"	*hr.*
24 Hours	"	1 Day,	"	*da.*
7 Days	"	1 Week,	"	*wk.*
4 Weeks	"	1 Month,	"	*mo.*
12 Calendar months	"	1 Year,	"	*yr.*
52 Weeks	"	1 Year,	"	*yr.*

The following table exhibits the names of the months, and the number of days in each :—

			NAMES.	DAYS.
Winter	1st	month,	January,	31.
	2nd	"	February,	28, in leap-year, 29.
Spring	3rd	"	March,	31.
	4th	"	April,	30.
	5th	"	May,	31.
Summer	6th	"	June,	30.
	7th	"	July,	31.
	8th	"	August,	31.
Autumn	9th	"	September,	30.
	10th	"	October,	31.
	11th	"	November,	30.
Winter	12th	"	December,	31.

The following lines may aid in remembering the number of days in each month :—

"Thirty days hath September,

April, June, and November;

All the rest have thirty-one,

Excepting February, all alone,

Which hath twenty-eight in fine,

Except in leap-year, twenty-nine."

1. Name the Winter months, and the number of days in each month.

2. Name the Spring months, and the number of days in each month.

3. Name the Summer months, and the number of days in each month.

4. Name the Autumn months, and the number of days in each month.

5. How many seconds in 2 minutes? in 4 minutes? in 3 minutes?

6. How many minutes in 2 hours? in 3 hours? in 4 hours?

7. How many hours in 2 days? in 5 days? in 3 days? in 4 days?

8. How many days in 3 weeks? in 4 weeks? in 6 weeks? in 2 weeks?

9. How many weeks in 4 months? in 6 months? in 3 months? in 2 months? in 5 months?

10. How many weeks in 2 years?

11. How many months in 6 years?

12. How many minutes in 180 seconds? in 240 seconds?

13. How many hours in 120 minutes? in 360 minutes?

14. How many days in 48 hours? in 96 hours? in 72 hours?

15. How many weeks in 21 days? in 28 days? in 49 days?

16. How many months in 12 weeks? in 24 weeks? in 36 weeks?

17. How many hours in 3600 seconds?

18. How many weeks in 168 hours?

19. How many months in 52 weeks?

20. How many days in 3 weeks and 3 days?

21. How many hours in 4 days and 4 hours?

Lesson XIII.

TABLE OF CIRCULAR MOTION

60 Seconds (″)	make	1 Minute, marked	′
60 Minutes	"	1 Degree,	°
30 Degrees	"	1 Sign,	sign.
12 signs, or 360 Degrees	"	1 Circle,	C.

1. How many degrees in 2 circles?

2. How many minutes in 1 sign?

3. How many seconds in 1 degree?

4. How many degrees in 8 signs?

5. If there are 60 miles in 1 degree, how many miles in 4 degrees?

6. How many degrees in 12 signs?

Lesson XIV.

MISCELLANEOUS TABLES.

ADVOIRDUPOIS WEIGHT.

A gallon of train-oil weighs	7½ lb.
A stone of wire "	10½ "
A stone of iron, or horseman's weight, is	14 "
A peck of salt weighs	14 "
A bushel of salt "	56 "
A firkin of butter "	56 "
A quintal of fish "	100 "
A faggot of steel "	120 "
A barrel of flour "	196 "
A barrel of beef or pork "	200 "
A barrel of potash "	200 "
A fother of lead "	19 cwt. 2 qrs.

LONG MEASURE.

4   Inches   make 1 Hand.   Used for meas. horses.

6   Feet   make 1 Fathom. } Used by sailors for meas. ropes, the depth of water, &c.

7$\frac{92}{100}$ Inches make 1 Link of a surveyor's chain.
100   Links, or 66 feet, or 4 rods, make 1 chain.
80   Chains, or 320 rods, or }   " 1 mile.
     1760 yards, or 5280 feet }

SOLID MEASURE.

231   cubic inches make 1 Wine gallon.
282   cubic inches make 1 Beer gallon.
2150$\frac{2}{50}$ cubic inches make 1 Bushel.

LIQUID MEASURE.

10 Gallons make 1 Anker.
18 Gallons make 1 Rundlet.
42 Gallons make 1 Tierce.
84 Gallons make 1 Puncheon.
9 Gallons make 1 Firkin of beer.
18 Gallons make 1 Kilderkin of beer.
36 Gallons make 1 Barrel of beer.
54 Gallons make 1 Hogshead of beer.
108 Gallons make 1 Butt.

TABLE.

12 Single things	make	1 Dozen,	marked	*doz.*
12 Dozen	"	1 Gross,	"	*gro.*
12 Gross (144 doz.)	"	1 Great Gross	"	*g. gro.*
20 Single things	"	1 Score,	"	*sco.*
5 Scores	"	100.		

TABLE OF PAPER.

24 Sheets of paper	make	1 Quire.	
20 Quires	"	1 Ream.	
2 Reams	"	1 Bundle.	
10 Reams	"	1 Bale.	

TABLE OF PARCHMENT.

12 Skins	make	1 Dozen.
5 Dozen, or 60 Skins	"	1 Roll.

TABLE OF BOOKS.

When a sheet of paper makes :

2 leaves, or 4 pages, the book is called a *folio*	size.	
4 leaves, or 8 pages, the book is called a *quarto*	"	
8 leaves, or 16 pages, the book is called an *octavo*	"	
12 leaves, or 24 pages, the book is called a *duodecimo*	"	
18 leaves, or 36 pages, the book is called an *eighteenmo*		

ARITHMETICAL SIGNS.

1. The symbol $+$ is called *plus*, and is the sign of addition. Thus, $2 + 4$ indicates the addition of 2 and 4.

2. The symbol $-$ is called *minus*, and is the sign of subtraction. Thus, $5 - 2$ indicates the subtraction of 2 from 5.

3. The symbol $\times$ is the sign of multiplication. Thus, 3×5 indicates that 3 is to be multiplied by 5, or 5 by 3.

4. The symbol $\div$ is the sign of division. Thus, $8 \div 2$ indicates the division of 8 by 2.

5. The symbol $=$ is the sign of equality. Thus, $4 + 6 = 10$.

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Aliquot, or Equal Parts of a Dollar.

100 cents =	1 dollar.	
75 cents =	$\frac{3}{4}$ (three-fourths)	of a dollar.
50 cents =	$\frac{1}{2}$ (one-half)	of a dollar.
33$\frac{1}{3}$ cents =	$\frac{1}{3}$ (one-third)	of a dollar.
25 cents =	$\frac{1}{4}$ (one-fourth)	of a dollar.
12$\frac{1}{2}$ cents =	$\frac{1}{8}$ (one-eighth)	of a dollar.
10 cents =	$\frac{1}{10}$ (one-tenth)	of a dollar.
6$\frac{1}{4}$ cents =	$\frac{1}{16}$ (one-sixteenth)	of a dollar.
5 cents =	$\frac{1}{20}$ (one-twentieth)	of a dollar.
4 cents =	$\frac{1}{25}$ (one-twenty-fifth)	of a dollar.
2 cents =	$\frac{1}{50}$ (one-fiftieth)	of a dollar.
1 cent =	$\frac{1}{100}$ (one-hundredth)	of a dollar.

New York Currency.

S.	D.			S.	D.		
0	6	are	6$\frac{1}{4}$ cts.	4	6	are	56$\frac{1}{4}$ cts.
1	0	are	12$\frac{1}{2}$ cts.	5	0	are	62$\frac{1}{2}$ cts.
1	6	are	18$\frac{3}{4}$ cts.	5	6	are	68$\frac{3}{4}$ cts.
2	0	are	25 cts.	6	0	are	75 cts.
2	6	are	31$\frac{1}{4}$ cts.	6	6	are	81$\frac{1}{4}$ cts.
3	0	are	37$\frac{1}{2}$ cts.	7	0	are	87$\frac{1}{2}$ cts.
3	6	are	43$\frac{3}{4}$ cts.	7	6	are	93$\frac{3}{4}$ cts.
4	0	are	50 cts.	8	0	are	100 cts.

Aliquot, or Equal Parts of a Month.

30 days =	1 month.	
15 days =	$\frac{1}{2}$ (one-half)	of a month.
10 days =	$\frac{1}{3}$ (one-third)	of a month.
6 days =	$\frac{1}{5}$ (one-fifth)	of a month.
5 days =	$\frac{1}{6}$ (one sixth)	of a month.
3 days =	$\frac{1}{10}$ (one-tenth)	of a month.
2 days =	$\frac{1}{15}$ (one-fifteenth)	of a month.
1 day =	$\frac{1}{30}$ (one-thirtieth)	of a month.

Aliquot, or Equal Parts of a Year.

12 months =	1 year.	
6 months =	$\frac{1}{2}$ (one-half)	of a year.
4 months =	$\frac{1}{3}$ (one-third)	of a year.
3 months =	$\frac{1}{4}$ (one-fourth)	of a year.
2 months =	$\frac{1}{6}$ (one-sixth)	of a year.
1 month =	$\frac{1}{12}$ (one-twelfth)	of a year.

FRACTIONS

Lesson I.

1. Mary has 4 apples, and Sarah 1 half as many; how many has she?

ANALYSIS.—If Mary has 4 apples, and Sarah 1 half as many, she must have one-half of 4 apples, which is 2 apples.

2. Henry is 8 years old, and Harvey is 1 half as old; how old is Harvey?

3. Martin has 6 marbles, and Matthew 1 half as many; how many has he?

4. If you divide 10 apples equally between 2 boys, what part of them will each receive?

5. What is 1 half of 10?

6. If an orange cost 12 cents, and a lemon 1 half as much, what was the cost of the lemon?

7. If 3 apples cost 6 cents, what part of 6 cents will 1 apple cost?

8. What is 1 third of 6?

9. What is 1 half of 4? of 6? of 8? of 10? of 12? of 14? of 16? of 18? of 20? of 24?

10. If 3 oranges cost 9 cents, what part of 9 cents will 1 orange cost? what part of 9 cents will 2 oranges cost?

11. What is 1 third of 3? of 6? of 9? of 12? of 15? of 21? of 24? of 27? of 30?

12. If 1 quart of nuts cost 12 cents, what will 1 third of a quart cost?

13. If 1 ton of hay cost $15, what will 1 third of a ton cost?

14. If 1 bushel of apples cost 21 cents, what will 1 third of a bushel cost?

15. If 1 yard of shalloon cost 24 cents, what will one third of a yard cost?

16. If 1 quart of vinegar cost 9 cents, what will 1 third of a quart cost?

17. If 1 pound of candies cost 12 cents what part of 12 cents will 1 third of a pound cost? what part of 12 cents will 2 thirds of a pound cost?

18. What is 1 third of 12?

19. If 1 third of 12 is 4, what is 2 thirds of 12?

20. What is 1 third of 6? 2 thirds of 6? 4 thirds of 6? 3 thirds of 6? 5 thirds of 6?

21. If a barrel of flour cost 9 dollars, what will 1 third of a barrel cost? 2 thirds?

22. What is 2 fourths of 12? 1 fourth of 12? 3 fourths of 12?

23. If a barrel of fish cost $12, what will 1 fourth of a barrel cost? 2 fourths? 3 fourths? 4 fourths?

24. What is 1 fifth of 15? 2 fifths of 15? 3 fifths of 15? 4 fifths of 15? 5 fifths of 15?

25. If a ton of hay cost $15, what will 1 fifth of a ton cost? 2 fifths? 3 fifths? 4 fifths? 5 fifths?

26. What is 2 thirds of 24? 3 fourths? 3 eighths? 2 fourths?

27. What is 3 fifths of 20? 7 eighths of 64? 4 sevenths of 56?

27. What do you understand by 1 fourth? 3 fourths?

ANSWER.—When a thing is divided into four equal parts, 1 of these parts is called 1 *fourth*, and 3 of these parts are called 3 *fourths*.

28. What do you understand by 2 fifths? 3 fifths? 4 fifths?

29. What do you understand by 3 sevenths? 4 sevenths? 5 sevenths? 6 sevenths?

30. How many thirds in 1?

31. How many fifths in 1?

32. How many fourths in 1?

33. How many tenths in 1?

34. How many ninths in 1?

35. How many twelfths in 1?

36. What is 1 seventh of $28? 2 sevenths of $28? 3 sevenths? 4 sevenths? 6 sevenths? 5 sevenths?

37. If a coat cost $20, and a pair of pantaloons 1 fourth as much. what is the cost of the pantaloons?

38. If a pound of cheese cost 9 cents, what will 2 thirds of a pound cost?

39. If 12 oranges cost 36 cents, what part of 36 cents will one orange cost? 2 oranges? 4 oranges? 3 oranges? 5 oranges? 9 oranges? 8 oranges?

40. What is 1 twelfth of 36? 2 twelfths of 36? 5 twelfths of 36? 4 twelfths of 36? 6 twelfths of 36? 9 twelfths? 8 twelfths? 10 twelfths? 11 twelfths?

41. Rachel has 14 primers, and Anthony 5 sevenths as many; how many has he?

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42. Abner is 15 years old, and Albert is 4 fifths as old; how old is he?

43. Augustus has 40 cents, and Augusta has 5 eighths as many; how many has she?

44. Martin had 25 marbles, and gave 3 fifths of them to Moses; how many had he remaining, and how many did he give to Moses?

45. Morgan had 21 fire-crackers, and Nathan had 8 sevenths as many; how many had he?

46. Matthew had 45 apples, and Marvin had 5 ninths as many; how many had he?

47. Dubois is 42 years old, and his father is 9 sixths as old; how old is he?

48. A farmer, having 72 sheep, lost 1 ninth of them; how many had he remaining?

49. A man bought a horse for 60 dollars, and a cow for 3 fifths as much; what was the cost of the cow?

50. In a certain school there are 9 girls, and 8 thirds as many boys; required the number of boys, and the number of boys and girls together.

Lesson II.

1. 3 fourths of 12 are how many times 3?

ANALYSIS.—1 fourth of 12 is 3, and 3 fourths are 3 times 3, which are 9. 9 is as many times 3, as 3 is contained in 9, which are 3 times. Therefore, 3 fourths of 12 are 3 times 3.

2. 2 thirds of 12 are how many times 2?

3. 2 thirds of 15 are how many times 2?

4. 2 thirds of 24 are how many times 4?
5. 2 fourths of 12 are how many times 6?
6. 2 fourths of 16 are how many times 4?
7. 3 fourths of 16 are how many times 6?
8. 2 thirds of 21 are how many times 7?
9. 2 thirds of 30 are how many times 5?
10. 2 thirds of 27 are how many times 6?
11. 3 fourths of 24 are how many times 9?
12. 5 fourths of 36 are how many times 9?
13. 2 fourths of 36 are how many times 6?
14. 3 fourths of 28 are how many times 7?
15. 3 fifths of 20 are how many times 6?
16. 4 fifths of 20 are how many times 8?
17. 4 fifths of 15 are how many times 6?
18. 2 fifths of 20 are how many times 2?
19. 3 sixths of 24 are how many times 6?
20. 5 sixths of 60 are how many times 2?
21. 2 sixths of 72 are how many times 6?
22. 2 sevenths of 42 are how many times 3?
23. 4 sevenths of 42 are how many times 6?
24. 3 sevenths of 70 are how many times 5?
25. 5 sevenths of 28 are how many times 2?
26. 5 eighths of 32 are how many times 10?
27. 6 eighths of 48 are how many times 12?
28. 8 ninths of 36 are how many times 2?
29. 9 tenths of 40 are how many times 6?
30. 9 twelfths of 96 are how many times 6?
31. 7 eighths of 64 are how many times 4?
32. 7 sixths of 54 are how many times 3?
33. 7 fourths of 24 are how many times 6?
34. 8 tenths of 30 are how many times 4?
35. 6 ninths of 72 are how many times 12?

Lesson III.

1. 4 fifths of 14 are how many times 1 half of 12 ?

2. 2 thirds of 12 are how many times 1 third of 6 ?

3. 2 fourths of 20 are how many times 1 half of 20 ?

4. 3 fourths of 16 are how many times 1 third of 18

5. 3 fifths of 20 are how many times 1 fourth of 24 ?

6. 3 fifths of 30 are how many times 1 half of 18 ?

7. 4 fifths of 30 are how many times 1 eighth of 64 ?

8. 3 fourths of 24 are how many times 1 fifth of 45 ?

9. 5 sixths of 54 are how many times 1 third of 9 ?

10. 2 thirds of 36 are how many times 2 thirds of 9 ?

11. 2 thirds of 24 are how many times 2 thirds of 6 ?

12. 2 fifths of 45 are how many times 2 fifths of 15 ?

13. 3 fifths of 50 are how many times 2 sixths of 18 ?

14. 6 eighths of 48 are how many times 2 fifths of 15 ?

15. 8 ninths of 27 are how many times 1 fourth of 24 ?

16. 7 eighths of 64 are how many times 2 sixths of 42 ?

17. 3 ninths of 108 are how many times 3 fourths of 16 ?

18. 4 sevenths of 84 are how many times 4 fifths of 30 ?

Lesson IV.

1. If 2 thirds of an orange cost 4 cents, what will 1 orange cost ?

ANALYSIS.—If 2 thirds of an orange cost 4 cents, 1 third will cost 1 half of 4 cents, which is two cents. If 1 third of an orange cost two cents, 3 thirds, or 1 orange, will cost 3 times 2 cents, which are 6 cents.

2. If 2 thirds of a melon cost 6 cents, what will 1 third of a melon cost ?

3. If 3 fourths of a pound of sugar cost 9 cents, what will 1 fourth of a pound cost ?

4. If 2 thirds of a pound of ginger cost 8 cents, what will 1 third of a pound cost ?

5. If 4 thirds of a pound of spice cost 12 cents, what will 1 third of a pound cost ?

6. If $8 dollars will buy 2 fifths of a barrel of fish, what will 1 fifth of a barrel cost ?

7. If 3 fourths of a pound of cinnamon cost 9 cents, what will 1 fourth of a pound cost ?

8. What will 1 sixth of a yard of cloth cost, if 4 sixths of a yard cost 120 cents ?

9. What will 1 seventh of a hogshead of molasses cost, if 5 sevenths of a hogshead cost $15 ?

10. If 2 thirds of a barrel of fish cost $8, what will one barrel cost?

11. If 3 fourths of a bushel of wheat cost 9 dimes, what will 1 bushel cost?

12. If 4 fifths of a box of raisins cost 12 dimes, what will 1 box cost?

13. If 6 eighths of a yard of broadcloth cost 30 dimes, what will one yard cost?

14. If 3 fourths of a barrel of flour cost $6, what will 1 barrel cost?

15. If 2 fifths of a barrel of fish cost $8, what will 1 barrel cost?

16. If 3 fourths of a pound of cinnamon cost 12 cents, what will 1 pound cost?

17. If 4 sixths of a barrel of sugar cost $12, what will 1 barrel cost?

18. If 5 sevenths of a box of boots cost $20, what will 1 box of boots cost?

19. If 4 ninths of a hogshead of molasses cost $20, what will 1 hogshead cost?

20. If 2 fifths of the cost of a waggon were $60, what was the cost of the waggon?

Lesson V.

1.   6 is $\frac{2}{3}$ of what number?

ANALYSIS.—If 2 thirds of some number is 6, 1 third of that number is one-half of 6, which is 3. If one-third of that number is 3, three-thirds, which is that number, is 3 times 3, which are nine. Therefore, 6 is two-thirds of 9.

2.   8 is $\frac{2}{3}$ of what number?

3.   4 is $\frac{2}{3}$ of what number?

4.	10	is	$\frac{2}{3}$	of	what	number ?
5.	12	is	$\frac{2}{3}$	of	what	number ?
6.	12	is	$\frac{3}{4}$	of	what	number ?
7.	12	is	$\frac{2}{4}$	of	what	number ?
8.	9	is	$\frac{3}{4}$	of	what	number ?
9.	12	is	$\frac{2}{5}$	of	what	number ?
10.	12	is	$\frac{2}{7}$	of	what	number ?
11.	15	is	$\frac{3}{4}$	of	what	number ?
12.	16	is	$\frac{4}{5}$	of	what	number ?
13.	16	is	$\frac{4}{9}$	of	what	number ?
14.	18	is	$\frac{2}{3}$	of	what	number ?
15.	25	is	$\frac{5}{6}$	of	what	number ?
16.	26	is	$\frac{2}{3}$	of	what	number ?
17.	20	is	$\frac{5}{4}$	of	what	number ?
18.	30	is	$\frac{5}{6}$	of	what	number ?
19.	36	is	$\frac{8}{9}$	of	what	number ?
20.	36	is	$\frac{4}{7}$	of	what	number ?

THE END.

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