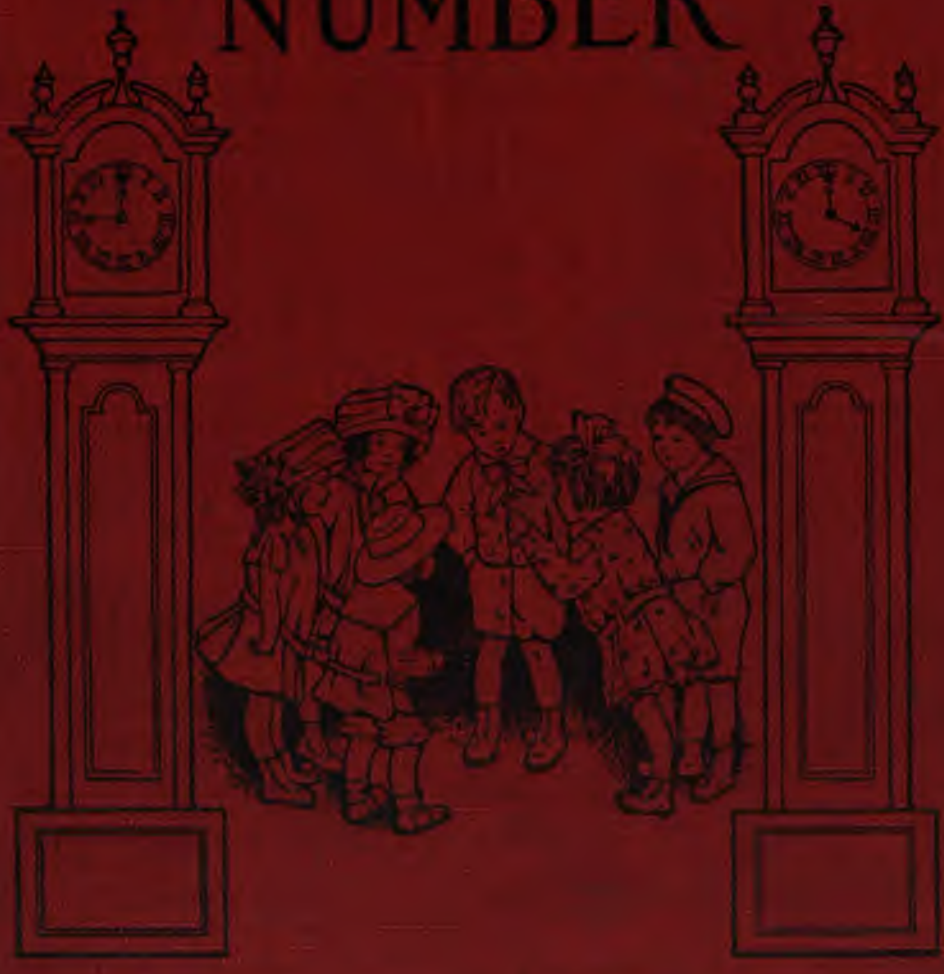
T YEAR IN NUMBER



HOYT AND PEET

FIRST YEAR IN NUMBER

BY

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AND

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HOUGHTON MIFFLIN COMPANY

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PREFACE

THIS book, it is hoped, will serve the same purpose in introducing the study of arithmetic that the Primer long has done in teaching the beginnings of reading. It provides an abundance of simple, carefully graded, and interesting material for teaching the elementary processes in number, in accordance with the practice prevailing in the better schools.

A child's attainments in number work should not be measured merely by his power to manipulate abstract figures. In fact, early skill in juggling numbers without adequate concepts back of them may seriously impede a child's future progress in arithmetic. Yet because of the failure of primary text-books in arithmetic to heed this commonly accepted principle in psychology, children are often plunged, at the very outset, into the formal study of number. Only the abler pupils survive this rigorous treatment; in most of our Elementary schools there are many "retarded" pupils who have failed to be promoted because "they could not keep up in arithmetic." Many of these failures could have been averted had a good foundation been laid at the beginning of their study of number.

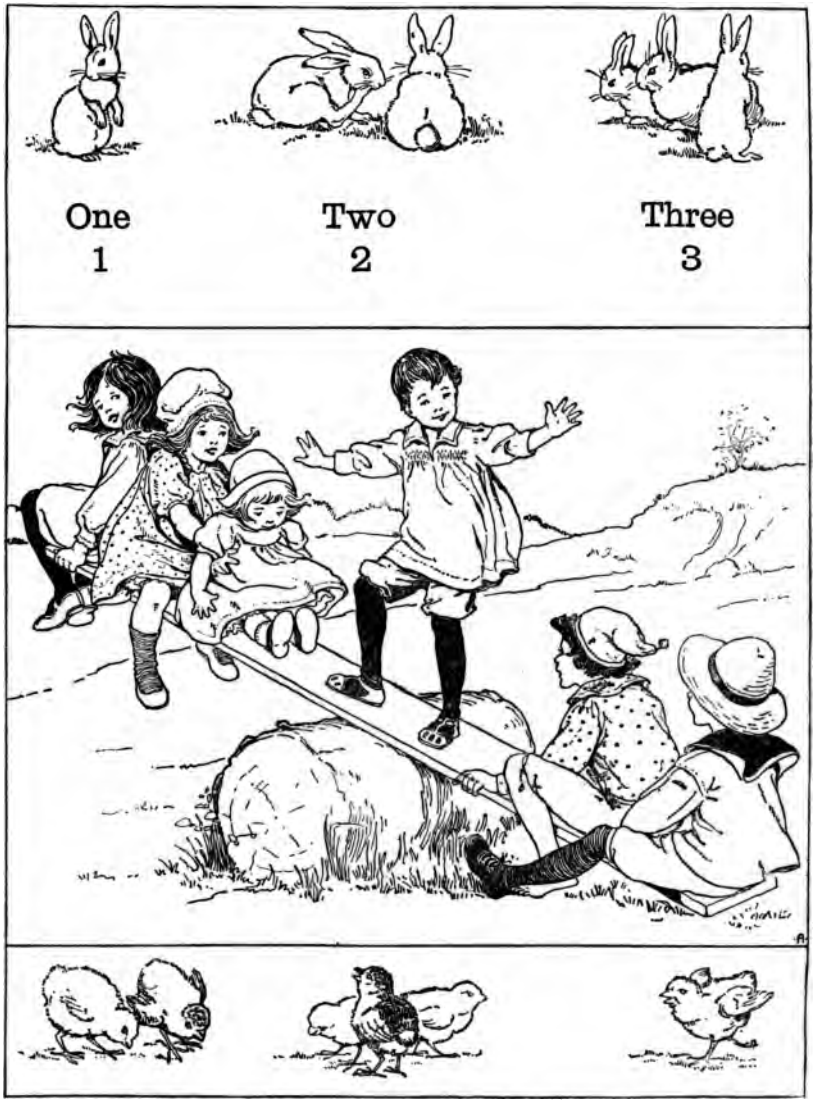
In order to insure such a foundation, the work in this book is based upon the familiar experiences and activities of childhood, and follows as closely as possible the child's own method of acquiring new knowledge and skill. Each topic is developed concretely in connection with some interest of children; the new facts are then established through games and exercises; and, finally, power and independence in the use

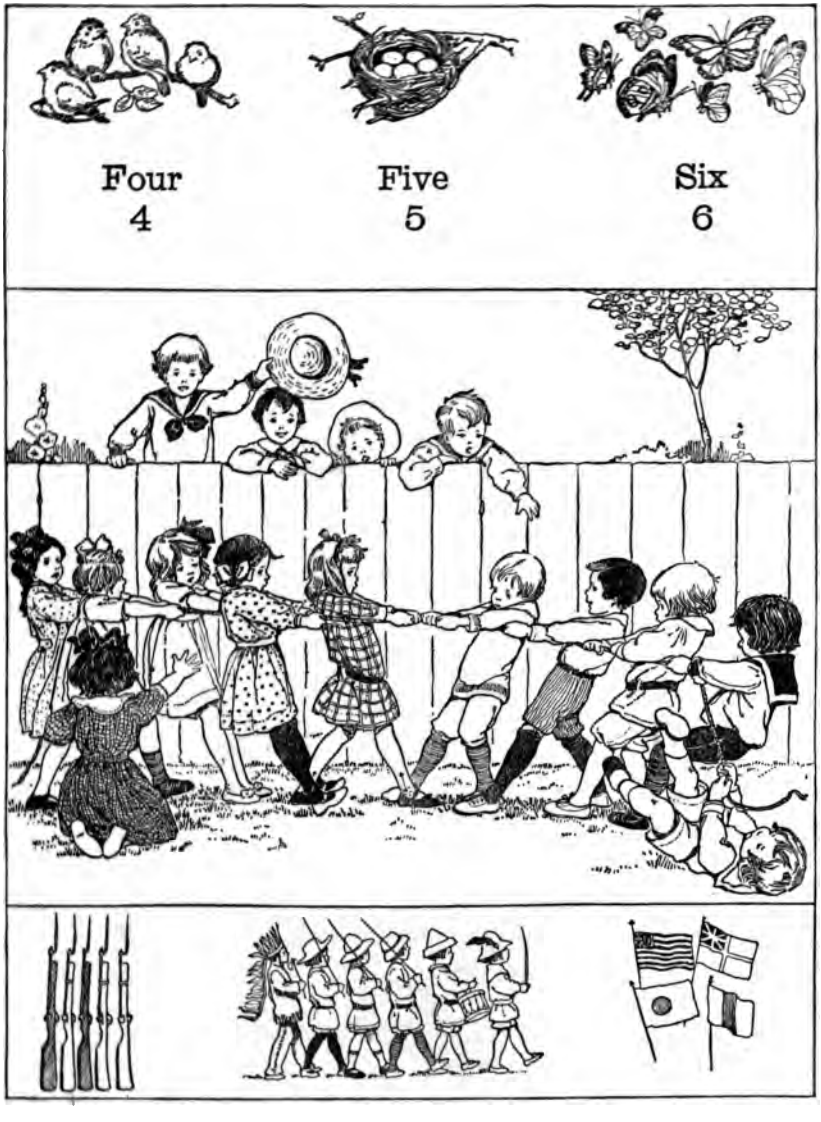
of number facts are acquired through a variety of applications to common situations in the lives of children. Every step is made as interesting as possible, but no time is wasted in mere entertainment. There is definite progress from day to day in the understanding of number facts and in the mastery of the simple number combinations and processes.

The authors take pleasure in acknowledging their indebtedness to Mr. J. A. Pitman, Principal of the State Normal School at Salem, Massachusetts, for his encouragement in this work; to Miss Jones and Miss Carpenter of the Salem Practice School for several contributions in the work with games and for their coöperation in working out and testing the principles at the basis of the book; and to Mr. George W. Evans, Headmaster of the Charlestown (Mass.) High School, formerly Head of the Department of Mathematics in the English High School, Boston, for his critical review of the manuscript and the proof of the book.

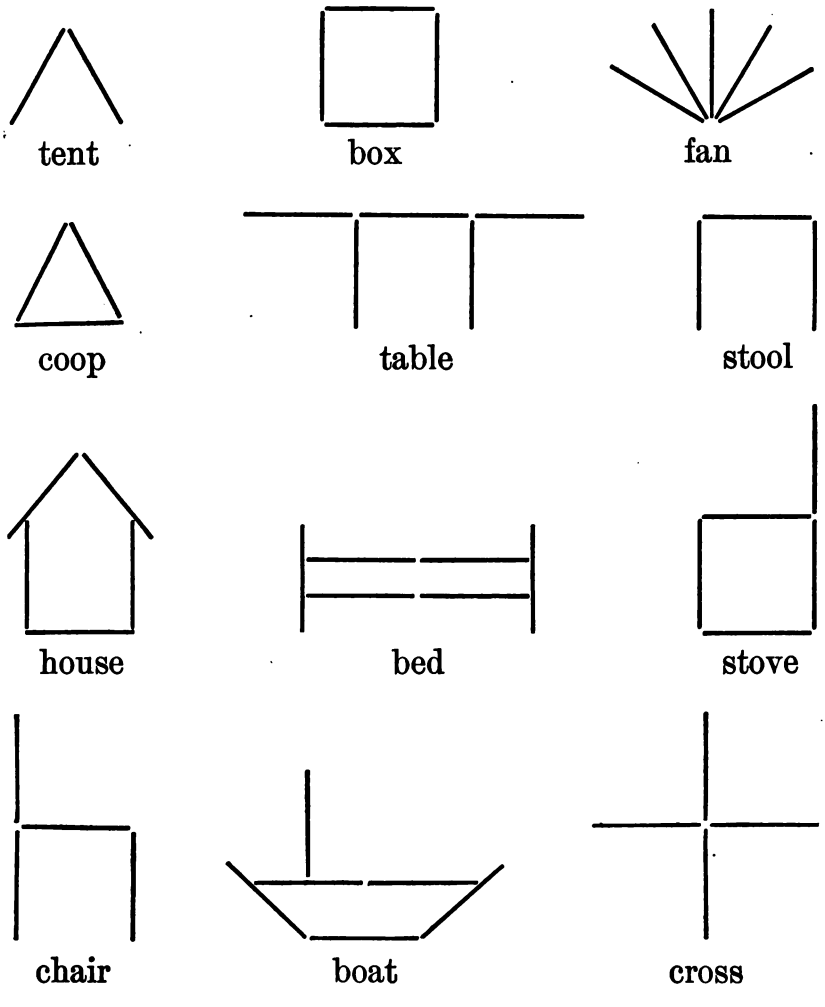
CONTENTS

CONTENTS


One
1
Two
2
Three
3


Four
4
Five
5
Six
6

FOR COUNTING AND BUILDING[1]

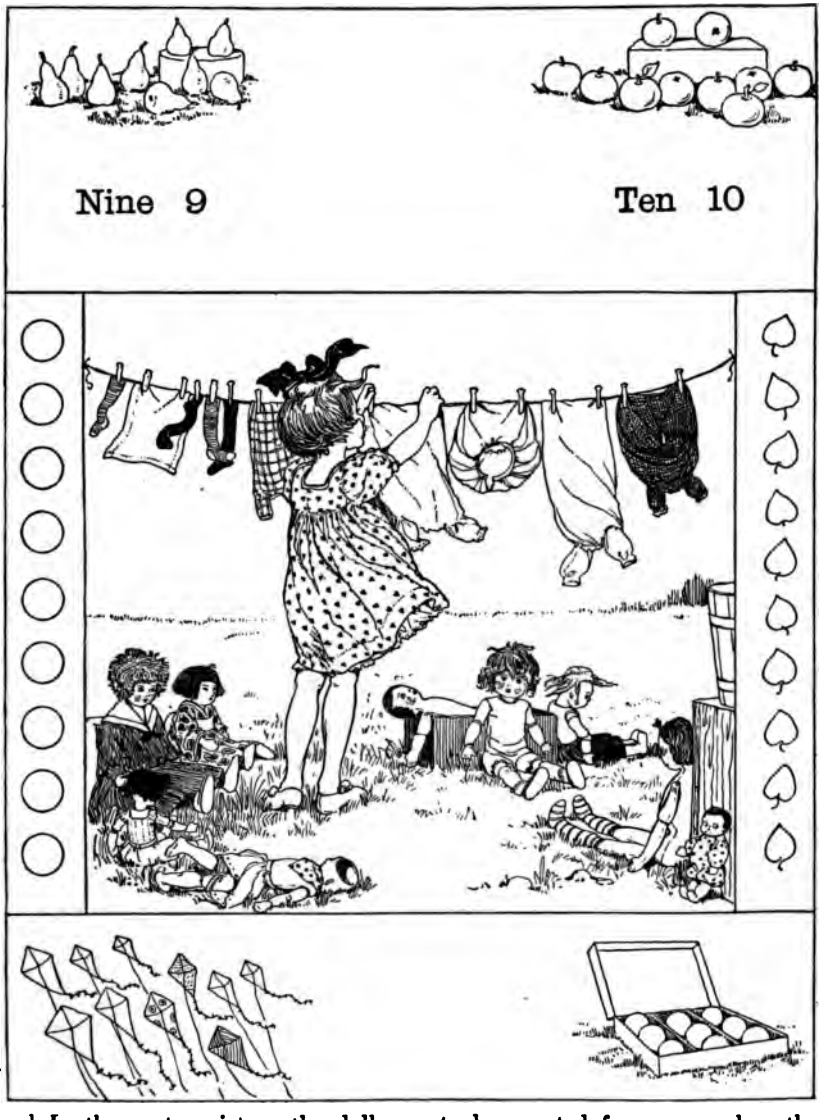


[1] This exercise and the one on page 6 give the children an opportunity to count for a definite purpose. First they count to find the number of splints or blocks required for each object, and again in getting out their material for building.

FOR COUNTING

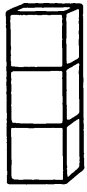
[1] The boys and the girls in the center picture are to be counted separately.

FOR COUNTING [1]

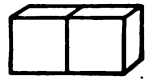


[1] In the center picture the dolls are to be counted for one number, the clothes for the other.

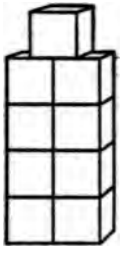
stool



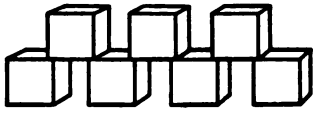
post



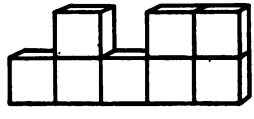
car



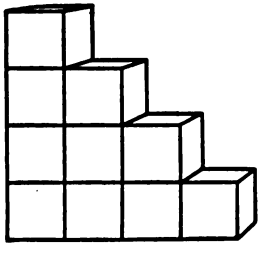
tower



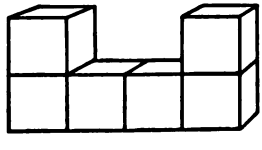
bridge



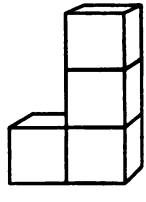
engine



stairs

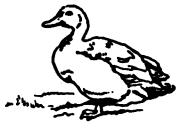


bed



chair

[1] See note, page 3.



one
1

two
2

three
3

four
4

five
5

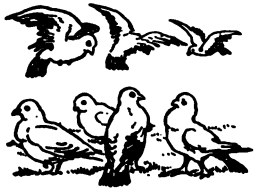
six
6

Read :

I see 1 duck, 2 boys, 3 rabbits, 4 birds, 5 guns, and 6 roses.

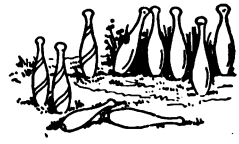
Here are two boys, one duck, three rabbits, five guns, four birds, and six roses.

1	2	3	4	5	6
one	two	three	four	five	six
two	four	three	one	six	five
three	one	four	two	five	six
3	1	2	4	6	5
5	3	1	2	4	6



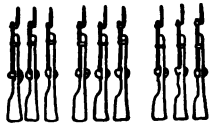
seven
7

ten
10



eight
8

eleven
11



nine
9

twelve
12

Read:

Here are seven doves, eight nuts, nine guns, ten pins, eleven balls, and twelve birds.

1	2	3	4	5	6
7	8	9	10	11	12
2	4	3	5	1	6
9	8	10	7	12	11
one	two	three	four	five	six
seven	eight	nine	ten	eleven	twelve
two	one	four	three	six	five
twelve	ten	eight	seven	eleven	nine

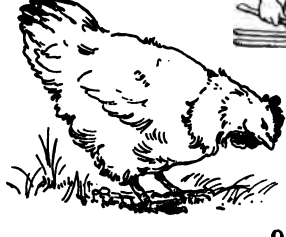
1, 2, 3, 4, 5!
I caught a hare alive;
6, 7, 8, 9, 10!
I let her go again.

One, two,
Buckle my shoe;

Three, four,
Shut the door;

Five, six,
Pick up sticks;

Seven, eight,
Lay them straight;



Nine, ten,
A good fat hen.

1 and 1 are —.

2 and 1 are —.

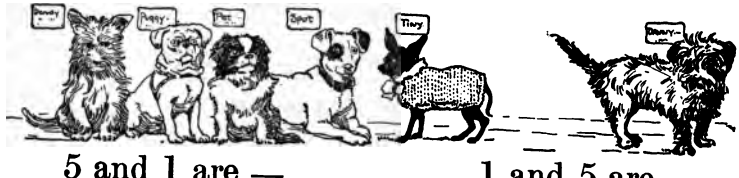
1 and 2 are —.

4 and 1 are —.

1 and 4 are —.

3 and 1 are —.

1 and 3 are —.



5 and 1 are —.

1 and 5 are —.

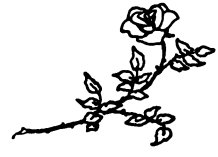
6 and 1 are —.

1 and 6 are —.

8 and 1 are —.

1 and 8 are —.

7 and 1 are —.



1 and 7 are —.

9 and 1 are —.

1 and 9 are —.

10 horses and 1 horse are — horses.

11 cows and 1 cow are — cows.

10 and 1 are —.

11 and 1 are —.

1 rabbit and 1 rabbit are — rabbits.

2 boys and 1 boy are — boys.

4 doves and 1 dove are — doves.

3 girls and 1 girl are — girls.

5 dogs and 1 dog are — dogs.

6 butterflies and 1 butterfly are — butterflies.

8 roses and 1 rose are — roses.

7 squirrels and 1 squirrel are — squirrels.

9 birds and 1 bird are — birds.

10 horses and 1 horse are — horses.

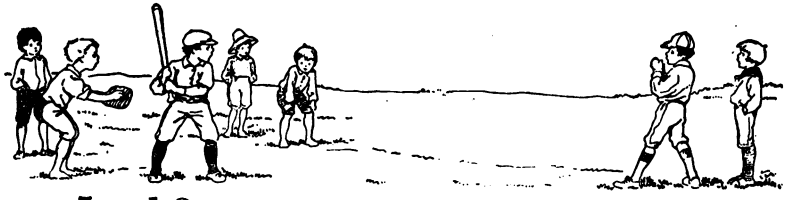
11 cows and 1 cow are — cows.

2 and 1 are —.	1 and 2 are —.
3 and 1 are —.	1 and 3 are —.
4 and 1 are —.	1 and 4 are —.
6 and 1 are —.	1 and 6 are —.
5 and 1 are —.	1 and 5 are —.
8 and 1 are —.	1 and 8 are —.
7 and 1 are —.	1 and 7 are —.
9 and 1 are —.	1 and 9 are —.

1 and 2 are —. 2 and 1 are —.

3 and 2 are —. 2 and 3 are —.

2 and 2 are —.



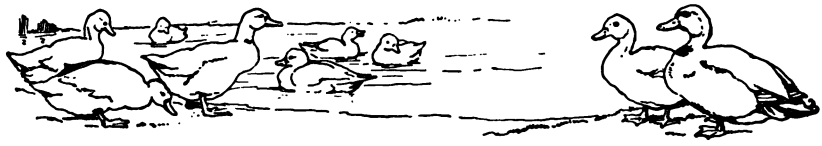
5 and 2 are —. 2 and 5 are —.

4 and 2 are —. 2 and 4 are —.

COUNTING TWO MORE

+ is read **and.**

= is read **is** or **are.**

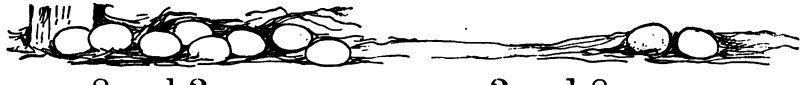


7 and 2 are —. 2 and 7 are —.

7 + 2 = —. 2 + 7 = —.

6 and 2 are —. 2 and 6 are —.

6 + 2 = —. 2 + 6 = —.



8 and 2 are —. 2 and 8 are —.

8 + 2 = —. 2 + 8 = —.

9 and 2 are —. 2 and 9 are —.

9 + 2 = —. 2 + 9 = —.

1 ship and 2 ships are — ships.

3 children and 2 children are — children.

2 girls and 2 girls are — girls.

5 girls and 2 boys are — boys.

4 soldiers and 2 soldiers are — soldiers.

7 ducks and 2 ducks are — ducks.

6 sheep and 2 sheep are — sheep.

8 eggs and 2 eggs are — eggs.

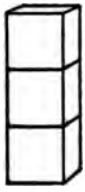
9 chickens and 2 chickens are — chickens.

10 birds and 2 birds are — birds.

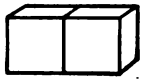
0 (naught) means not any or none.

0 and 2 are —.	0+2 = —.	2+0 = —.
1 and 2 are —.	3+2 = —.	2+3 = —.
3 and 2 are —.	1+2 = —.	2+1 = —.
5 and 2 are —.	4+2 = —.	2+4 = —.
4 and 2 are —.	6+2 = —.	2+6 = —.
6 and 2 are —.	5+2 = —.	2+5 = —.
8 and 2 are —.	7+2 = —.	2+7 = —.
7 and 2 are —.	8+2 = —.	2+8 = —.
9 and 2 are —.	9+2 = —.	2+9 = —.

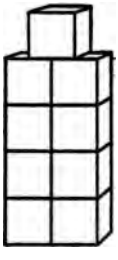
stool



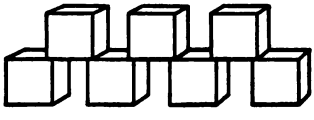
post



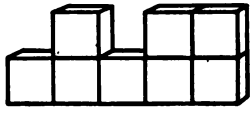
car



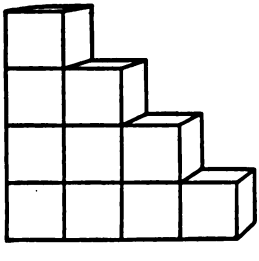
tower



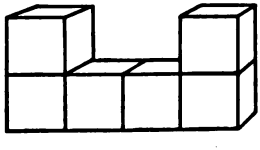
bridge



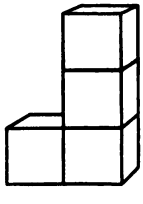
engine



stairs

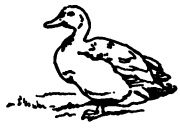


bed



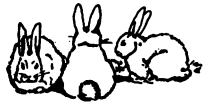
chair

[1] See note, page 3.



one
1

two
2



three
3

four
4

five
5

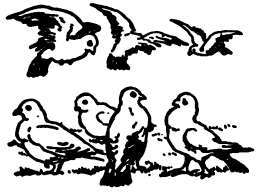
six
6

Read :

I see 1 duck, 2 boys, 3 rabbits, 4 birds, 5 guns, and 6 roses.

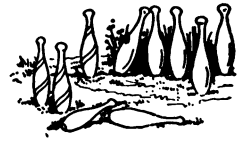
Here are two boys, one duck, three rabbits, five guns, four birds, and six roses.

1	2	3	4	5	6
one	two	three	four	five	six
two	four	three	one	six	five
three	one	four	two	five	six
3	1	2	4	6	5
5	3	1	2	4	6



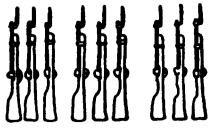
seven
7

ten
10



eight
8

eleven
11



nine
9

twelve
12

Read:

Here are seven doves, eight nuts, nine guns, ten pins, eleven balls, and twelve birds.

1	2	3	4	5	6
7	8	9	10	11	12
2	4	3	5	1	6
9	8	10	7	12	11
one	two	three	four	five	six
seven	eight	nine	ten	eleven	twelve
two	one	four	three	six	five
twelve	ten	eight	seven	eleven	nine

1, 2, 3, 4, 5!
I caught a hare alive;
6, 7, 8, 9, 10!
I let her go again.

One, two,
Buckle my shoe;

Three, four,
Shut the door;

Five, six,
Pick up sticks;

Seven, eight,
Lay them straight;

Nine, ten,
A good fat hen.

1 owl and 3 owls are — owls.

3 dolls and 3 dolls are — dolls.

2 cats and 3 cats are — cats.

4 ponies and 3 ponies are — ponies.

5 boys and 3 boys are — boys.

6 girls and 3 girls are — girls.

8 birds and 3 birds are — birds.

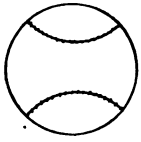
7 eggs and 3 eggs are — eggs.

9 trees and 3 trees are — trees.

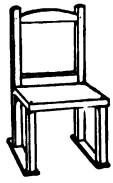
0+1 = —.	0+2 = —.	0+3 = —.
1+1 = —.	2+2 = —.	1+3 = —.
3+1 = —.	3+2 = —.	2+3 = —.
2+1 = —.	4+2 = —.	4+3 = —.
4+1 = —.	1+2 = —.	3+3 = —.
6+1 = —.	5+2 = —.	6+3 = —.
5+1 = —.	7+2 = —.	5+3 = —.
8+1 = —.	6+2 = —.	7+3 = —.
9+1 = —.	9+2 = —.	9+3 = —.
7+1 = —.	8+2 = —.	8+3 = —.

REVIEW

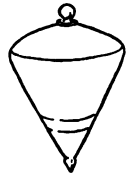
Playing Store



4 cents



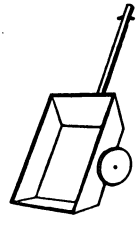
3 cents



2 cents

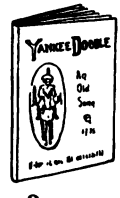
1 cent

3 cents



5 cents

4 cents



3 cents

Choose two toys and tell the cost of both together.

A 4-cent ball and a 2-cent top cost — cents.

A 4-cent doll and a 3-cent chair cost — cents.

A 5-cent cart and a 3-cent book cost — cents.

A 3-cent cup and 1-cent fan cost — cents.

3 cents and 3 cents are — cents.

5 cents and 3 cents are — cents.

4 cents and 2 cents are — cents.

4 cents and 3 cents are — cents.

REVIEW AND PRACTICE [1]

Add:

2+1.	8+1.	2+2.	8+2.	4+3.
4+1.	6+1.	3+2.	7+2.	6+3.
3+1.	7+1.	5+2.	9+2.	5+3.
5+1.	9+1.	4+2.	6+2.	7+3.

2	2	1	3	3	3	4	4
1	2	1	3	1	2	0	2
–	–	–	–	–	–	–	–

2	3	5	4	6	8	7	9
5	4	2	3	2	1	2	1
–	–	–	–	–	–	–	–

5	6	7	8	9	6	8	9
3	0	3	2	2	3	3	2
–	–	–	–	–	–	–	–

1+1+1.	2+0+2.	3+2+2.
2+0+1.	2+3+2.	3+2+3.
2+2+2.	2+2+2.	3+3+3.

1	2	2	3	3	2	3	3
2	2	0	2	3	2	0	2
1	2	2	1	1	3	2	3
–	–	–	–	–	–	–	–

[1] For the sake of rapidity in addition, avoid using the word "and" in column work.

Add:

1.

2+2.	2+1+1.	2+2+1+1.
2+3.	2+2+2.	2+1+2+1.
3+2.	3+2+2.	3+1+3+1.
1+2.	2+3+3.	2+3+2+3.

2.

4+3.	1+3+3.	1+1+1+1.
5+3.	3+3+3.	2+1+1+1.
7+3.	3+2+3.	3+2+2+2.
5+2.	2+3+2.	3+1+3+2.

3.

2	3	2	4	3	4	5	3
2	3	3	2	4	4	2	5
–	–	–	–	–	–	–	–

4.

2	2	3	2	3	1	1	2
3	2	1	2	1	2	3	3
1	1	2	2	1	1	1	2
–	–	–	–	–	–	–	–

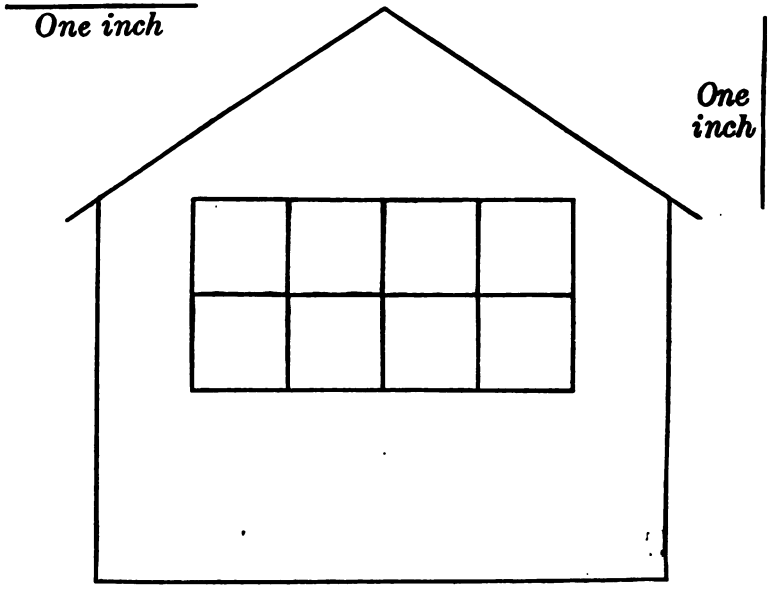
5.

3	3	1	1	2	1	3	3
2	1	2	2	3	3	1	2
1	2	3	1	1	2	1	2
3	1	1	2	2	3	3	3
–	–	–	–	–	–	–	–

6.

2	3	2	4	3	4	5	3
2	3	3	2	4	4	2	5
–	–	–	–	–	–	–	–

MEASURING BY INCHES[1]



1. This house is — inches high at each side.
   The house is — inches high in the middle.
   It is — inches wide at the base.

2. The window is — inch high.
   The window is — inches wide.
   The window is — inches around.

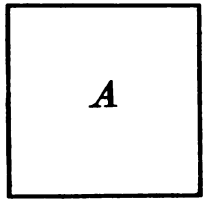
[1] For this work in measuring, the pupils should each be provided with a set of rectangles of stiff cardboard 1″ by 1″, 2″ by 1″, 3″ by 1″, 4″ by 1″, 5″ by 1″, and 6″ by 1″. From these "rulers" the children should learn to distinguish lines of different lengths and should become thoroughly familiar with the words *equal*, *longer*, and *shorter*.

1. 1 inch and 1 inch are — inches.

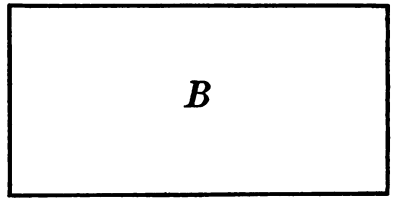
2. 1 inch and 1 inch and 1 inch are — inches.
   2 inches and 1 inch are — inches.
   1 inch and 2 inches are — inches.

3. 2 inches and 2 inches are — inches.

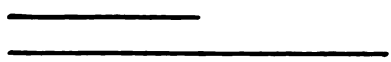
4. 3 inches and 1 inch are — inches.
   1 inch and 3 inches are — inches.



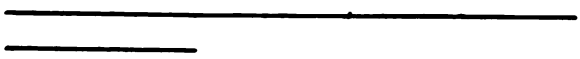
5. *A* is a square.
   It is one inch on each side.
   It is a one-inch square.
   It is a square inch.



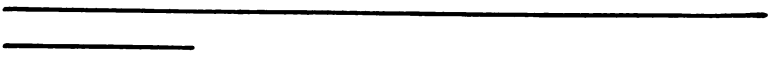
6. *B* is an oblong.
   It is — inches long.
   It is — inch wide.
   In it there are — square inches.



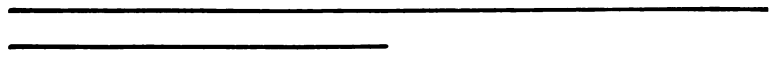
1. A two-inch line is — inch longer than a one-inch line.



2. A three-inch line is — inches longer than a one-inch line.



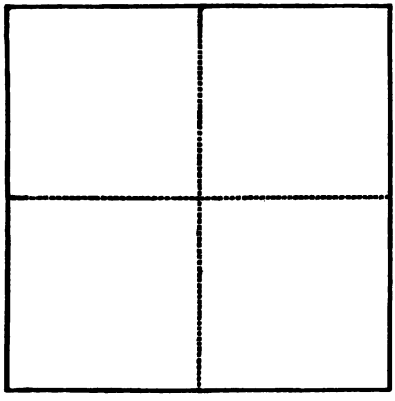
3. A four-inch line is — inches longer than a one-inch line.



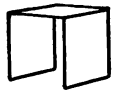
4. A four-inch line is — inches longer than a two-inch line.

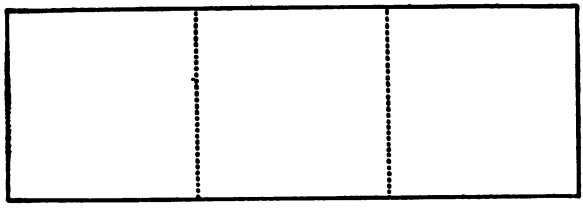
5. Draw a five-inch line and a three-inch line.
   A five-inch line is — inches longer than a three-inch line.

6. Draw a six-inch line and a three-inch line.
   A six-inch line is — inches longer than a three-inch line.



1. This square is — inches on a side.
   It is a two-inch square.
   It is — inches around.
   In it are — square inches.
   Folded in half, it is an oblong — inch wide and — inches long.



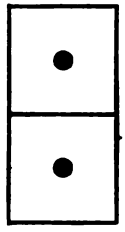


2. This is a pattern for a doll's stool.[1]
   The pattern is an oblong.
   It is one inch wide and — inches long.
   It is — inches around it.
   In it are — square inches.

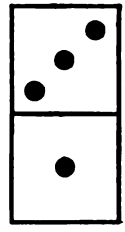
[1] To make this stool, the pupils should first draw the rectangle, then cut it out and fold it on the dotted lines.

COUNTING FROM ONE NUMBER TO ANOTHER[1]

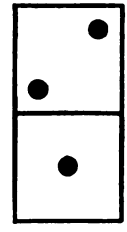
Here the question mark ? means **How many** or **What number.**



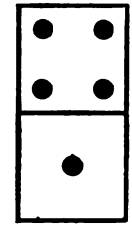
1. $1+?=2.$ $?+1=2.$



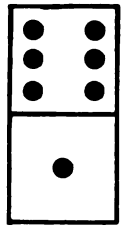
$1+?=4.$ $3+?=4.$



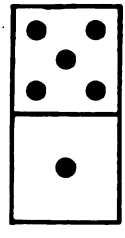
$1+?=3.$ $2+?=3.$



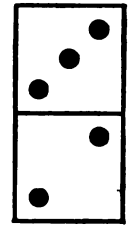
$1+?=5.$ $4+?=5.$



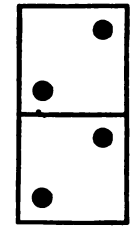
2. $1+?=7.$ $6+?=7.$



$1+?=6.$ $5+?=6.$



$2+?=5.$ $3+?=5.$

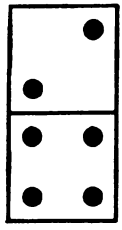
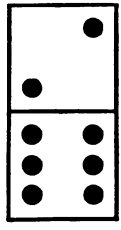
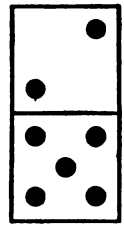
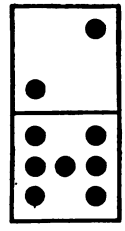


$2+?=4.$ $?+2=4.$

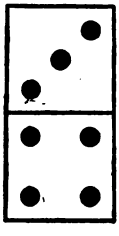
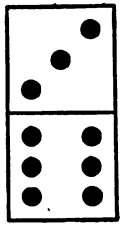
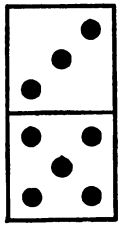
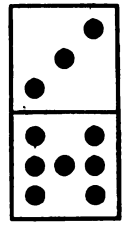
3. 1 boy and ? boy are 2 boys.
4. 3 girls and ? girl are 4 girls.
5. 1 bird and ? birds are 3 birds.
6. 1 tree and ? trees are 5 trees.
7. 3 nests and ? nests are 5 nests.
8. 2 eggs and ? eggs are 5 eggs.

[1] This exercise and all those of similar kind on successive pages prepare for subtraction with the subtraction sign given on page 78.

COUNTING FROM ONE NUMBER TO ANOTHER[1]

1. $2+?=6$. $2+?=8$. $2+?=7$. $2+?=9$.
$4+?=6$. $6+?=8$. $5+?=7$. $7+?=9$.

2. $3+?=7$. $3+?=9$. $3+?=8$. $3+?=10$.
$4+?=7$. $6+?=9$. $5+?=8$. $7+?=10$.

3. 4 birds and ? birds are 6 birds.

4. 2 trees and ? trees are 8 trees.

5. 5 dogs and ? dogs are 7 dogs.

6. 2 dolls and ? dolls are 9 dolls.

7. 3 bells and ? bells are 7 bells.

8. 6 keys and ? keys are 9 keys.

9. 5 tables and ? tables are 8 tables.

[1] For further practice on these combinations, see second domino game, page 125.

1.

$1+1=?$	$1+?=2.$
$2+2=?$	$2+?=4.$
$1+2=?$	$1+?=3.$
$2+3=?$	$2+?=5.$

2.

$3+3=?$	$3+?=6.$
$4+3=?$	$4+?=7.$
$4+2=?$	$4+?=6.$
$3+2=?$	$3+?=5.$

3.

$1+4=?$	$1+?=5.$
$2+4=?$	$2+?=6.$
$5+1=?$	$5+?=6.$
$5+2=?$	$5+?=7.$
$7+2=?$	$7+?=9.$

4.

$6+1=?$	$6+?=7.$
$6+2=?$	$6+?=8.$
$3+4=?$	$3+?=7.$
$5+3=?$	$5+?=8.$
$4+5=?$	$4+?=9.$

5.

3	2	5	4	6	1	7	8
?	?	?	?	?	?	?	?
4	3	6	5	7	2	8	9

6.

3	2	5	4	1	6	7	8
?	?	?	?	?	?	?	?
5	4	7	6	3	8	9	10

7.

This oblong is — inches long and one inch wide.
In it there are — square inches.

1.  and  are — birds.

1 + 1 are —. Two ones are —.

2 times 1 are —.

2.  and  are — mice.

2 + 2 are —. Two twos are —.

2 times 2 are —.

3.  and  are — chickens.

3 + 3 are —. Two threes are —.

2 times 3 are —.

4.  and 

are — tents. Two fours are —.

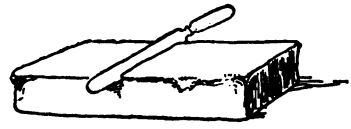
4 + 4 are —. 2 times 4 are —.

5.  and  are — books.

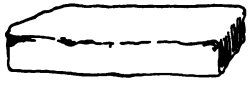
5 + 5 are —. Two fives are —.

2 times 5 are —.

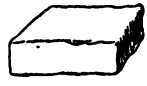
ONE-HALF[1]


1. If this is a whole apple, then this piece  is one-half of an apple.



2. Play this is a cake.

Then this piece  is — of a cake.

3. Play this is a pie.

Then this piece  is — of a pie.

4. To cut an apple into halves, cut it into two equal parts.

5. To cut a cake into halves, cut it into two — parts. Each of the two equal parts is called one —.

6. To cut a pie into halves, cut it into — — parts. Each of the two equal parts is called — —.

[1] In connection with this work, practice dividing into halves such things as oblong pieces, circles, and lines, emphasizing the idea of equal parts.

ONE-HALF[1]

1. One-half of 4 cents is — cents.

2. One-half of 6 squares is — squares.

3. One-half of 8 rings is — rings.

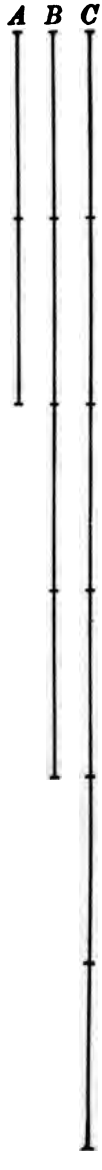
4. One-half of 10 stars is — stars.

5. One-half of 4 boys is — boys.
   One-half of 6 girls is — girls.
   One-half of 8 rabbits is — rabbits.
   One-half of 10 birds is — birds.

One-half may be written $\frac{1}{2}$.

6. $\frac{1}{2}$ of 4 is —. $\frac{1}{2}$ of 8 is —.
   $\frac{1}{2}$ of 6 is —. $\frac{1}{2}$ of 10 is —.

[1] In connection with this exercise, practice should be given in separating groups of 2, 4, 6, 8, and 10 objects into halves.

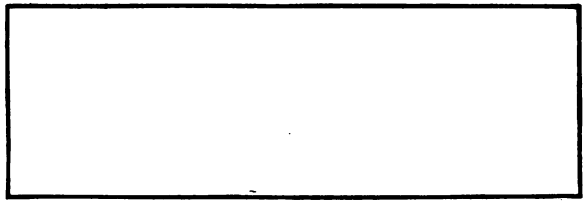


1. ½ of line *A* is — inch long.
   ½ of line *B* is — inches long.
   ½ of line *C* is — inches long.

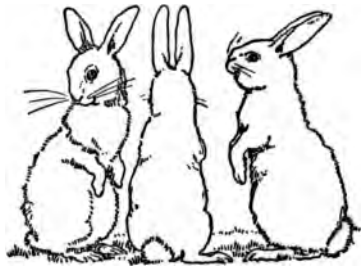
2. ½ of 2 inches is — inch.
   ½ of 4 inches is — inches.
   ½ of 6 inches is — inches.

3. 2 inches are one-half of — inches.
   1 inch is one-half of — inches.
   3 inches are one-half of — inches.

4. 2 times two inches are — inches.
   2 times one inch are — inches.
   2 times three inches are — inches.



5. This oblong is — inches long.
   It is — inches around it.
   It is — inches halfway around it.

One	Two		Three
1	2		3
I	II		III

1. 1 rabbit and 1 rabbit are — rabbits.
2 rabbits and 1 rabbit are — rabbits.
1 rabbit and — rabbit are 2 rabbits.
1 rabbit and — rabbits are 3 rabbits.
2 rabbits and — rabbit are 3 rabbits.

2.

$1+1=?$	$1+?=2.$
$1+1+1=?$	$1+?=3.$
$2+1=?$	$2+?=3.$
$1+2=?$	$0+?=3.$

3. 2 inches and 1 inch are — inches.
1 inch and 1 inch are — inches.
A 3-inch line is — inch longer than a 2-inch line.
A 3-inch line is — inches longer than a 1-inch line.

NOTE. It will be found helpful in giving the children automatic mastery of the combinations to supply much practice in column addition from this time on, and further to use the games suggested at the end of this book.

Four 4 IV

Five 5 V

1. 2 owls and 2 owls are — owls.
   3 owls and — owl are 4 owls.
   1 owl and — owls are 4 owls.
   2 birds and 3 birds are — birds.
   4 birds and — bird are 5 birds.
   1 bird and — birds are 5 birds.

2.

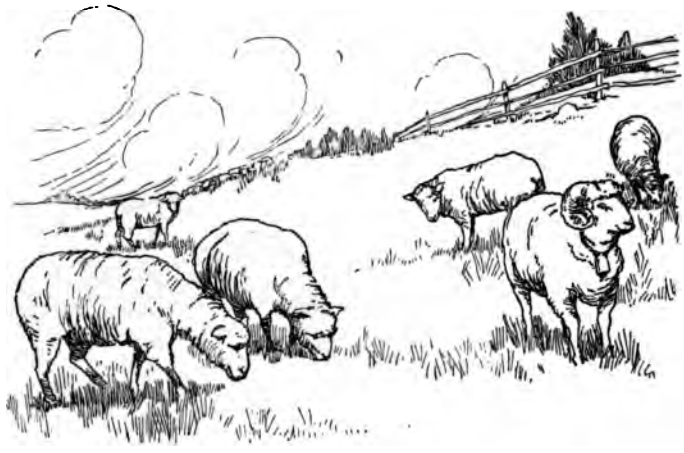
$2+2=?$	$2+?=4.$	2 twos = ?
$2+3=?$	$2+?=5.$	4 ones = ?
$3+1=?$	$3+?=4.$	2 twos and 1 = ?
$4+1=?$	$3+?=5.$	1 three and 1 = ?
$3+2=?$	$4+?=5.$	$\frac{1}{2}$ of 4 = ?

3. A 4-inch line is — inches longer than a 2-inch line.
   A 5-inch line is — inches longer than a 2-inch line.
   A 4-inch line is — inch longer than a 3-inch line.
   A 5-inch line is — inches longer than a 3-inch line.

Six

6

VI



1. 3 sheep and 3 sheep are — sheep.
   2 sheep and — sheep are 6 sheep.
   5 sheep and — sheep are 6 sheep.

2. $3+?=6$.
   $4+?=6$.
   $1+?=6$.

3. $3+3=$ —. $2+2+2=$ —.
   2 threes = —. 3 twos = —.
   2 times 3 = —. 3 times 2 = —.

The sign for times is $\times$.

$2 \times 3=$ —. $3 \times 2=$ —.

4. If I make an oblong like this of one-inch squares, there will be — square inches in it.

In half of it there will be — square inches.

1.	2	2	3	3	2	4	4	3	4
	2	3	3	1	4	1	2	2	3
2.	2	3	2	2	3	4	3	1	1
	1	0	2	1	0	2	2	0	2
	1	1	2	2	3	2	2	4	5
3.	3	2	1	2	1	3	2	2	2
	1	0	1	2	0	3	2	4	3
	3	2	0	2	4	3	2	2	2
	1	1	2	1	4	1	2	2	3

4. Four little red birds singing in a tree,
One flew away, and then there were — .

Three little red birds singing to you,
One flew away, and then there were —.

Two little red birds singing in the sun,
One flew away, and then there was —.

One little red bird left all alone,
He flew away, and then there was —.

Seven

7

VII

1. Three boys and how many boys are 7 boys?
   Five boys and how many boys are 7 boys?

2. How many boys are at play if there are 6 big boys and 1 little boy at play?

3. How many boys are at play if there are 4 big boys and 3 little boys at play?

4. Tell what you can about the number seven.[1]

5.

$6+?=7.$	$4+?=7.$	7 is — more than 4.
$5+?=7.$	$2+?=7.$	7 is — more than 3.
$3+?=7.$	$1+?=7.$	7 is — more than 2.

6. How many days in a week?

Sunday	Tuesday	Thursday	Saturday
Monday	Wednesday	Friday	

[1] Blocks or tablets should be used where they help. These statements by the children, based upon the picture, may take any one of three forms: "3+4=7," "3 boys and 4 boys are 7 boys," or, "If 3 boys were marching, and 4 boys came to march with them, there would be 7 boys marching."

REVIEW

Playing Store

¢ means cent

ORANGES	APPLES	PEARS	BANANAS
5¢ each	3¢ each	4¢ each	2¢ each

1. Choose 2 kinds of fruit and tell the cost of both together.

2. A 4-cent pear and a 2-cent banana cost — cents.

3. A 3-cent apple and a 2-cent banana cost — cents.

4. A 5-cent orange and a 3-cent apple cost — cents.

5. A 4-cent pear and a 3-cent apple cost — cents.

Find the cost:

6.

Orange 5¢	Apple 3¢	Apple 3¢
Banana 2¢	Orange 5¢	Pear 4¢

7.

Orange 5¢	Apple 3¢	Pear 4¢
Apple 3¢	Pear 4¢	Banana 2¢
Banana 2¢	Banana 2¢	Plum 1¢

Eight

8

VIII

1. Four girls and how many girls are 8 girls?
   Two girls and how many girls are 8 girls?
   Five girls and how many girls are 8 girls?

2. How many girls are 4 girls and 4 girls?
   How many girls are 2 times 4 girls?
   How many girls are one-half of 8 girls?

3. Tell what you can about the number eight.[1]

4. $1+?=8$. $5+?=8$. $4+4=—$.
   $4+?=8$. $3+?=8$. 2 fours $=—$.
   $7+?=8$. $6+?=8$. 2 times $4=—$.
   $0+?=8$. $2+?=8$. $\frac{1}{2}$ of 8 is —.

5. $2+2+2+2=—$. 4 twos are —. 4×2 are —.

[1] See note, page 39.

1. Play this is a tower.

If I build it of 2-inch blocks, it will be — inches high.

It will be — inches around.

2.

2+2	4+2	3+3	5+2
3+1	1+4	4+4	5+3
2+3	1+5	3+4	2+5
4+1	2+4	4+3	3+5
2+1	3+2	6+2	2+6

3.

2+?=3.	3+?=4.	4+?=8.
2+?=5.	3+?=8.	4+?=6.
2+?=7.	3+?=7.	4+?=7.
2+?=8.	3+?=6.	5+?=6.
2+?=6.	3+?=5.	5+?=8.
2+?=4.	4+?=5.	5+?=7.

4.

2×1=—.	3×2=—.	½ of 4 is —.
2×3=—.	4×2=—.	½ of 6 is —.
2×2=—.	2×4=—.	½ of 8 is —.

NOTE. For further practice on these combinations, see the third game, page 125.



1. $1+1+1=$ —. 3 ones are —.

3 times $1=$ —.



2. $2+2+2=?$ 3 twos are —.

3 times $2=$ —.



3. $3+3+3=$ —. 3 threes are —.

3 times $3=$ —.



4. $4+4+4=$ —. 3 fours are —.

3 times $4=$ —.

5. 3 times 2 apples are — apples. $3\times2=$ —.
   3 times 1 doll are — dolls. $3\times1=$ —.
   3 times 3 cents are — cents. $3\times3=$ —.
   3 times 4 blocks are — blocks. $3\times4=$ —.

ONE-THIRD[1]

1. Play that you cut this pie into 3 equal parts.

Then this piece  is one-third of the pie.

2. This is an apple cut into three equal parts.

Then this piece  is one — of an apple.

3. To cut an orange into halves, cut it into — equal parts.

4. To cut an orange into thirds, cut it into — equal parts.

5. Mary cut a pear into 2 equal parts. She cut it into —.

6. Helen cut a cake into 3 equal parts. She cut it into —.

7. Draw a circle. Divide it into thirds.

8. Draw an oblong. Divide it into thirds.

[1] In connection with this exercise, practice should be given in dividing lines into thirds, in folding paper into thirds, and in cutting thirds.

ONE-THIRD[1]

1. One-third of 3 pennies is — penny.

2. One-third of 6 squares is — squares.

3. One-third of 9 lines is — lines.

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

4. One-third of 12 stars is — stars.

5. One-third of 6 books is — books.
   One-third of 3 pencils is — pencil.
   One-third of 9 eggs is — eggs.
   One-third of 12 lemons is — lemons.

One-third may be written $\frac{1}{3}$.

6. $\frac{1}{3}$ of 6 is —. $\frac{1}{3}$ of 9 is —.
   $\frac{1}{3}$ of 3 is —. $\frac{1}{3}$ of 12 is —.

[1] In connection with this exercise, practice should be given in separating groups of 3, 6, 9, and 12 objects into 3 equal parts.

1. 3 twos are —. 3 ones are —.
$\frac{1}{3}$ of 6 is —. $\frac{1}{3}$ of 3 is —.

3 threes are —. 3 fours are —.
$\frac{1}{3}$ of 9 is —. $\frac{1}{3}$ of 12 is —.

2. 3 times 2 oranges are — oranges.
3 times 1 cent are — cents.

$\frac{1}{3}$ of 6 tops is — tops.
$\frac{1}{3}$ of 3 men is — man.

3. 3 times 3 dolls are — dolls.
3 times 4 books are — books.

$\frac{1}{3}$ of 9 horses is — horses.
$\frac{1}{3}$ of 12 eggs is — eggs.

4. Kate had 6 paper dolls. She lost one-third of them. How many did she lose?

5. Tom had 9 apples. He ate one-third of them. How many did he eat?

6. Mary had 12 cents. She spent one-third of them. How many did she spend?

Nine

9

IX

1. Tell what you can about the number nine.

2.

$8+?=9.$	$6+?=9.$	3 threes = —.
$1+?=9.$	$3+?=9.$	$3\times3=$ —.
$7+?=9.$	$5+?=9.$	$\frac{1}{3}$ of 9 = —.
$2+?=9.$	$4+?=9.$	$4+5=$ —.

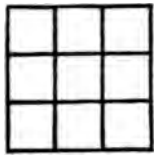
3. Mary has 4 blue cups and 5 white cups in her tea-set. In all she has — cups.

4. Mary has 9 plates. 6 are large, and — are small.

5. She had 9 saucers, but she broke $\frac{1}{3}$ of them. She broke — saucers. Now she has — saucers.

6. She had 9 teaspoons, but she lost 4. Now she has — teaspoons.

7. Mary had a tea-party for her 2 big dolls and her 7 little dolls. There were — dolls at the party.



1. If I build a square like this one of nine one-inch squares, it will be — inches on a side.

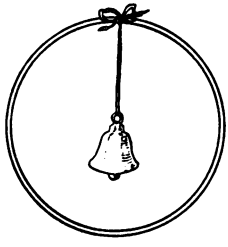
It will be called a — inch square.

In it there will be — square inches.

In one-third of it there will be — square inches.

A three-inch square is — inches on a side.

In a three-inch square there are — square inches.



2. Kate, Mary, Tom, and Frank threw bean bags through a hoop with a bell in it. Each time the bell rang, it counted one.

Kate's Rings	Mary's Rings	Tom's Rings	Frank's Rings
2	2	3	2
0	2	0	2
0	0	1	2
4	3	0	0
2	2	3	2

How much did each child make? Who won the game?[1]

[1] This game can easily be made by hanging a bell in a suspended barrel hoop.

Ten 10 X

1. Tell what you can about the number ten.

2. $1+?=10$.	$5+?=10$.	$5+5=—$.
$3+?=10$.	$7+?=10$.	$2\times5=—$.
$2+?=10$.	$6+?=10$.	$2\times4+?=10$.
$4+?=10$.	$8+?=10$.	$3\times3+?=10$.
$0+?=10$.	$9+?=10$.	$\frac{1}{2}$ of 10 is —.

3. 7 cents and 3 cents are — cents.
6 cents and — cents are 10 cents.
2 times 5 cents are — cents.

4. Helen earned 7 cents one day and 3 cents the next day. She earned — cents.

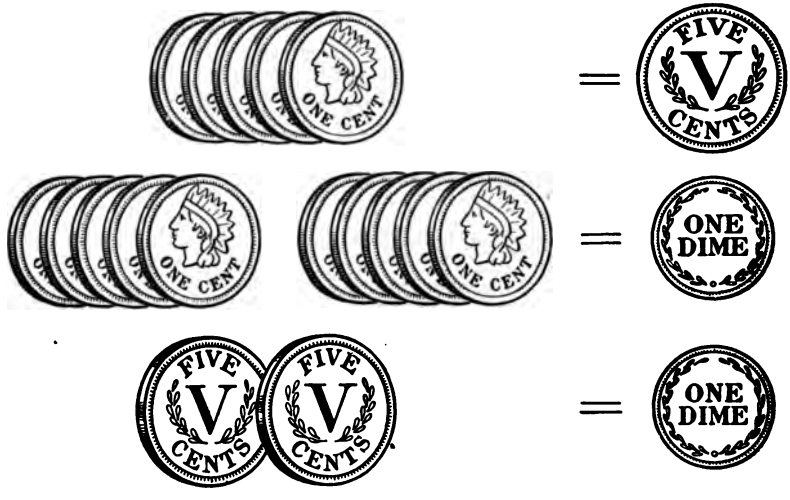
5. Tom earned 6 cents one day and 4 cents the next day. Tom earned — cents.

6. Mary had 5 cents in each hand. In her two hands she had — cents.

7. Fred had 10 pennies. He spent $\frac{1}{2}$ of them. He spent — pennies.

COINS

= is here read **equal** or **equals.**



1. A five-cent piece = — cents.

A dime = — cents.

A dime = — five-cent pieces.

2. *Add:*

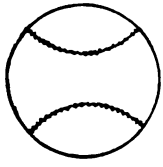
5¢	4¢	5¢	3¢	7¢	6¢
5¢	4¢	4¢	2¢	3¢	3¢

3. *Find the missing numbers:*

3¢	2¢	5¢	4¢	7¢	8¢
?	?	?	?	?	?
10¢	10¢	10¢	10¢	10¢	10¢

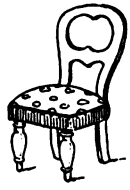
REVIEW

Playing Store

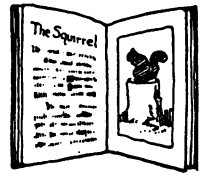


6¢

4¢

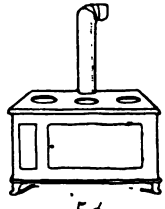


4¢



3¢

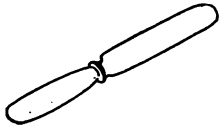
5¢



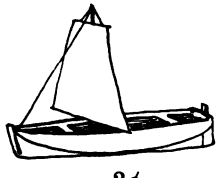
5¢

2¢

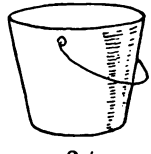
2¢



1¢



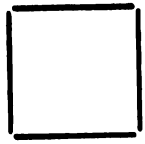
3¢



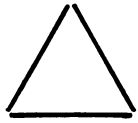
3¢

5¢

1. Choose 2 toys and tell what they cost together.
2. A 6-cent ball and a 4-cent top cost — cents.
3. A 5-cent cradle and a 4-cent chair cost — cents.
4. A 5-cent clock and a 3-cent book cost — cents.
5. A 5-cent stove and a 5-cent clock cost — cents.
6. For 10 cents, I can buy a 5-cent cradle and —.
7. For 10 cents, I can buy a 6-cent top and —.
8. For 10 cents, I can buy these three things: —.



SQUARE



TRIANGLE

OBLONG

1. If I build the square of 2-inch sticks, it will be — inches around.

2. If I build the triangle of 2-inch sticks, it will be — inches around.

3. If I build the oblong of 2-inch sticks, it will be — inches around.

4. A square has four equal sides.

A triangle has three sides.

An oblong has two equal long sides and two equal short sides.

CHICAGO AND NEW YORK

5. Play this is a ticket.
It is one inch wide.
It is — inches long.

6. How long a strip of paper one inch wide is needed for 2 tickets? For 3 tickets? For 4 tickets?

NOTE. From strips of paper one inch wide the children may mark off 2-inch tickets and, after writing names on them, use them at home for playing train.

Eleven

11

XI

1. Tell all you can about the number eleven.

10 + ? = 11.	3 + ? = 11.	2 fives + ? = 11.
1 + ? = 11.	7 + ? = 11.	3 threes + ? = 11.
9 + ? = 11.	4 + ? = 11.	2 fours + ? = 11.
2 + ? = 11.	6 + ? = 11.	5 twos + ? = 11.
8 + ? = 11.	5 + ? = 11.	6 ones + ? = 11.

3. 5 years and 6 years are — years.
7 years and 4 years are — years.
8 years and — years are 11 years.
6 years and — years are 11 years.

4. Frank is 9 years old. In — years he will be 11 years old.

5. Helen is 7 years old. In — years she will be 11 years old.

Twelve

12

XII

1. Tell what you can about the number twelve.

2.

$1+?=12$.	$7+?=12$.	— sixes $=12$.
$2+?=12$.	$5+?=12$.	— twos $=12$.
$6+?=12$.	$8+?=12$.	— threes $=12$.
$10+?=12$.	$4+?=12$.	— fours $=12$.
$3+?=12$.	$9+?=12$.	$\frac{1}{2}$ of 12 is —.

3. There were 12 birds in a tree. 5 flew away. How many were left?

4. In each nest there were 4 little birds. In 3 nests there were — birds.

5. Mary saw 6 birds in a tree, and 6 birds flying. In all she saw — birds.

6. Kate saw 8 birds in a bush. Some birds flew to the bush, and then there were 12. How many birds flew to the bush?

7. Fred had 12 doves. He gave away half of them. He gave away — doves.

Draw a line one foot long.
Draw a line one-half as long as a foot.
Draw a line one-third as long as a foot.
Count the inches in each line.

12 inches = 1 foot.

How many inches in 1 foot?
How many inches in half of a foot?
How many inches in one-third of a foot?
Six inches are what part of a foot?
Four inches are what part of a foot?
Nine inches are how many inches less than a foot?

12 eggs make 1 dozen eggs.

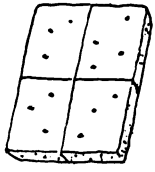
12=1 dozen.

How many eggs in 1 dozen eggs?
How many eggs in half a dozen?
How many eggs in one-third of a dozen?
Six eggs are what part of a dozen?
Four eggs are what part of a dozen?
Ten eggs are how many less than a dozen?
Eight eggs are how many more than half a dozen?

FOURTHS[1]

1. This apple is cut into 4 equal parts.

One part is one-fourth of the apple.



2. Call this a cake cut into 4 equal parts.

Then this piece  is one — of the cake.

3. Mary cut an orange into 4 equal parts. Each part was one — of the orange.

4. Tom cut an orange into 2 equal parts. Each part was one — of the orange.

2 HALVES

4 QUARTERS OR 4 FOURTHS

3 THIRDS

5. To cut a pie into halves, cut it into — equal parts.

6. To cut a pie into quarters, or fourths, cut it into — equal parts.

7. To cut a pie into thirds, cut it into — equal parts.

[1] In connection with the work on fourths, practice should be given in folding and cutting circles and other units into fourths.

FOUR TIMES; ONE-FOURTH[1]

One-fourth is written $\frac{1}{4}$.

1. 4 times 1 are —. $\frac{1}{4}$ of 4 is —.

2. 4 times 2 are —. $\frac{1}{4}$ of 8 is —.

3. 4 times 3 are —. $\frac{1}{4}$ of 12 is —.

4. Nellie has 2 dresses for each of her 4 paper dolls. She has — doll's dresses.

5. For a doll's party there were 4 plates with 2 cookies on each plate. There were — cookies in all.

6. Tom earned 3 cents a day. In 4 days he earned — cents.

7. Mary had 12 cents. She spent $\frac{1}{4}$ of it. She spent — cents.

8. Frank rode on the train 4 hours. He read $\frac{1}{4}$ of the time. He read — hour.

[1] In connection with this exercise, practice should be given in putting together groups of 1, 2, 3, and 4 objects; also in separating groups of 4, 8, and 12 objects into 4 equal parts.

1. Fred cut an apple into 2 equal parts. He cut it into —.

2. Mary cut an apple into 4 equal parts. She cut it into —.

3. Tom cut an apple into 3 equal parts. He cut it into —.

4.	4+2	9+2	2+?= 6.	2+?=11.
	3+2	7+2	2+?= 5.	2+?= 9.
	5+2	3+3	2+?= 7.	3+?= 6.
	6+2	2+3	2+?= 8.	3+?= 5.
	8+2	4+3	2+?=10.	3+?= 7.
5.	5+3	4+4	3+?= 8.	4+?= 8.
	7+3	6+4	3+?=10.	4+?=10.
	6+3	7+4	3+?= 9.	4+?=11.
	9+3	5+4	3+?=12.	4+?= 9.
	8+3	8+4	4+?=11.	4+?=12.

6.	2 twos	2 threes	½ of 4	⅓ of 6
	3 twos	4 threes	½ of 6	⅓ of 9
	5 twos	3 threes	½ of 8	¼ of 8
	4 twos	2 fours	½ of 10	¼ of 12

Add:

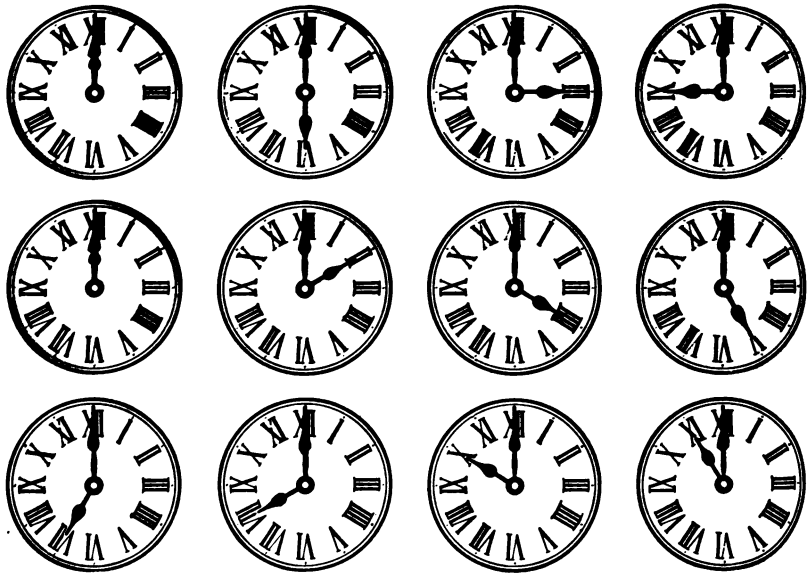
2	2	4	5	7	5	3	8	5
2	3	4	3	5	5	7	2	4
3	4	4	3	2	4	6	7	8
3	2	3	4	5	5	3	4	4
6	6	7	8	7	9	6	9	6
2	6	2	3	6	2	5	3	4
2	3	2	3	3	4	3	4	5
4	2	4	3	2	3	1	4	2
2	3	3	2	4	4	4	4	5
3	4	3	2	4	2	2	2	6
3	2	6	7	5	6	5	5	2
3	4	3	3	2	1	3	5	4
2	4	3	2	3	2	3	2	3
3	3	3	4	4	3	3	4	2
2	2	2	3	2	4	3	4	2
3	3	4	2	2	3	2	2	2

TELLING TIME — THE HOUR[1]

I II III IV V VI VII VIII IX X XI XII

1 2 3 4 5 6 7 8 9 10 11 12

What hour does each clock show?



THE KITCHEN CLOCK

Listen to the kitchen clock!
To itself it ever talks,
From its place it never walks;
"Tick-tock! Tick-tock!"
Tell me what it says.

[1] Note that IV is written IIII on the dials of clocks and watches.

1. When the hour hand is at II, it is — o'clock.

2. When the hour hand is at V, it is — o'clock.

3. When the hour hand is at VII, it is — o'clock.

4. When the hour hand is at X, it is — o'clock.

5. When the hour hand is at IX, it is — o'clock.

6. When the hour hand is at XII, it is — o'clock.

7. Between 1 o'clock and 3 o'clock there are — hours.

8. Between 3 o'clock and 5 o'clock there are — hours.

9. Between 3 o'clock and 6 o'clock there are — hours.

10. Between 8 o'clock and 12 o'clock there are — hours.

11. Between 7 o'clock and 12 o'clock there are — hours.

12. Between 11 o'clock and 1 o'clock there are — hours.

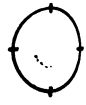
13. John worked from 8 o'clock till 12 o'clock. He worked — hours.

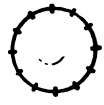
14. Baby slept from 2 o'clock till 5 o'clock. She slept — hours.

TELLING TIME — THE HOUR

Material: A circle of stiff paper 3 inches in diameter and a pin for each child.

1. Mark off the rim of the circle into halves. 

2. Mark off the rim of the circle into quarters. 

3. Mark off the quarters into thirds. 

4. Put in the numbers on the clock face.

5. With a bent pin for the hour hand, play telling time.

6. Show at what time school opens in the morning.

7. Show when it opens in the afternoon.

8. Move the bent pin as you tell stories like this one:—

Mary gets up at seven.
She has breakfast at eight.
She is in school at nine.
At twelve she has dinner.
At four she is at play.
At six she has her supper.
At seven she reads a story.
At eight she goes to bed.
At nine she is fast asleep.

BUILDING THE NUMBERS TEN TO TWENTY[1]

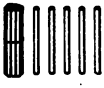
10. Ten.

10 + 1 = 11. **Eleven** means **ten and one.**

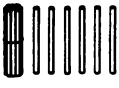
10 + 2 = 12. **Twelve** means **ten and** —.

10 + 3 = 13. **Thirteen** means —.

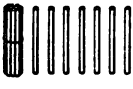
10 + 4 = 14. **Fourteen** means —.



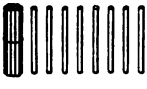
10 + 5 = 15. **Fifteen** means —.



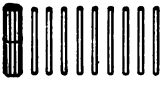
10 + 6 = 16. **Sixteen** means —.



10 + 7 = 17. **Seventeen** means —.



10 + 8 = 18. **Eighteen** means —.



10 + 9 = 19. **Nineteen** means —.

10 + 10 = 20. **Twenty** means —.

[1] Pupils should build these numbers with splints, as shown by the pictures.

Twelve

12

XII

1. Tell what you can about the number twelve.

2. $1+?=12$.	$7+?=12$.	— sixes $=12$.
$2+?=12$.	$5+?=12$.	— twos $=12$.
$6+?=12$.	$8+?=12$.	— threes $=12$.
$10+?=12$.	$4+?=12$.	— fours $=12$.
$3+?=12$.	$9+?=12$.	$\frac{1}{2}$ of 12 is —.

3. There were 12 birds in a tree. 5 flew away. How many were left?

4. In each nest there were 4 little birds. In 3 nests there were — birds.

5. Mary saw 6 birds in a tree, and 6 birds flying. In all she saw — birds.

6. Kate saw 8 birds in a bush. Some birds flew to the bush, and then there were 12. How many birds flew to the bush?

7. Fred had 12 doves. He gave away half of them. He gave away — doves.

1. Draw a line one foot long.
Draw a line one-half as long as a foot.
Draw a line one-third as long as a foot.
Count the inches in each line.

12 inches = 1 foot.

2. How many inches in 1 foot?
How many inches in half of a foot?
How many inches in one-third of a foot?
Six inches are what part of a foot?
Four inches are what part of a foot?
Nine inches are how many inches less than a foot?

12 eggs make 1 dozen eggs.

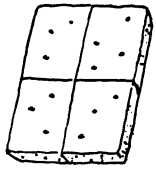
12=1 dozen.

3. How many eggs in 1 dozen eggs?
How many eggs in half a dozen?
How many eggs in one-third of a dozen?
Six eggs are what part of a dozen?
Four eggs are what part of a dozen?
Ten eggs are how many less than a dozen?
Eight eggs are how many more than half a dozen?

FOURTHS[1]

1. This apple is cut into 4 equal parts.

One part is one-fourth of the apple.



2. Call this a cake cut into 4 equal parts.

Then this piece  is one — of the cake.

3. Mary cut an orange into 4 equal parts. Each part was one — of the orange.

4. Tom cut an orange into 2 equal parts. Each part was one — of the orange.

2 HALVES

4 QUARTERS OR 4 FOURTHS

3 THIRDS

5. To cut a pie into halves, cut it into — equal parts.

6. To cut a pie into quarters, or fourths, cut it into — equal parts.

7. To cut a pie into thirds, cut it into — equal parts.

[1] In connection with the work on fourths, practice should be given in folding and cutting circles and other units into fourths.

FOUR TIMES; ONE-FOURTH[1]

One-fourth is written $\frac{1}{4}$.

1. 4 times 1 are —. $\frac{1}{4}$ of 4 is —.

2. 4 times 2 are —. $\frac{1}{4}$ of 8 is —.

3. 4 times 3 are —. $\frac{1}{4}$ of 12 is —.

4. Nellie has 2 dresses for each of her 4 paper dolls. She has — doll's dresses.

5. For a doll's party there were 4 plates with 2 cookies on each plate. There were — cookies in all.

6. Tom earned 3 cents a day. In 4 days he earned — cents.

7. Mary had 12 cents. She spent $\frac{1}{4}$ of it. She spent — cents.

8. Frank rode on the train 4 hours. He read $\frac{1}{4}$ of the time. He read — hour.

[1] In connection with this exercise, practice should be given in putting together groups of 1, 2, 3, and 4 objects; also in separating groups of 4, 8, and 12 objects into 4 equal parts.

1. Fred cut an apple into 2 equal parts. He cut it into —.

2. Mary cut an apple into 4 equal parts. She cut it into —.

3. Tom cut an apple into 3 equal parts. He cut it into —.

4.	4+2	9+2	2+?= 6.	2+?=11.
	3+2	7+2	2+?= 5.	2+?= 9.
	5+2	3+3	2+?= 7.	3+?= 6.
	6+2	2+3	2+?= 8.	3+?= 5.
	8+2	4+3	2+?=10.	3+?= 7.
5.	5+3	4+4	3+?= 8.	4+?= 8.
	7+3	6+4	3+?=10.	4+?=10.
	6+3	7+4	3+?= 9.	4+?=11.
	9+3	5+4	3+?=12.	4+?= 9.
	8+3	8+4	4+?=11.	4+?=12.

6.	2 twos	2 threes	½ of 4	⅓ of 6
	3 twos	4 threes	½ of 6	⅓ of 9
	5 twos	3 threes	½ of 8	¼ of 8
	4 twos	2 fours	½ of 10	¼ of 12

dd:

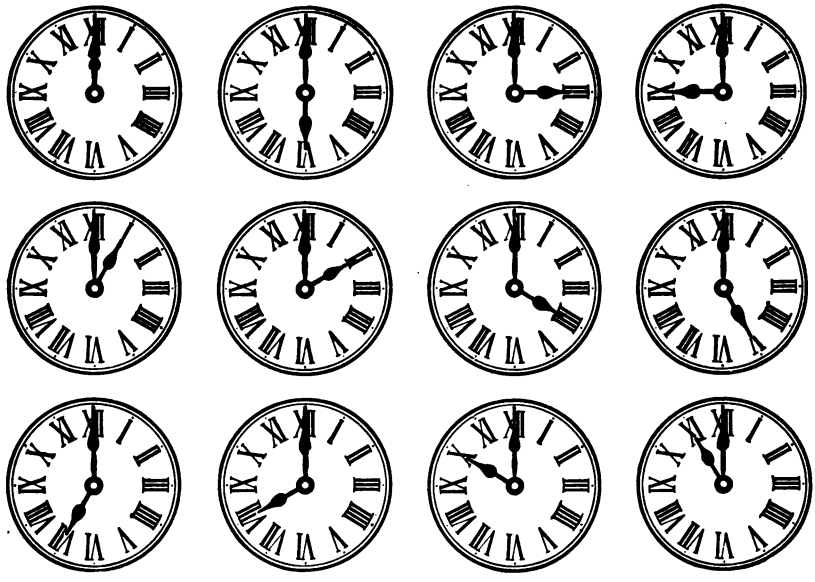
. 2	2	4	5	7	5	3	8	5
2	3	4	3	5	5	7	2	4
. 3	4	4	3	2	4	6	7	8
3	2	3	4	5	5	3	4	4
. 6	6	7	8	7	9	6	9	6
2	6	2	3	6	2	5	3	4
. 2	3	2	3	3	4	3	4	5
4	2	4	3	2	3	1	4	2
2	3	3	2	4	4	4	4	5
. 3	4	3	2	4	2	2	2	6
3	2	6	7	5	6	5	5	2
3	4	3	3	2	1	3	5	4
. 2	4	3	2	3	2	3	2	3
3	3	3	4	4	3	3	4	2
2	2	2	3	2	4	3	4	2
3	3	4	2	2	3	2	2	2

TELLING TIME — THE HOUR[1]

I II III IV V VI VII VIII IX X XI XII

1 2 3 4 5 6 7 8 9 10 11 12

What hour does each clock show?



THE KITCHEN CLOCK

Listen to the kitchen clock!
To itself it ever talks,
From its place it never walks;
"Tick-tock! Tick-tock!"
Tell me what it says.

[1] Note that IV is written IIII on the dials of clocks and watches.

1. When the hour hand is at II, it is — o'clock.

2. When the hour hand is at V, it is — o'clock.

3. When the hour hand is at VII, it is — o'clock.

4. When the hour hand is at X, it is — o'clock.

5. When the hour hand is at IX, it is — o'clock.

6. When the hour hand is at XII, it is — o'clock.

7. Between 1 o'clock and 3 o'clock there are — hours.

8. Between 3 o'clock and 5 o'clock there are — hours.

9. Between 3 o'clock and 6 o'clock there are — hours.

10. Between 8 o'clock and 12 o'clock there are — hours.

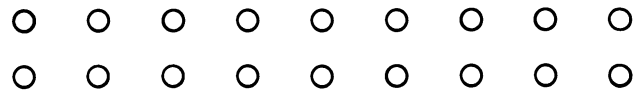
11. Between 7 o'clock and 12 o'clock there are — hours.

12. Between 11 o'clock and 1 o'clock there are — hours.

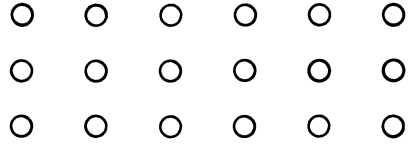
13. John worked from 8 o'clock till 12 o'clock. He worked — hours.

14. Baby slept from 2 o'clock till 5 o'clock. She slept — hours.

18 **Eighteen** XVIII



1. Count to 18 by twos. By nines.
How many 2's in 18? How many 9's in 18?
9 times 2 are —. 2 times 9 are —. $\frac{1}{2}$ of 18 is —.



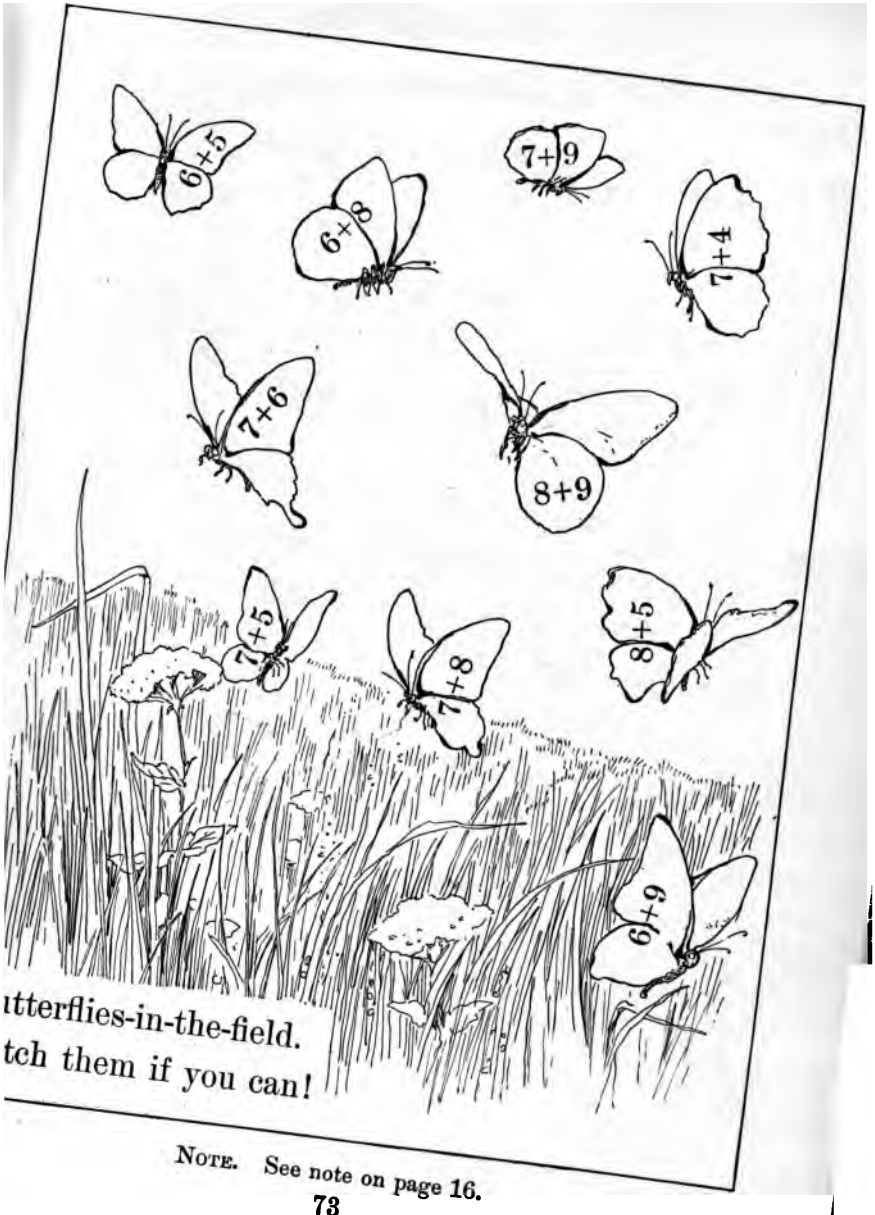
2. Count to 18 by threes. By sixes.
How many 3's in 18? How many 6's in 18?
6 times 3 are —. 3 times 6 are —. $\frac{1}{3}$ of 18 is —.

3. If one top costs 3 cents, 6 tops cost — cents.

4. If one doll costs 6 cents, 3 dolls cost — cents.

5. Mary had 18 nuts. She ate $\frac{1}{2}$ of them. How many did she eat?

6. John had 18 nails. He used $\frac{1}{3}$ of them. How many nails did he use?



ıtterflies-in-the-field.
tch them if you can!

NOTE. See note on page 16.

Add:

1.	4	3	4	3	2	2	3	2	4
	4	3	5	3	4	6	8	7	4
	4	4	4	6	7	5	3	7	9
2.	3	2	3	4	2	4	2	4	2
	4	4	6	6	7	7	3	2	8
	2	4	6	7	3	4	9	6	8
3.	3	6	2	6	3	4	5	5	4
	7	2	4	2	2	2	5	2	3
	3	3	4	3	4	4	0	5	3
	3	4	2	6	3	4	5	4	5
4.	2	1	3	4	2	3	2	2	1
	3	5	6	4	3	8	9	5	8
	4	5	2	4	6	3	3	6	6
	5	3	6	4	3	3	4	4	2
5.	2	2	4	3	6	2	4	3	5
	4	3	3	4	2	4	3	2	2
	4	2	3	3	2	4	3	5	3
	1	5	1	1	1	2	2	2	2
	2	5	4	3	6	2	4	3	5

19 **Nineteen** XIX

1. What numbers put together make nineteen?

2. $8+?=9$. $7+?=9$. $5+?=9$. $3+?=9$.
$18+?=19$. $17+?=19$. $15+?=19$. $13+?=19$.
$6+?=9$. $4+?=9$. $2+?=9$. $1+?=9$.
$16+?=19$. $14+?=19$. $12+?=19$. $11+?=19$.

3. 10 weeks and — weeks are 19 weeks.
17 days and — days are 19 days.
9 hours and — hours are 19 hours.
15 cents and — cents are 19 cents.
11 books and — books are 19 books.
14 pins and — pins are 19 pins.
12 eggs and — eggs are 19 eggs.
16 men and — men are 19 men.
13 girls and — girls are 19 girls.

4. A line 19 inches long is — inches longer than a line 12 inches long.

5. A line 19 inches long is — inches longer than a line 15 inches long.

Twenty ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

20

XX ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

1. Count to 20 by 10's. Count to 20 by 2's.
   How many 10's in 20? How many 2's in 20?
   10 is what part of 20? ½ of 20 is how many?

★ ★ ★ ★ ★

★ ★ ★ ★ ★

★ ★ ★ ★ ★

★ ★ ★ ★ ★

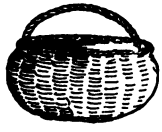
2. Count to 20 by 5's and then by 4's.
   How many 5's in 20? How many 4's in 20?
   5 is what part of 20? ¼ of 20 is how many?

3. 20 cents equal — dimes.
   20 cents equal — five-cent pieces.
   20 cents are — cents more than 15 cents.

4. Helen had 2 dimes. She had — cents.
   Frank had 4 five-cent pieces. He had — cents.

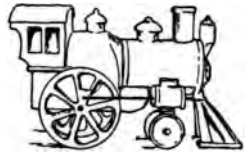
REVIEW

Playing Store



BASKET, 7¢

AIRSHIP, 10¢



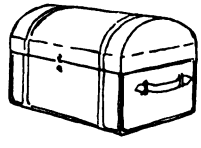
ENGINE, 8¢

DOLL, 9¢

1. Choose 2 toys of one kind and tell the cost in this way. — 2 baskets cost 14¢.

PITCHER, 4¢

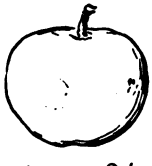
CUP AND SAUCER, 3¢



TRUNK, 5¢

CHAIR, 6¢

2. Choose 3 things of one kind and tell the cost.



APPLE, 2¢

ORANGE, 3¢

BAG OF PEANUTS, 5¢

CAKE, 4¢

3. Choose 4 things of one kind and tell the cost.

4. For 10 cents I can buy an 8-cent engine and —.

5. For 15 cents I can buy a 9-cent doll and —.

6. For 20 cents I can buy a 5-cent doll's trunk and —.

7. For 20 cents I can buy a 10-cent airship and —.

1. 2 birds and how many birds are 5 birds?

If 5 birds are in a tree and 2 fly away, how many birds are left?

How many birds are 5 birds less 2 birds?

2. 3 birds and how many birds are 5 birds?

If 5 birds are in a bush and 3 fly away, how many are left?

How many birds are 5 birds less 3 birds?

The sign for **less** is —.

3. 2 rabbits and ? rabbits are 4 rabbits.

4 rabbits less 2 rabbits are ? rabbits.

$$4 - 2 = —.$$

4. 4 roses and ? roses are 6 roses.

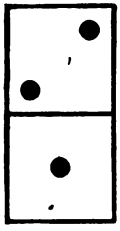
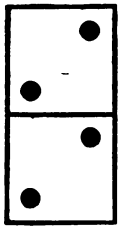
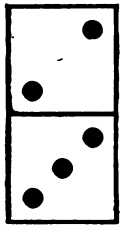
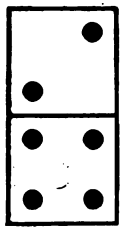
6 roses less 4 roses are ? roses.

$$6 - 4 = —.$$

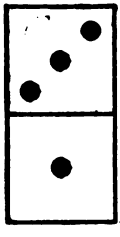
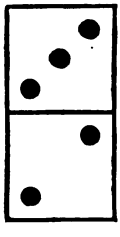
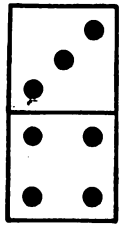
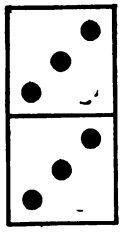
5. 4 books and ? books are 7 books.

7 books less 4 books are ? books.

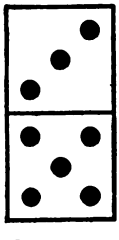
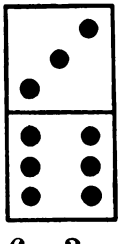
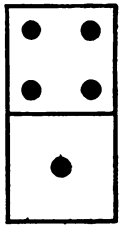
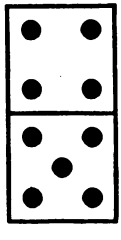
$$7 - 4 = —.$$

2. $2+?=3.$ $2+?=4.$ $2+?=5.$ $2+?=6.$
$3-2=?$ $4-2=?$ $5-2=?$ $6-2=?$

3. $3+?=4.$ $3+?=5.$ $3+?=7.$ $3+?=6.$
$4-3=?$ $5-3=?$ $7-3=?$ $6-3=?$

3. $3+5=8.$ $6+3=9.$ $1+4=5.$ $5+4=9.$
$8-3=?$ $9-6=?$ $5-1=?$ $9-5=?$

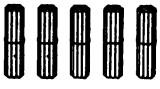
4. $4-2=?$ $8-2=?$ $4-3=?$ $9-3=?$
$3-2=?$ $7-2=?$ $6-3=?$ $8-3=?$

1.	7+3	8+4	9+5	9+6
	8+3	9+4	6+6	8+9
	9+3	7+5	8+7	9+8
	7+4	8+5	8+6	9+9
2.	2+2	5+2	4+3	4+4
	12+2	15+2	14+3	14+4
	3+2	6+2	5+3	5+4
	13+2	16+2	15+3	15+4
	4+2	3+3	6+3	6+4
	14+2	13+3	16+3	16+4
3.	5+5	7+2	7+3	8+2
	15+5	17+2	17+3	18+2
4.	2+?= 5.	5−2	3+?= 6	6−3
	2+?= 4.	4−2	3+?= 8.	8−3
	2+?= 6.	6−2	3+?= 7.	7−3
	2+?= 8.	8−2	3+?= 9.	9−3
	2+?= 7.	7−2	3+?= 5.	5−3
	2+?= 9.	9−2	3+?=12.	12−3
	2+?=11.	11−2	3+?=10.	10−3
	2+?=10.	10−2	3+?=11.	11−3

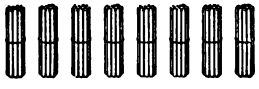
BUILDING NUMBERS FROM TWENTY TO ONE HUNDRED[1]

1	2	3	4	5	6	7	8	9	10
10	20	30	40	50	60	70	80	90	100

TWENTY
20

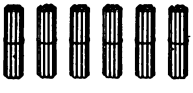


FIFTY
50

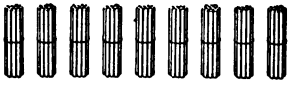


EIGHTY
80

THIRTY
30



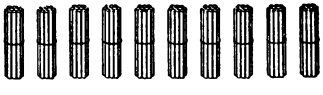
SIXTY
60



NINETY
90

FORTY
40

SEVENTY
70



ONE HUNDRED
100

20 means — tens.
30 means — tens.
40 means — tens.
50 means — tens.
60 means — tens.
70 means — tens.
80 means — tens.
90 means — tens.
100 means — tens.

Count to one hundred by tens.

[1] Pupils should make bundles of tens with splints, and then build the numbers as shown in the pictures.

THE NUMBERS TO ONE HUNDRED

A Counting Table

1. Complete the table first orally, then in written form.

1	11	21	31	41	51	61	71	81	91
1	11	21							
2	12	22							
3	13								
4	14								
5	15								
6	16								
7	17								
8	18								
9	19								

2. Count from 20 to 30.
   Count from 30 to 40.
   Count from 40 to 50.
   Count from 50 to 60.

3. Count from 65 to 75.
   Count from 72 to 82.
   Count from 84 to 94.
   Count from 90 to 100.

4. Play you are in a game of "Hide-and-Go-Seek."
   Count to 100 by tens. Count to 100 by fives.

5. *Read:*

20	9	57	33	43	13
80	19	73	44	59	69
40	47	85	77	89	87
100	58	92	99	74	78

[1] Drill on this table until every pupil can count readily from 1 to 100, first with this table as a guide, then without its help.

2+2	5+2	2. 2+?=3.	2+?= 8.
0+2	6+2	2+?=2.	2+?= 7.
1+2	8+2	2+?=4.	2+?=10.
3+2	7+2	2+?=6.	2+?= 9.
4+2	9+2	2+?=5.	2+?=11.

3. 7 balls and 2 balls are how many balls?
5 drums and 2 drums are how many drums?
9 flags and 2 flags are how many flags?
6 guns and 2 guns are how many guns?
8 boats and 2 boats are how many boats?

4. 2 dolls and — dolls are 6 dolls.
2 books and — books are 5 books.
2 plates and — plates are 7 plates.
2 cups and — cups are 9 cups.
2 chairs and — chairs are 11 chairs.

Count by 2's:
From 0 to 20.
From 20 to 40.
From 1 to 21.
From 21 to 41.

6. *Count back by 2's:*
From 40 to 20.
From 20 to 0.
From 41 to 21.
From 21 to 1.

ADDITION AND SUBTRACTION WITH TWO[1]

Add:

1.	1	41	31	2	12	52	3	63	73
	2	2	2	2	2	2	2	2	2
2.	4	14	34	5	25	95	6	46	86
	2	2	2	2	2	2	2	2	2
3.	7	37	77	8	28	38	9	19	49
	2	2	2	2	2	2	2	2	2
4.	51	82	43	74	35	26	57	88	39
	2	2	2	2	2	2	2	2	2

Subtract:

5.	3 – 2.	4 – 2.	5 – 2.	6 – 2.
	13 – 2.	14 – 2.	15 – 2.	16 – 2.
	43 – 2.	84 – 2.	95 – 2.	46 – 2.
6.	7 – 2.	8 – 2.	9 – 2.	10 – 2.
	17 – 2.	18 – 2.	19 – 2.	20 – 2.
	27 – 2.	48 – 2.	59 – 2.	40 – 2.
	47 – 2.	68 – 2.	99 – 2.	80 – 2.

[1] Pupils should note that having learned to add 2 to 1 in column, they can readily add 2 to any number ending in 1, as 11, 21, 31, 41, 81, 101; for the right-hand digit will always be 3. See that they master this principle of "adding or subtracting by endings," as illustrated on this page.

1. Fred found 5 eggs in one nest and 2 eggs in another. How many eggs did he find?

2. Mary had 14 pink shells and 2 white shells. How many shells did she have?

3. Kate had 9 red apples and 2 yellow apples. How many apples did she have?

4. There were 17 little fish and 2 big fish in a pool. How many fish were in the pool?

5. There were 15 pears in a basket when 2 fell out. How many pears were left?

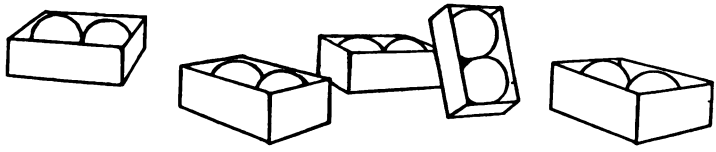
6. There were 21 birds in a tree when 2 flew away. How many were left?

7. Tom had 17 nuts and ate 2. How many nuts had he left?

8. Helen had 18 paper dolls and lost 2. How many had she left?

9. *Add:*

2	3	4	5	6	7	4	5
4	2	2	2	3	2	2	2
2	2	3	1	3	2	2	2
2	4	4	5	6	7	4	3



1. How many balls are there in each box?
How many balls in all?

In 2 boxes there are — balls.
In 4 boxes there are — balls.
In 3 boxes there are — balls.
In 5 boxes there are — balls.

2. One 2 is —. Four 2's are —. $5 \times 2 = —$.
Two 2's are —. Five 2's are —. $3 \times 2 = —$.
Three 2's are —. $1 \times 2 = —$. $4 \times 2 = —$.

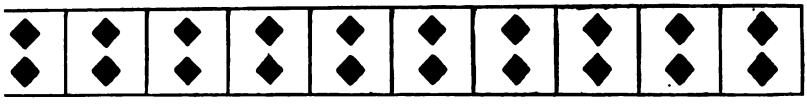
3. How many 2's in 6? 3 times.
2 is in 6, 3 times. $2\overline{)6}$

4. How many 2's in 8? In 4? In 10?

? times.	? times.	? times.
$2\overline{)8}$	$2\overline{)4}$	$2\overline{)10}$

5. *If I put 2 apples on each plate,*
For 3 plates I need — apples;
For 5 plates I need — apples;
For 4 plates I need — apples.

THE TABLE OF TWOS COMPLETED



. In each part of this border there are — squares.
To build the border I need — squares.

. How many squares in 3 parts of the border?
In 5 parts? In 7 parts? In 9 parts?
In 6 parts? In 8 parts? In 10 parts?

1 two is —. 6 twos are —.
2 twos are —. 7 twos are —.
3 twos are —. 8 twos are —.
4 twos are —. 9 twos are —.
5 twos are —. 10 twos are —.

. *How many 2's:*

In 4? In 8? In 12? In 16? In 20?
In 6? In 10? In 14? In 18?

. *Copy and write the answers:*

$2\overline{)8}$ $2\overline{)10}$ $2\overline{)16}$
$2\overline{)4}$ $2\overline{)14}$ $2\overline{)20}$
$2\overline{)6}$ $2\overline{)12}$ $2\overline{)18}$

Mailing Letters

1. *Count a two-cent stamp for each letter:*

   Father sent 6 letters. The stamps cost — cents.
   Mother sent 7 letters. The stamps cost — cents.
   Mary sent 5 letters. The stamps cost — cents.
   John sent 4 letters. The stamps cost — cents.

2. *How many 2-cent stamps can I buy:*

For 4 cents?	For 16 cents?
For 10 cents?	For 20 cents?
For 18 cents?	For 8 cents?

Eight o'clock;
The postman's knock!
Five letters for papa;
One for Lou,
And none for you,
And three for dear mamma.

1. Our milkman brings milk in quart and pint bottles. In one quart bottle there are — pints of milk. In one pint bottle there is one — of a quart.

1 quart = 2 pints.
1 pint = $\frac{1}{2}$ quart.

2. 2 quarts equal — pints.
4 quarts equal — pints.
3 quarts equal — pints.
5 quarts equal — pints.

3. 2 pints equal — quart.
6 pints equal — quarts.
4 pints equal — quarts.
8 pints equal — quarts.

4. If 1 pint of milk costs 3 cents, 1 quart costs — cents.

5. If 1 pint of milk costs 4 cents, 1 quart costs — cents.

6. If 1 quart of milk costs 8 cents, 1 pint costs — cents.

7. If 1 quart of milk costs 6 cents, 1 pint costs — cents.

1.

2+3	6+3	3+?=5.	3+?= 8.
3+3	8+3	3+?=7.	3+?=10.
5+3	7+3	3+?=6.	3+?=12.
4+3	9+3	3+?=9.	3+?=11.

3. Tom has 5 gray rabbits and 3 white rabbits. How many rabbits has he?

4. Mary has 8 white hens and 3 black hens. How many hens has she?

5. There were 7 birds in a tree when 3 flew away. How many were left?

6. There were 12 cows in a field before 3 got out. How many were left?

7. There were 9 horses in the barn before 3 were taken out. How many were left?

8. There were 11 boys playing football. 3 went home. How many were left?

9. *Count by 3's:*
From 0 to 30.
From 31 to 61.
From 62 to 92.

10. *Count back by 3's:*
From 30 to 0.
From 31 to 1.
From 42 to 12.

ADDITION AND SUBTRACTION WITH THREE[1]

Add:

1.	1	11	31	2	12	22	3	13	43
	3	3	3	3	3	3	3	3	3
2.	4	14	24	5	15	65	6	16	56
	3	3	3	3	3	3	3	3	3
3.	7	17	77	8	18	78	9	19	89
	3	3	3	3	3	3	3	3	3
4.	42	63	54	75	69	86	27	58	79
	3	3	3	3	3	3	3	3	3

Subtract:

5.	5 – 3.	7 – 3.	6 – 3.	8 – 3.
	15 – 3.	17 – 3.	16 – 3.	18 – 3.
	35 – 3.	47 – 3.	56 – 3.	48 – 3.
6.	10 – 3.	9 – 3.	12 – 3.	11 – 3.
	20 – 3.	19 – 3.	22 – 3.	21 – 3.
	80 – 3.	59 – 3.	62 – 3.	71 – 3.
	90 – 3.	79 – 3.	82 – 3.	91 – 3.

[1] See note, page 84.

A Peanut Hunt

Tell how many peanuts each child had at the end of the game; tell who won the game:—

1. Mary found 9 peanuts and then 3 peanuts.
2. Tom found 19 peanuts and then 3 peanuts.
3. Helen found 7, 8, and 3 peanuts.
4. Fred found 6, 6, and 3 peanuts.
5. Kate found 9, 9, and 3 peanuts.
6. Frank found 31 peanuts, but lost 3.
7. Robert found 27 and lost 3 and then 4.
8. Henry found 32 and lost 3, then 3 more.
9. Grace found 17, then lost 3, then found 5.

Addition

3	3	3	3	3	3	3	3	3
1	3	3	2	2	1	2	1	1
3	1	3	3	4	4	2	2	2
3	3	1	2	1	2	3	4	4
3	3	3	3	3	3	3	3	3
1	2	3	4	5	6	7	8	9

ADDITION AND SUBTRACTION WITH THREE[1]

1.	21	23	24	27	25	28	29
	3	3	3	3	3	3	3
2.	30	33	32	39	38	37	35
	3	3	3	3	3	3	3
3.	42	45	43	47	46	48	49
	3	3	3	3	3	3	3
4.	51	54	53	56	57	59	58
	3	3	3	3	3	3	3
5.	63	60	62	64	67	66	68
	3	3	3	3	3	3	3
6.	70	74	73	76	78	77	79
	3	3	3	3	3	3	3
7.	83	82	85	88	86	87	89
	3	3	3	3	3	3	3
8.	93	94	97	92	95	96	98
	3	3	3	3	3	3	3

[1] Use this page first for addition and then for subtraction.

1. How many eggs in each nest?
   How many eggs in all?

2. In 2 nests there are — eggs.
   In 3 nests there are — eggs.
   In 4 nests there are — eggs.
   In 5 nests there are — eggs.

3. 2 threes are —. 5 threes are —. $5 \times 3 = —$.
   3 threes are —. $1 \times 3 = —$. $2 \times 3 = —$.
   4 threes are —. $4 \times 3 = —$. $3 \times 3 = —$.

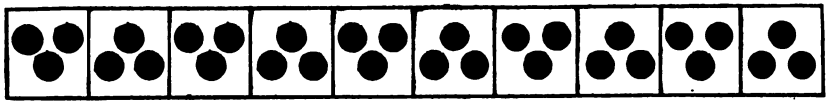
4. How many 3's are there in 6?
   How many 3's are there in 12?
   How many 3's are there in 9?
   How many 3's are there in 15?

? times.	?	?	?	?
$3\overline{)6}$	$3\overline{)12}$	$3\overline{)9}$	$3\overline{)3}$	$3\overline{)15}$

5. Rob earned 3 cents a day. In 4 days he earned — cents.

6. Kate earned 3 cents a day. In 5 days she earned — cents.

THE TABLE OF THREES COMPLETED



1. To build each part of this border I need 3 circles.
   To build all of the border I need — circles.

2. How many circles are there in 6 parts of the border?
   In 7 parts? In 9 parts?
   In 8 parts? In 10 parts?

3. 6 threes are —. 8 threes are —. 10 threes are —.
   7 threes are —. 9 threes are —. 5 threes are —.

4. From 21 circles I can build — parts of the border.
   From 24 circles I can build — parts of the border.
   From 27 circles I can build — parts of the border.
   From 30 circles I can build — parts of the border.

5. How many 3's in 18? In 21? In 24? In 27? In 30?

6.

1×3	6×3	$3\overline{)6}$	$3\overline{)18}$
2×3	7×3	$3\overline{)9}$	$3\overline{)30}$
3×3	8×3	$3\overline{)3}$	$3\overline{)21}$
4×3	9×3	$3\overline{)12}$	$3\overline{)24}$
5×3	10×3	$3\overline{)15}$	$3\overline{)27}$

THE YARD AND THE FOOT

3 feet = 1 yard.

1. Draw a line 1 yard long.
   Under it draw a line 1 foot long.

2. 1 yard equals — feet.
   2 yards equal — feet.
   5 yards equal — feet.

3. 6 feet equal — yards.
   12 feet equal — yards.
   9 feet equal — yards.

4. Mary's garden was 3 yards long. It was — feet long.

5. Mary's garden was 1 yard wide. It was — feet wide.

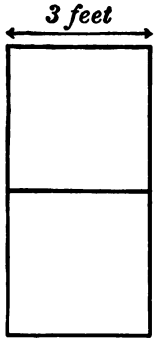
6. Tom's garden was 4 yards long. It was — feet long.

7. Tom's garden was 1 yard and 1 foot wide. It was — feet wide.

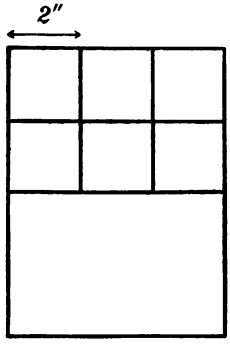
8. 2 yards and 1 foot equal — feet.
   2 yards and 2 feet equal — feet.
   3 yards and 1 foot equal — feet.
   3 yards and 2 feet equal — feet.
   4 yards and 1 foot equal — feet.
   4 yards and 2 feet equal — feet.

MEASURING [1]

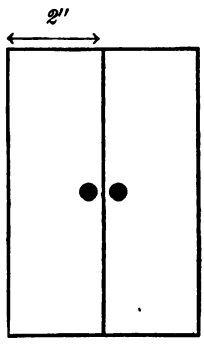
" is the sign for inches.



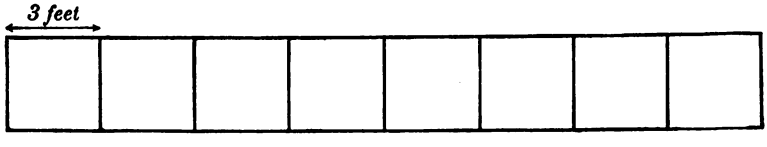
PLAY-HOUSE WINDOW



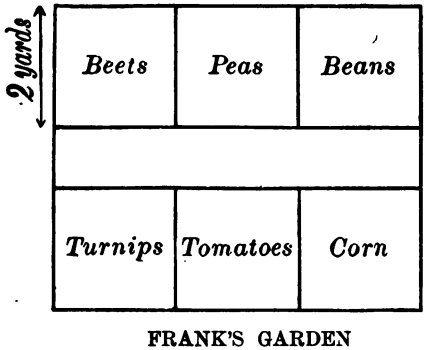
DOLL-HOUSE WINDOW



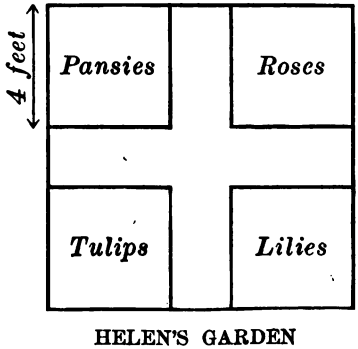
DOLL-HOUSE DOOR



SCHOOL WALK



FRANK'S GARDEN



HELEN'S GARDEN

[1] The children are to give the height, width, and distance around any part or the whole of each figure.

ADDITION AND SUBTRACTION WITH FOUR

1.

3+4	6+4	4+?=6.	4+?=11.
2+4	8+4	4+?=8.	4+?=10.
4+4	7+4	4+?=7.	4+?=12.
5+4	9+4	4+?=9.	4+?=13.

2. 5 roses and 4 roses are how many roses?
9 daisies and 4 daisies are how many daisies?
7 hens and 4 hens are how many hens?
8 cows and 4 cows are how many cows?
3 horses and 4 horses are how many horses?

3. 4 men and — men are 9 men.
4 boys and — boys are 11 boys.
4 girls and — girls are 12 girls.
4 trees and — trees are 10 trees.
4 bushes and — bushes are 13 bushes.

4. *Count by 4's:*
From 0 to 40.
From 11 to 51.
From 22 to 62.
From 43 to 83.

5. *Count back by 4's:*
From 40 to 0.
From 61 to 41.
From 82 to 62.
From 93 to 73.

Add:

1.	1	11	31	2	12	42	3	13	23
	4	4	4	4	4	4	4	4	4
2.	4	14	64	5	15	55	6	16	76
	4	4	4	4	4	4	4	4	4
3.	7	17	87	8	18	68	9	19	89
	4	4	4	4	4	4	4	4	4
4.	25	74	82	63	48	57	86	79	38
	4	4	4	4	4	4	4	4	4

Subtract:

5.	5 – 4.	7 – 4.	6 – 4.	8 – 4.
	15 – 4.	17 – 4.	16 – 4.	18 – 4.
	25 – 4.	37 – 4.	36 – 4.	58 – 4.
6.	9 – 4.	11 – 4.	12 – 4.	13 – 4.
	19 – 4.	21 – 4.	22 – 4.	23 – 4.
	49 – 4.	71 – 4.	62 – 4.	43 – 4.
7.	35 – 4.	47 – 4.	38 – 4.	59 – 4.
	45 – 4.	57 – 4.	58 – 4.	79 – 4.
	75 – 4.	87 – 4.	78 – 4.	99 – 4.

ADDITION AND SUBTRACTION WITH FOUR[1]

1.	21	23	24	27	25	28	29
	4	4	4	4	4	4	4
2.	30	33	32	39	38	37	35
	4	4	4	4	4	4	4
3.	42	45	43	47	46	48	49
	4	4	4	4	4	4	4
4.	51	54	53	56	57	59	58
	4	4	4	4	4	4	4
5.	63	60	62	64	67	66	68
	4	4	4	4	4	4	4
6.	70	74	73	76	78	77	79
	4	4	4	4	4	4	4
7.	83	82	85	88	86	87	89
	4	4	4	4	4	4	4
8.	91	93	94	90	92	95	96
	4	4	4	4	4	4	4

[1] Use this page first for addition and then for subtraction.

1. How many pears in each dish?
   How many pears in all?

2. In 2 dishes there are — pears.
   In 3 dishes there are — pears.
   In 4 dishes there are — pears.
   In 5 dishes there are — pears.

3. How many are 2 fours? 3 fours? 4 fours? 5 fours?

4. *At 4 cents each, what is the cost:*
   Of 3 tops? Of 4 pencils?
   Of 2 books? Of 5 balls?

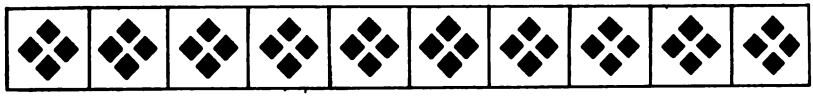
5. How many 4's in 8? In 12? In 16? In 20?

6. *At 4 cents each:*
12 cents will buy — roses. 16 cents will buy — dolls.
20 cents will buy — balls. 8 cents will buy — pencils.

7. 2×4 1×4 3×4 4×4 5×4

8. $4\overline{)4}$ $4\overline{)12}$ $4\overline{)8}$ $4\overline{)16}$ $4\overline{)20}$

THE TABLE OF FOURS COMPLETED



1. To build each part of this border I need — squares.
   To build all of the border I need — squares.

2. How many squares are there in 6 parts of the border?

In 7 parts?	In 9 parts?
In 8 parts?	In 10 parts?

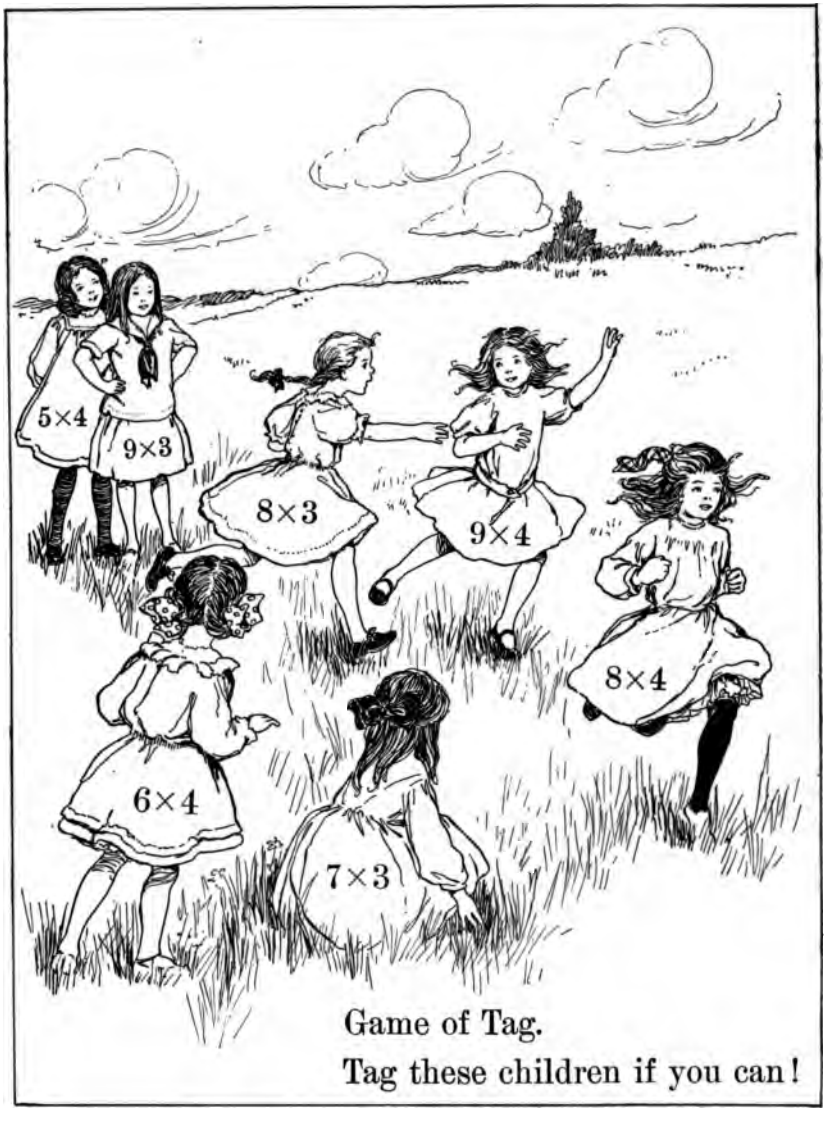
3. 6 fours are —. 8 fours are —. 10 fours are —.
   7 fours are —. 9 fours are —.

4. From 24 squares I can build — parts of the border.
   From 28 squares I can build — parts of the border.
   From 32 squares I can build — parts of the border.
   From 36 squares I can build — parts of the border.

5. How many 4's in 24? In 32? In 28? In 36?

6.

1×4	6×4	$4\overline{)12}$	$4\overline{)24}$
2×4	7×4	$4\overline{)8}$	$4\overline{)40}$
3×4	8×4	$4\overline{)4}$	$4\overline{)32}$
4×4	9×4	$4\overline{)16}$	$4\overline{)28}$
5×4	10×4	$4\overline{)20}$	$4\overline{)36}$



NOTE. These children are tagged by giving the answers to the problems written on them.

1. *At 2 cents each, what is the cost:*

Of 3 apples?	Of 6 pencils?
Of 5 pears?	Of 7 cards?
Of 4 plums?	Of 8 stamps?

2. *At 3 cents each, what is the cost:*

Of 2 tops?	Of 6 paper dolls?
Of 5 roses?	Of 8 pictures?
Of 4 pens?	Of 9 fans?

3. *At 3 cents each, how many pens can I buy:*

For 6 cents?	For 30 cents?
For 15 cents?	For 18 cents?
For 9 cents?	For 24 cents?

4. *At 4 cents each, what is the cost:*

Of 3 dolls?	Of 7 books?
Of 6 oranges?	Of 10 toy boats?
Of 8 balls?	Of 9 toy chairs?

5. *At 4 cents each, how many apples can I buy:*

For 8 cents?	For 40 cents?
For 12 cents?	For 28 cents?
For 20 cents?	For 36 cents?

Mary's Garden

1. Mary has a flower garden. It is 2 feet wide and 6 feet long. How far is it around?

2. There are 4 plants in each row across.

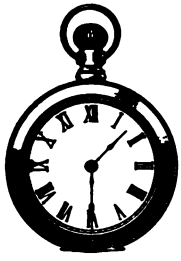
Mary has 3 rows of daisy plants. How many daisy plants has she?

Mary has 5 rows of pansies. How many pansy plants has she?

Mary has 6 rows of poppies. How many poppy plants has she?

3. Mary has 2 rose bushes. On one bush, one day, she found 6 roses. On the other she found 7 roses. How many did she find in all?

4. Mary found 4 buds on one rose bush and 5 buds on the other. How many buds did she find?



1. *With the long hand at XII, what time is it when the short hand is:*

At II?	At X?	At VI?
At V?	At XII?	At VII?
At IX?	At VIII?	At XI?

The short hand is a slow traveler.

The long hand is a fast traveler.

While the short hand is going between two numbers, the long hand goes all around the clock face.

When the long hand is at XII, the hour is just over.

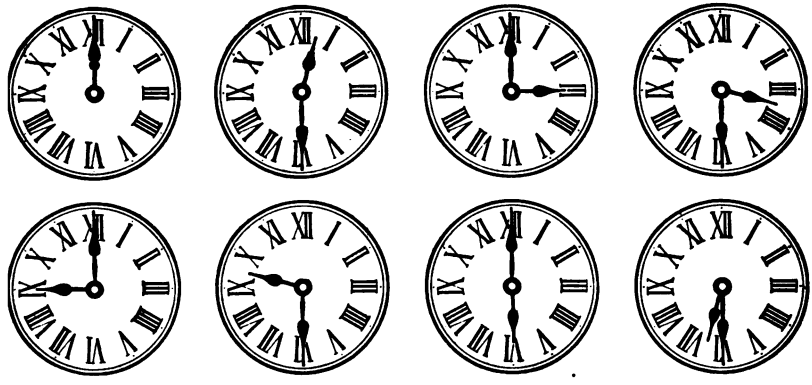
When the long hand is at VI, the hour is half over.

2. *Set the hands of the clock to show:*

Half past two o'clock.	Half past nine o'clock.
Half past four o'clock.	Half past eleven o'clock.
Half past six o'clock.	Half past twelve o'clock.

3. Tom ate his breakfast at 8 o'clock. He said, "In half an hour I shall be at school." When did Tom mean to be at school?

4. Mary went to play with Helen. When it was 4 o'clock, she said, "I can stay a half-hour longer." When was it time for her to go home?



1. Tell the time by these clocks.

2. When the long hand is at III, it is quarter past the hour.

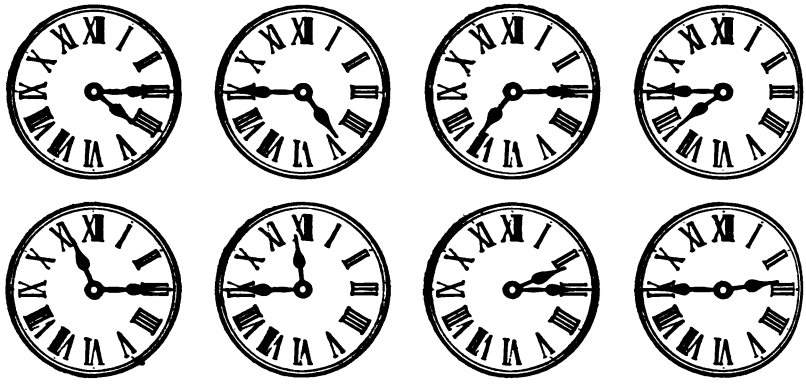
When the long hand is at IX, it is quarter before the hour.

3. Set the long hand of a clock to show quarter past the hour. Half past the hour. Quarter to the hour.

4. What time is it when the short hand is at XII and the long hand at III?

5. What time is it when the short hand is at VI, and the long hand at IX?

6. What time is it when both the short hand and the long hand are at III?



1. Tell the time by these clocks.

Set the hands of a clock to show:

2. Quarter past one o'clock.
   Quarter past five o'clock.
   Quarter past twelve o'clock.
   Quarter past six o'clock.

3. Quarter to three o'clock.
   Quarter to eight o'clock.
   Quarter to ten o'clock.
   Quarter to twelve o'clock.

4. At half past the hour, the long hand is at —.

5. At quarter past the hour, the long hand is at —.

At quarter before the hour, the long hand is at —.

1+5	6+5	5+?= 7.	5+?=12.
3+5	8+5	5+?=10.	5+?=11.
2+5	7+5	5+?= 8.	5+?=14.
4+5	9+5	5+?= 9.	5+?=13.

2. How many roses are 3 roses and 5 roses?
How many birds are 4 birds and 5 birds?
How many trees are 7 trees and 5 trees?
How many boys are 9 boys and 5 boys?
How many girls are 8 girls and 5 girls?

3. 6 cents and — cents are 11 cents.
4 cents and — cents are 9 cents.
5 cents and — cents are 12 cents.
5 cents and — cents are 13 cents.
5 cents and — cents are 8 cents.

4. *Count by 5's:*
From 0 to 50.
From 1 to 51.
From 22 to 62.
From 43 to 83.
From 64 to 94.

5. *Count back by 5's:*
From 50 to 0.
From 81 to 51.
From 92 to 52.
From 63 to 23.
From 44 to 4.

Add:

1.	1	11	21	2	12	32	3	13	43
	5	5	5	5	5	5	5	5	5
2.	4	14	64	5	15	75	6	16	36
	5	5	5	5	5	5	5	5	5
3.	7	17	77	8	18	38	9	19	69
	5	5	5	5	5	5	5	5	5
4.	22	33	54	65	76	48	27	49	37
	5	5	5	5	5	5	5	5	5
5.	34	63	85	56	87	88	28	59	47
	5	5	5	5	5	5	5	5	5

Subtract:

6. 6 – 5.	**7.** 9 – 5.	**8.** 8 – 5.	**9.** 7 – 5.
16 – 5.	19 – 5.	18 – 5.	17 – 5.
46 – 5.	29 – 5.	48 – 5.	67 – 5.
13 – 5.	12 – 5.	11 – 5.	14 – 5.
23 – 5.	22 – 5.	21 – 5.	24 – 5.
93 – 5.	42 – 5.	71 – 5.	94 – 5.

1. How many cents are 6 cents and 5 cents?

2. How many marbles are 16 marbles and 5 marbles?

3. Fred had 17 marbles. He bought 5 more. How many marbles had he then?

4. Grandmother is 68 years old. How old will she be in 5 years?

5. Grandfather is 79 years old. How old will he be in 5 years?

6. Mary had 21 paper dolls. She lost 5. How many had she left?

7. Kate had 32 cents. She spent 5 cents. How much money had she left?

8. There were 44 sheep in a field before 5 got out. How many sheep were left in the field?

9. There were 33 boys at play before 5 went home. How many boys were left?

10. Helen had 25 cents in her bank. She put in 5 cents more. How much had she then?

11. Tom had 47 cents in his bank. He put 4 cents in one day and 5 cents the next day. How much did he have in his bank then?

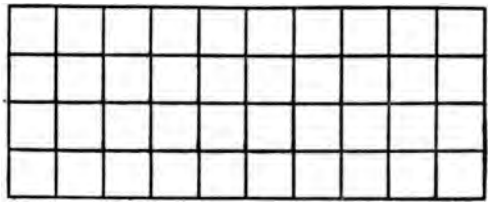
ADDITION AND SUBTRACTION WITH FIVE[1]

1.	22	24	25	23	27	29	28
	5	5	5	5	5	5	5
2.	33	32	34	35	38	37	39
	5	5	5	5	5	5	5
3.	40	43	42	45	46	49	48
	5	5	5	5	5	5	5
4.	52	54	53	55	57	56	58
	5	5	5	5	5	5	5
5.	61	62	64	65	67	66	69
	5	5	5	5	5	5	5
6.	72	73	75	74	76	79	78
	5	5	5	5	5	5	5
7.	80	85	84	83	86	87	89
	5	5	5	5	5	5	5
8.	90	92	91	93	94	95	96
	5	5	5	5	5	5	5

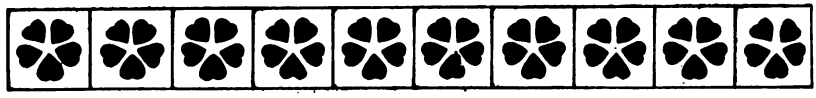
[1] Use this page first for addition and then for subtraction.

1.	2.	3.	4.	5.
1×2	$2\overline{)10}$	1×3	$3\overline{)9}$	2×4
3×2	$2\overline{)4}$	2×3	$3\overline{)6}$	1×4
2×2	$2\overline{)2}$	4×3	$3\overline{)15}$	3×4
4×2	$2\overline{)6}$	3×3	$3\overline{)12}$	4×4
6×2	$2\overline{)8}$	5×3	$3\overline{)18}$	6×4
5×2	$2\overline{)12}$	6×3	$3\overline{)21}$	5×4
7×2	$2\overline{)18}$	8×3	$3\overline{)27}$	8×4
9×2	$2\overline{)16}$	7×3	$3\overline{)24}$	7×4
8×2	$2\overline{)20}$	9×3	$3\overline{)3}$	9×4
10×2	$2\overline{)14}$	10×3	$3\overline{)30}$	10×4

6. $4\overline{)8}$	$4\overline{)12}$	$4\overline{)16}$	$4\overline{)32}$	$4\overline{)40}$
$4\overline{)4}$	$4\overline{)20}$	$4\overline{)24}$	$4\overline{)28}$	$4\overline{)36}$



7. If I build this oblong of one-inch squares, in the ten short rows there will be — square inches.



1.

1 five is	6 fives are	$2 \times 5 =$	$6 \times 5 =$
2 fives are	7 fives are	$4 \times 5 =$	$10 \times 5 =$
3 fives are	8 fives are	$1 \times 5 =$	$7 \times 5 =$
4 fives are	9 fives are	$3 \times 5 =$	$9 \times 5 =$
5 fives are	10 fives are	$5 \times 5 =$	$8 \times 5 =$

2. *At 5 cents each:*

6 dolls cost — cents. 7 horns cost — cents.

10 flags cost — cents. 9 tin cups cost — cents.

3.

$5\overline{)10}$	$5\overline{)30}$	$5\overline{)35}$
$5\overline{)15}$	$5\overline{)40}$	$5\overline{)45}$
$5\overline{)25}$	$5\overline{)50}$	$5\overline{)20}$

4. *At 5 cents each:*

25 cents will buy — dolls.

45 cents will buy — toy chairs.

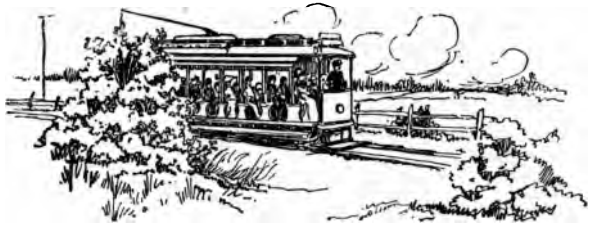
35 cents will buy — toy watches.

40 cents will buy — balls.

20 cents will buy — picture cards.

50 cents will buy — dishes.

On the Street Car[1]



1. *At 5¢ a ride:*

2 rides cost — cents.
4 rides cost — cents.
3 rides cost — cents.
5 rides cost — cents.

2. Tom paid the conductor Fred's fare and his own. How much did Tom pay him?

3. Mary paid 3 fares. How much did she pay?

4. Father paid 6 fares. How much did he pay?

5. Ten boys rode on a street car. How much did it cost them altogether?

6. Eight girls rode. How much did it cost them?

7. The conductor took 45 cents in fares. How many people paid him?

[1] In all these problems the fare is 5 cents.

COUNTING CHANGE

1. 2 5-cent pieces equal — cents.
   4 5-cent pieces equal — cents.
   3 5-cent pieces equal — cents.
   7 5-cent pieces equal — cents.
   5 5-cent pieces equal — cents.

2. 10 cents equal — 5-cent pieces.
   40 cents equal — 5-cent pieces.
   20 cents equal — 5-cent pieces.
   30 cents equal — 5-cent pieces.
   50 cents equal — 5-cent pieces.

3. 1 dime equals — cents.
   2 dimes equal — cents.
   4 dimes equal — cents.
   3 dimes equal — cents.
   5 dimes equal — cents.

4. 10 cents equal — dime.
   40 cents equal — dimes.
   20 cents equal — dimes.
   30 cents equal — dimes.
   50 cents equal — dimes.

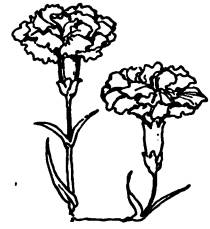
REVIEW

Playing Store

ROSES
5¢ each

DAISIES
2¢ each

LILIES
4¢ each



CARNATIONS
3¢ each

1. Choose flowers and tell the cost of 2 of one kind.

2. 1 rose costs — cents. 6 roses cost — cents.
   4 roses cost — cents. 8 roses cost — cents.

3. For 10 cents I can buy — roses.
   For 20 cents I can buy — roses.

4. 1 daisy costs — cents. 9 daisies cost — cents.
   7 daisies cost — cents. 8 daisies cost — cents.

5. For 10 cents I can buy — daisies.
   For 20 cents I can buy — daisies.

6. 1 lily costs — cents. 4 lilies cost — cents.
   6 lilies cost — cents. 10 lilies cost — cents.

7. For 10 cents I can buy — lilies and have — cents left.
   For 20 cents I can buy — lilies.

COUNTING CHANGE[1]

1. What is the change from 10 cents if I buy a 5-cent doll?

2. What is the change from 10 cents if I buy a 3-cent top?

3. What is the change from 10 cents if I buy a 7-cent book?

4. What is the change from 15 cents if I buy a 12-cent basket?

5. What is the change from 15 cents if I buy an 11-cent fan?

6. What is the change from 20 cents if I buy a 15-cent ball?

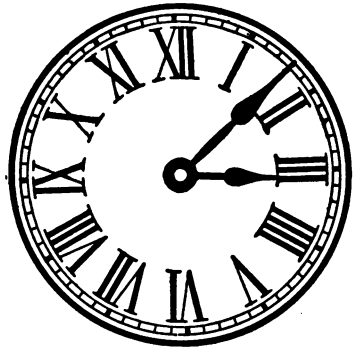
7. What is the change from 20 cents if I buy an 18-cent drum?

8. What is the change from 25 cents if I buy a 20-cent flag?

9. What is the change from 25 cents if I buy an 18-cent set of dishes?

10. Count out 25 cents in coins in three ways.

[1] Pupils may first tell the amount of the change in each case; then tell what coins might be received in change.



1. How many minutes on the clock face between XII and I?

2. Count the minutes by 5's around the clock face.

3. Count the minutes by 5's a quarter of the way around the clock face.

4. Count the minutes by 5's half-way around the clock face.

5. In one hour there are — minutes.

6. In one-quarter of an hour there are — minutes.

7. In one-half of an hour there are — minutes.

8. Which hand points to the minutes?

9. Which hand points to the hour?

10. Read the time on the clock face above.

1. *Place the minute hand:*

At 10 minutes past the hour.
At 20 minutes past the hour.
At 25 minutes past the hour.
At 30 minutes past the hour.

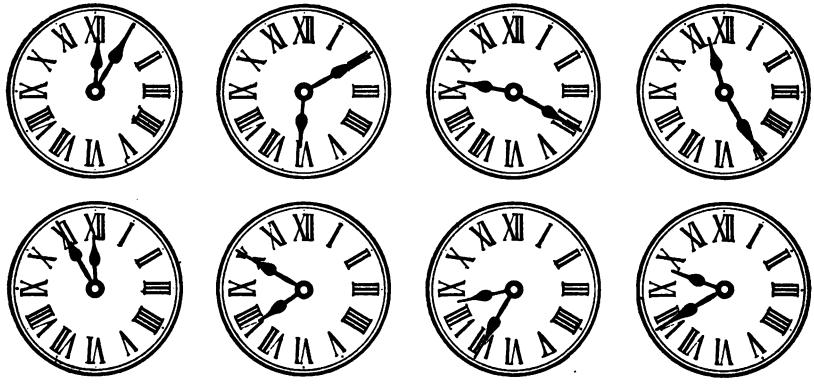
After the minute hand gets to half past, we count before the hour. Five minutes after half past one hour is 25 minutes before the next hour.

2. *Place the minute hand:*

At 20 minutes before the hour.
At 15 minutes before the hour.
At 10 minutes before the hour.
At 5 minutes before the hour.

3. *How many minutes between:*

5 minutes and 10 minutes past the hour?
5 minutes and 15 minutes past the hour?
10 minutes and 20 minutes past the hour?
10 minutes and 15 minutes past the hour?
15 minutes and 20 minutes past the hour?
15 minutes and 25 minutes past the hour?
15 minutes and 30 minutes past the hour?
20 minutes and 30 minutes past the hour?



1. What time does each of these clocks show?

2. Mary played from 5 minutes past three until 20 minutes past three. How long did she play?

3. Frank played from 5 minutes past four until 25 minutes past four. How long did he play?

4. Tom worked from half past four until 10 minutes to five. How long did Tom work?

5. Baby slept from 10 minutes past two until half past two. How long did baby sleep?

6. Father walked from 15 minutes past six until 15 minutes before seven. How long did father walk?

7. Robert and Hélen studied from quarter past eight till quarter to nine. How long did they study?

REVIEW OF COMBINATIONS

1.	1+1	5+1	2+2	6+2	5+3
	3+1	7+1	4+2	8+2	7+3
	2+1	9+1	3+2	9+2	6+3
	4+1	6+1	5+2	3+3	9+3
	0+1	8+1	7+2	4+3	8+3

2.	4+4	8+4	7+5	7+6	8+7
	5+4	9+4	9+5	9+6	9+7
	7+4	5+5	8+5	8+6	8+8
	6+4	6+5	6+6	7+7	8+9

3.	5−2	9−2	7−3	11−3
	6−2	11−2	8−3	12−3
	7−2	10−2	10−3	8−4
	8−2	6−3	9−3	7−4

4.	9−4	12−4	11−5	9−5
	11−4	13−4	10−5	14−5
	10−4	8−5	12−5	13−5

5.	12−6	13−7	14−8	18−9	11−6
	14−6	15−7	17−8	15−9	12−7
	13−6	14−7	16−8	17−9	13−9
	15−6	16−7	15−8	16−9	14−9

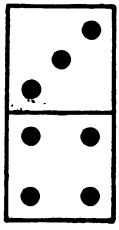
1.	3 twos	7 twos	2 in 4	2 in 12
	2 twos	9 twos	2 in 8	2 in 16
	4 twos	8 twos	2 in 6	2 in 14
	1 two	6 twos	2 in 2	2 in 18
	5 twos	10 twos	2 in 10	2 in 20
2.	1 three	6 threes	3 in 6	3 in 21
	3 threes	10 threes	3 in 3	3 in 18
	2 threes	7 threes	3 in 9	3 in 24
	5 threes	9 threes	3 in 12	3 in 27
	4 threes	8 threes	3 in 15	3 in 30
3.	2 fours	7 fours	4 in 4	4 in 28
	1 four	6 fours	4 in 8	4 in 24
	3 fours	8 fours	4 in 16	4 in 32
	5 fours	10 fours	4 in 12	4 in 40
	4 fours	9 fours	4 in 20	4 in 36
4.	2 fives	6 fives	5 in 10	5 in 30
	1 five	8 fives	5 in 5	5 in 40
	3 fives	7 fives	5 in 15	5 in 35
	5 fives	9 fives	5 in 25	5 in 45
	4 fives	10 fives	5 in 20	5 in 50

$1 \times 2 = 2$	$1 \times 3 = 3$
$2 \times 2 = 4$	$2 \times 3 = 6$
$3 \times 2 = 6$	$3 \times 3 = 9$
$4 \times 2 = 8$	$4 \times 3 = 12$
$5 \times 2 = 10$	$5 \times 3 = 15$
$6 \times 2 = 12$	$6 \times 3 = 18$
$7 \times 2 = 14$	$7 \times 3 = 21$
$8 \times 2 = 16$	$8 \times 3 = 24$
$9 \times 2 = 18$	$9 \times 3 = 27$
$10 \times 2 = 20$	$10 \times 3 = 30$

$1 \times 4 = 4$	$1 \times 5 = 5$
$2 \times 4 = 8$	$2 \times 5 = 10$
$3 \times 4 = 12$	$3 \times 5 = 15$
$4 \times 4 = 16$	$4 \times 5 = 20$
$5 \times 4 = 20$	$5 \times 5 = 25$
$6 \times 4 = 24$	$6 \times 5 = 30$
$7 \times 4 = 28$	$7 \times 5 = 35$
$8 \times 4 = 32$	$8 \times 5 = 40$
$9 \times 4 = 36$	$9 \times 5 = 45$
$10 \times 4 = 40$	$10 \times 5 = 50$

GAMES FOR DRILL

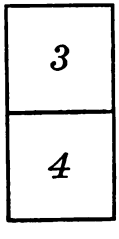
1. **Domino Cards** 8″ by 4″ are made of cardboard and placed



along the blackboard in sight of all the children. If a child, when it is his turn, can tell the sum of the spots on any card, he takes the card and keeps it until the end of the game, at which time the children show how many cards each has won. Little attention in this game or any of the succeeding games need be paid to the winner. The activity in the game itself is sufficiently stimulating without competition.

2. **Domino Cards** are put along the blackboard just as in the first game. The teacher or one of the children says, "I am thinking of a card with numbers on it that make 8" (or any other number under consideration). The children take turns in guessing, "Is it 6 and 2 are 8?" "Is it 5 and 3 are 8?" (making a complete statement each time) until the right combination is guessed. The child who first guesses the right combination gets the card. At the end of the game each child shows the number of cards he has won, as in the game above.

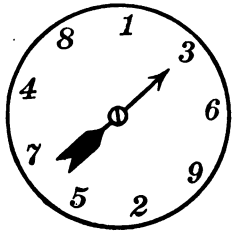
3. When the children no longer need the help of counting spots,



the same games as those above may be played with cards on which figures take the place of the spots.

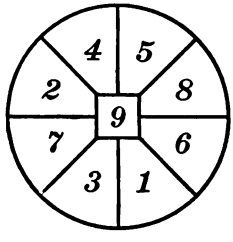
4. The cards used in 3 may be held in a pack by the teacher and exposed one at a time in rapid succession for the benefit of the class. The children answer in turn and, if they fail, are given the cards upon which they miss to puzzle out. It aids a teacher to have the numbers on the back of the card, preferably in reverse order; for she herself is then able to see the number combination she is holding before the class.

5. **Spinning the Arrow.** A cardboard arrow is loosely nailed to a



circle of wood 18 inches in diameter (an old barrel head covered with paper will do very well), upon which the figures 1, 2, 3, 4, 5, 6, 7, 8, 9 are printed. A number like 4 or 5 is chosen; the children twirl the arrow in turn, and add the number chosen to the number nearest to which the arrow stops. This game may be used for subtraction by choosing at the start a number larger than 9, or for multiplication by choosing a number in a table with which the children are familiar. The score may be kept by giving out counters for correct answers.

6. **Bean-bags.** A circle about 4 feet in diameter is drawn with



chalk upon the floor and marked as shown in the diagram. A number like 4 or 5 is chosen. The children stand in line at a given distance from the circle and each in turn throws a bean-bag, trying to strike the largest numbers. If a bag strikes a line, it is called a foul. If the game is for addition, the number chosen is added to the number near which the bag falls; if for multiplication, the numbers are multiplied.

7. **The Striking Clock.** The pupils try to "strike" around the clock, rapidly and without a mistake, using the numbers on the rim of the clock and performing the operation suggested by the figure and sign in the center. If a clock "strikes wrong" (a wrong answer is given), the pupil is to strike all the way around the clock by giving all the combinations, thus securing the additional drill that he evidently needs. Clocks should be made for each of the tables.

8. Magic Squares. In a Magic Square the sums of the figures in all of the columns added up or down and the sums of the figures in the rows added to the right or to the left will be exactly the same. Thus in the second of the Magic Squares below, six is the sum of the figures in each column, whether added up or down; and in each row, whether added to right or left. Pupils will enjoy finding this sum in the case of each of the following Magic Squares.

2	1
1	2

1

2	0	4
3	2	1
1	4	1

2

2	3	6	1
3	1	2	6
5	2	1	4
2	6	3	1

3

5	4	2	3
2	3	5	4
6	2	4	2
1	5	3	5

4

In figure 5 below, find the number that must be put into the little square left blank, in order to have the whole a perfect Magic Square.

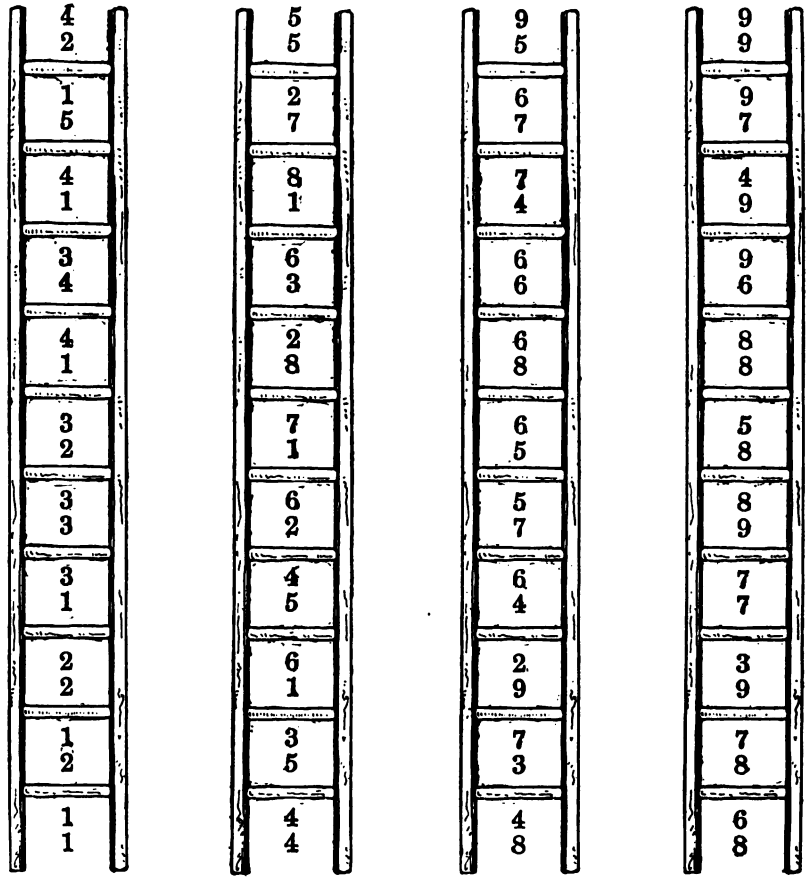
3	1	5
4	3	2
2	5	

5

Let pupils for "busy work" try making Magic Squares. Begin with a square of only two columns (see 1); then make a square with three columns (see 2). Some of the pupils may be able to build such a square with even more than three columns.

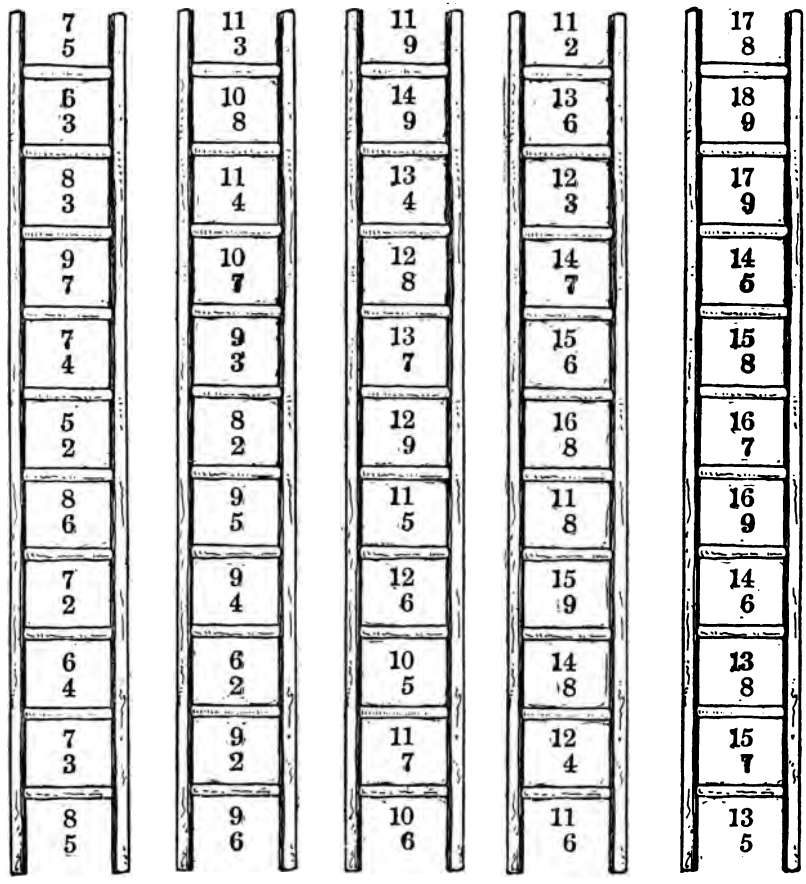
GAMES FOR DRILL

Addition Ladders. Pupils try to run rapidly up and down these ladders without falling (to give an incorrect answer is to "fall").



On this page will be found all the addition combinations. Drill pupils on these until they have mastered them; i.e., until they give answers automatically.

10. Subtraction Ladders. Pupils try to run rapidly up and down these ladders without falling ("to fall" is to give an incorrect remainder).



In the latter part of the year's work every pupil should be able to give these remainders automatically. Drill daily until this is accomplished.

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