THE THORNDIKE ARITHMETICS

BOOK ONE

COMMON MEASURES

Length

1 inch or 1 in.

12 inches = 1 foot (ft.)
3 feet = 1 yard (yd.)
16½ feet = 1 rod (rd.)
5280 feet = 1 mile (mi.)
320 rods = 1 mile (mi.)

Time

60 seconds = 1 minute (min.)
60 minutes = 1 hour (hr.)
24 hours = 1 day (da.)
7 days = 1 week (wk.)
365 days = 1 year (yr.)
Leap years have 366 days

Liquid Measure

4 gills = 1 pint (pt.)
2 pints = 1 quart (qt.)
4 quarts = 1 gallon (gal.)

Money

10 cents = 1 dime
10 dimes = 1 dollar

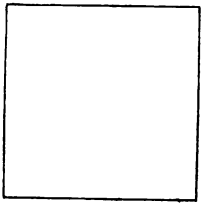
Dry Measure

2 pints = 1 quart (qt.)
8 quarts = 1 peck (pk.)
4 pecks = 1 bushel (bu.)

Weight

16 ounces = 1 pound (lb.)
2000 pounds = 1 ton (T.)

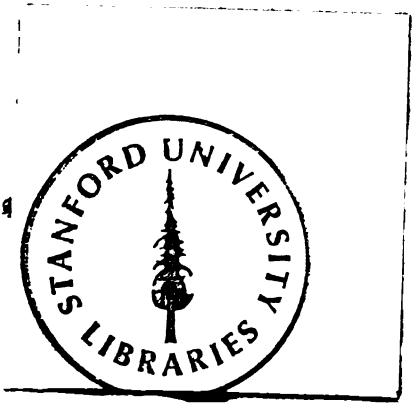
Area



One square inch
or
1 sq. in.

144 sq. in. = 1 square foot (sq. ft.)
9 sq. ft = 1 square yard (sq. yd.)
272¼ sq. ft. = 1 square rod (sq. rd.)
160 square rods = 1 acre (A.)
640 acres = 1 square mile (sq. mi.)

1 sq. ft. = a square 1 ft. long and 1 ft. wide
1 sq. rd. = a square a rod long and a rod wide



THE THORNDIKE ARITHMETICS

BOOK ONE

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By

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PREFACE

THESE books apply the principles discovered by the psychology of learning, by experimental education, and by the observation of successful school practice, to the teaching of arithmetic. Consequently they differ from past practice in the following respects:

Nothing is included merely for mental gymnastics. Training is obtained through content that is of intrinsic value.

The preparation given is not for the verbally described problems of examination papers, but for the actual problems of life. In particular, problems whose answers must be known to frame the problems or whose conditions are fantastic are rigorously excluded.

Reasoning is treated, not as a mythical faculty which may be called on to override or veto habits, but as the coöperation, organization, and management of habits; and the logic of proof is kept distinct from the psychology of thinking.

Interest is secured, not in pictures, athletic records, and the like, but in arithmetic itself and its desirable applications. Interest is not added as a decoration or antidote, but is interfused with the learning itself.

Nothing that is desirable for the education of children in quantitative thinking is omitted merely because it is hard; but the irrelevant linguistic difficulties, the unrealizable pretenses at deductive reasoning, and the unorganized computation which have burdened courses in arithmetic are omitted. The demand here is that pupils shall approximate 100 percent efficiency with thinking of which they are capable.

The formation and persistence of useful habits is not left to be a chance result of indiscriminate drill and review. Every habit is formed so as to give the maximum of aid to, and the

minimum of interference with, others. Other things being equal, no habit is formed that must be later broken; two or three habits are not formed where one will do as well; each is formed as nearly as possible in the way in which it is required to function; each is kept alive and healthy by being made to coöperate in the formation of other and higher habits in the arithmetical hierarchy. If a pupil carries through the projects in computing and problem-solving of these three books under competent supervision, he will have abundant practice for the arithmetical insight, knowledge, and skill that the elementary school is expected to provide.

E. L. T.

NOTES ON BOOK ONE

Part One of this book is for use as a supplement to the informal work of Grade II, and as a basic text in Grade III. Part Two, or so much of it as the course of study makes advisable, is for use in Grade IV.

Experienced teachers will, by examining and using this book, understand the reasons for the choice of the exercises and problems, for the order in which they appear, and for the methods used, with three possible exceptions. These are: (1) the early, varied, and extended use of the equation form with a missing number or quantity to be supplied, (2) the introduction of two-place and three-place multiplicands before the products of 6, 7, 8, and 9 are learned, (3) the rationalizing of procedures by verifying the fact that they are right rather than by arguments to show that they must be right.

Such uses of the equation form as the book contains will be found admirable as preventives of rote memorizing without understanding, as stimuli to mathematical thinking, and as means to an economical organization of arithmetical knowledge. The time spent on them will be saved twice over in later work.

The introduction of two-place and three-place multiplicands provides a genuine use for the multiplication facts learned, organizes the knowledge of the products of 5, 2, 3, and 4, gives a needed review, relieves the monotony of learning the tables, and enables the pupil to utilize rather than memorize the products of 6, 7, 8, and 9 as fast as these are learned.

The rationalization of procedures by the pupil's own experience in verifying the results obtained is superior to the use of formal proofs of the validity of the procedures before they are learned and used. With all save the most gifted, there is grave danger that the pupil, especially in Grades III and IV, will not know what is being proved to be true by the "analysis" or "explanation," or will forget the proof after he has mastered the procedure. The best way to secure eventual insight into the principles governing arithmetical operations is to learn to operate by imitation and the extension of past knowledge, then to make sure that the operation is right by verification from known facts, and last of all to learn why it is right and must be right.

It will be observed that in the early steps in subtraction the pupil learns to derive his facts about $8-5$, $6-2$, etc., from his knowledge that $5+3=8$, $2+4=6$, etc., but that care is taken that he distinguishes subtraction sharply from addition, gives it its proper name, understands its common uses, and soon comes to think of subtraction combinations fluently and directly. This is important. The pupil is also taught to increase both minuend and subtrahend rather than to "borrow." This is more scientific, businesslike, and economical of thought, especially in the case of subtraction with fractions.

In using this book, those expert in the teaching of arithmetic will follow its organization of arithmetical learning, adding other

exercises of the same sorts to supplement it and using the daily life of the pupils as a source of problems, but not omitting sections or introducing new principles. For they will see in it a deliberate arrangement of arithmetical learning to fit the abilities and needs of the pupils and to organize a hierarchy of habits and powers for continuous growth.

The inexperienced teacher may well follow the order of the book even if the purpose of some one exercise here and there is not clear to him. Every section has a definite part to play in teaching something new, reviewing something previously taught, relating elements of knowledge previously taught separately, or preparing for some advance to be made fully in later sections. The organization of topics is more subtle than in ordinary texts because it parallels childish learning rather than adult knowledge, because the interests and abilities of the pupils are allowed weight as well as the teacher's convenience, and because arithmetical learning is treated as an organic whole which lives and works rather than as a collection of isolated abilities to add, subtract, multiply, and divide with such and such sorts of numbers.

It should be observed that the games, activities, and topics upon which the exercises and problems are based permit framing many additional exercises and problems of the same types as those in the text. The pupil should be encouraged to frame such. When the teacher frames such, or states a problem from the daily life of the class, he should either reproduce the actual situation or event, or use language so clear and simple that the pupils understand just what the situation or event is. It is fruitless to train children to understand intricate verbal descriptions in cases where the real situation, as life offers it, explains itself.

CONTENTS: PART I*

I. Elements of Addition, Subtraction, and Measurement: Supplement to the Work of the Earlier Grades

*The table of contents shows, in one column, the topics and activities in connection with which the learning of arithmetic is secured. In the second column are stated the main elements of the arithmetical content itself. What these are in detail and what applications of them are made to daily life can be discovered by inspection of the text. A still more summary order of topics is shown by the titles of the six main divisions. It should be understood, however, that the book provides for a continuous growth of arithmetical ability as an integrated whole, and that consequently each main division deals with much more than the one topic.

II. Addition and Subtraction

III. First Steps in Multiplication and Division

IV. Multiplication with One-Place Multipliers: Preparation for Division

CONTENTS: PART II

I. Multiplication with Integers: General Theory and Technique

II. The Simpler Uses of Fractions

III. Long Division

IV. Elements of Addition and Subtraction of Fractions and Mixed Numbers. General Review of Integers

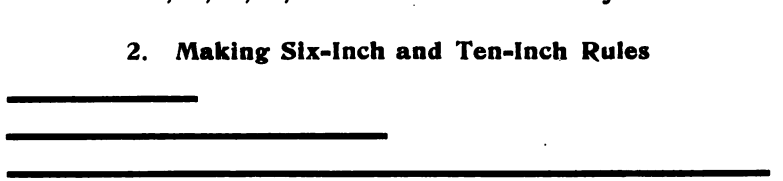
ARITHMETIC

BOOK ONE, PART ONE

1. Counting

1. Count "*one, two, three,*" and so on as far as you can.
2. Write the words "*one, two, three,*" and so on as far as you can.
3. Write 1, 2, 3, 4, and so on as far as you can.

2. Making Six-Inch and Ten-Inch Rules



4. Which line is one inch long?
5. Which line is two inches long?
6. Which line is four inches long?

The children in the first grade need some short rules. Can you make some?

7. Make a rule two inches long.
8. Write "Two inches" on the rule.
9. Make a rule four inches long.
10. What will you write on the four-inch rule?
11. Make a rule six inches long.
12. Put lines and numbers on the six-inch rule to show 1 inch, 2 inches, 3 inches, 4 inches, and 5 inches.
13. Write "This rule is 6 inches long" on the rule.
14. Make a rule ten inches long to keep for yourself.

3. Measuring

1. Measure your 6-inch rule with the real rule. Is it too long, or too short, or just 6 inches? Are the lines in the right places?
2. Measure your 10-inch rule. Is it too long, or too short, or just 10 inches? Are the lines in the right places?
3. Measure your 4-inch rule and your 8-inch rule. Are they just right for the first-grade children to measure with?
4. What can you do to make a rule right if it is too long?
5. What must you do if a rule is too short?

4. Adding Inches to Inches

Take your 10-inch rule.

1. Draw a line two inches long. Mark it *2 inches.*
2. Draw a line four inches long. Mark it *4 inches.*
3. Draw a line six inches long. Mark it *6 inches.*
4. Draw a line eight inches long. Mark it *8 inches.*
5. Draw a line ten inches long. Mark it *10 inches.*
6. Read the rest of this page. Say the right numbers where the dots are:
   a. Two inches and two inches make....inches. 2 and 2 are....
   b. Four inches and two inches make....inches. 4 and 2 are....
   c. Six inches and two inches make....inches. 6 and 2 are....
   d. Eight inches and two inches make....inches. 8 and 2 are....

1. Take ten cents of play money.* Put them on your desk in rows like this. OO Count them to see if you have just ten. OO
   OO
   OO
   OO
2. Put four cents in a pile and put your hand over the pile. Put two cents more in the pile under your hand. How many cents are in the pile under your hand now? Look at them to see that your answer was right.
3. Put six cents in a pile under your hand. Put two cents more under your hand. How many cents are under your hand? Is your answer right?
4. Put three cents in a pile under your hand. Put two cents more under your hand. How many cents are under your hand?
5. Put five cents in a pile under your hand. Add two cents to the pile. How many cents are under your hand?
6. Read the rest of this page. Say the right numbers where the dots are:
   a. Three cents and two cents are....cents. 3 and 2 are....
   b. 5 and 2 are.... *c.* 7 and 2 are....
   d. 1 and 2 are.... *e.* 8 and 2 are....
   f. Four cents and four cents are....cents. 4 and 4 are....

*Play-cents may be cut the proper size from cardboard and marked 1¢ or ONE CENT; or counters may be used.

6. Playing Store

Candy	Yeast Cakes	Oranges	Stale Bread	Fresh Bread
1 cent	2 cents	3 cents	4 cents	5 cents

Play that you are buying things at this store.

A stick of candy costs 1 cent.
A yeast cake costs 2 cents.
An orange costs 3 cents.
A loaf of stale bread costs 4 cents.
A loaf of fresh bread costs 5 cents.

1. How many cents do you give for a yeast cake and an orange?
2. How many cents do you give for a loaf of fresh bread and an orange?
3. How many cents do you give for a loaf of stale bread and an orange?
4. How many cents do you pay for a yeast cake, a stick of candy, and an orange?
5. How many cents do you pay for a loaf of stale bread, a yeast cake, and an orange? Count with play money and make sure that your answer is right.
6. How many cents do you pay for two oranges?
7. Which costs more, a loaf of fresh bread or a loaf of stale bread?
8. How much do you pay for a loaf of fresh bread and a yeast cake?

Read these lines. Say the right numbers where the dots are:

1. A loaf of fresh bread and a yeast cake cost...cents.
2. Two yeast cakes cost...cents.
3. Two yeast cakes and an orange cost....cents.
4. A yeast cake and a loaf of stale bread cost....cents.
5. A loaf of stale bread and a loaf of fresh bread cost ....cents.
6. An orange and a loaf of stale bread cost....cents.
7. Tell the class two things you wish to buy. They must say as quickly as they can how much you will have to pay.

8. Addition

Read these lines. Say the right numbers where the dots are:

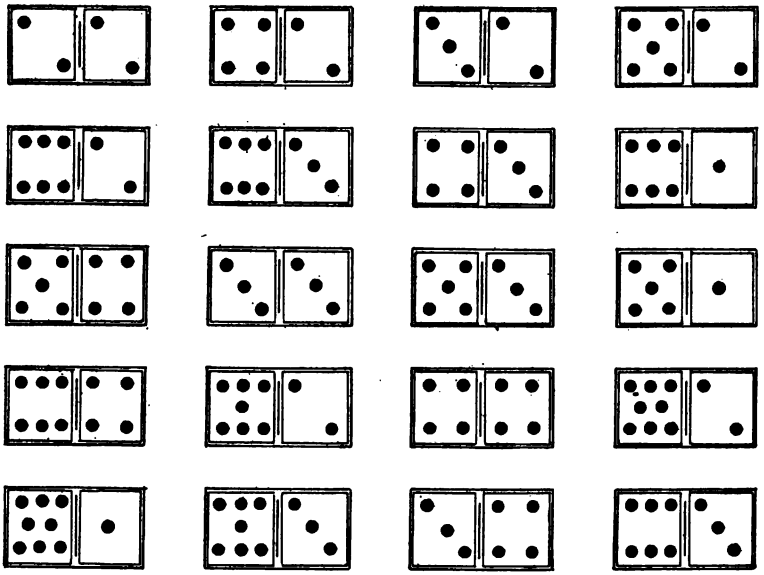
2 and 3 are....	5 and 3 are....	4 and 3 are....
1 and 3 are....	6 and 3 are....	7 and 3 are....
4 and 4 are....	5 and 4 are....	6 and 4 are....
3 and 1 are....	6 and 1 are....	2 and 1 are....
7 and 1 are....	4 and 1 are....	8 and 1 are....

9.

Add and say the sums:

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

Tell the number of dots on each domino as quickly as you can.



11. Problems

1. A boy spent five cents for a loaf of bread and two cents for a yeast cake. How much did he spend for both together?
2. A pad costs five cents and a pencil costs two cents. How much do both together cost?
3. How long are a six-inch ruler and a four-inch ruler together?
4. A girl had four cents in her bank. She put in three cents more. How many cents were in the bank then?
5. How many cents are three pennies and a nickel?

Play this game:

1. Two boys hide behind the teacher's desk. Then five more boys hide with them. The class must tell how many boys are behind the desk.
2. Three boys hide behind the desk. Then six more boys hide with them. How many boys are behind the desk?
3. Four boys hide behind the desk. Then five more boys hide with them. How many boys are behind the desk?
4. Two boys hide behind the desk. Then six more boys hide with them. How many boys are behind the desk?

Play this game using 7 and 2, 1 and 6, 3 and 7, and other numbers.

13.

1. Say the right numbers where the dots are:

2 and 5 is the same as 5 and....
2 and 6 is the same as 6 and....
3 and 7 is the same as 7 and....

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

2. Count by twos as far as you can, beginning 2, 4, 6.
3. Count by twos as far as you can, beginning 1, 3, 5.
4. Count by twos as far as you can, beginning 3, 5, 7.

14. Practice in Adding

State the sums. Ask the teacher to see how many you can say correctly in a minute.

Addition

Row A

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

Row B

2	3	5	4	5	2	4	2	3	8
4	6	5	1	3	3	4	5	4	2

Row C

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

Row D

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

Row E

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

Row F

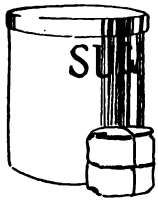
5	5	2	1	5	6	5	3	8	4
4	3	7	4	3	2	5	6	2	5

15.

Write the sums:

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

Sugar	Soap	Milk	Salt
6 cents	7 cents	8 cents	9 cents
a pound	a cake	a quart	a bag




John keeps the store and sells things and makes change. You buy things with play money. If John makes a mistake, the one who finds it out keeps the store.

1. You buy a yeast cake and give John a nickel. You get....cents change.
2. You buy an orange and give John a nickel. You get....cents change.
3. You buy a loaf of stale bread and give John a nickel. You receive....cents change.

17.

1. Why do we call a nickel a five-cent piece?
2. Why do we call a dime a ten-cent piece?
3. You buy a cake of soap and give John a dime. You get....cents change.
4. You buy a pound of sugar and give John a dime. You get....cents change.
5. You buy a loaf of fresh bread and give John a dime. You receive....cents change.
6. You buy a bag of salt and give John a dime. You receive....cents change.

Tell what change you should receive when —

1. You buy a quart bottle of milk and give the storeman a dime.
2. You buy a yeast cake and give a dime.
3. You buy a yeast cake and give a nickel.
4. You buy an orange and give a nickel.
5. You buy an orange and give a dime.
6. You buy a stick of candy and give a nickel.

19.

Buy things at the store and pay with five-cent pieces and pennies.

1. You buy a pound of sugar. You pay a five-cent piece and....penny.
2. You buy a quart of milk. You pay a five-cent piece and....pennies.
3. You buy a cake of soap. You pay a five-cent piece and....pennies.

Buy things at the store and give the storeman only part. John must tell you how much more to give. You buy a quart of milk and give five cents. John says, "Give me....cents more to make 8 cents."

What must John say —

4. When you buy a quart of milk and give 3 cents?
5. When you buy a pound of sugar and give 2 cents?
6. When you buy a pound of sugar and give 4 cents?
7. When you buy a cake of soap and give 5 cents?
8. When you buy a cake of soap and give 4 cents?
9. When you buy a bag of salt and give 4 cents?
10. When you buy a bag of salt and give 6 cents?

Read the lines and say the right numbers where the dots are:

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

21.

Take ten cents of play money.

1. Put ten cents under your hand. Take out three cents. How many cents are left?
2. Put eight cents under your hand. Take away three cents. How many cents are left?
3. Put nine cents under your hand. Take away four cents. How many cents are left?

"Subtract from" means "take away from."

4. How many cents are left if you subtract—
   - *a.* Three cents from ten cents?
   - *b.* Two cents from eight cents?
   - *c.* Four cents from nine cents?
   - *d.* Two cents from five cents?

5. Tell how many are left if you subtract—
   - *a.* 5 from 9
   - *b.* 3 from 8
   - *c.* 1 from 4
   - *d.* 2 from 4

6. Subtract the lower number from the upper number. Think how many you must add to the lower number to make the upper number.

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

The prices in our store were:

A stick of candy, 1 cent.
A yeast cake, 2 cents.
An orange, 3 cents.
A loaf of stale bread, 4 cents.
A loaf of fresh bread, 5 cents.
A pound of sugar, 6 cents.
A cake of soap, 7 cents.
A quart bottle of milk, 8 cents.
A bag of salt, 9 cents.

1. Which costs more, a loaf of fresh bread or a yeast cake? How much more?
2. Which costs more, a bag of salt or a cake of soap? How much more?
3. Which costs more, a pound of sugar or an orange? How much more?
4. Make other problems and find the answers.

23. Subtraction

Look at each pair of numbers in Row A. State what the difference between the two numbers is. Think what you add to the lower number to make the upper number. Do the same with Row B, Row C, and Row D.

Row A.	9	6	7	8	6	9	6	9	7	8
	6	4	4	5	3	4	2	5	2	3
Row B.	7	8	9	4	6	7	9	4	7	8
	1	4	7	1	3	6	8	3	4	5
Row C.	9	5	4	3	5	6	7	8	9	8
	4	1	2	1	4	5	3	1	6	7
Row D.	3	8	9	2	9	8	9	9	6	7
	2	4	4	1	2	4	1	3	3	5

A stick of candy costs 1 cent. **An orange costs 3 cents.**
A yeast cake costs 2 cents. **A pound of sugar costs 6 cents.**

1. What do you pay in all if you buy a pound of sugar, a yeast cake, and a stick of candy?
2. What do you pay in all if you buy an orange, a yeast cake, and a stick of candy?
3. What do you pay in all if you buy a pound of sugar, a stick of candy, and an orange?

25. Practice in Adding

1. Find the sum of these three numbers:

   Think what 4 and 2 are.
   Then think what 6 and 3 are.

$$\begin{array}{r} 3 \\ 2 \\ \underline{4} \end{array}$$

2. Find the sum of these three numbers:

   Think what 5 and 2 are.
   Then think what 7 and 2 are.

$$\begin{array}{r} 2 \\ 2 \\ \underline{5} \end{array}$$

3. State the sums:

Row A

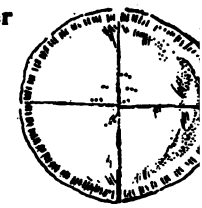
3	2	3	2	3	2	1	2	2	1
1	3	2	1	2	4	2	2	1	2
5	2	4	3	3	3	2	4	5	3

Row B

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

Row C

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



1. Draw a pie cut in quarters like this:
2. Draw a half of a pie. Mark it "$\frac{1}{2}$ of a pie."
3. Draw a quarter of a pie. Mark it "$\frac{1}{4}$ of a pie."
4. Draw an inch. How will you mark it?
5. Draw a half inch. How will you mark it?
6. Draw a quarter of an inch. How will you mark it?
7. Hold your hands one foot apart.
8. Hold your hands $\frac{1}{2}$ foot apart.
9. Hold your hands $\frac{1}{4}$ foot apart.

27.

12 inches make 1 foot.

1. Make a rule 12 inches long. Put lines and numbers on it to show 1 inch, 2 inches, 3 inches, 4 inches, etc.
2. Find the middle of the 12-inch rule. How many inches are there in one half of twelve inches?
3. Make a rule $\frac{1}{4}$ of a foot long. How many inches are there in one fourth of twelve inches?
4. Draw a line 8 inches long.
5. Draw a line half as long as 8 inches. How many inches long is the line?
6. Draw a line one fourth as long as 8 inches. How many inches long is it?

Tell how many inches there are in:

7. One half of 8 inches.
8. One half of 12 inches.
9. $\frac{1}{2}$ of 6 inches.
10. $\frac{1}{2}$ of 10 inches.
11. $\frac{1}{2}$ of 4 inches.
12. $\frac{1}{4}$ of 12 inches.
13. $\frac{1}{4}$ of 8 inches.
14. $\frac{1}{4}$ of 4 inches.

1. Take the pint measure and the quart measure. Which is larger?
2. Will a pint of water fill about one glass or about two glasses?
3. Will a quart of water fill about two glasses or about four glasses or about eight glasses?
4. Will a quart of water fill one pint measure or two pint measures?
5. Will two quarts of water fill four pint measures or five pint measures?
6. Find out how many pint measures three quarts of water or sand will fill.
7. Find out how many pint measures four quarts of water or sand will fill.
8. Find out how many glassfuls three pints will make.
9. Find out how many glassfuls five pints will make.

29.

1. Which of these do you think means quart or quarts? Which means pint or pints?

qt. pt. yd. ft. in.

2. Which means yard or yards? Which means foot or feet? Which means inch or inches?
3. Read these lines. Say the right numbers where the dots are. Say "are equal to" for =.

2 qt. = ... pints.	3 pt. = ... glassfuls.
5 qt. = ... pt.	2 pt. = ... glassfuls.
3 qt. = ... pt.	4 pt. = ... glassfuls.
4 qt. = ... pt.	5 pt. = ... glassfuls.

Read these lines. Say the right numbers where the dots are:

1.	2.
6 pints = ... quarts.	4 glassfuls = ... pints.
4 pt. = ... qt.	10 glassfuls = ... pt.
10 pt. = ... qt.	8 glassfuls = ... pt.
8 pt. = ... qt.	6 glassfuls = ... pt.

3.	4.
For 2 cents you get. . . . yeast cake.	10 equals. . . . 2s
For 6 cents you get. . . . yeast cakes.	4 equals. . . . 2s
For 8 cents you get. . . . yeast cakes.	8 equals. . . . 2s
For 4 cents you get. . . . yeast cakes.	6 equals. . . . 2s

31. Feet and Yards

1. Take the foot rule and the yardstick. How many feet does 1 yard equal?
2. Draw a line on the blackboard 2 yards long. How many feet long is it?
3. Read these lines. Say the right numbers where the dots are. Say "equal" or "equals" for =.

A.	B.
A line 2 yd. long is. . . . ft. long.	1 yd. = ... ft.
A line 3 yd. long is. . . . ft. long.	2 yd. = ... ft.
	3 yd. = ... ft.
A line 9 ft. long is. . . . yd. long.	3 ft. = ... yd.
A line 3 ft. long is. . . . yd. long.	6 ft. = ... yd.
A line 6 ft. long is. . . . yd. long.	9 ft. = ... yd.

C.

Half of 4 is. . . .	Half of 6 is. . . .	½ of 8 is. . . .
½ of 10 is. . . .	¼ of 8 is. . . .	¼ of 4 = ...

1. Take your foot rule. How many inches are there in one foot?
2. Draw a line 10 inches long. Add two inches to it. How many inches long is it now?
3. Draw a line 9 inches long. How many inches must you add to it to make it 12 inches long?
4. Draw pictures to show that 12 = six 2s, or four 3s, or three 4s.

5. State the missing numbers:

A.	B.	C.
Four 2s = ...	Two 3s = ...	10 and 1 = ...
Five 2s = ...	Three 3s = ...	10 and 2 = ...
Six 2s = ...	Four 3s = ...	4 and 4 = ...

33. Planning for a Party

Three girls had a party. There were nine little sandwiches, six cakes, and twelve pieces of candy. Mary's mother divided the sandwiches and cakes and candy equally among the three girls.

1. How many sandwiches did each child have?
2. How many cakes did each child have?
3. How many pieces of candy did each child have?

John and Will are having a party for four boys.

4. How many cakes do they need to give each boy two?
5. How many sandwiches do they need to give each boy three?
6. How many pints of lemonade do they need to give each boy a pint?

Mary is going to have a party for Alice, Nell, and herself.

7. How many sandwiches does she need if each of the three girls is to have two sandwiches?
8. How many cakes does she need if each of the three girls is to have three cakes?
9. How many pieces of candy does she need if each girl is to have four?
10. Five children are coming to a party. How many pieces of candy do you need to give each child two?
11. If six children come, how many cakes will you need to give each child two?
12. If only three children come, how many cakes will you need to give each child two?

34. Problems

1. Tom had six cents in his bank and put in three cents more. How many cents were in the bank then?
2. Will has four large marbles and four small ones. How many marbles has he in all?
3. Mary found seven white eggs and two brown ones. How many did she find in all?
4. Nell looked in 4 nests. She found 2 eggs in each nest. How many did she find in all?
5. Eight eggs are how many more than half a dozen?
6. Nell has found two eggs. How many more must she find to have half a dozen?
7. Dick has half a dozen pencils. George has three. How many pencils have Dick and George together?

8. Alice has 2 boy dolls and 7 girl dolls. How many dolls has she in all?
9. How many cents are there in two nickels?
10. Tom is 12 years old. John is 3 years old. Will is 4 years old. Fred is 6 years old. Which boy is half as old as Tom? Which boy is one fourth as old as Tom?
11. George is 7 years old. How old will he be in two years?
12. His baby sister is 4 years old. How old will she be in two years?
13. Dick is 6 years old. John is 10 years old. How much older is John than Dick?
14. Make up problems about adding 3 to 4.
15. Make up problems about subtracting 3 from 10.
16. Make up problems about three 3s.
17. Make up problems about four 2s.

5+3=8. The + means "Add the 3 to the 5."
5−3=2. The − means "Subtract the 3 from the 5."

18. Add:

5 + 4 =	3 + 2 =	4 + 3 =	2 + 7 =
6 + 3 =	4 + 4 =	5 + 5 =	3 + 5 =

19. Subtract:

4 − 3 =	6 − 3 =	9 − 4 =	7 − 3 =
5 − 2 =	8 − 5 =	7 − 2 =	6 − 4 =

20. Add if the sign is +.
Subtract if the sign is −.

5 + 5 =	9 − 2 =	8 − 4 =	3 + 4 =
7 − 3 =	8 − 2 =	6 + 4 =	5 − 3 =

1. Count from eleven to fifty.
2. Take a wide sheet of paper. Write the numbers from 11 through 20 on the first line.
3. On the second line write the numbers from 21 through 30. Write the 21 just under the 11, write the 22 just under the 12, write the 23 just under the 13.
4. On the third line write the numbers from 31 through 40. Write the 31 just under the 11 and 21. Write 32 just under the 12 and 22.
5. On the fourth line write the numbers from 41 to 50.
6. Find how many inches there are in one yard.
7. How many cents are there in a quarter of a dollar?
8. How many cents are there in half a dollar?
9. Name something that costs about 40¢ a pound.
10. Name something that costs about 30¢ a pound.
11. Name something that costs about 20¢ a pound.
12. Name something that is about ten feet long.
13. Name something that is about twenty feet long.
14. Name something that is about fifty feet long.

Take a tape measure or a long stick marked off in inches.

15. Measure the shortest boy in the class. How many inches tall is he?
16. Measure the tallest boy in the class.
17. Measure the shortest girl in the class.
18. Draw a line 5 inches long on the blackboard.
19. Draw a line 15 inches long on the blackboard.
20. Draw a line 25 inches long on the blackboard.
21. Draw a line 35 inches long on the blackboard.

(*With pencil.*)

1. The teacher puts 34 cents of play money in a box and adds 12 cents more to it. Find out how many cents there are in the box without counting.

Here is a quick way to find out: 34
Write 34. Write 12 under the 34: 12

Look at the 2 and 4, think "2 and 4 are six," write 6 under the 2.
Look at the 1 and 3, think "1 and 3 are 4," write 4 under the 1.
There are 46 cents in the box.

2. The teacher puts 26 cents in a box and then puts 23 cents more in the box. How many cents are there in the box? Write the numbers and write the answer.

3. The teacher puts 14 cents in the box and then 23 cents. How many cents are there in the box?

4. Draw a line 25 inches long. Add 23 inches to it. Find out how long the line is without measuring.

5. A boy had 27 cents in his bank and put in 12 cents more. How many cents were in the bank then?

6. The teacher puts 23 cents in a box and then puts 12 more in and then puts 14 more in. Find out how many cents there are in the box without counting.

Here is the quick way to find out: 23
Write 23. Write 12 and 14 under the 23. 12
14

Think "4 and 2 are 6, 6 and 3 are 9." Write 9 under the 4.
Think "1 and 1 are 2, 2 and 2 are 4." Write 4 under the 1.
There are 49 cents in the box.

7. The teacher puts 15 cents and 12 cents and 21 cents in a box. How many cents are in the box?

1. Count from 51 to 100.
2. Take a wide sheet of paper. On the first line write the numbers from 51 through 60.
3. On line 2 write the numbers from 61 through 70.
4. On line 3 write the numbers from 71 through 80.
5. On line 4 write the numbers from 81 through 90.
6. On line 5 write the numbers from 91 through 100.
7. Draw a line 55 inches long on the blackboard.
8. Draw a line 65 in. long. 9. Draw one 75 in. long.
10. Draw a line 85 in. long. 11. Draw one 95 in. long.
12. Five feet are equal to 60 inches. Name somebody who is as tall as 60 inches.
13. Hold your hand 30 inches above the floor. Now hold it 10 inches higher, or 40 inches from the floor. Now hold it 50 inches from the floor. Now hold it 60 inches from the floor. Can you hold it 100 inches from the floor?

38.

1. The third-grade children and the second-grade children had a party. There are thirty-six children in the third grade and forty-two children in the second grade. How many are there in both grades together?
2. Tom brought 21 apples. Fred brought 23 apples. Dick brought 42 apples. How many apples were there in all?
3. Mary brought 24 cakes. Nell brought 31 cakes. Alice brought 32 cakes. How many cakes were there in all?

EVERYTHING FOR THE DOLL. SPECIAL PRICES.

DOLL CARRIAGE
Price....42¢

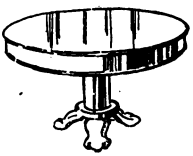


TABLE
Price....23¢

CHAIR
Price....23¢

COMB SET
Price....23¢

SLIPPERS
Price....16¢

HAT
Price....12¢

DISHES
Price....11¢

How much will it cost to buy:

1. A carriage, table, and chair? 2. Slippers and a hat?
3. A table, chair, and dishes? 4. A hat and comb set?
5. A table, chair, hat, and set of dishes?
6. A carriage and comb set? 7. A carriage and slippers?

40.

Add and write the sums. Do as many as you can in 10 minutes.

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
21	22	32	12	21	12	24	21	22	24
23	31	12	52	33	12	31	22	13	23
14	33	24	11	15	65	24	25	52	42

11.	12.	13.	14.	15.	16.	17.	18.	19.	20.
		21	21	12	23			22	23
14	32	15	32	11	22	34	33	12	21
62	32	22	12	42	32	42	11	32	12
23	32	21	23	23	21	23	34	22	23

1. A boy has 98 cents in his bank. He takes out 23 cents. Find out how much he has left.

Here is a quick way to find out: 98
Write 98. Write 23 under the 98. 23

Subtract 3 from 8. Write the 5 under the 3.
Subtract 2 from 9. Write the 7 under the 2.
He has 75 cents left in the bank.

2. A girl has a roll of ribbon 99 inches long. She cuts off a piece 27 inches long. Find out how many inches are left on the roll.

Write 99 *Subtract.*
27

3. John weighs 86 pounds. Tom weighs 73 pounds. How many pounds more does John weigh than Tom?
4. Tom wishes to buy a baseball suit that costs 98 cents. He has 76 cents. How much more money must he get?
5. If you buy some tools for 53 cents and give the man in the store 75 cents, how much change should you get?
6. The boys brought 86 apples for the party. They threw away 13 because they were not fit to eat. How many of the apples were fit to eat?
7. The girls brought 87 cakes for the party. 15 cakes were left. All the rest were eaten. How many cakes were eaten?
8. Mary had 75 cents. She spent 22 cents. How much has she left?

Subtract the smaller number from the larger number and write the answers. How many can you do in ten minutes and have them all right?*

A.	1.	2.	3.	4.	5.	6.	7.	8.
	75	95	87	48	68	69	97	49
	42	43	46	32	24	38	53	28
B.	9.	10.	11.	12.	13.	14.	15.	16.
	88	96	68	39	76	86	99	78
	65	73	23	13	24	55	25	37
C.	17.	18.	19.	20.	21.	22.	23.	24.
	75	94	89	97	96	75	68	89
	54	32	31	62	74	11	44	62
D.	25.	26.	27.	28.	29.	30.	31.	32.
	75	99	55	76	43	46	88	49
	33	54	32	44	12	25	64	28

Add when it says add. Subtract when it says subtract. Write the answers.

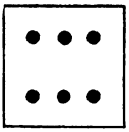
1.	2.	3.	4.	5.	6.	7.
Add	Subtract	Add	Add	Subtract	Add	Subtract
34	96	47	52	75	65	88
54	73	32	34	42	23	65

*To the Teacher.—In this and many of the following written exercises in addition and subtraction, it is not necessary to have the pupils copy the examples. Have them lay the top edge of a sheet of paper under the row of examples to be done and write the answers only. Then let them fold the sheet under 1 inch and lay this new edge under the next row to be done. This will reduce the time required by over 50 percent, will increase accuracy, and will make the correction of the work very much easier. Teach the children to write all answers directly under the examples in question and to make straight folds.

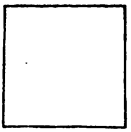
43. Zero

0 means "not any" or zero.
0 boys means not any boys.

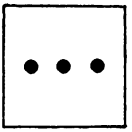
0 cents means no cents at all.
The name for 0 is ZERO.



6 dots



0 dots



3 dots

Look at these examples. Cover the answers with a piece of paper. Think what answers you would write. Then look to see if you are right.

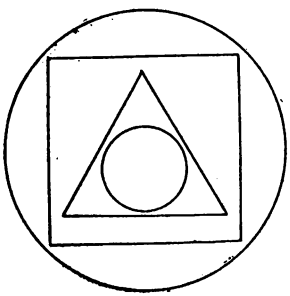
0 and 0 = 0

Subtract	Subtract	Subtract	Subtract	Subtract	Subtract
56	79	58	37	92	67
36	19	52	33	42	64
20	60	6	4	50	3

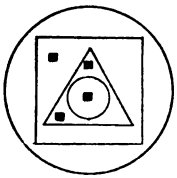
Add	Add	Add	Add	Add	Add	Add	Add
		20	15	30	10	40	20
36	40	14	20	12	30	16	30
20	29	32	30	46	40	20	10
56	69	66	65	88	80	76	60

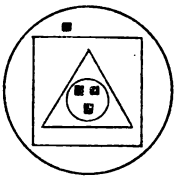
44. Bean Bag

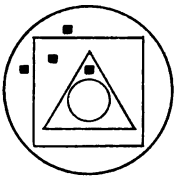
The children played bean bag. They marked a little circle, a triangle, a square, and a big circle on the floor like this. Each child threw four bean bags. A bag in the big circle outside the square counts 0; a bag in the square outside the triangle counts 1; a bag in the triangle outside the little circle counts 5; a bag in the little circle counts 10. They added the

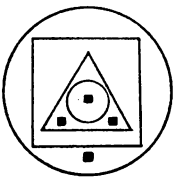


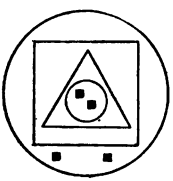
four numbers to get the score. The pictures show where each child threw the bean bags. A little black square stands for a bean bag.

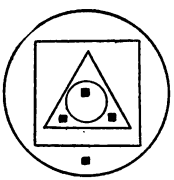

John's

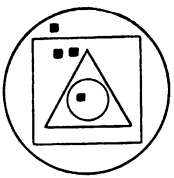

Will's

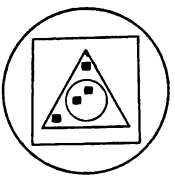

Tom's


George's


Mary's


Nell's


Alice's


Grace's

1. Tell what each child's score was.

When you play sides, you write each child's score and add the scores for all the children who are on the same side. The sum is the total score for the side.

Write each child's name and write his score after his name. Use these numbers to find:

2. The total score for Mary, Nell, and Alice.
3. The total score for John, Will, Mary, and Nell.
4. The total score for Tom, George, Alice, and Grace.
5. The total score for all four boys.
6. The total score for all four girls.
7. The total score for John, Tom, Alice, and Mary.

Each number is the single score of one child. Each column of three numbers stands for a team of three players. Find the total score for each team. Write the answers.

1.	2.	3.	4.	5.	6.	7.	8.
22	20	26	26	3	40	57	40
50	4	30	20	21	17	12	22
14	33	33	32	30	22	20	3

9.	10.	11.	12.	13.	14.	15.	16.
20	40	21	10	20	10	52	11
50	20	43	30	30	40	7	22
17	30	14	40	30	24	30	44

Each of these columns gives the scores for a team of four players. Find the total score for each team. Write the answers.

17.	18.	19.	20.	21.	22.	23.	24.
20	10	14	12	26	10	43	30
20	20	10	20	20	30	10	20
31	20	40	30	20	10	20	6
22	40	32	14	20	30	13	40

Each of these columns gives the scores for a team of five players. Find the total score for each team. Write the answers.

25.	26.	27.	28.	29.	30.	31.	32.
12	20	10	3	5	12	13	10
11	30	20	30	3	4	12	7
23	6	4	30	10	1	21	12
11	10	40	4	50	40	30	40
22	30	25	20	20	20	20	10

1. The boys' team made a total score of 67. The girls' made a total score of 77. Which won? By how much?

2. Each of the following numbers is the total score for a team. The upper number gives the total score for the team that won. The number below it gives the total score for the team that lost. Find the difference between the scores of the team that won and of the team that lost.

A.	1.	2.	3.
Winners	76	54	90
Losers	60	50	70

B.	4.	5.	6.	7.	8.	9.
Winners	65	77	83	83	80	87
Losers	40	70	51	60	60	82

C.	10.	11.	12.	13.	14.	15.
Winners	90	80	70	76	68	97
Losers	80	50	50	56	41	77

D.	16.	17.	18.	19.	20.	21.
Winners	87	82	65	38	47	96
Losers	34	70	45	33	44	93

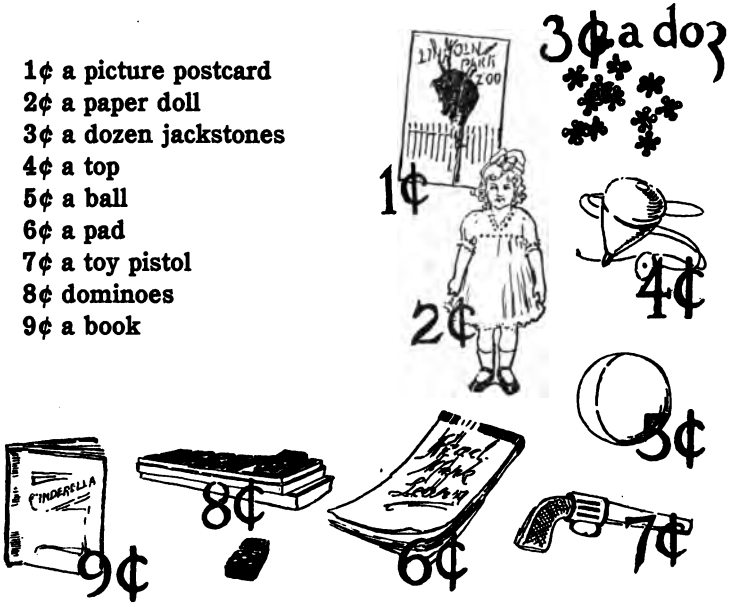
E.	22.	23.	24.	25.	26.	27.
Winners	80	85	69	88	96	70
Losers	70	60	57	80	76	40

F.	28.	29.	30.	31.	32.	33.
Winners	59	59	45	94	86	98
Losers	27	29	35	90	63	68

47. The 1 2 3 4 5 6 7 8 9 Cent Store

Things for Boys and Girls at Every Price

1¢ a picture postcard
2¢ a paper doll
3¢ a dozen jackstones
4¢ a top
5¢ a ball
6¢ a pad
7¢ a toy pistol
8¢ dominoes
9¢ a book



How much do you pay for —

1. A ball and a pad?
2. A ball and a toy pistol?
3. Dominoes and a dozen jackstones?
4. A top and a pad?
5. A top and a toy pistol?
6. A book and a paper doll?
7. A book and a dozen jackstones?
8. A book and a top?
9. A book and a ball?
10. Dominoes and a top?

1. Play that you have 8 cents to spend for two things at the *1 2 3 4 5 6 7 8 9 Cent Store.* You can buy a pad and....., or you can buy a ball and a....., or you can buy two tops.

What can you buy if —

2. You have 9 cents to spend for two things?
3. You have 10 cents to spend for two things?
4. You have 11 cents to spend for two things?
5. You have 12 cents to spend for two things?
6. You have 13 cents to spend for two things?
7. You have 14 cents to spend for two things?
8. You have 15 cents to spend for two things?
9. You buy a toy pistol and a paper doll and pay with a dime and a nickel. How many cents change should you get?

Play that you have 15 cents. How much will you have left if you buy:

10. Two tops?
11. Two dozen jackstones?
12. A top and a ball?
13. A top and a paper doll?
14. A toy pistol?
15. A set of dominoes?
16. Three paper dolls?
17. Seven picture postcards?

How much do you pay for —

18. A top, a ball, and a paper doll?
19. A top, a ball, and a pad?
20. A top, a ball, and a dozen jackstones?
21. A ball, a paper doll, and a toy pistol?
22. A ball, a paper doll, and a pad?
23. A toy pistol, a postcard, and a top?

State the sums:

a.			*b.*			*c.*			*d.*		
6	7	2	4	5	2	6	7	7	3	8	5
5	6	7	8	5	8	7	8	4	6	2	6
e.			*f.*			*g.*			*h.*		
6	8	3	1	8	5	9	7	2	6	3	5
8	5	8	9	3	9	3	3	9	4	9	7
i.			*j.*			*k.*			*l.*		
4	6	6	7	5	4	4	8	9	9	7	3
7	6	9	4	8	9	6	4	6	4	7	3
m.			*n.*			*o.*			*p.*		
8	8	9	7	9	8	7	8	9	7	8	8
2	3	3	8	2	5	3	7	5	5	4	6

50.

A pistol costs 7¢. Dominoes cost 8¢. A book costs 9¢.

1. How much do you pay for two sets of dominoes?
2. How much do you pay for a book and dominoes?
3. How much do you pay for a book and a pistol?
4. How much do you pay for two books?
5. Which two things can you buy with 17 cents?
6. Which two with 15 cents? With 16 cents?

51.

A team of 3 boys and a team of 3 girls have an adding match. Each child gives the sums for one row on page 33. His score is the number of sums he gets right in 1 minute. To get the total score for the team you add the scores of the three children.

Practice with all the rows on page 33, so that you can make a good score.

A.

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

B.

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

C.

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

D.

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

E.

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

F.

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

1. Tom's team scored 18. Mary's team scored 9. Which won? By how much?
2. Will's team scored 16. Nell's team scored 8. Which won? By how much?
3. Dick's team scored 17. Alice's team scored 9. Which won? By how much?

52. Saving for a Bicycle

The Peerless bicycle costs 18 dollars.
The Napoleon bicycle costs 16 dollars.
The Kenwood bicycle costs 12 dollars.

1. Tom has 9 dollars saved for a bicycle. How much more must he save to be able to buy a Peerless? To buy a Napoleon? To buy a Kenwood?
2. Fred has 8 dollars saved. How much more must he save to have enough to buy a Peerless? A Napoleon? A Kenwood?
3. John has 7 dollars saved. How much more must he save to have enough to buy a Meccano No. 5 that costs 14 dollars? To buy an extra large size tool chest that costs 11 dollars?
4. Will has 9 dollars saved. How much more must he save to buy a Meccano No. 5? To buy the extra large size tool chest?
5. George earned 4 dollars in June, 5 dollars in July, and 8 dollars in August. How much did he earn in all?
6. If George spends 9 dollars of what he earned for a second-hand bicycle, how much will he have left?
7. A boy has six dollars in one bank, two in another, and seven in another. How much has he in all?
8. Say the right numbers where the dots are:

A.	B.	C.
9 and... =13	7 and... =14	9 and... =18
5 and... =12	9 and... =14	8 and... =16
7 and... =15	7 and... =16	3 and... =12
9 and... =15	9 and... =12	8 and... =17
8 and... =10	8 and... =15	6 and... =14

1. Count by 2s to 31, beginning 1, 3, 5, 7.
2. Count by 2s to 32, beginning 2, 4, 6, 8.
3. Count by 3s to 31, beginning 1, 4, 7, 10.
4. Count by 3s to 33, beginning 3, 6, 9, 12.
5. Count by 4s to 41, beginning 1, 5, 9, 13.
6. Count by 4s to 42, beginning 2, 6, 10, 14.
7. Count by 4s to 43, beginning 3, 7, 11, 15.
8. Count by 4s to 44, beginning 4, 8, 12, 16.
9. Give the sums:

A.	B.	C.	D.
$2 + 3 =$	$8 + 4 =$	$15 + 2 =$	$17 + 2 =$
$22 + 3 =$	$28 + 4 =$	$35 + 2 =$	$29 + 3 =$
$42 + 3 =$	$6 + 4 =$	$17 + 3 =$	$16 + 3 =$
$7 + 3 =$	$16 + 4 =$	$17 + 4 =$	$28 + 3 =$
$37 + 3 =$	$9 + 4 =$	$23 + 3 =$	$26 + 4 =$
$27 + 3 =$	$19 + 4 =$	$25 + 4 =$	$19 + 3 =$

10. Count by 5s to 51, beginning 1, 6, 11.
11. Count by 5s to 52, beginning 2, 7, 12.
12. Count by 5s to 53, beginning 3, 8, 13.
13. Count by 5s to 54, beginning 4, 9, 14.
14. Count by 5s to 55, beginning 5, 10, 15.
15. Count by 6s to 61, beginning 1, 7, 13.
16. Count by 6s to 62, beginning 2, 8, 14.
17. Count by 6s to 63, beginning 3, 9, 15.
18. Count by 6s to 64, beginning 4, 10, 16.
19. Count by 6s to 65, beginning 5, 11, 17.
20. Count by 6s to 66, beginning 6, 12, 18.
21. Count by 3s to 32, beginning 2, 5, 8, 11.
22. Count by 10s to 95, beginning 5, 15, 25.

November 1915

Sun.	Mon.	Tues.	Wed.	Thu.	Fri.	Sat.
	1	2	3		5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

Look at the calendar.

1. What do you think Sun. stands for? What does Mon. stand for? Tues.? Wed.?
2. How many days are there in a week?
3. How many days are there in November?
4. What day of the month was the first Monday in November 1915, the 1st, or 2d, or 3d?
5. What day of the month was the second Monday in November 1915, the 7th, or the 8th, or the 9th?
6. What day of the month was the third Monday?
7. What day of the month was the fourth Monday?
8. What day of the month was the fifth Monday?
9. How many are 1 and 7? 8 and 7? 15 and 7? 22 and 7?
10. What day of the month was the first Thursday in November 1915?
11. What day of the month was the second Thursday in November 1915?
12. How many are 4 and 7? 11 and 7? 18 and 7?
13. How many are 3 and 7? 13 and 7? 23 and 7?
14. Make a calendar for this month of this year. The teacher will help you.

1. Count by 7s to 71, beginning 1, 8, 15.
2. Count by 7s to 72, beginning 2, 9, 16.
3. Count by 7s to 73, beginning 3, 10, 17.
4. Count by 8s to 81, beginning 1, 9, 17.
5. Count by 8s to 82, beginning 2, 10, 18.
6. Count by 8s to 83, beginning 3, 11, 19.
7. Count by 9s to 91, beginning 1, 10, 19.
8. Count by 9s to 92, beginning 2, 11, 20.
9. Count by 9s to 93, beginning 3, 12, 21.

10. State the sums:
    $13 + 4$
    $13 + 7$
    $13 + 3$
    $13 + 8$
    $13 + 6$
    $13 + 2$
    $13 + 9$
    $13 + 5$

11. Cover the 13s. Think $16 + 4$, $16 + 7$, $16 + 3$, etc., and state the sums.
12. Cover the 13s. Think $19 + 4$, $19 + 7$, $19 + 3$, etc., and state the sums.
13. Cover the 13s. Think $24 + 4$, $24 + 7$, etc., and state the sums.
14. Cover the 13s. Think $17 + 4$, etc., and state the sums.
15. Cover the 13s. Think $25 + 4$, etc., and state the sums.

16. Add each number in the row below to 11. To 18. To 22. To 13. To 20. To 14. To 26. To 15. To 19. To 27. To 38.

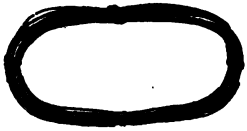
2 5 9 7 6 3 4 8

17. Count by 7s to 74, beginning 4, 11, 18.
18. Count by 8s to 88, beginning 8, 16, 24.
19. Count by 7s to 76, beginning 6, 13, 20.

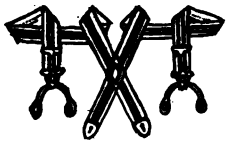
56. Christmas Presents

For Father

INK WELL
Price....15¢



FISH LINE
Price....18¢



SUSPENDERS
Price....25¢

For Mother

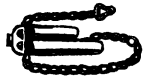
PICTURE FRAME
Price....15¢

SUGAR BOWL
Price....17¢

TEAPOT
Price....38¢

For a Boy

HAMMER
Price....9¢



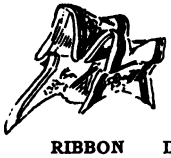
WHISTLE
Price....13¢

BATTERY
Price....14¢

KNIFE
Price....24¢

For a Girl

DOMINOES
Price....9¢



RIBBON
Price....19¢

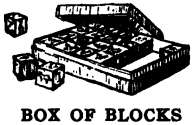
DOLL'S SLIPPERS
Price....22¢

CANDY
Price....25¢

For a Baby

TRUMPET
Price....8¢

RUBBER BALL
Price....15¢



BOX OF BLOCKS
Price....17¢

WAGON
Price....25¢

Try to think out for yourself the way to find the right sums.* If you need help, study page 40. Page 40 will show you a quick way to find the sums and have them all right.

1. Choose three presents, one for father, one for mother, and one for baby. Write the cost of each and add to find the total cost. *Total cost* means the cost for all three together.
2. Choose three presents for yourself. Find the total cost.
3. Choose three presents for a girl. Do not spend more than 60 cents. What is the total cost of the three you chose?
4. Choose three presents for a boy. Do not spend over 40 cents. What is the total cost of those you chose?
5. Find the total cost if you buy a fish line for father, a sugar bowl for mother, and dominoes for sister.
6. Find the total cost if you buy suspenders for father, a picture frame for mother, and a box of blocks for baby.
7. How much is the total cost of the two cheapest presents for a girl?
8. How much is the total cost of the three most expensive presents for a girl?
9. What is the total cost of all four presents for a boy?
10. What is the total cost of all four presents for a girl?
11. What is the total cost of all four presents for a baby?

*To the Teacher.—Only a few of the most gifted pupils will invent "carrying" for themselves, but it is well for all the children to face this problem and feel a need for its solution before learning the solution.

1. Read the right numbers where the dots are:

A.	B.
35 cents is 5 cents and . . . dimes.	18 is 8 and . . . tens.
32 cents is . . . cents and . . . dimes.	25 is 5 and . . . tens.
28 cents is . . . cents and . . . dimes.	19 is 9 and . . . tens.
23 cents is . . . cents and . . . dimes.	28 is . . . and . . . 10s
17 cents is . . . cents and . . . dimes.	36 is . . . and . . . 10s
24 is 4 and . . . tens.	32 is . . and . . . 10s
36 is 6 and . . . tens.	16 is . . . and . . . 10

2. Say any number you think of. Then tell how many ones and how many tens make the number.

3. How much is 26 cents and 38 cents?

Here is a quick way to find out:

Dimes	Cents
2	6
3	8

Add the cents column first. Write the 4 of 14 in the cents column under the 8 and 6. Add 1 dime to 3 and 2. Write the sum of 1 and 3 and 2 in the dimes column under the 3 and 2.

4. How much is 4 cents and 9 cents and 15 cents and 28 cents?

Here is the quickest way to find out:

Dimes	Cents
1	5
2	8

Add the cents column first. Write the 6 of 26 in the cents column under the 8 and 5 and 9 and 4. Add 2 dimes to the 2 and 1. Write the sum of 2 and 2 and 1 in the dimes column under the 2 and 1.

5. Look at this:

Tens	Ones
2	4
2	3
3	9

What is the sum of the ones? What will you write in the ones column? What will you add to 3 and 2 and 2?

6. How much are 16, 18, 19, and 39?

Tens	Ones
1	6
1	8
1	9
3	9
3	2

Copy the numbers and add. Think where you write the 2 of the 32. Think what you must do with the 3.

7. Copy and add:

a.	*b.*	*c.*	*d.*	*e.*	*f.*	*g.*	*h.*	*i.*	*j.*
				4	14	19		9	
19	24	12	9	19	9	18	14	13	
26	23	13	26	19	17	16	25	15	27
17	19	17	38	29	26	18	39	25	48

59. Checking Sums in Addition

When you send a mail order, a clerk adds the numbers to see if the total cost is right. Play that you are a clerk and see if the total cost is right or wrong in each of the twenty orders on this page. Be sure you get the right sum yourself. Keep a list of the orders where the total cost is wrong.

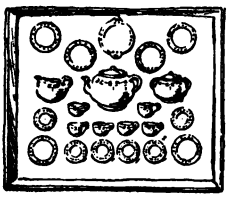
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
18		25	17	38	15	24	9	14	13
25	13	9	38	9	25	9	14	22	15
9	14	15	15	17	9	19	15	25	22
15	19	17	24	9	22	17	13	15	25
67	46	46	94	73	61	69	52	76	75

11.	12.	13.	14.	15.	16.	17.	18.	19.	20.
19		9	25			9		18	
17	22	15	14	17	13	14	25	15	
25	38	17	17	9	15	19	18	15	17
25	15	14	38	24	25	13	38	9	38
81	75	55	94	51	53	55	81	59	55

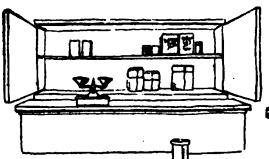
1. $4.23 means 4 dollars and 23 cents. Or we may read it "4 dollars 23 cents." What does $16.48 mean?
2. $15.08 means 15 dollars and 8 cents. Or we may read it "15 dollars 8 cents." What does $9.05 mean?

When we write numbers meaning dollars and cents, we put a $ first and put a decimal point to show which number means dollars and which number means cents.

3. Read the prices of these articles:



FINEST TOY CHINA
Price....$1.98



SPECIAL TOY STORE
Price....$2.89

THIS WONDERFUL TRAIN
Price....$12.98

THIS 14-INCH ENGINE
Price....$4.67

ERECTOR OUTFIT No. 4
Price..$4.49

OUR FINEST DOLL
Price..$4.95

4. Read these:

$6.50	$7.10	$15.06	$.84
$1.05	$20.75	$20.08	$9.45	$7.98
$10.05	$1.25	$1.75	$8.29	$2.10

5. Write in figures:
   - *a.* Seven dollars fifty-four cents.
   - *b.* Seven dollars fifty cents.
   - *c.* Twenty-eight dollars seventy-five cents.
   - *d.* Ten dollars and nine cents.
   - *e.* Five dollars and ten cents.

1. Find the cost of the set of toy china and the doll.

Here is the way to find it:

Dollars	Dimes	Cents
$1.	9	8
$4.	9	5

Write the 3 of 13 in the cents column under the 5 and 8.
Add the 1 to the 9 and 9 of the dimes column.
Write the 9 of 19 in the dimes column.
Add the 1 of 19 to the 4 and 1 of the dollars column.

Put a $ before the 6.93 to show that it means dollars and cents. Put a decimal point between the 6 and 9, to show that 6 means dollars and 93 means cents.

2. Find the cost of the set of china, the store, and the 14-inch engine.
3. Find the cost of the $4.95 doll and the erector outfit.
4. Find the cost of the 14-inch engine and the erector outfit.
5. Find the cost of the set of china at $1.98, the store at $2.98, and the doll at $4.95.
6. Find the total cost of each of these orders.

Put $ before your answers to show that the numbers mean dollars and cents. Put a decimal point in each answer to show which numbers mean dollars and which numbers mean cents.

Order 1.	Order 2.	Order 3.	Order 4.	Order 5.
$6.25	$2.50	$4.47	$5.10	$2.68
4.69	1.25	1.08	2.25	3.79
1.98	5.09	6.89	1.98	4.50
Order 6.	**Order 7.**	**Order 8.**	**Order 9.**	**Order 10.**
$1.98	$ .75	$.75	$14.25	$1.62
.70	2.08	.62	12.50	2.73
1.62	.84	.98	11.50	1.85

1. Mary has saved $1.55. How much more must she save to have enough to buy the toy store for $2.98?

2. Nell has saved $2.82. How much more must she save to have enough to buy the doll for $4.95?

3. Tom has saved $2.79. How much more must he save to have enough to buy the 14-inch engine for $4.67?

Here is the way to find out:

Subtract

Dollars	Dimes	Cents
$4.	6	7
2.	7	9

Nine is more than 7. So increase the 7 to 17.
Think "9 and . . . . = 17," and write 8 in the cents column.
Increase the 7 of 2.79 to 8.

8 is more than 6. So increase the 6 to 16.
Think "8 and . . . . = 16," and write 8 in the dimes column.
Increase the 2 of 2.79 to 3.

3 and . . . . = 4. Write 1 in the dollars column.
Put $ and . where they belong.

4. Will has saved $2.87. How much more must he save to have enough to buy the Erector Outfit No. 4 for $4.49?

Subtract

Dollars	Dimes	Cents
$4.	4	9
2.	8	7

Think "7 and . . . . = 9." Write 2 in the cents column.
8 is more than 4. So increase the 4 to 14.
Think "8 and . . . . = 14." Write 6 in the dimes column.
Increase the 2 of 2.87 to 3.

3 and . . . . = 4. Write 1 in the dollars column.
Put $ and . where they belong.

1. Alice has saved \$3.28. How much more must she save to have enough to buy the doll for \$4.95?

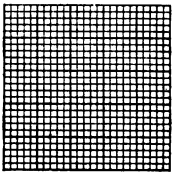
\$4.95 *What do you do to the 5?*
3.28 *What do you write in the cents column?*
What do you do to the 2?
What do you write in the dimes column?

2. Dick has saved \$2.69. How much more must he save to buy the 14-inch engine for \$4.67? After you find the answer, add it to \$2.69. If your answer is right, you will have \$4.67 when you add your answer to \$2.69.
3. John has saved \$2.63. How much more does he need to have enough to buy the Erector for \$4.49?
4. Tom, Will, John, and Fred are all saving so that each can buy a Meccano No. 3 for \$5.61. Tom has \$2.85. Will has \$3.19. John has \$3.76. Fred has \$3.79. How much more does Tom need?
5. How much more does Will need?
6. How much more does John need?
7. How much more does Fred need?
8. Make sure that your answers are right by adding what you find Tom needs to what he has and seeing if the two together make \$5.61. Add what you find Will needs to what he has. Do the same for John and for Fred.
9. Mary, Nell, Alice, and Grace are all saving so that each can buy a real sewing machine for \$3.25. Mary has \$1.63. Nell has \$1.78. Alice has \$1.98. Grace has \$2.18. How much more does Mary need? Nell? Alice? Grace?

1. Count by 10s to 900, beginning 10, 20, 30, 40.
2. Count by 5s to 600, beginning 105, 110, 115.
3. Count by 20s to 800, beginning 220, 240, 260.
4. Count by 2s to 200, beginning 102, 104, 106.
5. Write the numbers from 301 to 370, like this:

   301 302 303 304 305 306 307 308 309 310
   311 312 313 314 315 316 317 318 319 320

6. Read these numbers: 240 725 165 162 169 248 241 290 800 150 233 276
7. Guess how many inches long your schoolroom is.
8. Find the difference between your guess and the right answer. You can find the right answer by measuring with the yardstick and adding, or the teacher will tell you.
9. Guess how many little squares there are in this picture.



10. The teacher will tell you the right answer. Find the difference between your guess and the right answer.
11. Some boys guessed the number of days in a year. Tom guessed 198; Will guessed 218; John guessed 347; George guessed 400. The right number is 365. Who guessed less than the right number?
12. Who guessed more than the right number?
13. Who guessed nearest?
14. Find the difference between each boy's guess and the right number.
15. How much nearer did John guess than George?
16. Who made the worst guess?

1. You buy something for 39 cents and pay with a 50-cent piece. What change should you receive?
2. You buy something for 29¢ and pay with a 50-cent piece. What change should you receive?
3. Tell what change you should get from a 50-cent piece when the total cost of what you buy is 37 cents.
4. When it is 28 cents. 45 cents. 43 cents. 25¢. 46¢. 18¢. 22¢. 35¢. 34¢.
5. Tell what change you should get from a 50-cent piece and a 25-cent piece when the total cost of your purchase is 57 cents.
6. When it is 62 cents. 60¢. 69¢. 56¢. 68¢. 71¢. 58¢. 55¢.
7. Tell what change you should get from a dollar bill when the total cost of your purchase is 27 cents.

Think of the dollar as 100 cents.

8. When it is 43¢. When it is 64¢. 68¢. 78¢. 88¢. 59¢. 22¢. 17¢. 36¢. 25¢. 75¢. 50¢. 40¢.
9. Tom has 93 cents. How much will he have left if he buys a sled for 75 cents?
10. Will has 87 cents. How much will he have left if he buys some skates for 69 cents?

Addition

Write the sums:

a.	*b.*	*c.*	*d.*	*e.*	*f.*	*g.*
290	332	420	160	187	356	290
134	280	79	57	150	89	34
299	108	375	166	178	134	203
142	57	66	508	245	203	124

Find the difference between the lower number and the upper number. Lay a strip of paper across the page. Write the answers on it. Practice with these examples until you can do a row or nearly a row in a minute, and get them all right. Test them by adding. Then the teacher may have a race between the boys and the girls.

Test all your answers for this page by adding.

Row A

1.	2.	3.	4.	5.	6.	7.
732	450	100	442	623	650	563
289	275	35	185	144	225	210

Row B

1.	2.	3.	4.	5.	6.	7.
721	83	98	225	260	64	65
387	45	72	158	190	16	37

Row C

1.	2.	3.	4.	5.	6.	7.
70	97	500	83	97	250	61
25	52	275	64	88	96	27

Row D

1.	2.	3.	4.	5.	6.	7.
337	425	725	623	345	400	336
159	396	675	450	67	94	75

Row E

1.	2.	3.	4.	5.	6.	7.
82	53	80	100	928	675	42
24	30	40	47	350	167	33

Row F

1.	2.	3.	4.	5.	6.	7.
663	575	248	493	525	162	886
156	277	89	478	315	94	656

1. Count by 5s to 50, beginning 5, 10, 15.

2. Add and give the sums. Then give the sums without adding.

			5
	5		5
	5	5	5
	5	5	5
5	5	5	5
5	5	5	5
5	5	5	5
5	5	5	5
Four 5s =	Seven 5s =	Six 5s =	Eight 5s =

1 nickel = 5 cents.

3. How many cents are there in 3 nickels or 5-cent pieces? In 5 nickels? In 2 nickels? In 6 nickels? In 4 nickels? In 7 nickels?

4. Say the right numbers where the dots are:

One trolley ride costs 5 cents.

Two trolley rides cost.... Six trolley rides cost....
Three trolley rides cost... Seven trolley rides cost...
Four trolley rides cost.... Eight trolley rides cost...
Five trolley rides cost.... Nine trolley rides cost....

5. Say the right numbers where the dots are. Say **times** for ×.

If it costs 5¢ to go to the moving pictures once,
It costs 6 × 5¢ or....to go six times.
It costs 4 × 5¢ or....to go four times.
It costs 7 × 5¢ or....to go seven times.
It costs 3 × 5¢ or....to go three times.
It costs 9 × 5¢ or....to go nine times.

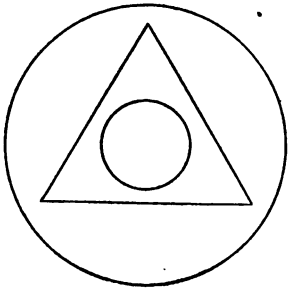
68. 10 = Two 5s, 15 = Three 5s, etc.

1. Count by 5s to 50, saying, "10 = two fives, 15 = three 5s, 20 = four 5s."
2. Read this. Say the right numbers where the dots are. Say **equals** or **equal** for =. Say **times** for ×.

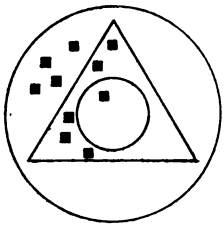
a.	Three 5s = 15.	....5s = 20.	....5s = 40.
b.	....5s = 30.	....5s = 35.	....5s = 10.
c.	20 = ...5s.	30 = ...5s.	40 = ...5s.
d.	45 = ...5s.	25 = ...5s.	35 = ...5s.
e.	5 × 5 = 25.	.... × 5 = 30.	.... × 5 = 10.
f.	.... × 5 = 40.	.... × 5 = 45.	.... × 5 = 15.
g.	....5s = 25.	....5s = 45.	15 = ...5s.
h.	50 = ...5s.	.... × 5 = 50.	.... × 5 = 35.

3. Tell how many nickels = 20¢. How many nickels = 30¢? 15¢? 40¢? 25¢? 35¢? 10¢? 45¢? 50¢?
4. For 5¢ you can buy one small loaf of fresh bread. How many loaves can you buy for 10¢? For 20¢? For 25¢? For 40¢? For 30¢? For 35¢? 15¢?

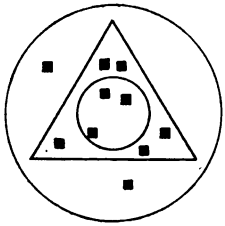
69. Playing Bean Bag



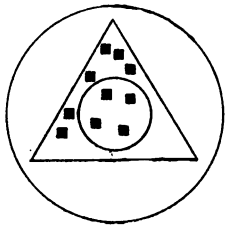
The children played bean bag. Each child threw ten bags. A bag in the little circle counts 10. A bag in the triangle outside the circle counts 5. A bag in the big circle outside the triangle counts 0.



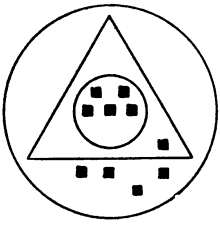
Tom's 10 bags were like this.



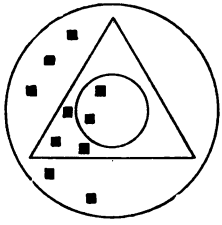
Will's 10 bags were like this.



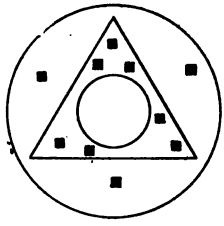
George's 10 bags were like this.



Mary's 10 bags were like this.



Nell's 10 bags were like this.



Alice's 10 bags were like this.

Two 10s = 20 **Three 10s = 30** **Four 10s = 40**

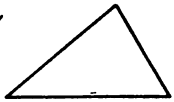
Five 10s = 50 **Six 10s = 60** **Seven 10s = 70**

1. What was Tom's score? Will's score? George's?
2. What was Mary's score? Nell's? Alice's?
3. Fred had seven 5s and three 10s. What was his score?
4. John had nine 5s and one 10. What was his score?
5. How much higher was Fred's score than John's?

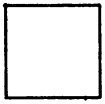
70. Review

1. Find the sum of \$1.40, \$.75, \$1.89, \$2.10, and \$.98.
2. Find the sum of \$2.00, \$4.35, \$.98, \$.69, and \$.83.
3. Find the sum of 79¢, 48¢, 75¢, 35¢, and \$1.50.
4. How much must you add to \$1.18 to make \$3.75?
5. How much must you add to \$2.25 to make \$3.75?
6. How much must you add to \$1.98 to make \$3.25?
7. How much must you add to \$2.49 to make \$5.00?

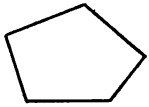
This is an angle.



This is a triangle.



This is a square.



This is a pentagon.

The children make angles, triangles, squares, and pentagons with toothpicks. Tell how many toothpicks you will need to make three separate squares like this: □ □ □

How many toothpicks do you need to make five separate triangles like this? △ △ △ △ △

A. State how many toothpicks you need to make—	B. Say the right numbers where the dots are:	C. Say the missing numbers. Remember that
a. V V V V V	Two 2s = . .	**1 quart = 2 pints**
	Two 3s = . .	**1 gallon = 4 quarts**
	Two 4s = . .	**1 yard = 3 feet**
	Two 5s = . .	1 quart = . . pint
b. □ □ □ □	Three 2s = . .	3 qt. = . . pt.
	Three 3s = . .	5 qt. = . . pt.
c. ⬠ ⬠ ⬠	Three 4s = . .	1 yard = . . feet
	Three 5s = . .	4 yd. = . . ft.
	Four 2s = . .	3 yd. = . . ft.
d. △ △ △	Four 3s = . .	1 gallon = . . qt.
	Four 4s = . .	2 gal. = . . qt.
	Four 5s = . .	4 gal. = . . qt.
e. V V	2 × 4 =	4 nickels = . . ¢
	3 × 5 =	7 nickels = . . ¢
f. △ △	4 × 4 =	. . quart = 4 pt.
	3 × 3 =	. . qt. = 6 pt.
	5 × 5 =	. . yards = 9 feet
g. □ □	2 × 5 =	. . yd. = 6 ft.

1. Count by 2s to 20, beginning 2, 4, 6. Then count to 20, saying, "Two 2s are 4, Three 2s are 6," etc.
2. Count by 2s backward, saying, "Ten 2s are 20, nine 2s are 18, eight 2s are 16," and so on.
3. Read these lines. Say the right numbers where the dots are:

Three 2s = ...	Five 2s = ...	Six 2s = ...
Seven 2s = ...	Eight 2s = ...	Nine 2s = ...
Four 2s = ...	Ten 2s = ...	Six 2s = ...

4. Read the three lines again. Read them as fast as you can.
5. Tell how many pints there are in 5 quarts. In 8 quarts. In 6 quarts. In 9 quarts.

73.

1. Count by 3s to 30, beginning 3, 6, 9.
2. Count by 3s backward, saying, "Ten 3s are 30, nine 3s are 27, eight 3s are 24," and so on.
3. Read these lines across. Say the right numbers where the dots are:

Four 3s = ...	Six 3s = ...	Eight 3s = ...
Three 3s = ...	Five 3s = ...	Seven 3s = ...
Nine 3s = ...	Four 3s = ...	Six 3s = ...

4. Say the missing numbers, reading down in columns.
5. Read the three lines until you can say all the right numbers *in half a minute.*
6. Tell how many feet there are in 2 yards. In 6 yards. In 8 yards. In 9 yards. In 5 yards.
7. Say the missing numbers:

$6 \times 2 =$	$3 \times 2 =$	$4 \times 2 =$	$5 \times 2 =$
$6 \times 3 =$	$3 \times 3 =$	$4 \times 3 =$	$5 \times 3 =$

1. State the missing numbers:

6 = ... 2s
12 = ... 2s
18 = ... 2s
10 = ... 2s
14 = ... 2s
16 = ... 2s
20 = ... 2s
8 = ... 2s
15 = ... 3s
21 = ... 3s
18 = ... 3s
27 = ... 3s
12 = ... 3s
24 = ... 3s
30 = ... 3s
9 = ... 3s
12 = ... 2s
12 = ... 3s
12 = ... 4s
15 = ... 5s
14 = ... 2s
16 = ... 2s
16 = ... 4s
20 = ... 2s
20 = ... 5s

2. State the missing numbers:

. . . . × 2 = 12
. . . . × 3 = 12
. . . . × 5 = 15
. . . . × 3 = 15
. . . . × 2 = 20
. . . . × 3 = 24
. . . . × 2 = 18
. . . . × 3 = 18
. . . . × 3 = 30
. . . . × 5 = 30
. . . . × 2 = 16
. . . . × 3 = 21
. . . . × 5 = 25
. . . . × 3 = 27
6 × . . . . = 12
4 × . . . . = 12
2 × . . . . = 12
3 × . . . . = 12
5 × . . . . = 15
3 × . . . . = 15
10 × . . . . = 30
6 × . . . . = 30
10 × . . . . = 20
4 × . . . . = 20
5 × . . . . = 20
6 × . . . . = 18
9 × . . . . = 18
3 × . . . . = 18

3. State the missing numbers:

12 ft. = ... yd.
24 ft. = ... yd.
30 ft. = ... yd.
18 ft. = ... yd.
27 ft. = ... yd.
15 ft. = ... yd.
21 ft. = ... yd.
14 pt. = ... qt.
12 pt. = ... qt.
18 pt. = ... qt.
16 pt. = ... qt.
20 pt. = ... qt.
8 pt. = ... qt.
10 pt. = ... qt.
14 pt. = ... qt.

How many two-cent stamps should you get—
For 10 cents?
For 18 cents?
For 12 cents?
For 16 cents?
For 14 cents?
For 20 cents?
For 8 cents?

1. Mary is giving a party. There will be eight girls at the party. How many sandwiches does she need to give each girl three? How many cakes does she need to give each girl two? How many pieces of candy does she need to give each girl five? She made four pints of cocoa. They had this in small cups, and a pint filled four cups. How many cupfuls did she make? How many cupfuls can each girl have?
2. Tell how many sandwiches and cakes are needed for a party of six boys, if each boy is to have five sandwiches and three cakes.
3. How many quarts of lemonade are needed to give each boy two glasses or a pint?
4. Dick is giving a birthday party. There are seven children at the party. The birthday cake is cut in 16 pieces. How many pieces will be left for Dick's father and mother if each boy eats only two? A 10-cent box contains 28 or 30 nabiscos. Will there be enough to give each child four nabiscos? Will there be enough to give each child five?
5. One quart of ice cream is enough to give five children two plates apiece. How many quarts are needed to give forty-five children at a big party two plates apiece?
6. How many lemons are needed to make six quarts of lemonade, if you use three lemons for a quart?
7. How much should a dozen and a half lemons cost at 20 cents a dozen?

When a parcel needs 5 cents for postage we can put on

5 one-cent stamps, or
2 two-cent stamps and 1 one-cent stamp, or
1 three-cent stamp and 1 two-cent stamp, or
1 five-cent stamp.

When a parcel needs 6 cents for postage we can put on

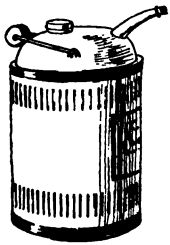
6 one-cent stamps, or
3 two-cent stamps, or
2 three-cent stamps, or
1 five-cent stamp and 1 one-cent stamp.

1. State ways to arrange the postage for a parcel that needs 7 cents postage, using five-cent stamps, three-cent stamps, two-cent stamps, and one-cent stamps.
2. State ways to arrange for a parcel that needs 8 cents postage.
3. State ways to arrange for a parcel that needs 9 cents postage.
4. State ways to arrange for a parcel that needs 10 cents postage.
5. State one way to arrange for 25¢ postage.

State ways to arrange—

6. For 11¢ postage.
7. For 12¢ postage.
8. For 13¢ postage.
9. For 14¢ postage.
10. For 15¢ postage.
11. For 16¢ postage.
12. For 17¢ postage.
13. For 18¢ postage.
14. For 19¢ postage.
15. For 20¢ postage.
16. For 21¢ postage.
17. For 22¢ postage.
18. For 23¢ postage.
19. For 24¢ postage.

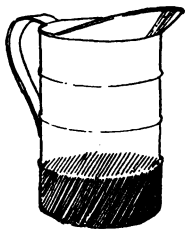
1. Count by 4s to 40, beginning 4, 8, 12.
2. Count by 4s backward from 40, saying, "40 = ten 4s, 36 = nine 4s," and so on.



1 gallon

1 quart

1 half pint or glassful



This gallon measure has 1 quart of water in it

This quart measure has 1 glassful or half pint in it

3. Find out how many quarts of water or sand are needed to fill the gallon measure.
4. Find out how many half pints or glasses one quart of water or sand will fill.
5. State the missing numbers: 2 gallons = . . . qt.
4 gallons = . . . qt. 3 gallons = . . . qt. 7 gallons = . . . qt.
6 gallons = . . . qt. 9 gallons = . . . qt. 5 gallons = . . . qt.
6. 1 qt. = ... half pints 3 qt. = ... half pints
6 qt. = ... half pints 5 qt. = ... half pints
8 qt. = ... half pints 4 qt. = ... half pints
7 qt. = ... half pints 9 qt. = ... half pints
7. Say the missing numbers. Say them again until you can say all the right numbers in a minute.

5 2s =	9 × 2 =	4 × 2 =	2 × 1 =
5 3s =	9 × 3 =	4 × 3 =	3 × 1 =
5 × 4 =	9 × 4 =	4 4s =	4 × 1 =
5 × 5 =	9 × 5 =	4 5s =	5 × 1 =
6 × 2 =	7 2s =	8 2s =	6 × 1 =
6 × 3 =	7 3s =	8 3s =	7 × 1 =

Addition

Find the sums:

1.	2.	3.	4.	5.	6.	7.
$2.39	$1.56	$.21	$1.50	$1.99	$1.20	$.84
1.49	2.49	.42	1.75	2.67	1.25	.97
2.56	1.65	.35	2.25	1.85	2.44	.72
1.67	2.78	.66	1.40	2.46	1.08	.63

Subtraction

Find the differences:

8.	9.	10.	11.	12.	13.	14.
732	650	100	921	480	260	828
289	275	25	497	390	86	350

15.	16.	17.	18.	19.	20.	21.
563	865	348	593	500	800	725
156	267	89	578	279	500	675

Problems

John has saved $1.68. **Mary has saved $1.80.**
Dick has saved $1.74. **Nell has saved $1.56.**

22. How much more does John need to have enough to buy a sled for $2.50?
23. How much will Dick have left if he buys a pair of skates for $1.10?
24. Have John and Dick together enough to buy an electric motor for $3.50?
25. Mary wishes to buy a big doll for $2.89. How much more does she need?
26. Nell wishes to buy a sewing machine for $3.00. How much more does she need?
27. How much more money has Dick than John? How much money have all four children together?

1. Learn this:

1 dime = 10 cents.
1 nickel = 5 cents.
1 yard = 3 feet.

yd. means **yard** or **yards.**
ft. means **foot** or **feet.**
¢ means **cent** or **cents.**

1 quart = 2 pints.
1 quart = 4 half pints or glassfuls.
1 gallon = 4 quarts.
pt. means **pint** or **pints.**
qt. means **quart** or **quarts.**
gal. means **gallon** or **gallons.**

2. Say the right numbers where the dots are:

A.	B.	C.
3 dimes = . . . ¢	4 nickels = . . . ¢	2 gallons = . . . qt.
6 dimes = . . . ¢	7 nickels = . . . ¢	5 gallons = . . . qt.
7 dimes = . . . ¢	5 nickels = . . . ¢	10 gallons = . . . qt.
8 dimes = . . . ¢	2 nickels = . . . ¢	3 gallons = . . . qt.
9 dimes = . . . ¢	8 nickels = . . . ¢	7 gallons = . . . qt.
2 dimes = . . . ¢	3 nickels = . . . ¢	9 gallons = . . . qt.
4 dimes = . . . ¢	6 nickels = . . . ¢	8 gallons = . . . qt.
5 dimes = . . . ¢	10 nickels = . . . ¢	6 gallons = . . . qt.
10 dimes = . . . ¢	9 nickels = . . . ¢	4 gallons = . . . qt.

D.	E.	F.
4 yd. = . . . ft.	7 quarts = . . . half pints	8 × 2 = . . .
6 yd. = . . . ft.	3 quarts = . . . half pints	6 × 2 = . . .
10 yd. = . . . ft.	8 quarts = . . . half pints	3 × 2 = . . .
3 yd. = . . . ft.	4 quarts = . . . half pints	5 × 2 = . . .
9 yd. = . . . ft.	10 quarts = . . . half pints	10 × 2 = . . .
7 yd. = . . . ft.	7 quarts = . . . half pints	4 × 2 = . . .
5 yd. = . . . ft.	9 quarts = . . . half pints	7 × 2 = . . .
8 yd. = . . . ft.	6 quarts = . . . half pints	9 × 2 = . . .

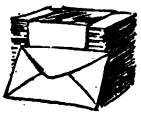
G.	H.	I.	J.
2 × 2 = . . .	3 × 2 = . . .	4 × 2 = . . .	5 × 2 = . . .
2 × 3 = . . .	3 × 3 = . . .	4 × 3 = . . .	5 × 3 = . . .
2 × 4 = . . .	3 × 4 = . . .	4 × 4 = . . .	5 × 4 = . . .
2 × 5 = . . .	3 × 5 = . . .	4 × 5 = . . .	5 × 5 = . . .
2 × 10 = . . .	3 × 10 = . . .	4 × 10 = . . .	5 × 10 = . . .

4¢ EACH

FOR ANY ARTICLE ON THIS PAGE, MARKED DOWN FROM 5 CENTS

DUST PAN

OIL CAN



PACKAGE OF ENVELOPES

BOX OF CRAYONS

TIN QUART MEASURE

KITCHEN SPOON

EGG BEATER

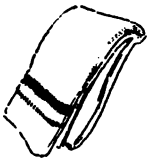
CAN OPENER

THREE-TINED FORK

STEEL PARING KNIFE

TIN PIE PLATE

TIN PUDDING PAN



COTTON TOWEL

SHOE LACES

BRUSH

TEA STRAINER

1. How many articles at 4¢ each can you buy for 8¢? For 16¢? For 20¢? For 28¢? For 32¢? For 36¢? For 12¢? For 24¢?
2. State the missing numbers:

A.	B.	C.
....4s = 24	12 = ...4s	12 = ...2s
....4s = 28	20 = ...4s	12 = ...3s
....4s = 36	36 = ...4s	12 = ...4s
....4s = 40	32 = ...4s	16 = ...2s
....4s = 16	24 = ...4s	16 = ...4s
....4s = 12	28 = ...4s	20 = ...2s
....4s = 20	16 = ...4s	20 = ...4s
....4s = 32	40 = ...4s	20 = ...5s

3. How many gallons make 16 qt.? 24 qt.? 28 qt.? 20 qt.? 36 qt.? 32 qt.? 12 qt.? 40 qt.?
4. How many quarts of lemonade are needed to fill 32 glasses, each holding a half pint? To fill 16 glasses? To fill 36 glasses? To fill 20 glasses?
5. How many quart bottles will a five-gallon can of milk fill? How many will an eight-gallon can fill? How many will a ten-gallon can fill?
6. How much is the total cost for 7 of the 4-cent articles on page 60? For 9 of them? For 6 of them? For 3 of them? For 5 of them?
7. If the price of the articles on page 60 was left at 5 cents each, how many could you buy for 35¢? For 45¢? For 30¢? For 15¢? For 40¢?
8. If the price of the articles on page 60 was marked down to 3 cents each, how many could you buy for 18¢? For 27¢? For 21¢? For 15¢?

1. State the missing numbers:

	40		40
	40		40
	40		40
	40		40
Three 40s =		Four 40s =	

2.

Two	40s =	$4 \times 40 =$	$3 \times 5 =$	$5 \times 30 =$
Six	40s =	$3 \times 40 =$	$3 \times 50 =$	$9 \times 20 =$
Eight	40s =	$8 \times 40 =$	$7 \times 4 =$	$2 \times 50 =$
Nine	40s =	$6 \times 3 =$	$7 \times 40 =$	$3 \times 40 =$
Seven	40s =	$6 \times 30 =$	$8 \times 2 =$	$7 \times 30 =$
Ten	40s =	$9 \times 2 =$	$8 \times 20 =$	$8 \times 40 =$
Five	40s =	$9 \times 20 =$	$8 \times 30 =$	$6 \times 50 =$

3. A man in a store had six piles of money, with 40 cents in each pile. How many cents did he have in all six piles together? How many dollars and how many cents is that?

4. Another man had 7 piles of money, with 50 cents in each pile. How many cents did he have in all 7 piles together? How many dollars and how many cents is that?

In your answers to problems 5, 6, 7, and 8, say, "One dollar and twenty cents" for 120¢. Say, "Two dollars and eighty cents" for 280¢.

5. What is the cost of 6 pounds of crackers at 20 cents a pound?

6. What is the cost of 7 pounds of candy at 40 cents a pound?

7. What is the cost of 4 pounds of coffee at 30¢ a pound?

8. What is the cost of 3 pounds of tea at 50¢ a pound?

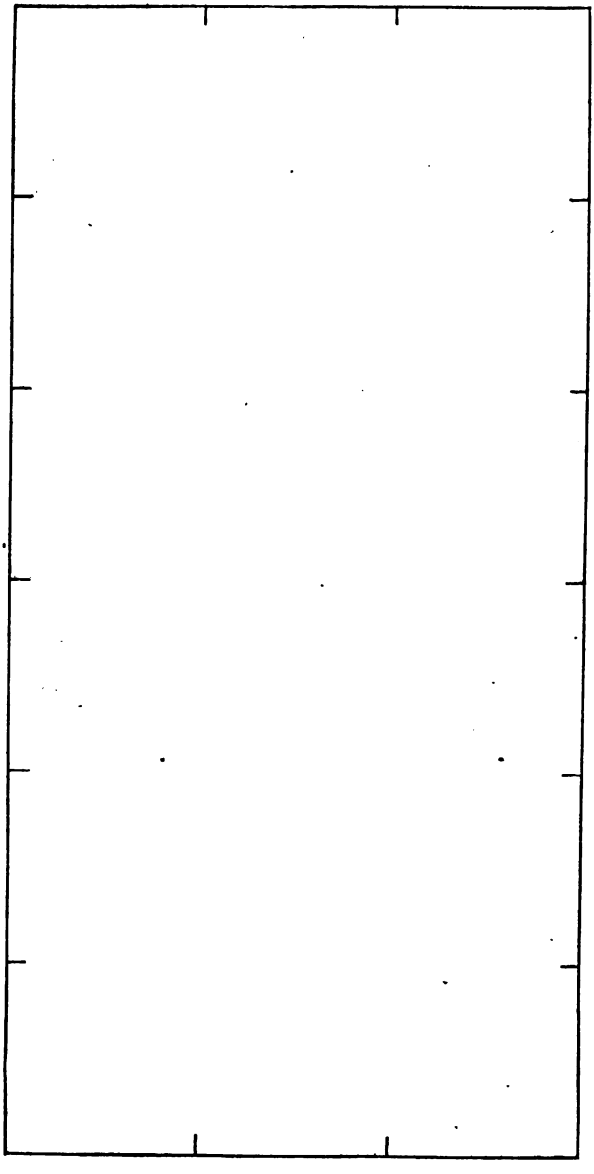
State the missing numbers:

A.	B.	C.	D.
$3 \times 5 =$	$7 \times 4 =$	$1 \times 1 =$	$9 = \ldots . 3s$
$2 \times 5 =$	$7 \times 2 =$	$1 \times 2 =$	$9 = \ldots . 1s$
$1 \times 5 =$	$7 \times 1 =$	$1 \times 3 =$	$8 = \ldots . 4s$
$4 \times 5 =$	$4 \times 5 =$	$1 \times 4 =$	$8 = \ldots . 2s$
$6 \times 2 =$	$4 \times 3 =$	$1 \times 5 =$	$8 = \ldots . 1s$
$2 \times 2 =$	$4 \times 1 =$	$1 \times 6 =$	$6 = \ldots . 3s$
$1 \times 2 =$	$8 \times 2 =$	$1 \times 7 =$	$6 = \ldots . 2s$
$9 \times 2 =$	$8 \times 1 =$	$1 \times 8 =$	$6 = \ldots . 1s$
$8 \times 3 =$	$9 \times 1 =$	$1 \times 9 =$	$4 = \ldots . 2s$
$3 \times 3 =$	$6 \times 5 =$	$1 \times 1 =$	$4 = \ldots . 1s$
$1 \times 3 =$	$6 \times 2 =$	$2 \times 1 =$	$7 = \ldots . 1s$
$7 \times 3 =$	$6 \times 1 =$	$3 \times 1 =$	$5 = \ldots . 1s$
$5 \times 4 =$	$5 \times 1 =$	$4 \times 1 =$	$3 = \ldots . 1s$
$2 \times 4 =$	$3 \times 1 =$	$5 \times 1 =$	$2 = \ldots . 2$
$1 \times 4 =$	$2 \times 1 =$	$5 \times 2 =$	$2 = \ldots . 1s$
$8 \times 4 =$	$1 \times 1 =$	$5 \times 3 =$	$1 = \ldots . 1$

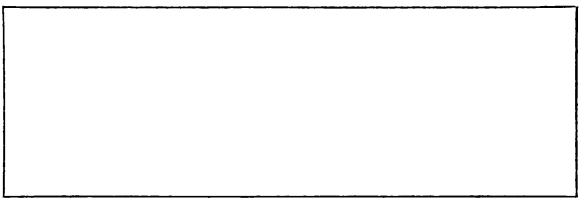
83.

A.	B.	C.	D.
$2 \times 10 =$	$4 \times 10 =$	$6 \times 10 =$	$8 \times 10 =$
$2 \times 20 =$	$4 \times 20 =$	$6 \times 20 =$	$8 \times 20 =$
$2 \times 30 =$	$4 \times 30 =$	$6 \times 30 =$	$8 \times 30 =$
$2 \times 40 =$	$4 \times 40 =$	$6 \times 40 =$	$8 \times 40 =$
$2 \times 50 =$	$4 \times 50 =$	$6 \times 50 =$	$8 \times 50 =$
$3 \times 10 =$	$5 \times 10 =$	$7 \times 10 =$	$9 \times 10 =$
$3 \times 20 =$	$5 \times 20 =$	$7 \times 20 =$	$9 \times 20 =$
$3 \times 30 =$	$5 \times 30 =$	$7 \times 30 =$	$9 \times 30 =$
$3 \times 40 =$	$5 \times 40 =$	$7 \times 40 =$	$9 \times 40 =$
$3 \times 50 =$	$5 \times 50 =$	$7 \times 50 =$	$9 \times 50 =$

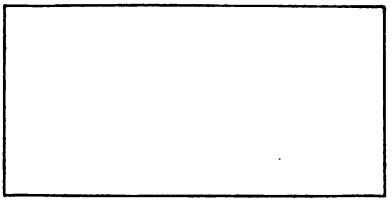
E.	F.	G.	H.
$20 = \ldots 5s$	$20 = 10 \ldots s$	$12 = 6 \ldots s$	$24 = 6 \ldots s$
$20 = \ldots 4s$	$20 = 4 \ldots s$	$12 = 3 \ldots s$	$24 = 8 \ldots s$
$20 = \ldots 2s$	$20 = 5 \ldots s$	$12 = 4 \ldots s$	$24 = 4 \ldots s$



1. How long is the rectangle on page 64?
2. How wide is it?
3. How many square inches are there in it?
4. How many pieces like this could you make out of the rectangle on page 64?



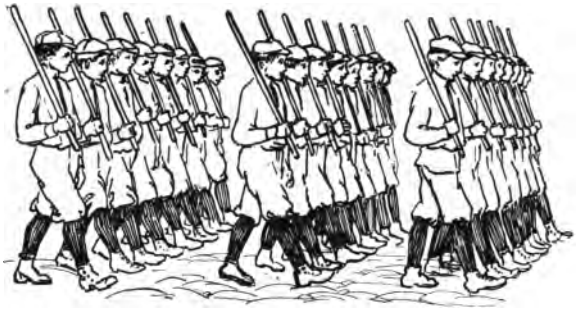
5. How many pieces like this could you make out of the rectangle?



6. Read this. Say the right numbers for the dots:

A rectangle 3 inches wide and 6 inches long contains ....square inches. You could cut it into 9 little rectangles each containing....square inches, or into 6 rectangles each containing....square inches, or into 3 rectangles each containing....square inches, or into 2 squares each containing....square inches.

7. Draw a rectangle 4 inches wide and 6 inches long. Draw lines to cut it into 4 smaller rectangles each 2 inches wide and 3 inches long. Draw lines to cut one of these smaller rectangles into inch squares.



In the picture there are 24 boys marching. There are 3 rows of boys. There are 8 boys in each row.

1. How many rows will there be if 24 boys march 6 in a row? If they march 4 in a row?
2. If 32 children march 8 in a row, how many rows will there be? If they march 4 in a row?
3. How many rows will there be if 18 children march 3 in a row? If they march 6 in a row? If they march 2 in a row? If they march 9 in a row?
4. How many rows will there be if 21 children march 3 in a row? If they march 7 in a row?
5. How many rows will there be if 20 children march 4 in a row? If they march 2 in a row? If they march 5 in a row? If they march 10 in a row?
6. If there are 9 rows marching 5 in a row, how many children are there in all?
7. If there are 7 rows marching, 4 in each row, how many children are there in all?
8. If there are 8 rows of soldiers, 2 in each row, how many soldiers are there in all?
9. If there are 8 rows with 20 soldiers in each row, how many soldiers are there in all?

1. The children of the third grade are to have a picnic. 32 are going. How many sandwiches will they need if each of the 32 children has four sandwiches?

Here is a quick way to find out:

$$\begin{array}{r} 32 \\ \underline{4} \end{array}$$

Think "4 × 2," write 8 under the 2 in the ones column.
Think "4 × 3," write 12 under the 3 in the tens column.

2. How many bananas will they need if each of the 32 children has two bananas? 32×2 or 2×32 will give the answer.

3. How many little cakes will they need if each child has three cakes? 32×3 or 3×32 will give the answer.

$$\begin{array}{r} 32 \\ \underline{3} \end{array}$$

3 × 2 = . . . Where do you write the 6?
3 × 3 = . . . Where do you write the 9?

4. Prove that 128, 64, and 96 are right by adding four 32s, two 32s, and three 32s.

$$\begin{array}{rrr} 32 & & \\ 32 & 32 & \\ 32 & 32 & 32 \\ \underline{32} & \underline{32} & \underline{32} \end{array}$$

5. One long trolley car holds 42 men. Four long cars hold . . . . men.
6. Three long trolley cars hold how many men?
7. One short car holds 23 men. Three short cars hold how many men?
8. One box of Uneeda biscuit contains 22 crackers. How many crackers are there in 4 boxes?
9. One ticket costs 31¢. 5 tickets cost . . . ¢.

You **multiply** when you find the answers to questions like

How many are 9×3?
How many are 3×32?
How many are 8×5?
How many are 4×42?

1. Read these lines. Say the right numbers where the dots are:

If you **add** 3 to 32, you have.... 35 is the **sum.**

If you **subtract** 3 from 32, the result is.... 29 is the **difference** or **remainder.**

If you **multiply** 3 by 32 or 32 by 3, you have.... 96 is the **product.**

Find the products. Check your answers to the first line by adding.

2.	3.	4.	5.	6.	7.	8.	9.
41	33	42	44	53	43	34	22
3	2	4	2	3	2	2	4

10.	11.	12.	13.	14.	15.	16.
43	52	32	23	41	51	14
3	3	3	3	2	4	2

17.

213 *Write the 9 in the ones column.*
3 *Write the 3 in the tens column.*
Write the 6 in the hundreds column.

Check your answer by adding.

Add
213
213
213

18.	19.	20.	21.	22.	23.	24.
214	312	432	231	132	314	243
2	3	2	3	3	2	2

State the missing numbers. Remember that $2 \times 0 = 0$, $3 \times 0 = 0$, $4 \times 0 = 0$. The product of any number and 0 is 0. A thousand boxes with 0 cents in each box would have only 0 cents in all.

A.	B.	C.	D.
$7 \times 3 =$	$5 \times 2 =$	$8 \times 0 =$	$1 \times 1 =$
$7 \times 0 =$	$5 \times 0 =$	$7 \times 1 =$	$1 \times 0 =$
$4 \times 5 =$	$6 \times 4 =$	$7 \times 2 =$	$3 \times 0 =$
$9 \times 5 =$	$6 \times 0 =$	$7 \times 0 =$	$2 \times 0 =$
$9 \times 0 =$	$8 \times 1 =$	$1 \times 4 =$	$2 \times 1 =$

89. Multiplication

Find the products. Check your answers to the first row by adding.

1.	2.	3.	4.	5.	6.	7.
42	220	430	342	50	204	403
4	4	2	2	3	2	2
8.	**9.**	**10.**	**11.**	**12.**	**13.**	**14.**
120	213	310	102	332	202	313
3	3	3	4	3	4	2
15.	**16.**	**17.**	**18.**	**19.**	**20.**	**21.**
330	303	51	42	11	41	200
3	3	4	3	5	4	4

22. State the products:

20	30	50	40	40		30	20	50	50	20
2	2	2	2	3		3	3	3	4	4
40	30	20	30	40		50	30	50	20	40
4	4	5	5	5		5	6	6	6	6

1. Find the total cost of 3 fancy French dolls that cost $4.23 each.

This is the way:

$$\begin{array}{r} \$\ 4.23 \\ \times\quad 3 \\ \hline \$12.69 \end{array}$$

We put $ before 12.69 to show that it means dollars and cents. We put a decimal point between the 2 and 6 to show that the 12 means dollars and the 69 means cents.

2. Find the total cost for 4 dresses that cost $1.12 each.
3. Find the total cost for 2 suits of clothes at $5.40 each.
4. Find the total cost of 3 dresses at $2.31 each.
5. Find the total cost of 3 fancy dolls, at $3.20 each.

One railroad ticket from New York to Darien costs 91¢.
One railroad ticket from New York to East Norwalk costs $1.02.
One railroad ticket from New York to Fairfield costs $1.23.

6. Find the cost of 3 tickets from New York to Fairfield.
7. Find the cost of 4 tickets from New York to East Norwalk.
8. Find the cost of 5 tickets from New York to Darien.
9. Check your answers to 6, 7, and 8 by adding.

91. Multiplication

Find the products:

1.

$$\begin{array}{r} 125 \\ \times\quad 5 \\ \hline \end{array}$$

Think "5 × 5 = 25." Write the 5 in the ones column. Remember the 2.

Think "5 × 2 = 10. 10 and 2 = 12." Write the 2 in the tens column. Remember the 1.

Think "5 × 1 = 5. 5 and 1 = 6." Write the 6.

2.	3.	4.	5.	6.	7.	8.
125	42	142	23	43	115	123
× 7	× 8	× 7	× 5	× 3	× 7	× 6

9.	10.	11.	12.	13.	14.	15.
344	344	213	53	215	215	125
2	3	4	8	4	3	6

16.

150
6

Think "6 × 0 = 0." Write 0 in the ones column.
Think "6 × 5 = 30." Write 0 in the tens column. Remember the 3.
Think "6 × 1 = 6." 6 and 3 = 9. Write 9.

17.	18.	19.	20.	21.	22.	23.
$2.50	$1.25	$1.50	$.25	$1.20	$2.40	$1.30
6	4	5	6	3	4	7

24. **25.**

153
6

Check your answer to 24 by writing

6 × 3 = 18
6 × 50 = 300
6 × 100 = 600
The sum is 918

26. State the products:

A.	B.	C.	D.	
3 × 2 =	4 × 1 =	2 × 40 =	30	40
3 × 20 =	4 × 10 =	2 × 4 =	4	4
3 × 200 =	4 × 100 =	2 × 400 =	20	40
4 × 20 =	5 × 100 =	3 × 20 =	6	6
4 × 200 =	5 × 200 =	4 × 20 =		
2 × 30 =	2 × 300 =	3 × 40 =	30	70
2 × 300 =	3 × 300 =	3 × 100 =	6	6

27. Read these numbers: 80 800 25 425 201
210 241 405 504 524 306 360 762
726 267 330 333 692 999 777.

Find the products:

1.	2.	3.	4.	5.	6.
254	142	35	32	123	124
3	6	9	8	8	7

7. Check your answer to 1 by adding:
$3 \times 4 = 12$
$3 \times 50 = 150$
$3 \times 200 = 600$

8. Check your answer to 2 by adding:
$6 \times 2 = 12$
$6 \times 40 = 240$
$6 \times 100 = 600$

9. Check your answer to 3 by adding:
$9 \times 5 = 45$
$9 \times 30 = 270$

Find the products:

10.	11.	12.	13.	14.	15.
250	435	115	154	133	153
3	2	8	5	7	6

16. Check your answer to 10 by
$3 \times 50 = 150$
$3 \times 200 = 600$

17. Check your answer to 11 by
$2 \times 5 = 10$
$2 \times 30 = 60$
$2 \times 400 = 800$

18. Check your answers to 12 and 13.

19. Check your answers to 14 and 15.

20. There are 24 hours in a day. How many hours are there in 5 days?

21. How many days are there in 52 weeks?

22. One yard = 36 inches. How many inches are there in 3 yards?

23. One bushel = 32 quarts. 8 bushels = how many quarts?

24. One year equals 365 days. 2 years equal.... days.

1. Count by 6s to 60, beginning 6, 12, 18.
2. Count by 6s backward from 60, saying, "Ten 6s = 60, nine 6s = 54," and so on.
3. Learn the table of 6s from $2 \times 6 = 12$ to $10 \times 6 = 60$.
4. Say the missing numbers:

A.	B.	C.	D.
Seven 6s =	$7 \times 6 =$	$7 \times 6 =$	$3 \times 6 =$
Three 6s =	$5 \times 6 =$	$8 \times 6 =$	$4 \times 6 =$
Nine 6s =	$6 \times 2 =$	$1 \times 6 =$	$5 \times 6 =$
Five 6s =	$6 \times 3 =$	$6 \times 6 =$	$6 \times 6 =$
Four 6s =	$6 \times 4 =$	$6 \times 1 =$	$7 \times 6 =$

5. Find the products:

a.	*b.*	*c.*	*d.*	*e.*	*f.*	*g.*	*h.*
\$2.65	\$.36	\$.65	\$1.26	\$4.06	\$.65	\$1.63	\$.46
3	9	6	7	2	9	5	8

6. Find the missing numbers.

$\frac{1}{2}$ means one half.
$\frac{1}{3}$ means one third.
$\frac{1}{4}$ means one fourth.

A.	B.	C.	D.
. . . 6s = 18	60 = . . . 6s	$\frac{1}{2}$ of 8 =	$\frac{1}{4}$ of 12 =
. . . 6s = 12	12 = . . . 6s	$\frac{1}{2}$ of 10 =	$\frac{1}{4}$ of 8 =
. . . 6s = 24	54 = . . . 6s	$\frac{1}{2}$ of 12 =	$\frac{1}{4}$ of 20 =
. . . 6s = 30	24 = . . . 6s	$\frac{1}{2}$ of 20 =	$\frac{1}{4}$ of 16 =
. . . 6s = 60	36 = . . . 6s	$\frac{1}{3}$ of 12 =	$\frac{1}{4}$ of 160 =
. . . 6s = 42	18 = . . . 6s	$\frac{1}{3}$ of 18 =	$\frac{1}{4}$ of 80 =
. . . 6s = 54	42 = . . . 6s	$\frac{1}{3}$ of 9 =	$\frac{1}{4}$ of 24 =

7. Count to $\frac{1}{6}$ of 60, saying, "One sixth of 6 is 1, one sixth of 12 is 2, $\frac{1}{6}$ of 18 is 3, $\frac{1}{6}$ of 24 is 4," and so on.

94. Square Feet

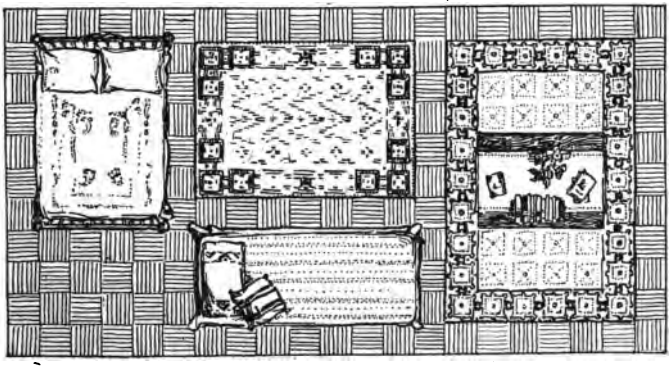
1. The teacher will show, on the blackboard, rectangles containing 1 square foot, 2 square feet, 4 square feet, and 10 square feet. Look at them. Then tell how many square feet there will be in a rectangle 3 feet long and 2 feet wide.

Think of the top of the teacher's desk.
Think of the door of your room at home.
Think of the floor of the schoolroom.

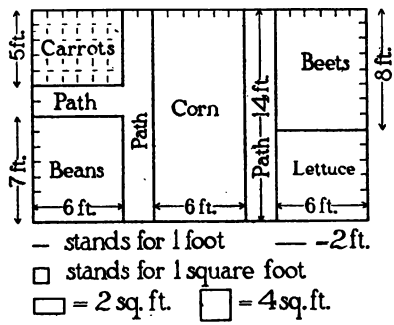
2. Which contains about 10 square feet?
3. Which contains about 20 square feet?
4. Which contains about 500 square feet?
5. Draw on the blackboard a rectangle 4 ft. long and 2 ft. wide. How many square feet does it contain?
6. Draw a rectangle 3 ft. long and 3 ft. wide. How many square feet does it contain?

95. Drawing Plans

This is the plan of a room. — stands for 1 foot long. ☐ stands for one square foot.



1. The bed is 6 feet long by 4 feet wide. How many square feet does it cover?
2. The couch is 7 feet by 3 feet. How many square feet does it cover?
3. The big rug is 6 by 9 feet. How many square feet does it cover?
4. The table is 3 by 4 feet. How many square feet does it cover?
5. The little rug is 5×7 feet. How many square feet does it cover?
6. This is the plan of Tom's garden. How long and how wide is the space for carrots?
7. How long and how wide is the space which is planted with beans?



8. How long and how wide is the space for corn?
9. How many square feet are planted with carrots? With beans? With beets? With lettuce? With corn? (Use pencil if you need to.)
10. How many square feet are there in the path between the corn and the beets and the lettuce?
11. Draw a plan of a garden. Let one inch stand for four feet. Then $\frac{1}{2}$ inch will stand for how many feet? An inch and a half will stand for how many feet? Two inches will stand for how many feet? Three inches?

1. Mary has a flower garden. Her bed of roses is 10 ft. long and 6 ft. wide. How many square feet does it contain?
2. Her bed for tulips is 8 ft. long and 6 ft. wide. How many square feet does it contain?
3. Her bed for poppies is 8 ft. long and 4 ft. wide. How many sq. ft. does it contain?
4. Her bed for pansies is 10 ft. long and 2 ft. wide. How many sq. ft. does it contain?

Use pencil and paper for problems 5 to 14. Write sq. ft. after each answer to show what the number means.

We call the number of square feet in a flower bed its AREA.

5. What is the total area of all four flower beds in Mary's garden?
6. How much larger is the area of the rose bed than the area of the poppy bed?
7. Next year Mary plans to have a poppy bed with 50 square feet in it. How many more square feet will it have then than it has now?
8. What is the area of a big flower bed 8 feet wide and 46 feet long?

How many square feet are there —

9. In a path 6 feet wide and 162 feet long?
10. In a path 3 feet wide and 254 feet long?
11. In a path 5 feet wide and 86 feet long?
12. In a path 4 feet wide and 154 feet long?
13. In the floor of a room 9 feet by 21 feet?
14. In the floor of a room 8 feet by 16 feet?

1. Count by 7s to 70, beginning 7, 14, 21.
2. Count by 7s backward from 70, saying, "Ten 7s equal 70, nine 7s equal 63," and so on.
3. Learn the table of 7s from $2 \times 7 = 14$ to $10 \times 7 = 70$.
4. State the missing numbers:

wk. means **week** or **weeks.**

A.	B.	C.
2 7s =	1 wk. = . . . days	If boys march 7 in a row
4 7s =	3 wk. = . . . days	2 rows will be . . . . boys
3 7s =	6 wk. = . . . days	3 rows will be . . . . boys
5 7s =	5 wk. = . . . days	5 rows will be . . . . boys
10 7s =	9 wk. = . . . days	8 rows will be . . . . boys
9 7s =	8 wk. = . . . days	6 rows will be . . . . boys
6 7s =	10 wk. = . . . days	10 rows will be . . . . boys
8 7s =	7 wk. = . . . days	9 rows will be . . . . boys
7 7s =	4 wk. = . . . days	7 rows will be . . . . boys

5. Find the products:

a.	*b.*	*c.*	*d.*	*e.*	*f.*	*g.*	*h.*
25	175	27	123	170	64	207	37
7	5	4	7	5	6	8	9

6. Find the area in square feet of a path 76 feet long — *a.* If it is 3 feet wide. *b.* If it is 7 feet wide.
7. State the products:

$7 \times 2 =$	$8 \times 2 =$	$9 \times 2 =$	$6 \times 2 =$	$5 \times 2 =$
$7 \times 3 =$	$8 \times 3 =$	$9 \times 3 =$	$6 \times 3 =$	$5 \times 3 =$
$7 \times 4 =$	$8 \times 4 =$	$9 \times 4 =$	$6 \times 4 =$	$5 \times 4 =$
$7 \times 5 =$	$8 \times 5 =$	$9 \times 5 =$	$6 \times 5 =$	$5 \times 5 =$
$7 \times 6 =$	$8 \times 6 =$	$9 \times 6 =$	$6 \times 6 =$	$5 \times 6 =$
$7 \times 7 =$	$8 \times 7 =$	$9 \times 7 =$	$6 \times 7 =$	$5 \times 7 =$

8. Repeat all the work of the page until you can get all the right answers in 10 minutes.

State the missing numbers:

A.	B.	C.
....7s = 70	14 days = ...weeks	35 = ...7s
....7s = 63	70 days = ...weeks	21 = ...7s
....7s = 14	42 days = ...weeks	14 = ...7s
....7s = 28	21 days = ...weeks	28 = ...7s
....7s = 35	49 days = ...weeks	56 = ...7s
....7s = 21	56 days = ...weeks	42 = ...7s
....7s = 49	63 days = ...weeks	63 = ...7s
....7s = 56	28 days = ...weeks	49 = ...7s

99. Review

Look at the first three lines in the columns carefully. Study them. Think what ÷ means.

Then give the missing numbers in the rest of the columns.

D.	E.	F.
6 ÷ 3 = 2	20 ÷ 4 = 5	14 ÷ 7 = 2
12 ÷ 3 = 4	28 ÷ 4 = 7	63 ÷ 7 = 9
30 ÷ 3 = 10	12 ÷ 4 = 3	21 ÷ 7 = 3
21 ÷ 3 = . . ,	40 ÷ 4 = . . .	28 ÷ 7 = . . .
15 ÷ 3 = . . .	32 ÷ 4 = . . .	56 ÷ 7 = . . .
24 ÷ 3 = . . .	16 ÷ 4 = . . .	70 ÷ 7 = . . .
9 ÷ 3 = . . .	24 ÷ 4 = . . .	42 ÷ 7 = . . .

G.	H.	I.	J.
24 ÷ 6 =	24 ÷ 3 =	36 ÷ 4 =	14 ÷ 7 =
36 ÷ 6 =	24 ÷ 4 =	36 ÷ 6 =	21 ÷ 7 =
12 ÷ 6 =	24 ÷ 6 =	40 ÷ 5 =	28 ÷ 7 =
18 ÷ 6 =	28 ÷ 4 =	48 ÷ 6 =	35 ÷ 7 =
30 ÷ 6 =	28 ÷ 7 =	49 ÷ 7 =	42 ÷ 7 =
42 ÷ 6 =	30 ÷ 3 =	54 ÷ 6 =	49 ÷ 7 =
54 ÷ 6 =	30 ÷ 5 =	56 ÷ 7 =	56 ÷ 7 =

Repeat the work of this page until you can say all the missing numbers in 5 minutes.

1. Count by 2s to 21, beginning 1, 3, 5, 7, 9.
2. Count by 2s to 22, beginning 2, 4, 6, 8, 10.
3. Count by 3s to 31, beginning 1, 4, 7, 10, 13.
4. Count by 3s to 32, beginning 2, 5, 8, 11, 14.
5. Count by 3s to 33, beginning 3, 6, 9, 12, 15.
6. Count by 4s to 41, beginning 1, 5, 9, 13, 17.
7. Count by 4s to 42, beginning 2, 6, 10, 14, 18.
8. Count by 4s to 43, beginning 3, 7, 11, 15, 19.
9. Count by 4s to 44, beginning 4, 8, 12, 16, 20.
10. Find the sum of \$2.89, \$1.04, \$1.32, \$1.45, and \$1.24.
11. Find the sum of \$1.98, \$1.75, \$2.43, \$.64, and \$1.02.
12. Find the sum of \$1.76, \$2.49, \$1.63, \$1.45, and \$1.22.
13. Find the sum of 56¢, 44¢, 32¢, 38¢, and 43¢.
14. Which is larger, a company of 6 rows, 57 men in a row, or a company of 7 rows, 61 men in a row? How much larger?
15. Which is larger, a company of 5 rows, 63 men in a row, or a company of 8 rows, 41 men in a row? How much larger?
16. How many square feet are there in a path 73 feet long and 8 feet wide?
17. Does a path 8 ft. wide and 65 ft. long contain more than 500 sq. ft? How much more?
18. Which will seat more, 3 cars with 56 seats each or 4 cars with 42 seats each?
19. Count by 9s to 90, beginning 0, 9, 18, 27, 36.
20. Count by 9s to 91, beginning 1, 10, 19, 28, 37.
21. Count by 9s to 92, beginning 2, 11, 20, 29, 38.
22. Count by 9s to 93, beginning 3, 12, 21, 30, 39.
23. Count by 9s to 94, beginning 4, 13, 22, 31, 40.

1. Count by 8s to 81, beginning 1, 9, 17, 25.
2. Count by 8s to 82, beginning 2, 10, 18, 26.
3. Count by 8s to 83, beginning 3, 11, 19, 27.
4. Count by 8s to 84, beginning 4, 12, 20, 28.

Add and write the sums:

5.	6.	7.	8.	9.	10.	11.	12.	13.	14.
29	49	78	95	85	26	87	39	68	53
78	36	97	64	25	79	68	98	87	89
85	92	93	49	98	94	57	76	59	78
66	79	86	97	98	29	84	93	82	66
93	75	54	36	25	82	63	39	88	65

Subtract and write the differences:

15.	16.	17.	18.	19.	20.	21.
$3.21	$4.50	$9.15	$8.00	$7.43	$5.25	$8.32
1.98	4.13	6.15	2.75	5.84	1.10	4.89

Multiply and write the products:

22.	23.	24.	25.	26.	27.	28.
$2.16	$1.44	$1.25	$3.50	$1.67	$1.75	$1.06
4	6	7	2	5	4	9

29.	30.	31.	32.	33.	34.	35.
165	127	470	106	325	111	76
5	7	2	8	3	9	9

2 7 3 6 5 1 4

36. Multiply each of these numbers by 5 and add 3 to the product.
37. Multiply each of them by 7 and add 1 to the product.
38. Multiply each of them by 4 and add 5 to the product.

1. Take a sheet of paper. Write

$$2 \times 8 = 16$$
$$3 \times 8 = 24$$
$$4 \times 8 = 32$$

and the other products of 8, up to $10 \times 8 = 80$.

You can find out what to write by counting by 8s and remembering what you have learned. Show the numbers that you write to the teacher. Then, if she says they are all right, study them until you know them.

2. There are 8 pints in a gallon. How many pints are there in 6 gallons? In 3 gallons? In 7 gallons? In 4 gallons? In 9 gallons? In 5 gallons? In 2 gallons? In 10 gallons?
3. If one quart of milk costs 8 cents, how much will 2 quarts cost? 5 quarts? 7 quarts? 3 quarts? 9 quarts? 8 quarts? 6 quarts? 4 quarts?
4. The boys are marching 8 in a row. How many boys are there in 5 rows? In 3 rows? In 9 rows? In 6 rows? In 4 rows? In 2 rows?
5. Write the products. Remember that $2 \times 0 = 0$, $3 \times 0 = 0$, $4 \times 0 = 0$, etc.

58	180	87	106	208	75	280	68
7	5	6	8	4	8	3	9

6. Take a sheet of paper. Write $16 \div 8 = 2$
$24 \div 8 = 3$

and the other numbers that tell about dividing by 8, up to $80 \div 8 = 10$.

You can find out by yourself what to write.

State the missing numbers:

1. $32 \div 8 =$ $16 \div 8 =$ $48 \div 8 =$ $24 \div 8 =$ $40 \div 8 =$
   $80 \div 8 =$ $72 \div 8 =$ $56 \div 8 =$ $64 \div 8 =$ $8 \div 8 =$

pk. means **peck** or **pecks.**

2. 8 qt. = 1 pk. 16 qt. = . . pk. 40 qt. = . . pk.
   32 qt. = . . pk. 64 qt. = . . pk. 24 qt. = . . pk.
   48 qt. = . . pk. 72 qt. = . . pk. 56 qt. = . . pk.

What change should you get, if milk costs 8¢ a quart, when —

3. You buy 4 quarts and pay with a 25-cent piece and a dime?
4. You buy 6 quarts and pay with five dimes?
5. You buy 9 quarts and pay with a 50-cent piece and a 25-cent piece?
6. You buy 7 quarts and pay with a 50-cent piece and a dime?
7. You buy 5 quarts and pay with a 50-cent piece?

What change should you get when —

8. You buy 7 two-cent stamps and pay with a dime and a nickel?
9. You buy 3 four-cent stamps and pay with a dime and a nickel?

Read these lines. Say the right numbers where the dots are:

10. Divide 12¢ equally among 3 boys. Each boy gets . . . ¢.
11. Divide 24¢ equally among 4 boys. Each boy gets . . . ¢.
12. Divide 32¢ equally among 8 boys. Each boy gets . . . ¢.
13. Divide 56¢ equally among 8 boys. Each boy gets . . . ¢.
14. Divide 72¢ equally among 8 boys. Each boy gets . . . ¢.

Repeat all the work of this page.

Take a sheet of paper. Write the numbers that tell about multiplying and dividing with 9. They begin like this. You can think out those that you do not know already.

Multiplying with 9	Dividing with 9
1×9 or $9 \times 1 = 9$	$9 \div 9 = 1$
2×9 or $9 \times 2 = 18$	$18 \div 9 = 2$
3×9 or $9 \times 3 = 27$	$27 \div 9 = 3$

When you have the tables all right, learn them.

105.

A square yard means a square 1 yard long and 1 yard wide.

1. Draw a square yard on the blackboard. Divide it into square feet.
2. How many square feet are there in 1 square yard? In 2 square yards? In 7 square yards?

We write **sq. yd.** *for square yard or square yards.*
We write **sq. ft.** *for square feet.*

3. How many sq. ft. are there in 5 sq. yd.? In 9 sq. yd.? In 8 sq. yd.? In 4 sq. yd.? In 3 sq. yd.?
4. If one yard of cloth costs 9 cents, how much do 4 yards of it cost? How much do 9 yards cost? How much do 6 yards cost? 5 yards? 7 yards?
5. Find the products:

a.	*b.*	*c.*	*d.*	*e.*	*f.*	*g.*	*h.*
89	98	80	109	249	48	95	79
7	3	9	9	4	9	6	6

6. Check your products by multiplying and adding.

$7 \times 9 = 63$	$3 \times 8 = 24$	$9 \times 9 = 81$
$7 \times 80 = 560$	$3 \times 90 = 270$	$9 \times 100 = 900$

1. Tom, Dick, Will, and Fred put in 2 cents each to buy an eight-cent bag of marbles. There are 128 marbles in it. How many should each boy have, if they divide the marbles equally among the four boys?

$4\overline{)128}$

Think "12 = three 4s." Write the 3 over the 2 in the tens columns.
Think "8 = two 4s." Write the 2 over the 8 in the ones column.
32 is right because $4 \times 32 = 128$.

2. Mary, Nell, and Alice are going to buy a book as a present for their Sunday-school teacher. The present costs 69 cents. How much should each girl pay, if they divide the cost equally among the three girls?

$3\overline{)69}$

Think "6 = . . . 3s." Write the 2 over the 6 in the tens column.
Think "9 = . . . 3s." Write the 3 over the 9 in the ones column.
23 is right, for $3 \times 23 = 69$.

3. Divide the cost of a 96-cent present equally among three girls. How much should each girl pay? $3\overline{)96}$

4. Divide the cost of an 84-cent present equally among 4 girls. How much should each girl pay?

5. Learn this: (Read ÷ as "*divided by.*")

$12 + 4 = 16$. 16 is the sum.
$12 - 4 = 8$. 8 is the difference or remainder.
$12 \times 4 = 48$. 48 is the product.
$12 \div 4 = 3$. 3 is the quotient.

6. Find the quotients. Check your answers by multiplying.

$3\overline{)99}$ $2\overline{)86}$ $5\overline{)155}$ $6\overline{)246}$ $4\overline{)168}$ $3\overline{)219}$

Find the quotients. Divide. Remember that 0 means *no, not any, none.* 0 divided by 4 = 0. 0 divided by 2 = 0. 0 = 0 3s, or 0 5s, or 0 6s.

1. $2\overline{)460}$

Write the 2 over the 4. Write the 3 over the 6. Write 0 over the 0.

2.	3.	4.	5.	6.	7.
$3\overline{)690}$	$3\overline{)90}$	$5\overline{)350}$	$9\overline{)270}$	$4\overline{)840}$	$8\overline{)560}$
8.	**9.**	**10.**	**11.**	**12.**	**13.**
$9\overline{)720}$	$9\overline{)369}$	$7\overline{)210}$	$3\overline{)960}$	$5\overline{)35}$	$5\overline{)450}$
14.	**15.**	**16.**	**17.**	**18.**	**19.**
$4\overline{)88}$	$2\overline{)846}$	$6\overline{)420}$	$4\overline{)484}$	$7\overline{)147}$	$8\overline{)240}$

108. Problems

1. Tom had 56 pennies in his bank. He put 8 cents more in. How much did he have then?
2. Will had 56 pennies in his bank. He took 8 cents out and spent it. How much did he have then?
3. John had 56 pennies in his bank. He divided the money into eight equal parts. How many cents were there in each part?
4. George had 56 pennies in his bank. He said, "I wish I had 8 times as much." How much would that be?
5. Mary has a collection of 568 picture postcards. She buys a book to put them in. How many pages will they fill if Mary puts eight on each page?

Pencils, 2¢ each.	**Envelopes, 6¢ a package.**
Penholders, 3¢ each.	**Crayons, 7¢ a box.**
Erasers, 4¢ each.	**Pads, 8¢ each.**
Ink, 5¢ a bottle.	**Notebooks, 9¢ each.**

Supply the missing numbers:

A.

For 10¢ you get . . . pencils.
For 10¢ you get . . . penholders and . . . ¢ change.
For 10¢ you get . . . erasers and . . . ¢ change.
For 10¢ you get . . . bottles of ink.
For 15¢ you get . . . pencils and . . . ¢ change.
For 15¢ you get . . . penholders.
For 15¢ you get . . . erasers and . . . ¢ change.

B.

10 = . . . 3s and . . . remainder.
10 = . . . 4s and . . . remainder.
10 = . . . 5s and no remainder.
15 = . . . 2s and . . . remainder.
15 = . . . 3s.
15 = . . . 4s and . . . remainder.
15 = . . . 5s.
15 = . . . 6s and . . . remainder.
15 = . . . 7s and . . . remainder.

C.

5 = . . . 2s and . . . remainder.
5 = . . . 3 and . . . remainder.
5 = . . . 4 and . . . remainder.
6 = . . . 2s.
6 = . . . 3s.
6 = . . . 4 and . . . remainder.
6 = . . . 5 and . . . remainder.
7 = . . . 2s and . . . remainder.
7 = . . . 3s and . . . remainder.

Read these lines. Say the right numbers where the dots are. Read "remainder" where you see r.

D.

8 = . . . 2s.
8 = . . . 3s and . . . r.
8 = . . . 4s.
8 = . . . 5 and . . . r.
8 = . . . 6 and . . . r.
8 = . . . 7 and . . . r.

E.

9 = . . . 2s and . . . r.
9 = . . . 3s.
9 = . . . 4s and . . . r.
9 = . . . 5 and . . . r.
9 = . . . 6 and . . . r.
9 = . . . 7 and . . . r.

F.

11 = . . . 2s and . . . r.
11 = . . . 3s and . . . r.
11 = . . . 4s and . . . r.
11 = . . . 5s and . . . r.
11 = . . . 6 and . . . r.
11 = . . . 7 and . . . r.

1. Nell, Alice, and four other girls were going to a picnic. Nell planned to take four boxes of Uneeda biscuit, but Alice said, "Is n't that too many? That will be 88 crackers, or 14 crackers apiece and four left over." Was Alice right?

$6\overline{)88}$

Think "8 = one 6 and 2 remainder." Write 1 over the first 8.
Think "28 = four 6s and 4 remainder." Write 5 over the 8 of 28.

2. Alice planned to take 3 ten-cent boxes of nabiscos. Alice said, "If there are 30 nabiscos in a ten-cent box, that will be just 15 nabiscos apiece." Was she right?

$6\overline{)90}$

Think "9 = one 6 and 3 remainder." Write 1 over the 9.
Think "30 = five 6s and no remainder." Write 4 over the 0 of 30.

The girls said to Alice, "You like to divide so well, you may teach all of us division." So Alice taught them to find the quotients and remainders for these examples. See if you can get them all right without anybody to teach you!

1.	2.	3.	4.	5.	6.
$3\overline{)71}$	$3\overline{)108}$	$4\overline{)95}$	$6\overline{)129}$	$5\overline{)85}$	$7\overline{)150}$
7.	8.	9.	10.	11.	12.
$9\overline{)117}$	$2\overline{)151}$	$7\overline{)98}$	$4\overline{)864}$	$4\overline{)951}$	$3\overline{)675}$
13.	14.	15.	16.	17.	18.
$3\overline{)907}$	$8\overline{)112}$	$2\overline{)809}$	$5\overline{)150}$	$6\overline{)186}$	$3\overline{)401}$
19.	20.	21.	22.	23.	24.
$3\overline{)162}$	$5\overline{)375}$	$4\overline{)144}$	$3\overline{)214}$	$5\overline{)271}$	$8\overline{)179}$

Read these, saying the right numbers where the dots are. Read "remainder" for r.

When you know them all, ask the teacher to have a race, to see how many each child can do correctly in 60 seconds.

A.	B.	C.
12 = . . . 2s.	16 = . . . 2s.	19 = . . . 2s and . . . r.
12 = . . . 3s.	16 = . . . 3s and . . . r.	19 = . . . 3s and . . . r.
12 = . . . 4s.	16 = . . . 4s.	19 = . . . 4s and . . . r.
12 = . . . 5s and . . . r.	16 = . . . 5s and . . . r.	19 = . . . 5s and . . . r.
12 = . . . 6s.	16 = . . . 6s and . . . r.	19 = . . . 6s and . . . r.
12 = . . . 7s and . . . r.	16 = . . . 7s and . . . r.	19 = . . . 7s and . . . r.
12 = . . . 8s and . . . r.	16 = . . . 8s.	19 = . . . 8s and . . . r.
12 = . . . 9s and . . . r.	16 = . . . 9s and . . . r.	19 = . . . 9s and . . . r.
13 = . . . 2s and . . . r.	17 = . . . 2s and . . . r.	20 = . . . 2s.
13 = . . . 3s and . . . r.	17 = . . . 3s and . . . r.	20 = . . . 3s and . . . r.
13 = . . . 4s and . . . r.	17 = . . . 4s and . . . r.	20 = . . . 4s.
13 = . . . 5s and . . . r.	17 = . . . 5s and . . . r.	20 = . . . 5s.
13 = . . . 6s and . . . r.	17 = . . . 6s and . . . r.	20 = . . . 6s and . . . r.
13 = . . . 7s and . . . r.	17 = . . . 7s and . . . r.	20 = . . . 7s and . . . r.
13 = . . . 8s and . . . r.	17 = . . . 8s and . . . r.	20 = . . . 8s and . . . r.
13 = . . . 9s and . . . r.	17 = . . . 9s and . . . r.	20 = . . . 9s and . . . r.
14 = . . . 2s.	18 = . . . 2s.	21 = . . . 2s and . . . r.
14 = . . . 3s and . . . r.	18 = . . . 3s.	21 = . . . 3s.
14 = . . . 4s and . . . r.	18 = . . . 4s and . . . r.	21 = . . . 4s and . . . r.
14 = . . . 5s and . . . r.	18 = . . . 5s and . . . r.	21 = . . . 5s and . . . r.
14 = . . . 6s and . . . r.	18 = . . . 6s.	21 = . . . 6s and . . . r.
14 = . . . 7s.	18 = . . . 7s and . . . r.	21 = . . . 7s.
14 = . . . 8s and . . . r.	18 = . . . 8s and . . . r.	21 = . . . 8s and . . . r.
14 = . . . 9s and . . . r.	18 = . . . 9s.	21 = . . . 9s and . . . r.

Find the quotients and the remainders:

1.	2.	3.	4.	5.	6.	7.
$6\overline{)129}$	$7\overline{)127}$	$9\overline{)197}$	$8\overline{)136}$	$5\overline{)175}$	$3\overline{)163}$	$8\overline{)184}$
8.	9.	10.	11.	12.	13.	14.
$8\overline{)992}$	$9\overline{)780}$	$5\overline{)193}$	$6\overline{)214}$	$9\overline{)158}$	$3\overline{)177}$	$8\overline{)685}$
15.	16.	17.	18.	19.	20.	21.
$9\overline{)879}$	$4\overline{)127}$	$4\overline{)114}$	$7\overline{)93}$	$8\overline{)954}$	$5\overline{)142}$	$5\overline{)160}$

Find the quotients. If you divide correctly and subtract correctly there will be no remainders.

22.	23.	24.	25.	26.	27.	28.
$3\overline{)117}$	$5\overline{)135}$	$4\overline{)292}$	$2\overline{)134}$	$5\overline{)215}$	$6\overline{)192}$	$6\overline{)450}$
29.	30.	31.	32.	33.	34.	35.
$5\overline{)180}$	$3\overline{)144}$	$7\overline{)238}$	$4\overline{)364}$	$7\overline{)532}$	$8\overline{)296}$	$7\overline{)434}$
36.	37.	38.	39.	40.	41.	42.
$7\overline{)406}$	$4\overline{)340}$	$2\overline{)132}$	$8\overline{)360}$	$6\overline{)510}$	$7\overline{)336}$	$9\overline{)252}$
43.	44.	45.	46.	47.	48.	49.
$4\overline{)196}$	$7\overline{)231}$	$4\overline{)180}$	$3\overline{)171}$	$9\overline{)333}$	$6\overline{)564}$	$8\overline{)696}$

113.

1. January has 31 days. How many weeks are there in January and how many days left over?
2. February usually has 28 days. How many weeks are there in February?
3. April has 30 days. How many weeks are there in April and how many days left over?

State the quotient and remainder for each of these:

A.	B.	C.	D.	E.	F.
22 = . . . 3s and . . . r.	6|25	9|28	8|32	8|36	9|40
22 = . . . 4s and . . . r.	7|25	3|29	9|32	9|36	5|41
22 = . . . 5s and . . . r.	8|25	4|29	4|33	4|37	6|41
22 = . . . 6s and . . . r.	9|25	5|29	5|33	5|37	7|41
22 = . . . 7s and . . . r.	3|26	6|29	6|33	6|37	8|41
22 = . . . 8s and . . . r.	4|26	7|29	7|33	7|37	9|41
22 = . . . 9s and . . . r.	5|26	8|29	8|33	8|37	5|42
23 = . . . 3s and . . . r.	6|26	9|29	9|33	9|37	6|42
23 = . . . 4s and . . . r.	7|26	4|30	4|34	4|38	7|42
23 = . . . 5s and . . . r.	8|26	5|30	5|34	5|38	8|42
23 = . . . 6s and . . . r.	9|26	6|30	6|34	6|38	9|42
23 = . . . 7s and . . . r.	3|27	7|30	7|34	7|38	5|43
23 = . . . 8s and . . . r.	4|27	8|30	8|34	8|38	6|43
23 = . . . 9s and . . . r.	5|27	9|30	9|34	9|38	7|43
24 = . . . 3s.	6|27	4|31	4|35	4|39	8|43
24 = . . . 4s.	7|27	5|31	5|35	5|39	9|43
24 = . . . 5s and . . . r.	8|27	6|31	6|35	6|39	5|44
24 = . . . 6s.	9|27	7|31	7|35	7|39	6|44
24 = . . . 7s and . . . r.	3|28	8|31	8|35	8|39	7|44
24 = . . . 8s.	4|28	9|31	9|35	9|39	8|44
24 = . . . 9s and . . . r.	5|28	4|32	4|36	5|40	9|44
25 = . . . 3s and . . . r.	6|28	5|32	5|36	6|40	5|45
25 = . . . 4s and . . . r.	7|28	6|32	6|36	7|40	6|45
25 = . . . 5s.	8|28	7|32	7|36	8|40	7|45

Repeat this page until you can give all the quotients and remainders correctly in 20 minutes or less.

Find the quotients. Put $ before each quotient to show that the numbers mean dollars and cents. Put a decimal point in each quotient to show which numbers mean dollars and which numbers mean cents.

1. Divide $16.38 equally among 7 girls.
2. Divide $30.24 equally among 7 girls.
3. Divide $30.24 equally among 9 girls.
4. Divide $30.24 equally among 3 girls.
5. Divide $30.24 equally among 8 girls.
6. Six persons buy a victrola together for $15.00 and divide the cost equally. How much does each person pay?
7. Nine boys buy a boat together for $24.75 and divide the cost equally. How much does each boy pay?
8. At the end of the summer they sell it for $15.75. How much does each one get?

When the quotient means only cents, like $.73 or $.42 or $.98, you may write it $.73 or 73¢, $.42 or 42¢, $.98 or 98¢.

9. Three girls bought a croquet set for $2.88 and divided the cost equally. How much did each girl pay?
10. Five boys bought a football for $1.95 and divided the cost equally. How much did each boy pay?
11. Tom and Will each worked 5 days in a store. Tom received $4.00 in all. Will received 75 cents a day. Which one got the higher wages?
12. Nine girls plan to buy a present for their club leader, and divide the cost equally. How much must each give if they get a book for $1.44?

Take a large sheet of paper. Write the numbers to show the quotients and remainders when you divide 45, 46, 47, 48, etc. Begin with

$5\overline{)45}$ 9 $\quad$ $6\overline{)45}$ 7 and 3 r. $\quad$ $7\overline{)45}$ 6 and 3 r.

Use all the numbers from 45 to 80.

Divide the numbers up to 50 by 5, 6, 7, 8, and 9. After 50 you need not divide by 5. After 60 you need not divide by 6. After 70 you need not divide by 7.

117. Review

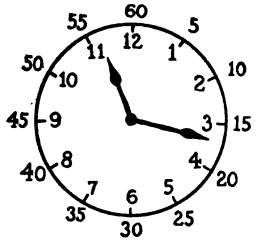
2 5 8 3 9 7 6 4

1. Multiply each of these numbers by 9 and add 2 to the product.
2. Multiply each of them by 8 and add 3 to the product.
3. Multiply each of them by 7 and add 4 to the product.
4. Multiply each of them by 6 and add 5 to the product.
5. Multiply each of them by 5 and add 3 to the product.
6. Multiply each of them by 4 and add 4 to the product.

118.

1. Count by 7s to 71, beginning 1, 8, 15, 22.
2. Count by 7s to 72, beginning 2, 9, 16, 23.
3. Count by 7s to 73, beginning 3, 10, 17, 24.
4. Count by 7s to 74, beginning 4, 11, 18, 25.
5. Count by 6s to 61, beginning 1, 7, 13, 19.
6. Count by 6s to 62, beginning 2, 8, 14, 20.
7. Count by 6s to 63, beginning 3, 9, 15, 21.
8. Count by 6s to 64, beginning 4, 10, 16, 22.
9. Add \$1.89, \$2.67, \$1.58, \$1.75, and \$.46.

1. Find the total cost of 9 articles that cost \$.25 each.
2. Find the total cost of 3 articles that cost \$1.98 each.
3. Find the total cost of 7 articles that cost \$.75 each.
4. Tom, Dick, Will, and Fred each earned 35¢. How much did they earn in all?
5. How much more do they need to buy a football for \$1.50?
6. There were 9 girls in the sewing class. Each girl hemmed a half dozen napkins. How many napkins did they hem in all?
7. It took Nell 7 hours to hem the first three and 4 hours to hem the last three. Later she hemmed a half dozen more in an hour apiece. How long did it take her for all twelve?
8. Nell's napkins were all sold at the church fair at three for \$1.25. How much was received for the whole dozen?
9. Grace made 6 doilies for the fair, which sold for \$.75 each. How much was received for all?
10. Nell's mother took her and some other girls to the fair. She bought 7 admission tickets for 35¢ each. How much did she pay in all for the tickets?
11. She bought ice cream and cake for 7 persons at 15¢ for each person. How much did she pay for ice cream and cake?
12. She bought 6 aprons at 30¢ each and 4 holders for 10¢ each. How much did she pay in all for the aprons and holders?
13. Find the total cost of 8 tickets at 35 cents each.

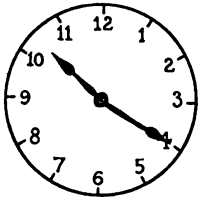


1. This clock has more numbers on it than ordinary clocks have. What do you think the outside numbers (5, 10, 15, 20) tell, hours or minutes?
2. What do the inside numbers (1, 2, 3, 4) tell?
3. Which hand do you look at to see what hour it is?
4. Which hand tells you whether it is 5 minutes past 9, or 10 minutes past 9, or 15 minutes past 9, or half past?
5. Read the inside numbers up to 11, saying, "When the little hand points to 1 it is 1 o'clock. When the little hand points to 2 it is 2 o'clock. When the little hand points to 3 it is 3 o'clock," and so on.
6. Read these lines. Say the right numbers where the dots are:
   a. The little hand goes half way round the clock in....hours.
   b. The little hand goes quarter way round the clock in....hours.
   c. The little hand goes from 12 to 2, or one sixth of the way, in....hours.
7. Read the inside numbers up to 11, saying, "When the big hand points to 1, it is 5 minutes past. When the big hand points to 2, it is 10 minutes past. When the big hand points to 3, it is 15 minutes past," and so on.

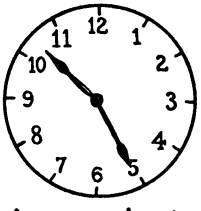
1. Read this page. Say the right numbers where the dots are:

a. The big hand goes half way round the clock in ....minutes or ....an hour.

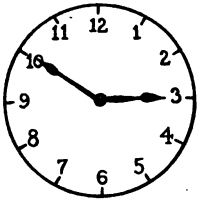
b. The big hand goes one quarter the way round the clock in....minutes or....of an hour.



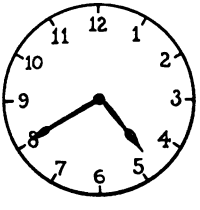
c. It is....minutes past ....or 10:20



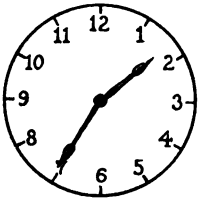
d. It is....minutes past ....or 10:25



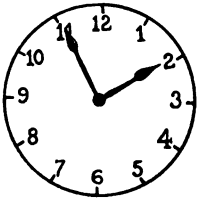
e. It is....minutes past ....or 2:50. It will be 3 o'clock in.... minutes. It is.... minutes of 3.



f. It is....minutes past ..or 4:40. It will be 5 o'clock in.... minutes. It is.... minutes of 5.



2. What time is it by each of these clocks?



Draw a clock on the blackboard.

Draw hands on the clock so that they show—

1. 10 minutes past 9, or 9:10.
2. 30 minutes past 9, or half past nine, or 9:30.
3. 45 minutes past 9, or 9:45, or 15 minutes of 10.
4. 55 minutes past 9, or 9:55, or 5 minutes of 10.
5. 20 minutes past 10, or 10:20.
6. 40 minutes past 10, or 10:40, or 20 minutes of 11.
7. 11:25. 8. 11:35. 9. 10 minutes of 12.
10. 2:15. 11. 2:50. 12. 5 minutes of 3.

123. Review

ADD	1.	2.	3.	4.	5.	6.	7.
	568	409	294	673	345	376	448
	237	503	189	258	216	498	352
SUBTRACT	8.	9.	10.	11.	12.	13.	14.
	575	918	800	925	525	465	603
	525	379	216	820	298	391	425
MULTIPLY	15.	16.	17.	18.	19.	20.	21.
	$1.48	$1.69	$1.70	$1.05	$1.08	$2.35	$1.29
	6	5	3	8	9	4	7
DIVIDE	22.	23.	24.	25.	26.	27.	28.
	4|232	2|118	5|265	6|180	7|490	3|159	8|656

To Be Done at Home

Look at a watch. Has it any hands besides the hour hand and the minute hand? Find out all that you can about how a watch tells seconds, how long a second is, and how many seconds make a minute.

How many hours does it take the hour hand to go—

1. From 6 in the morning to 11 in the morning?
2. From 6 in the morning to 3 in the afternoon?
3. From 8 in the morning to noon?
4. From 8 in the morning to 5 in the afternoon?
5. All the way round from 12 noon to 12 midnight?
6. From midnight to noon and then all around again to midnight? From midnight to noon and then again to midnight is 1 day. How many hours equal 1 day?
7. From midnight to 2 o'clock in the afternoon is how many hours?
8. From noon to 6 o'clock in the morning of the next day is how long?
9. On some railroads they call 1 o'clock in the afternoon 13 o'clock. They call 2 o'clock in the afternoon 14 o'clock, and so on to 23 o'clock. What do they call 5 o'clock in the afternoon? What do they call 9 o'clock in the evening?
10. On most railroads they call the hours from midnight to noon 1 A.M., 2 A.M., 3 A.M., etc. They call the afternoon and evening hours from noon to midnight 1 P.M., 2 P.M., 3 P.M., etc. How long does it take the hour hand to go from 5 A.M. to 7 P.M.? From 9 A.M. to 4 P.M.? From 3 A.M. to 7 P.M.?
11. Read the right numbers where the dots are: From noon to midnight is....hours. $\frac{1}{2}$ of 12 hours = ...hours. $\frac{1}{4}$ of 12 hours = ...hours. $\frac{1}{6}$ of 12 hours = ...hours. $\frac{1}{3}$ of 12 hours = ...hours.

1. How many minutes does it take the minute hand to go from 2 to 3? From 2 to 4?
2. From 2 to 9? From 12 around to 12 again? From 12 to 1? From 12 to 2? From 12 to 8?
3. What part of an hour is 30 minutes? How many minutes make $\frac{1}{6}$ hr. or one sixth of an hour? What part of an hour is 15 minutes? How many minutes are there in an hour and a half?
4. How many minutes are there in $\frac{3}{4}$ hr. or three quarters of an hour? In half an hour?
5. At 10 minutes past 5, Dick's mother told him, "You must come in in a quarter of an hour." At what time must Dick come in?
6. Another day at 5 minutes past 4 she said, "You may stay just three quarters of an hour." A what time did he have to come in on that day?
7. Another day at quarter of five she said, "You must come in 25 minutes." At what time did he have to come?
8. It was quarter past 4. "You can play till 5 o'clock," said Will's mother. "How long is that?" asked Will. How long was it?
9. How many minutes is it from 9:40 A.M. to 10 A.M.? From 9:40 to 10:20? From 2:50 P.M. to 3 P.M.? From 2:50 P.M. to 3:25 P.M.?
10. From 3:48 P.M. or 12 minutes of 4 P.M. to 4:09 P.M. or 9 minutes past 4? From 9:52 or 8 minutes of 10 to 10:07 or 7 minutes past 10?
11. How long is $\frac{3}{4}$ hr. and $\frac{1}{4}$ hr. in all?
12. How long is $\frac{1}{4}$ hr. and $\frac{1}{4}$ hr. in all?

1. Supply the quotients and remainders:

A.	B.	C.
50 = . . . 6s and . . . r.	60 = . . . 6s.	$6\overline{)40}$
50 = . . . 7s and . . . r.	60 = . . . 7s and . . . r.	$7\overline{)40}$
50 = . . . 8s and . . . r.	60 = . . . 8s and . . . r.	$8\overline{)40}$
50 = . . . 9s and . . . r.	60 = . . . 9s and . . . r.	$9\overline{)40}$

D.	E.	F.	G.	H.	I.	J.
$5\overline{)45}$	$6\overline{)35}$	$6\overline{)55}$	$6\overline{)27}$	$7\overline{)62}$	$3\overline{)25}$	$9\overline{)33}$
$6\overline{)45}$	$7\overline{)35}$	$7\overline{)55}$	$7\overline{)27}$	$8\overline{)62}$	$4\overline{)25}$	$8\overline{)43}$
$7\overline{)45}$	$8\overline{)35}$	$8\overline{)55}$	$8\overline{)36}$	$8\overline{)70}$	$8\overline{)25}$	$7\overline{)30}$
$8\overline{)45}$	$9\overline{)35}$	$9\overline{)55}$	$9\overline{)36}$	$9\overline{)70}$	$7\overline{)25}$	$4\overline{)30}$

Copy and write the quotients and remainders:

2.	3.	4.	5.	6.	7.
$4\overline{)215}$	$3\overline{)163}$	$8\overline{)262}$	$8\overline{)585}$	$9\overline{)218}$	$6\overline{)200}$

8.	9.	10.	11.	12.	13.
$6\overline{)498}$	$5\overline{)625}$	$9\overline{)325}$	$7\overline{)515}$	$7\overline{)450}$	$9\overline{)738}$

Write the products:

14.	15.	16.	17.	18.	19.	20.
\$.84	\$2.12	\$2.54	\$1.75	\$1.50	\$1.20	\$.65
2	4	3	5	6	8	9

Write the quotients. If your work is all correct there will be no remainders in these:

21.	22.	23.	24.	25.
$9\overline{)\$7.47}$	$7\overline{)\$5.81}$	$8\overline{)\$6.96}$	$6\overline{)\$4.56}$	$4\overline{)\$3.56}$

1. Count by 5s to 51, beginning 1, 6, 11, 16.
2. Count by 5s to 52, beginning 2, 7, 12, 17.
3. Count by 5s to 53, beginning 3, 8, 13, 18.
4. Count by 5s to 54, beginning 4, 9, 14, 19.
5. Count by 6s to 61, beginning 1, 7, 13, 19.
6. Count by 6s to 62, beginning 2, 8, 14, 20.
7. Count by 6s to 63, beginning 3, 9, 15, 21.
8. Count by 6s to 64, beginning 4, 10, 16, 22.
9. Count by 6s to 65, beginning 5, 11, 17, 23.
10. Count by 6s to 66, beginning 6, 12, 18, 24.
11. Say the sums:

a.	*b.*	*c.*	*d.*	*e.*	*f.*	*g.*	*h.*	*i.*	*j.*	*k.*	*l.*
9	6	6	4	3	3	9	4	8	7	6	6
8	8	9	7	5	6	5	6	3	9	8	7
5	5	7	6	2	6	9	2	1	2	9	2
7	8	5	8	6	5	6	7	5	7	1	5
7	5	6	1	9	8	4	6	6	8	6	8
6	6	9	5	7	6	5	5	7	9	9	5
7	6	5	9	6	4	9	5	6	5	5	3
9	8	3	6	7	9	4	9	5	8	6	8

12. Write the sums for each of these twelve columns.
13. Tell what you must add to each of these numbers to make 15:

7 4 2 9 6 8 3 10 12 5 14

14. Tell what you must add to each of these numbers to make 20:

13 8 16 5 14 18 9 10 17 15 12

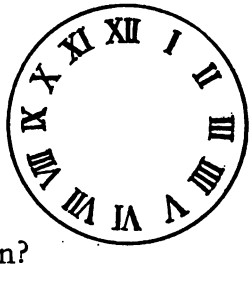
15. Find what you must add to \$3.76 to make \$4.25.
16. Which costs more, four dresses at 88 cents each or three dresses at \$1.25 each? How much more?

Flour, 4 cents a pound.	**Milk, 8 cents a quart.**
Bread, 5 cents a loaf.	**Salt, 9 cents a bag.**
Sugar, 6 cents a pound.	**Nabiscos, 10 cents a box.**
Soap, 7 cents a cake.	**Oranges, 30 cents a dozen.**

At these prices find the amount of each of these purchases:

1. Two pounds of flour and a loaf of bread.
2. A quart of milk and a bag of salt.
3. Three boxes of nabiscos and a dozen oranges.
4. Half a dozen oranges.
5. A cake of soap and two quarts of milk.
6. A pint of milk.
7. Make up three problems for the other children to solve.
8. How many loaves of bread will 20 cents buy?
9. How many pounds of sugar will 12 cents buy?
10. You buy a dozen oranges and pay with a 50-cent piece. How much change should you receive?
11. You buy two quarts of milk and pay with a 25-cent piece. How much change should you receive?
12. Which costs more, 1 quart of milk and 2 pounds of flour or three loaves of bread? How much more?
13. How much should you pay for a loaf of bread, a quart of milk, and a box of nabiscos?
14. How much milk should you get for 4 cents?
15. Nabiscos average 29 to a box. How many nabiscos would there be in 10 boxes?
16. How many oranges are there in $\frac{1}{2}$ dozen? In $\frac{1}{3}$ dozen? In $\frac{1}{4}$ dozen?

Some clocks are made like this:



1. What number does V mean?
2. What number does X mean?
3. What numbers do these mean?
   VI, XI, IV, IX, III, VIII,
   II, XII.
4. What do you think XX will mean?
   XIV? XVI? XVIII?

I, II, III, IV, V, VI, etc., are called **Roman numerals.**

1, 2, 3, 4, 5, 6, etc., are called **Arabic numerals** or **Hindu numerals.**

5. Read these lines. Say the right numbers where the dots are:

IV means..less than 5.	IX means..less than 10.
V means...	X means...
VI means..and..	XI means..and..
VII means..and..	XII means..and..
VIII means..and..	XIII means..and..

XIV means 10 and 1 less than 5 (or...and 4).
XV means...and...

6. Write in Roman numerals: 7, 12, 17, 5, 10, 15, 11.
7. Write in Arabic numerals: IV, XIV, XVI, VII.
8. XX means 20, XXX means 30. XIX means 19. XXI means 21. What do you think 36 is in Roman numerals? 28? 24? 34? 26? 32? 38?
9. Say the Arabic numerals for these. See if you can say them all correctly in a minute.
   V VII IV III X IX XI II VIII XIII
   XII VI XV VIII V XI X IV IX VII
   II XX XI IV IX XV XXX VI XII VIII

1. What does Jan. stand for? Feb.? Mar.? Aug.? Sept.? Oct.? Nov.? Dec.?
2. Tell the months of the year without looking at the calendar.
3. Which months have only 30 days?
4. Play that it is Dec. 10. In how many days will it be Christmas or Dec. 25?

   Do not look at the calendar. Simply subtract 10 from 25.
5. It is Nov. 4. In how many days will it be Thanksgiving, Nov. 25? What do you subtract from 25?
6. School closes June 30. Play that it is June 8 now. In how many days will school close?

How long is it —

7. From Oct. 9 to Oct. 20? From Nov. 7 to Nov. 16?
8. From May 8 to May 14? From May 5 to May 23?
9. How many days is it from Jan. 2 to Jan. 23?
10. How many weeks is it?
11. How many weeks is it from July 3 to July 31?

	Sun.	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.
Jan.	..	..	..	..	..	1	2
	3	4	5	6	7	8	9
	10	11	12	13	14	15	16
	17	18	19	20	21	22	23
	24	25	26	27	28	29	30
	31	..	..	..	..	..	..
Feb.	..	1	2	3	4	5	6
	7	8	9	10	11	12	13
	14	15	16	17	18	19	20
	21	22	23	24	25	26	27
	28	..	..	..	..	..	..
Mar.	..	1	2	3	4	5	6
	7	8	9	10	11	12	13
	14	15	16	17	18	19	20
	21	22	23	24	25	26	27
	28	29	30	31	..	..	..
April.	..	..	..	..	1	2	3
	4	5	6	7	8	9	10
	11	12	13	14	15	16	17
	18	19	20	21	22	23	24
	25	26	27	28	29	30	..
May.	..	..	..	..	..	..	1
	2	3	4	5	6	7	8
	9	10	11	12	13	14	15
	16	17	18	19	20	21	22
	23	24	25	26	27	28	29
	30	31	..	..	..	..	..
June.	..	..	1	2	3	4	5
	6	7	8	9	10	11	12
	13	14	15	16	17	18	19
	20	21	22	23	24	25	26
	27	28	29	30	..	..	..
July.	..	..	..	..	1	2	3
	4	5	6	7	8	9	10
	11	12	13	14	15	16	17
	18	19	20	21	22	23	24
	25	26	27	28	29	30	31
Aug.	..	..	..	..	..	..	..
	1	2	3	4	5	6	7
	8	9	10	11	12	13	14
	15	16	17	18	19	20	21
	22	23	24	25	26	27	28
	29	30	31	..	..	..	..
Sept.	..	..	..	1	2	3	4
	5	6	7	8	9	10	11
	12	13	14	15	16	17	18
	19	20	21	22	23	24	25
	26	27	28	29	30	..	..
Oct.	..	..	..	..	..	1	2
	3	4	5	6	7	8	9
	10	11	12	13	14	15	16
	17	18	19	20	21	22	23
	24	25	26	27	28	29	30
	31	..	..	..	..	..	..
Nov.	..	1	2	3	4	5	6
	7	8	9	10	11	12	13
	14	15	16	17	18	19	20
	21	22	23	24	25	26	27
	28	29	30	..	..	..	..
Dec.	..	..	..	1	2	3	4
	5	6	7	8	9	10	11
	12	13	14	15	16	17	18
	19	20	21	22	23	24	25
	26	27	28	29	30	31	..

STATIONS	HR. MIN.	MILES
New York	2:03	0
High Bridge	2:19	7
Yonkers	2:33	15
Tarrytown	2:50	25
Scarborough	2:57	29
Ossining	3:02	30
Harmon	3:10	33
Croton	3:16	34

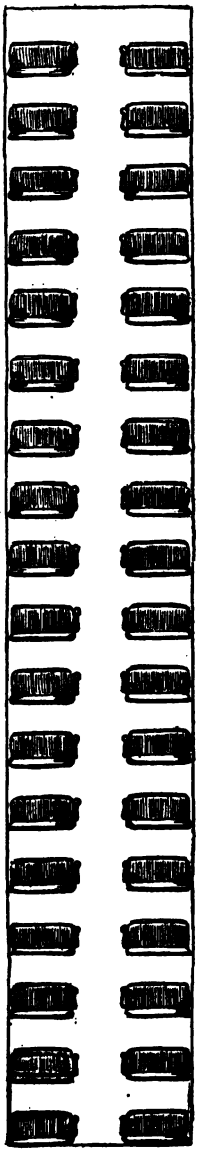
This time table tells the time a train leaves each station from New York to Croton.

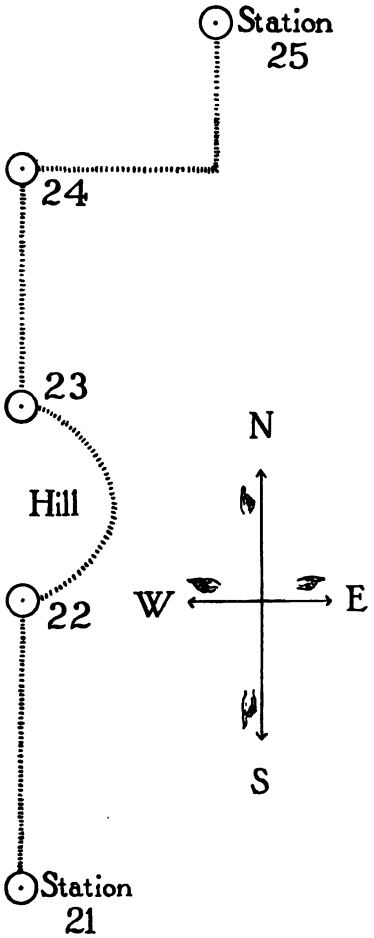
The first column tells the names of the stations. The second tells the time the train leaves each station. The third tells how many miles each station is from New York.

1. How many minutes does it take the train from the time it leaves New York to the time it leaves High Bridge?
2. How many minutes does it take the train from the time it leaves New York to the time it leaves Yonkers?
3. How many minutes does it take the train from the time it leaves New York to the time it leaves Tarrytown?
4. How many minutes does it take the train to go from Yonkers to Tarrytown?
5. From Yonkers to Scarborough?
6. From Tarrytown to Harmon? From Tarrytown to Ossining?
7. How many miles is it from New York to Yonkers?
8. How many miles is it from New York to Tarrytown?
9. How many miles is it from New York to Harmon?
10. How many miles is it from High Bridge to Yonkers?
11. How many miles is it from High Bridge to Ossining?
12. How many miles is it from Yonkers to Ossining?

This is a plan or map of a passenger car on a railroad train.

1. How many seats are there on one side?
2. On both sides together?
3. Each seat holds 2 passengers. How many passengers will all the seats hold?
4. How many passengers will the seats in a train of 6 such cars hold?
5. If all seats are full and 17 persons are standing, how many persons are in the car?
6. If the floor of this car is 8 feet wide and 48 feet long, what is its area in square feet?
7. Draw a plan or map of a schoolroom 28 feet long and 24 feet wide. Let one inch stand for 4 feet. Put in 42 desks, 2 ft. long and 1 ft. wide, in 6 rows. How many desks will there be in each row? If one inch stands for 4 ft., what part of an inch stands for 2 ft.? What part of an inch stands for 1 ft.?
8. What part of 12 is 6?
9. What part of 12 is 3?
10. What part of an hour is 30 minutes?
11. What part of an hour is 20 minutes?
12. What part of a foot is 4 inches?

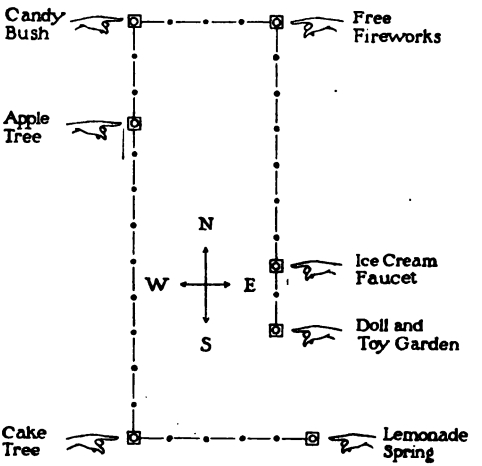




This is a plan or map of a railroad. The little circles stand for stations. Each fourth of an inch stands for 1 mile.

1. What do the N.,S.,E., and W. stand for?
2. How many miles north of Station 21 is Station 22?
3. How many miles north of Station 23 is Station 24?
4. How many miles is it from Station 24 to Station 25 by the track?
5. Measure and see how many miles it would be from Station 24 to Station 25 in a straight line.
6. Read this. Say the right words where the dots are. A train going from Station 24 to Station 25 first goes 4 miles....then 3 miles....

The teacher asked the class to draw a map of a road or railroad and write a story telling about it.



Dick and Nell made this map of a Fairyland road, and wrote this story. Read the story, and find the right numbers where the dots are. Use your pencil when you need to. Remember that

•—• = 9 ft.

•—•—• = two times 9 ft.

•—•—•—• = three times 9 ft.

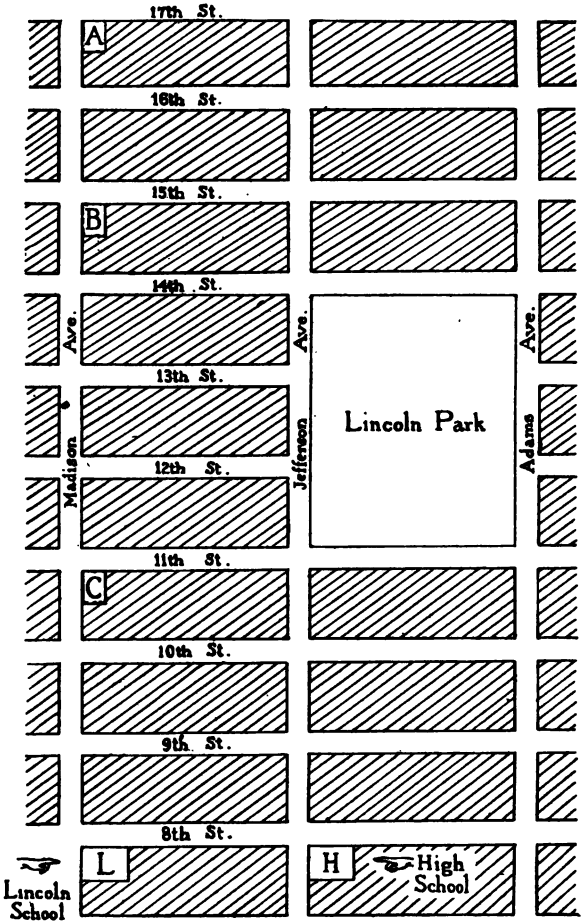
A child starts with a drink at Lemonade Spring and walks...feet west to Cake Tree. He eats a cake and walks...ft. north to Apple Tree. He takes some apples and goes...ft. farther north to Candy Bush. After filling his pockets with candy he turns and goes...ft. east to Free Fireworks. Then he goes...ft. south to the Ice Cream Faucet. He eats some ice cream and goes...ft. farther south to Doll and Toy Garden. The fairy there says, "Tell me how far you have walked in all from Lemonade Spring and you may choose ten toys." So the child figures it out with pencil and paper and says, "I have come...ft." Then he takes the toys and goes out of the gate of Fairyland.

Take a large sheet of paper.

Draw a map of a road that goes north 63 miles, then east 54 miles, then south 81 miles, then west 72 miles.

Let 1 inch = 9 miles.

Write a story about it if you have time.



The map on page 108 is a map of part of a city. The shaded parts are the houses and stores and other buildings. The white parts are the streets and sidewalks. Boys and girls in this city measure distance by **blocks.** The distance east and west from one street to the next they call one long block. The distance north and south from one street to the next they call one short block.

One long block is 660 feet. One short block is 264 feet.

1. Alice lives at the corner of Madison Ave. and 17th St. (A). How many blocks is it from her house to the Lincoln School (L)?
2. How many feet is it from her house to the Lincoln School? 2376 ft. means twenty-three hundred seventy-six feet or two thousand three hundred seventy-six feet.
3. How many hundreds make one thousand?
4. 500 is what part of a thousand,—$\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{1}{8}$, or $\frac{1}{9}$?
5. 250 is what part of 1000? Is it $\frac{1}{2}$ or $\frac{1}{3}$ or $\frac{1}{4}$ of 1000?
6. Bert lives at the corner of Madison Ave. and 15th St. (B). How many blocks is it from his house to the Lincoln School? How many feet is it?
7. When Bert goes to the High School (H) he will walk 7 short blocks south and then 1 long block east. How many feet will that be?
8. Charles lives at (C), the corner of Madison Ave. and 11th St. About how many feet must he walk to reach the Lincoln School?
9. To reach the High School?
10. To reach the corner of Adams Ave. and 16th St.?

1. Dick's brother rides on his bicycle eight short blocks and then nine long blocks to go from his house to where he works. How many feet is that?
2. If he rides as fast as he can, he can go this distance in just 6 minutes. About how many feet does he go in a minute when he rides as fast as he can?
3. Usually he takes 9 minutes to go from his house to where he works. How many feet does he go in 9 minutes, when he goes 900 ft. a minute?

138.

1. Supply the missing numbers:

A.	B.	C.
$10 \times 4 =$	100×2 or $2 \times 100 =$	$10 \times 2 =$
$10 \times 8 =$	100×5 or $5 \times 100 =$	$100 \times 2 =$
$10 \times 6 =$	100×7 or $7 \times 100 =$	$10 \times 7 =$
$10 \times 3 =$	100×4 or $4 \times 100 =$	$100 \times 7 =$

To multiply by 10, annex 0.
To multiply by 100, annex 00.

2. Read these numbers: 600 900 400 800
1100 1200 1300 1400 1800 1600
1900 1500 1700

3. Supply the missing products:

D.	E.	F.	G.
$10 \times 5 =$	$10 \times 16 =$	$100 \times 15 =$	47 17 28
$100 \times 3 =$	$10 \times 10 =$	$100 \times 18 =$	10 100 100
$10 \times 9 =$	$100 \times 8 =$	$10 \times 20 =$	
$100 \times 9 =$	$100 \times 11 =$	$10 \times 60 =$	
$10 \times 12 =$	$100 \times 12 =$	$10 \times 50 =$	36 19 60
$10 \times 25 =$	$10 \times 45 =$	$100 \times 16 =$	10 100 100

If you live in a city, draw a plan of the block your schoolhouse lot is on. Let each inch stand for 100 ft. What will $\frac{1}{4}$ inch stand for?

If you live in the country draw a plan of your schoolhouse lot and of what is on the road within about 500 ft. of it. Let each inch stand for 100 ft.

140.

If one short block = 264 ft. and 1 long block = 660 ft.

1. How many feet is half a long block? $\frac{1}{4}$ of a long block? $\frac{1}{6}$ of a long block?
2. How many feet are there in $\frac{1}{6}$ of a short block?
3. How many feet are there in two short blocks?
4. In $2\frac{1}{2}$ short blocks? ($2\frac{1}{2}$ means two blocks and half a block more.)
5. In 10 short blocks? In 10 long blocks?
6. Edward has to walk 792 ft. from his gate to the schoolhouse door. Mary has to walk 910 ft. How much farther does Mary have to walk than Edward?
7. Edward goes about 2 ft. per step. About how many steps does he take to walk the 792 ft.?
8. It takes Mary 7 minutes to walk to school, hang up her coat and hat, and be in her seat ready for work. It takes Nell 13 minutes. It takes Grace 15 minutes. How late can Mary start for school and be in her seat ready for work at 8.55 A.M.?
9. How late can Nell start?
10. How late can Grace start?

141. How Alice Earned Money

Every year on Gala Day, Alice sells lemonade to the people who go down the street past her house. This year she plans to buy three dozen lemons at 20¢ a dozen, four pounds of sugar at 7¢ a pound, a piece of ice for 15¢, some straws for 5¢, and some white paper to cover the table for 2¢.

1. How much will all this cost?
2. How many glasses must she sell at 5¢ a glass to get back what these things cost?
3. If she sells 50 glasses at 5¢ a glass, how much profit will she make? That is, how much more money will she get than the materials cost?
4. How many glasses must she sell to make 90¢ gain or profit?

142. How Mary Earned Money

Mary earned money picking berries. She sold 7 quarts at 15¢ a quart, 18 quarts at two quarts for a quarter, and 23 quarts at 10¢ a quart.

1. How much did she receive for the 7 qt. sold at 15¢?
2. How much did she receive for the 18 qt. sold for 2 qt. for a quarter?
3. How much did she receive for the 23 qt. sold at 10¢ a qt.?
4. How much did she receive in all?
5. If she buys a new dress for $1.98 and a new hat for $1.89, how much money will she have left?
6. If Mary decides to save all the money toward a party dress that costs $7.50, how much more must she save to have enough to buy it?

1. Add 296 to each of these numbers:
231 509 625 474 382 528 189 398

2. Subtract 468 from each of these numbers:
682 721 500 735 898 668 934 929

3. Multiply each of these numbers by 9:
78 106 54 29 27 45 111 110

4. Multiply each of these numbers by 7:
132 89 114 107 96 75 125 140

5. Multiply each of these numbers by 8:
113 75 69 120 84 37 29 66

6. Find the quotients and remainders when you divide each of these numbers by 6. By 7. By 8. By 9:
472 976 800 608 849 675 550 345

7. State the missing numbers:

A.	B.	C.	D.
$54 + 9 =$	$72 \div 8 =$	$8 \times 9 =$	$7 \times 7 =$
$54 - 9 =$	$72 + 8 =$	$56 \div 8 =$	$\frac{1}{3}$ of $12 =$
$54 \div 9 =$	$6 \times 7 =$	$56 - 8 =$	$6 \times 9 =$
$8 \times 7 =$	$\frac{1}{2}$ of $12 =$	$\frac{1}{4}$ of $12 =$	$\frac{1}{3}$ of $36 =$
$8 + 7 =$	$\frac{1}{2}$ of $16 =$	$\frac{1}{4}$ of $20 =$	$64 - 8 =$
$8 - 7 =$	$9 \times 9 =$	$81 - 9 =$	$64 + 8 =$
$6 \times 8 =$	$4 \times 7 =$	$81 \div 9 =$	$64 \div 8 =$
$10 \times 4 =$	$\frac{1}{2}$ of $8 =$	$\frac{1}{4}$ of $24 =$	$80 \div 8 =$
$90 \div 9 =$	$\frac{1}{2}$ of $18 =$	$10 \times 8 =$	$10 \times 6 =$

1. Lift the ounce weight. Lift the pound weight. Lift the weight that weighs 2 ounces or $\frac{1}{8}$ of a pound (one eighth of a pound).
2. Name something that weighs about an ounce.
3. Name something that weighs about a pound.
4. Name something that weighs about ten pounds.
5. Name something that weighs about seventy-five pounds.
6. Name something that weighs about ten hundred or a thousand pounds.
7. 1 ton = 2000 pounds. Guess how many boys it would take to weigh a ton, if each boy weighed 100 pounds—10 or 20 or 30?
8. How many men would it take to weigh a ton if each man weighed 200 pounds—10 or 20 or 30?

16 ounces make one pound.
2000 pounds equal 1 ton.

9. What part of a pound = 4 ounces—$\frac{1}{2}$ or $\frac{1}{4}$ or $\frac{1}{6}$ or $\frac{1}{8}$ of a pound?
10. What part of a pound = 8 ounces—$\frac{1}{2}$ or $\frac{1}{4}$ or $\frac{1}{6}$ or $\frac{1}{8}$ of a pound?
11. What part of a pound = 2 ounces—$\frac{1}{2}$ or $\frac{1}{4}$ or $\frac{1}{6}$ or $\frac{1}{8}$ of a pound?
12. State the missing numbers: One eighth of a pound = 2 ounces. Three eighths of a pound = ... ounces. Seven eighths of a pound = ...ounces. One fourth of a pound = ...ounces. Three fourths of a pound = ...ounces.
13. How many inches = $\frac{1}{4}$ ft.?
14. How many inches = $\frac{3}{4}$ ft.?

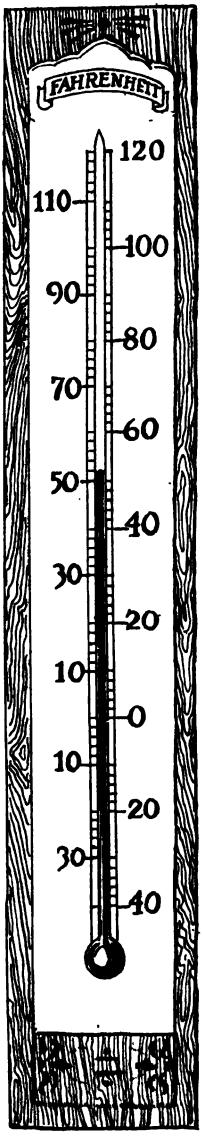
1. Mr. Jones sells tea in little packages containing 2 ounces, or $\frac{1}{8}$ of a pound, for 10¢ a package. What part of a pound would two little packages make? Four little packages? Six little packages?
2. How much does the tea cost per ounce (**per ounce** means **for each ounce that you buy**) when you buy two ounces for 10 cents?
3. If it costs 8 cents for half a pound of crackers, how much do they cost per ounce?
4. Tell the missing numbers:

A.	B.	C.	D.
$\frac{1}{2}$ of 12 =	$\frac{1}{3}$ of 12 =	$\frac{1}{4}$ of 12 =	$\frac{1}{8}$ of 16 =
$\frac{1}{2}$ of 10 =	$\frac{1}{3}$ of 9 =	$\frac{1}{4}$ of 24 =	$\frac{1}{8}$ of 48 =
$\frac{1}{2}$ of 16 =	$\frac{1}{3}$ of 21 =	$\frac{1}{4}$ of 16 =	$\frac{1}{8}$ of 24 =
$\frac{1}{2}$ of 8 =	$\frac{1}{3}$ of 15 =	$\frac{1}{4}$ of 32 =	$\frac{1}{8}$ of 56 =

5. Mr. Jones sells flour in 4-pound bags for 15¢ a bag and in 7-pound bags for 25¢ a bag. One day he sold 9 four-pound bags and eight 7-pound bags. How much money did he receive for all?

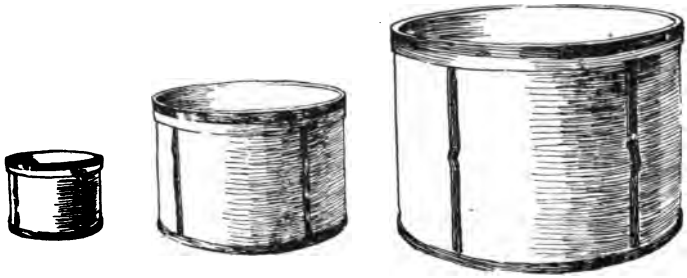
We write **lb.** *for pounds. 3 lb. means 3 pounds. 5 lb. means 5 pounds. 196 lb. means 196 pounds.*

6. How many 4-lb. bags should he get from 196 lb. of flour?
7. How many 7-pound bags should he get from 196 lb. of flour, and how many pounds of flour are left over?
8. A barrel of flour contains 196 lb. flour. How much flour do 10 barrels contain?



1. Study this picture. Find the bulb. Find the top of the column of mercury.
2. Take a real thermometer. Put the bulb in some very cold water. Does the mercury go up or down? Take the thermometer out of the cold water and put the bulb near something very hot. What happens to the mercury?
3. Find out how hot it is in the sun to-day.
4. Find out how hot it is in the shade to-day.
5. What does "*below zero*" mean—"colder than zero" or "warmer than zero"?
6. On a certain day the mercury rose from 68 degrees at 6 A.M. to 82 degrees at noon. Did it grow hotter or colder from 6 A.M. to noon? How much?
7. On a certain day the mercury fell from 76 degrees at noon to 58 degrees at midnight. How much colder did it get from noon to midnight?
8. If the temperature of a schoolroom is 76 and ought to be 68, how much too hot is it?

8 quarts = 1 peck. 32 quarts = 1 bushel. 4 pecks = 1 bushel.



A box 10 inches long 10 inches wide and $5\frac{1}{2}$ inches high holds about 1 peck.

A box 10 inches long 10 inches wide and 22 inches high holds about one bushel.

1. Will your desk hold about a peck or about a bushel or about a quart?
2. About how much do you think the waste basket will hold?
3. How many pecks are there in half a bushel?
4. How many quarts are there in half a bushel?
5. How many quarts are there in half a peck?
6. How many quarts are there in three pecks?
7. How many quarts are there in a bushel and a half?
8. Mr. Jones bought a bushel of plums and filled small baskets each holding four quarts with them. How many baskets did he fill?
9. He sold them all for 15¢ a basket. How much did he receive for them?
10. He bought a load of potatoes containing 8 bushels, for 60 cents per bushel. How much did he pay for the load?

One day John, who had just finished the third grade, was clerk in his father's store. In the forenoon he filled 20 orders, and figured out the amount of each order correctly. See if you can do as well.

This is a card his father gave him, telling some prices:

Bananas, 20¢ a dozen.	**Eggs, 36¢ a dozen.**
Butter, 32¢ a lb.	**Potatoes, 30¢ a peck.**
Cheese, 24¢ a lb.	**Sugar, 7¢ a lb. or**
Coffee, 28¢ a lb. or	**8 lb. for 50¢.**
4 lb. for a dollar.	**Tea, 60¢ a lb.**

The first order was: A dozen bananas and half a pound of butter.

The second order was: Two pounds of sugar and a half dozen eggs.

The third order was: A dozen eggs and a peck of potatoes.

The fourth order was: Half a pound of cheese, half a pound of coffee, and a 10-cent loaf of bread.

The fifth order was: Half a peck of potatoes and half a pound of tea.

The sixth order was: A quarter of a pound of tea and a 10-cent loaf of bread.

The seventh order was: Three dozen eggs, two pounds of butter, and a peck of potatoes.

The eighth order was: Ten cents' worth of cheese, a 5-cent loaf of bread, and half a pound of coffee.

The ninth order was written: ¼ lb. tea and 1 lb. sugar.

The 10th order was: 3 bananas, 3 eggs, and a 5-cent loaf of bread.

The 11th order was: Four dozen eggs, two pecks of potatoes, a dollar's worth of sugar, and a pound of tea.

The 12th order was: Half a dozen bananas, a half peck of potatoes, and a 12¢ can of beans.

The 13th order was: A pound of butter, a pound of cheese, a pound of coffee, and two 10-cent loaves of bread.

The 14th order was: A dozen eggs, a quarter of a pound of tea, and a 15¢ box of starch.

The 15th order was: Half a pound of cheese, half a pound of coffee, and a pound of sugar.

The 16th order was: Two dozen bananas, four pounds of butter, three pounds of coffee, and a peck of potatoes.

The 17th order was: Two dozen eggs, 4 pounds of coffee, 8 pounds of sugar, and a pound of tea.

The 18th order was: A dozen and a half bananas, a peck of potatoes, and two 12¢ cans of beans.

The 19th order was: A pound and a half of cheese, a 5-cent box of matches, and a peck of potatoes.

The 20th order was: One half pound of butter, two pounds of sugar, and two 5-cent boxes of Uneeda biscuit.

Count

1. By 2s to 21, beginning 1, 3, 5.
2. By 3s to 31, beginning 1, 4, 7.
3. By 4s to 41, beginning 1, 5, 9.
4. By 5s to 51, beginning 1, 6, 11.
5. By 6s to 61, beginning 1, 7, 13.
6. By 7s to 71, beginning 1, 8, 15.
7. By 8s to 81, beginning 1, 9, 17.
8. By 9s to 91, beginning 1, 10, 19.
9. By 2s to 22, beginning 2, 4, 6.
10. By 3s to 32, beginning 2, 5, 8.
11. By 4s to 42, beginning 2, 6, 10.
12. By 5s to 52, beginning 2, 7, 12.
13. By 6s to 62, beginning 2, 8, 14.
14. By 7s to 72, beginning 2, 9, 16.
15. By 8s to 82, beginning 2, 10, 18.
16. By 9s to 92, beginning 2, 11, 20.
17. By 3s to 33, beginning 3, 6, 9.
18. By 4s to 43, beginning 3, 7, 11.
19. By 5s to 53, beginning 3, 8, 13.
20. By 6s to 63, beginning 3, 9, 15.
21. By 7s to 73, beginning 3, 10, 17.
22. By 8s to 83, beginning 3, 11, 19.
23. By 9s to 93, beginning 3, 12, 21.
24. By 4s to 44, beginning 4, 8, 12.
25. By 5s to 54, beginning 4, 9, 14.
26. By 6s to 64, beginning 4, 10, 16.
27. By 7s to 74, beginning 4, 11, 18.
28. By 8s to 84, beginning 4, 12, 20.
29. By 9s to 94, beginning 4, 13, 22.

State the products:

A.	B.	C.	D.	E.	F.
2 6s =	10 5s =	6 9s =	4 8s =	9 3s =	4 1s =
7 4s =	3 2s =	5 3s =	3 4s =	2 2s =	2 9s =
10 7s =	5 7s =	6 7s =	4 2s =	5 6s =	2 1s =
4 5s =	6 1s =	10 4s =	7 3s =	9 4s =	10 8s =
6 8s =	8 3s =	9 6s =	2 5s =	3 9s =	3 3s =

G.	H.	I.	J.	K.	L.
9 2s =	5 2s =	10 3s =	6 5s =	2 8s =	9 5s =
5 4s =	5 8s =	7 6s =	7 7s =	6 2s =	7 8s =
4 7s =	2 4s =	8 8s =	6 4s =	7 9s =	7 1s =
7 5s =	10 5s =	3 5s =	4 9s =	6 6s =	6 3s =
9 9s =	8 9s =	5 1s =	7 2s =	3 1s =	2 7s =

151.

3 9 5 7 2 6 8 1 4

1. Multiply each of these numbers by 6 and add 2 to the product.
2. Then multiply each of them by 7 and add 3 to the product.
3. Then multiply each of them by 8 and add 4 to the product.
4. Then multiply each of them by 9 and add 5 to the product.
5. Then multiply each of them by 5 and add 6 to the product.
6. Then multiply each of them by 4 and add 7 to the product.
7. Then multiply each of them by 3 and add 2 to the product.

State the quotient and remainder for each of these divisions:

1.	$3\overline{)25}$	$6\overline{)50}$	$4\overline{)30}$	$8\overline{)61}$	$7\overline{)50}$	$3\overline{)20}$	$3\overline{)22}$	$9\overline{)15}$
2.	$7\overline{)61}$	$6\overline{)42}$	$9\overline{)62}$	$5\overline{)19}$	$3\overline{)21}$	$9\overline{)52}$	$9\overline{)57}$	$4\overline{)34}$
3.	$9\overline{)73}$	$5\overline{)49}$	$6\overline{)16}$	$7\overline{)67}$	$4\overline{)22}$	$8\overline{)42}$	$7\overline{)60}$	$7\overline{)16}$
4.	$5\overline{)42}$	$9\overline{)67}$	$8\overline{)67}$	$8\overline{)75}$	$9\overline{)42}$	$6\overline{)18}$	$5\overline{)18}$	$8\overline{)70}$
5.	$6\overline{)40}$	$4\overline{)25}$	$6\overline{)49}$	$6\overline{)52}$	$8\overline{)45}$	$9\overline{)28}$	$7\overline{)49}$	$3\overline{)26}$
6.	$5\overline{)16}$	$8\overline{)68}$	$9\overline{)40}$	$8\overline{)28}$	$7\overline{)68}$	$5\overline{)34}$	$8\overline{)57}$	$8\overline{)49}$
7.	$9\overline{)68}$	$4\overline{)31}$	$6\overline{)55}$	$4\overline{)29}$	$5\overline{)31}$	$9\overline{)56}$	$6\overline{)20}$	$8\overline{)60}$
8.	$5\overline{)46}$	$7\overline{)34}$	$8\overline{)26}$	$7\overline{)65}$	$9\overline{)25}$	$8\overline{)50}$	$7\overline{)52}$	$4\overline{)18}$
9.	$8\overline{)77}$	$9\overline{)75}$	$9\overline{)50}$	$9\overline{)51}$	$4\overline{)21}$	$7\overline{)55}$	$6\overline{)31}$	$6\overline{)51}$
10.	$8\overline{)15}$	$8\overline{)18}$	$6\overline{)34}$	$8\overline{)63}$	$9\overline{)69}$	$8\overline{)51}$	$4\overline{)39}$	$9\overline{)39}$

153.

Write the quotients and remainders:

1.	2.	3.	4.	5.
$4\overline{)375}$	$6\overline{)500}$	$5\overline{)425}$	$8\overline{)144}$	$9\overline{)835}$
6.	**7.**	**8.**	**9.**	**10.**
$9\overline{)150}$	$6\overline{)150}$	$7\overline{)650}$	$8\overline{)500}$	$3\overline{)225}$
11.	**12.**	**13.**	**14.**	**15.**
$9\overline{)250}$	$7\overline{)455}$	$6\overline{)75}$	$8\overline{)175}$	$4\overline{)128}$

Write the products:

16.	17.	18.	19.	20.
\$1.03	\$1.45	\$2.18	\$1.36	\$1.89
9	6	4	7	5

Supply the missing numbers:

A.

1 qt. = ... pt.

1 gal. = ... qt.

1 ft. = ... in.

1 yd. = ... ft.

1 sq. yd. = ... sq. ft.

1 week = ... days.

1 day = ... hr.

1 min. = ... sec.

1 lb. = ... ounces.

B.

1. A rug 6 ft. wide and 9 ft. long covers . . . . sq. ft.
2. A garden 6 yd. wide and 7 yd. long contains . . . . sq. yd.
3. $\frac{1}{2}$ hr. = ... min. $\frac{1}{4}$ hr. = ... min. $\frac{1}{3}$ hr. = ... min.
4. $\frac{1}{2}$ dozen = ... $\frac{1}{4}$ dozen = ... $\frac{1}{3}$ dozen = ...
5. 7 quarts of milk at 8¢ a qt. cost . . . . ¢.
6. 5 boys bought a ball together for 25¢. Dividing the cost equally, each boy paid . . . . ¢
7. Will has 42¢. How much more must he get to have enough to buy a 50¢ saw?

C.

1. A train goes 90 miles in 3 hours. It goes . . . . miles per hour.
2. Nell paid 14 cents for 2 pounds of sugar. The sugar cost . . . . ¢ per pound.
3. Tom bought a ball for 5¢, a bat for 10¢, and a glove for 25¢. The total cost for all was . . . . ¢.
4. 6 is what part of a dozen? 3 inches is what part of a foot? 1 foot is what part of a yard?
5. $\frac{1}{2}$ hr. = . . . minutes. $\frac{1}{6}$ hr. = . . . minutes.

Find the sums. You need not copy the numbers. Lay a sheet of paper over this page. Write the sums for Row A on the top line of the sheet of paper. Then make a one-inch fold in the sheet of paper and write the sums for Row B.

Row A

1.	2.	3.	4.	5.	6.	7.
138	234	52	203	223	106	50
249	269	94	119	152	194	70
356	165	87	402	198	295	87
178	267	95	168	149	256	92

Row B

8.	9.	10.	11.	12.	13.	14.
244	125	38	105	99	27	55
26	100	46	220	67	78	83
303	275	29	105	16	248	72
39	150	87	123	24	165	64
152	200	17	137	85	116	19

156.

Find the differences. Use a sheet of paper as you did in writing the sums.

1.	2.	3.	4.	5.	6.	7.
536	600	925	225	525	425	337
72	194	350	67	475	219	169

8.	9.	10.	11.	12.	13.	14.
100	100	100	500	500	500	300
37	82	68	125	249	198	217

15.	16.	17.	18.	19.	20.	21.
475	514	763	875	493	725	725
167	250	156	277	268	245	225

ARITHMETIC

BOOK ONE, PART TWO

1. Vacation Activities

Each child gave the class a problem to solve about something he did in vacation. Some children added other problems. Can you solve them all correctly?

(*Write any numbers you need to write to find the answers.*)

1. Mary gave this one: "I went to my uncle's farm. I went 296 miles by boat, 56 miles by train, and 9 miles by carriage. What was the total distance?"
2. Nell said, "I went on an automobile trip for six days. We rode 498 miles. How much was that per day?"
3. Joe said, "I earned $1.50 a week for eight weeks by working on a grocery wagon. How much did I earn in all?"
4. Tom said, "I earned twelve dollars but I worked only six weeks. How much did I earn per week?"
5. Alice said, "I had a garden 8 ft. long and 8 ft. wide. How many square feet were there in it?"
6. Grace said, "I had a garden that must have been five times as big as Alice's, I think. It was 20 ft. wide and 32 ft. long. How many square feet were there in my garden?"
7. Lucy said, "Was Grace's garden really 5 times as big as Alice's? I think it was 10 times as big. Is Grace right or am I right?"

8. Maud said, "I raised sweet peas in my garden and sold them for 25¢ a bunch. How many bunches did I have to sell to make a dollar?"
9. Kate said, "If Maud put 50 sweet peas in each bunch, how many sweet peas did she have to sell to get a dollar?"
10. Dick said, "Eight of us boys bought a tent together. It cost $12.32 for the tent and parcel postage on it. How much did I have to pay?"
11. Will said, "I bought a bicycle for $12.00 and used it for nine weeks and then sold it for $9.75. How much did it cost me to have the bicycle for the nine weeks?"
12. John said, "How much did it cost Will per week for the use of his bicycle?"
13. Tom said, "I rode 18 miles one day in 3 hours. How many miles did I go per hour?"
14. George said, "My brother went 72 miles in 3 hours on a motorcycle. How many miles per hour was that?"
15. Fred said, "We counted how many automobiles went past our house in ten minutes, and one day there were fifty. How many would that be per minute?"
16. Fred's brother said, "One day when we counted there were just 23 every ten minutes from 5 o'clock to 6. How many went by in the whole hour?"
17. Henry said, "How many persons will 7 cars seat if each car has 9 seats, holding 5 persons each?"

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

Multiply each of these numbers by 7. Then by 4. By 8. By 5. By 9, 6, 3, 10.

2. **30 41 53 60 55 25 35 40 21**

Divide each of these numbers by 6. Then by 8. By 9, 4, 7, 5. Tell the quotient and the remainder.

3. **15 11 18 13 16 14 17 12 19 25**

Subtract 9 from each of these numbers. Then subtract 7. Then subtract 5, 3, 8, 6, 4.

4. Add each column:

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

5. Tell the missing numbers:

A.	B.	C.	D.
9 + 3 =	20 ÷ 5 =	10 + 2 =	5 + 5 =
9 − 3 =	20 × 5 =	10 × 2 =	5 − 5 =
9 × 3 =	20 − 5 =	10 − 2 =	5 × 5 =
9 ÷ 3 =	20 + 5 =	10 ÷ 2 =	5 ÷ 5 =

6. Say the division tables. Say them like this:

½ of 2 = 1, ½ of 4 = 2, ½ of 6 = 3, ½ of 8 = 4, etc.
⅓ of 3 = 1, ⅓ of 6 = 2, ⅓ of 9 = 3, ⅓ of 12 = 4, etc.
¼ of 4 = 1, ¼ of 8 = 2, ¼ of 12 = 3, ¼ of 16 = 4, etc.
⅕ of 5 = 1, ⅕ of 10 = 2, etc.
⅙ of 6 = 1, ⅙ of 12 = 2, etc.

1. Add 75
219
324
197
148

Check your result by adding downward.
Then check your result by adding 1, 1, 3, and 2 and writing 700 for 7 hundreds
Then add 4, 9, 2, 1, and 7 and write 230 for 23 tens
Then add 8, 7, 4, 9, and 5 and write 33
Then add the 700, 230, and 33.

Find the sums. Check your results by adding downward. Then check them by adding the hundreds, the tens, and the ones, and adding the three numbers.

2.	3.	4.	5.	6.	7.	8.
252	186	129	170	187	120	194
120	143	315	175	235	76	140
95	173	144	66	84	89	65
416	258	239	159	197	246	238
147	137	168	128	275	294	257

Subtract to find the differences. Check your results by adding the difference to the smaller number.

9.	10.	11.	12.	13.	14.	15.
1275	1000	144	360	1225	309	1680
918	698	75	160	850	175	425

Find the products:

16.	17.	18.	19.	20.	21.	22.
128	193	137	309	275	108	120
6	5	7	3	4	9	8

23. Check your result for 16.
Do this by thinking 6×8 *and writing* 48
6×20 *and writing* 120
6×100 *and writing* 600
Then add.

24. Check your results for 17, 18, 19, 20, 21, and 22.

1. Multiply. Say the product of each pair of numbers.

A.		B.		C.		D.		E.	
7	6	9	8	8	7	6	4	7	4
4	8	8	6	6	8	9	5	8	9
9	7	6	7	7	9	4	9	6	5
6	9	7	8	6	6	7	7	9	9
8	5	9	6	8	4	8	8	4	7

2. Divide. Give as many quotients and remainders as you can in two minutes. Then try again. See if you can beat your record.

A.	$3\overline{)25}$	$4\overline{)25}$	$6\overline{)25}$	$9\overline{)25}$	$7\overline{)25}$	$9\overline{)60}$	$8\overline{)60}$	$7\overline{)60}$
B.	$6\overline{)50}$	$7\overline{)50}$	$8\overline{)50}$	$9\overline{)50}$	$6\overline{)40}$	$7\overline{)40}$	$8\overline{)70}$	$9\overline{)70}$
C.	$9\overline{)75}$	$8\overline{)45}$	$4\overline{)35}$	$9\overline{)35}$	$4\overline{)30}$	$6\overline{)30}$	$7\overline{)30}$	$9\overline{)80}$

5.

Find the quotients and remainders:

1.	2.	3.	4.	5.	6.
$4\overline{)125}$	$8\overline{)375}$	$3\overline{)1150}$	$6\overline{)1275}$	$9\overline{)1400}$	$5\overline{)1275}$
7.	**8.**	**9.**	**10.**	**11.**	**12.**
$7\overline{)1850}$	$5\overline{)875}$	$6\overline{)3120}$	$4\overline{)491}$	$8\overline{)2495}$	$2\overline{)1635}$

13. $4\overline{)825}$ *Think "8 = . . . 4s." Write 2 over the 8.*
2 = zero 4s and 2 remainder. Write 0 over the 2.
25 = . . . 4s and . . . remainder.

14. $4\overline{)1632}$ *Think "16 = . . . 4s." Write . . . over the 6 of 1632.*
3 = 0 4s and . . . remainder. Write 0 over the 3.
32 = . . . 4s.

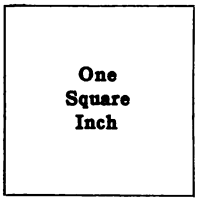
15.	16.	17.	18.	19.	20.
$8\overline{)3225}$	$7\overline{)2116}$	$3\overline{)917}$	$3\overline{)1518}$	$5\overline{)2532}$	$5\overline{)516}$

Check your answers to 15, 16, 17, 18, 19, and 20.

Sometimes you have to use large numbers like 5274 or 9863 or 4250. We read 5274, five thousand two hundred seventy-four.

1. Read 9863, ...thousand ...hundred ....

2. How do you read 4250?



You will know what these large numbers mean if you remember that it takes 1296 square inches of cloth to cover a table 3 feet long and 3 feet wide.

There are 1760 yards or 5280 feet in a mile.

If you save a cent a day for ten years you will save about thirty-six hundred(3600) cents.

A horse weighs two or three thousand times as much as this book.

Twenty-five dollars equal 2500 cents.

Say the right words or numbers where the dots are:

3. $20 = ...cents. $45 = ...cents. $32 = ...cents.
$17.50 = ...cents. $12.05 = ...cents.
$50 = ...cents. $90 = ...cents.

4. 2800 cents = ...dollars. 2500 cents = ...dollars.
1075 cents = ...dollars and ... cents.
3520 cents = ...dollars and...cents.

5. Read these numbers:

5274	9863	4250	3572	6124
6166	6666	5062	5000	5008
2075	3208	4005	6274	3838

6. State the products:

500	2000	800	2222
9	4	7	3

7. State the quotients: $7\overline{)630}$ $3\overline{)6000}$ $4\overline{)816}$

Find the sums:

7000	7	6	6000	4000	6000
600	20	50	8	30	800
40	800	4000	500	5000	80
8	9000	300	70	40	8

8.

Write in figures:

1. Seven thousand six hundred eighty-four.
2. Five thousand three hundred seventy-two.
3. Nine thousand seven hundred forty-five.
4. Six thousand five hundred seventy.
5. Seven thousand thirty-six.
6. Four thousand nine hundred six.
7. Eight thousand two hundred four.
8. Six thousand three hundred twenty.
9. Eight thousand sixty-seven.
10. Two thousand six hundred nine.
11. Seven thousand.
12. Seven thousand four hundred.
13. Seven thousand four hundred thirty.
14. Seven thousand four hundred thirty-two.
15. Three thousand six.
16. Three thousand sixty.
17. Five thousand six hundred.

Find the sums:

18.	19.	20.	21.	22.	23.
2419	1502	2035	1958	1398	1089
3065	3734	2687	1069	2876	1715
1928	2689	1980	1774	1802	3650
1795	1434	2525	1416	1369	1927

24. Add 293, 2681, 475, 93 and 4120.

The Second Grade, Rooms A, B, and C, had these supplies:

3 boxes of pencils, 144 pencils in a box.
6 boxes of chalk, 144 pieces in a box.
3 big boxes of inch cubes, 1728 cubes in a box.
5 boxes of play money, 250 pennies in a box.
72 pads of paper, 96 sheets in a pad.

1. How many pencils did they have in all?
2. How many pieces of chalk did they have in all?
3. How many inch cubes did they have in all?
4. How many play pennies did they have in all?
5. How many sheets of paper did they have in all?

Here is a quick way to find out:

96
72
192
672
6912

Think "2 6s=12." Write the 2 under the 2 of 72 in the ones column. Remember the 1.
Think "2 9s=18. 18 and 1=19." Write the 19.
Think "7 6s=42." Write the 2 under the 7 of 72 in the tens column. Remember the 4.
Think "7 9s=63. 63 and 4=67." Write the 67.
Add. Remember that the 672 counts as 6720 in adding.

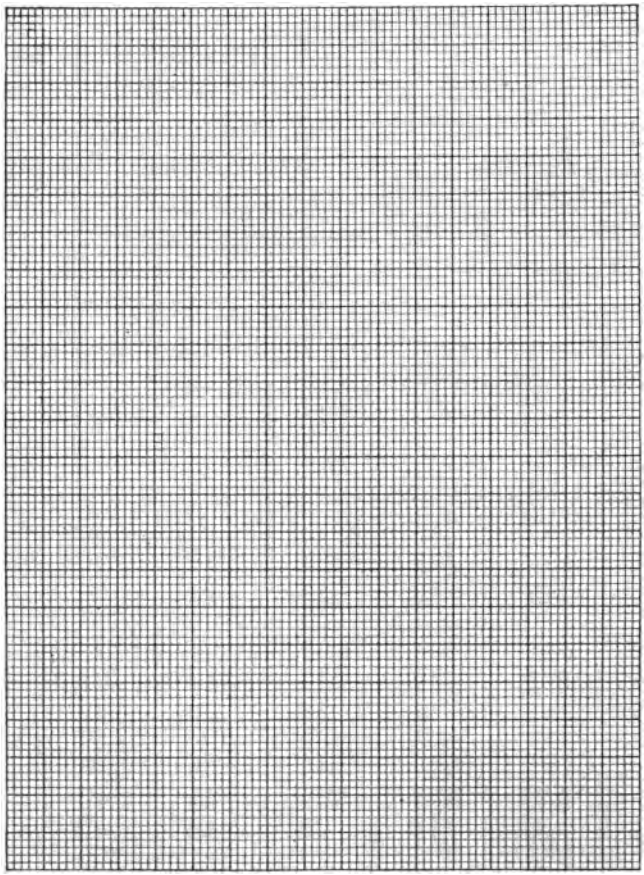
6. For the whole school, the principal bought 54 boxes of chalk, 144 pieces in a box. How many pieces of chalk did he buy for the whole school?

144
54
576
720
7776

Remember that—
First you multiply 144 by 4.
Then you multiply 144 by 5.
You write the 0 of 20 under the 5 by which you are multiplying.
The 720 counts as 7200 in adding.

7. How many pieces of cloth are there in 23 boxes, if each box contains 144 pieces?

1. Guess how many little squares there are in all in this picture. Then find out just how many there are by multiplying 115 by 85.



2. What was the difference between your guess and the right answer?
3. Guess how many square inches there are in 1 sq. yd.

Then find out how many there are by multiplying 36 by 36.

4. How near did you guess?

5. Guess how many half pints or glassfuls of water there are in a big barrel that holds 42 gallons. Then find out just how many there are by multiplying. 1 gallon equals 4 qt. or 16 half pints.

6. Guess how many square inches there are in a blanket 84 inches long and 72 inches wide. Then find the right number by multiplying.

7. Nell's garden is 57 feet long and 23 feet wide. How many square feet does it contain?

8. Alice's garden is 43 feet long and 32 feet wide. How many square feet does it contain?

11.

Find the products:

1.	2.	3.	4.	5.	6.	7.
314	216	142	423	248	312	312
32	27	66	21	24	33	17

8.	9.	10.	11.	12.	13.	14.
149	260	630	230	310	175	300
44	9	4	28	36	42	8

15.	16.	17.	18.	19.	20.	21.
300	160	530	206	54	70	91
23	55	13	23	46	42	77

Find the quotients:

22.	23.	24.	25.	26.	27.
$5\overline{)1025}$	$6\overline{)648}$	$8\overline{)2472}$	$7\overline{)364}$	$2\overline{)4020}$	$9\overline{)5400}$

1. The Malden Midgets' baseball team has 9 regular players and 4 substitutes. How much will it cost for suits for all at $1.75 each?

Put $ before the product to show that the numbers mean dollars and cents. Put a decimal point in the product to show which numbers mean dollars and which mean cents.

2. The Girls' Club has 37 members. Each gave $.75 to help buy an organ for the church. How much did they give in all?

Find the products:

3.	4.	5.	6.	7.	8.	9.
$1.25	$1.98	$2.50	$3.49	$.89	$2.40	$3.08
23	36	17	14	65	28	34

13.

1. A barrel of flour contains 196 pounds. 30 barrels contain how many pounds?

196 $0 \times 196 = 0$. *Write 0 under the 0.*
30 *Write the 8 of 18 under the 3.*

Find the products:

2.	3.	4.	5.	6.	7.	8.
32	196	413	256	122	175	89
30	40	20	30	70	50	40

Find the products. Put $ and . in the products where they belong.

9.	10.	11.	12.	13.	14.	15.
$1.25	$2.75	$3.50	$1.29	$.69	$2.04	$2.80
50	30	20	70	90	40	30

The children play "How far."

It is Dick's turn. Dick says, "I am a railroad train. I go 35 miles an hour for 9 hours. How far do I go?" Then he goes to the blackboard and writes the numbers and the answer. The other children begin work as soon as Dick states the problem, and try to find the right answer before Dick does.

It is Alice's turn. Alice says, "I am an automobile. I go 18 miles an hour for 6 hours. How far do I go?" Then she goes to the blackboard and finds the answer. The other children try to find the answer to Alice's problem before she does.

Make up problems so that you can play this game. Practice with these so that you can find the right answers quickly:

1. 17 mi. per hr. for 3 hours.
2. 32 mi. per hr. for 9 hr.
3. 47 mi. per hr. for 8 hr.
4. 225 mi. per day for 22 days.
5. 56 mi. per hr. for half an hour.

15. Playing "Saving"

The children played "Saving." One girl said, "I am saving for a sweater. It will cost $3.98. I have $2.65 now. How much more must I save?" Then she went to the blackboard and wrote the numbers and the answer. The other children tried to get the right answer before she did.

Make up problems for this game. Your teacher will let you play it.

A child states a problem like, "23 pints equal how many quarts and how many pints?" Then he goes to the blackboard and writes it, putting in the right numbers instead of the two "how many's." The other children try to find the right answer before he does. Practice with these problems so that you can play the game well. Look at the tables at the bottom of the page when you need to.

1. 25 pt. = . . qt. and . . pt.
2. 19 qt. = . . gal. and . . qt.
3. 29 ft. = . . yd. and . . ft.
4. 20 in. = . . ft. and . . in.
5. 9 gills = . . pt. and . . gills.
6. 35 qt. = . . pk. and . . qt.
7. 20 da. = . . wk. and . . da.
8. 25 qt. = . . gal. and . . qt.
9. 100 sec. = . . min. and . . sec.
10. 15 pt. = . . qt. and . . pt.
11. 15 pt. = . . gal. and . . pt.
12. 38 pt. = . . gal. and . . pt.
13. 50 qt. = . . pk. and . . qt.
14. 50 pk. = . . bu. and . . pk.
15. 200 min. = . . hr. and . . min.
16. 30 da. = . . wk. and . . da.

Learn these tables. They will help you to play the game well.

4 gills	**= 1 pint.**	**pt. means pint or pints.**
2 pints	**= 1 quart.**	**qt. means quart or quarts.**
4 quarts	**= 1 gallon.**	**gal. means gallon or gallons.**
8 pints	**= 1 gallon.**	
8 quarts	**= 1 peck.**	**pk. means peck or pecks.**
4 pecks	**= 1 bushel.**	**bu. means bushel or bushels.**
60 seconds	**= 1 minute.**	**min. means minute or minutes.** **sec. means second or seconds.**
60 minutes	**= 1 hour.**	**hr. means hour or hours.**
24 hours	**= 1 day.**	**da. means day or days.**
7 days	**= 1 week.**	**wk. means week or weeks.**

1. Learn what these words mean:

128
146
117
391

128, 146, and 117 are the **addends,** or numbers to be added.

391 is the **sum.** The operation is **addition.**

4720 is the **minuend.**
1285 is the **subtrahend.**
3435 is the **difference.** The operation is **subtraction.**

524
6
3144

524 is the **multiplicand,** or number to be multiplied. 6 is the **multiplier.**

3144 is the **product.** The operation is **multiplication.**

182
9|1638

1638 is the **dividend,** or number to be divided.
9 is the **divisor.**
182 is the **quotient.** The operation is **division.**

2. + means **"plus."** It indicates the operation of adding.
− means **"minus."** What operation does it indicate?
What operation does × indicate?
What operation does ÷ indicate?

Perform the operations indicated, and write the results:

3.	4.	5.	6.
23×28	$1346 \div 2$	$3875 - 2490$	$1613 + 2143 + 1278$

7.	8.	9.	10.
$613 - 245$	43×54	$81 + 93 + 75$	$852 \div 3$

1. It costs 25¢ to send a telegram of 10 words from New York to Philadelphia in the daytime. It costs 2¢ a word for each word over 10. What does it cost for a telegram of 16 words?

These are the rates for a telegram from New York to other cities:

	For Ten Words	For Each Word Over Ten
New York to Chicago	**50¢**	**3¢**
New York to St. Louis	**50¢**	**3¢**
New York to Denver	**75¢**	**5¢**
New York to San Francisco	**$1.10**	**7¢**

Find the cost of each of these telegrams sent from New York:

2. A 17-word telegram to Chicago.
3. A 20-word telegram to St. Louis.
4. A 15-word telegram to Denver.
5. A 16-word telegram to San Francisco.
6. A 19-word telegram to Chicago.
7. A 25-word telegram to San Francisco.
8. How much do you save in sending telegram A instead of telegram B from New York to San Francisco?

A. *Arrive Saturday fourth. Health excellent. Disregard earlier telegram. Arrange meeting with Jones.*

B. *Arrive on Saturday the fourth. My health is very good. Pay no attention to telegrams sent before this. See if you can get Jones to meet me.*

9. Write a telegram. Tell from what place it is sent and to what place it goes. Find the cost.

The express rates from Chicago to San Francisco are:

For a package weighing 5 lb., it costs $.65.
For a package weighing 10 lb., it costs $1.11.
For a package weighing 20 lb., it costs $2.02.
For a package weighing 25 lb., it costs $2.47.
For a package weighing 100 lb., it costs $9.30.

10. How much less does it cost to send 100 pounds in one package than to send four 25-pound packages?
11. Than to send five 20-pound packages?
12. Than to send ten 10-pound packages?
13. Than to send twenty packages of 5 pounds each?
14. You can send 100 pounds from Chicago to San Francisco by freight for $3.40. How much less is that than the express rate?
15. Does it cost four times as much to send 20 lbs. by express as it costs to send 5 lbs.?

19. Playing "Cashier"

Play that you are a cashier in a store. The customer hands you the money and a slip of paper telling the amount of his purchase. You count out the pennies, nickels, dimes, quarters, half dollars, etc., that make the right change. Make yourself 10 one-dollar bills, $5 worth of 50-cent pieces and quarters, $2 worth of dimes and nickels, and 10 pennies. Suppose the slip said 19¢ and the customer gave you a dollar bill; you could count out 1¢ and think 20, a nickel and think 25, a 25-cent piece and think 50, and a half dollar and think 1 dollar.

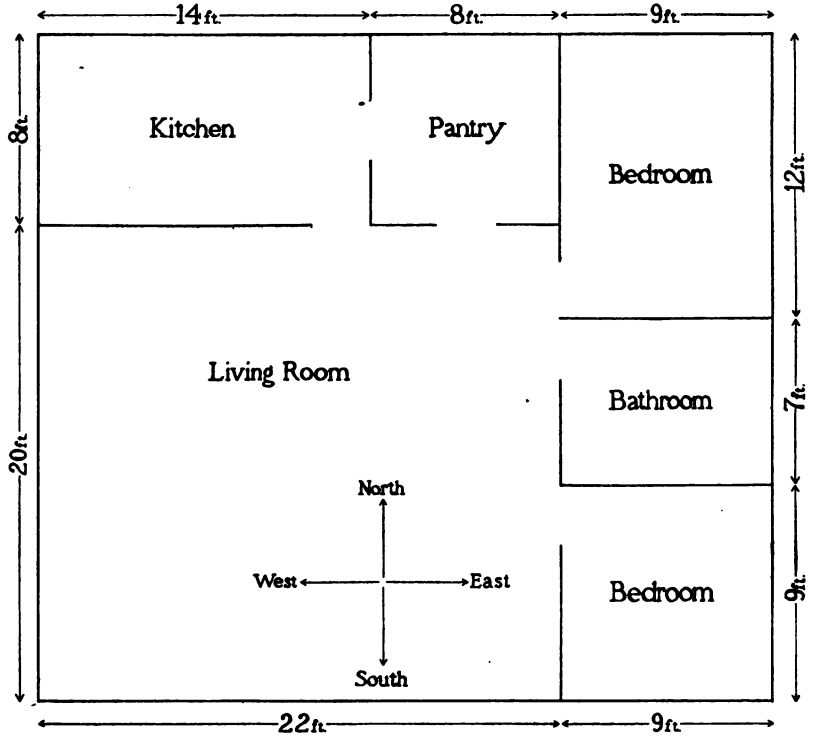
1. Make change for 17¢ from a dollar.
2. Make change for 64¢ from a dollar.
3. Make change for 18¢ from a 50-cent piece.

Tell what coins you would give as change for each of these purchases:

4. 3¢ from a dime.
5. 11¢ from two dimes.
6. 28¢ from three dimes.
7. 28¢ from a half dollar.
8. 9¢ from a 25¢ piece.
9. 57¢ from 75 cents.
10. 63¢ from a dollar.
11. 89¢ from a dollar.
12. 98¢ from a two-dollar bill.
13. 75¢ from a five-dollar bill.
14. 49¢ from a two-dollar bill.
15. 16¢ from a half dollar.
16. 13¢ from a dollar.
17. 35¢ from a half dollar.
18. 27¢ from a dollar.
19. 44¢ from a two-dollar bill.
20. $1.69 from a five-dollar bill.
21. 8¢ from a half dollar.

22. In what different ways could you make change for 12¢ from a dollar?
23. Play that a man does not buy anything, but just wants change for a bill. He gives you a two-dollar bill and says, "Please give me this in quarters" (25-cent pieces). How many should you give him?
24. He gives you a two-dollar bill and says, "Please give me half of this in dimes and half in nickels." How many dimes should you give him? How many nickels? (A nickel = 5 cents.)
25. He gives you a five-dollar bill and says, "Please give me this in dimes." How many dimes should you give him.?
26. How many nickels should you give for a five-dollar bill?
27. How many half-dollars should you give for a two-dollar bill?
28. How many half-dollars should you give for a five-dollar bill?

Frank's father and mother wish to build a new house. Here is the drawing they made to show the builder about what they want. Each inch stands for 8 feet.



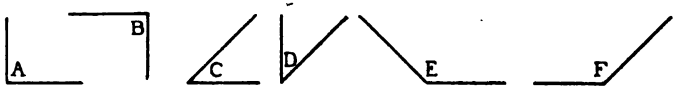
1. Look at the dimension lines (←9 ft.→ is a dimension line) and numbers on the south side of the house. How long is the south side of the house?
2. Look at the dimension lines at the east side of the house. How long is the east end of the big

bedroom? How long is the east end of the bathroom? How long is the east end of the small bedroom? How long is the east side of the house?

3. What are the dimensions of the whole house?
4. How many square feet of floor space has it?
5. How many square feet of floor space has the living-room? The kitchen? The pantry? The big bedroom on the east side? The small bedroom on the east side? The bathroom?
6. Draw a floor plan of a house such as you would like to have. Put in lines and numbers to show the dimensions of each room. Let each inch stand for 8 feet. What will ½ inch stand for? What will ¼ inch stand for? What will ⅛ inch stand for?
7. Find out how many square feet of floor space each room in your house will have.
8. Dick wants a room 8 ft. wide with 80 square feet of floor space. How long will it be?
9. Mary wants a closet with 12 square feet of floor space. What dimensions may it have?

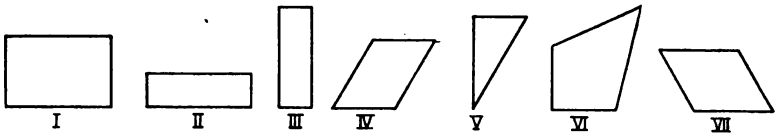
21. Drawing to Scale

1. Which of these angles are right angles?



2. Which are equal to about half a right angle?
3. Which are equal to about a right angle and a half?

4. A rectangle has four sides and four right angles as its corners. Which of these are rectangles?



5. Draw a rectangle 2 in. long and 1 in. wide. Call it A. Draw a rectangle 2 in. long and 2 in. wide. Call it B. Draw a rectangle 2 in. long and ½ in. wide. Call it C. Draw a rectangle 4 in. long and ½ in. wide. Call it D. Draw a rectangle 1 in. long and ½ in. wide. Call it E.
6. Tell how many sq. in. each rectangle contains.
7. How many square inches are there in a page 8 in. by 7 in.? (8 in. by 7 in. means a rectangle 8 in. long and 7 in. wide.)
8. Tell how many square inches there are in a picture that is 4 in. by 5 in. In one that is 5 in. by 8 in. In one that is 6 in. by 9 in.
9. How many square feet are there in a rug that is 4 ft. by 2 ft.?
10. In a rug that is 7 ft. by 9 ft.?
11. How many square yards are there in a rug that is 4 yd. by 3 yd.?
12. Lee Park is a rectangle 2 miles long and ½ mile wide. How many square miles does it contain? Draw a plan of it, letting 1 inch stand for 1 mile.
13. Find out what you can about how long a rod is, how big a square rod is, and how big an acre is. To-morrow you may tell what you have found out.

1. Tell what you found out about rods and square rods.
2. Tell what you found out about acres.
3. Which of these would you measure in sq. in.? Which would you measure in sq. ft. or sq. yd.? Which would you measure in sq. rd. or acres? Which would you measure in sq. miles?

The floor of a room. The United States. France. A photograph. A field of corn. A city park.

1 acre equals 43,560 sq. ft.

4. How many sq. ft. are there in one half of an acre?
5. In ¼ acre (one fourth of an acre)? In ⅛ acre?
6. Divide an acre into five equal parts. How many square feet will there be in each fifth (⅕) of an acre?
7. Divide an acre into eight equal parts. How many sq. ft. are there in each eighth (⅛) of an acre?

1 acre equals 160 square rods (sq. rd.).

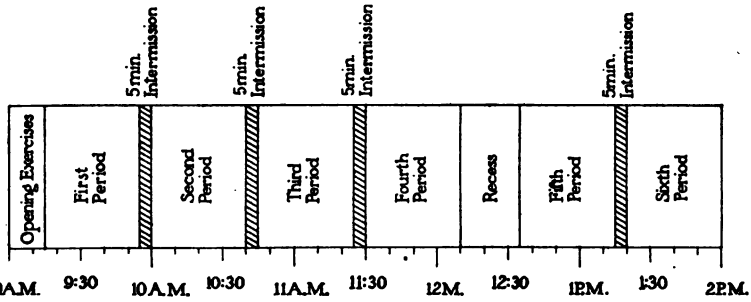
8. How many square rods are there in ½ acre?
9. In ¼ acre? 10. In ⅛ acre? 11. In 2 acres?
12. In 4 acres? 13. In 10 acres?
14. Which is larger, a field 28 rods by 15 rods, or a field 22 rods by 20 rods?

1 square mile = 640 acres.

15. How many acres are there in a town that is 6 miles long and 6 miles wide?
16. How many acres are there in ¼ sq. mi.?
17. Is the area of a park that contains 325 acres about ¼ sq. mi. or about ½ sq. mi. or about 2 sq. mi.?

1. Which is larger, a rug 6 by 9 ft., or a rug 8 by 7 ft.? How much larger?
2. Which is larger, a forest of 10 square miles or a forest of 6500 acres? How much larger?
3. Which is larger, a room 12 by 18 ft. or a room 15 by 16 ft.? How much larger?
4. A mile is 5280 feet long. How many feet long is a quarter of a mile?
5. Which is longer, a quarter of a mile or 500 yd.? How much longer?
6. How many yards make a mile?
7. Which is longer, four hours or four hundred minutes? How much longer?
8. If a boy walks for an hour at the rate of 96 yards a minute, how far will he go?
9. Which is longer, an hour and a half or 100 minutes?
10. Which goes the longer distance, a train going 32 miles an hour for 5 hours, or a train going 38 miles an hour for 4 hours? How much longer?
11. The 4th grade has a space 28 ft. by 16 ft. for a garden. How many square feet does it contain?
12. 128 sq. ft. are used for paths. How much is left for plots for the children?
13. If each plot is 2 ft. by 4 ft., how many plots will there be?
14. Each child in the 5th grade has a plot 3 ft. by 4 ft. There are 32 children. How many square feet do the 5th grade children have in all?
15. Which is longer, an hour and a quarter or 80 min.?

Henry's big brother Frank goes to high school. This picture shows his school program.



1. School begins at 9 A.M. and closes at 2 P.M. How many hours long is his school day? 2. How many minutes are there in his school day? 3. When does the first period begin? 4. The second period? 5. How many minutes are spent in recitation and study periods? 6. How much time is spent in opening exercises and 5-minute intermissions? 7. How much time is left for recess?
8. Henry requires 25 minutes to get from his house to the school. How late can he leave the house and still not be late to school?
9. School is in session daily except Saturdays and Sundays. How many recitation and study periods are there in a week?
10. Each week Frank spends 5 periods in the English class, 5 periods in the Algebra class, 5 in the History class, 5 in the Biology class, and 1 in the Drawing class. How many periods a week has he left for study by himself in school?

25.

1. Find out what the school program is for your class and draw a plan of it. Let a width of $\frac{1}{8}$ inch stand for 10 min.
2. Make up three problems for the class to solve about your school program. Make one that is easy, one that is harder, and one that is very hard.

26.

1. Draw a rectangle that is 6 inches long and 1 inch wide. Use it to make a plan of the time from 6 A.M. to noon for a girl who got up at 6 A.M., was dressed by 6:15, helped mother till 7, had breakfast till 7:30, studied for an hour, started for school, reached school at 9, stayed in school 3 hours.
2. Make two easy problems and two hard problems for the class to solve about this girl.
3. Make five problems for the class to solve about how she spent the time from noon to bedtime.

27.

1. How many weeks must school keep in a year to have 180 school days?
2. If there are 180 school days, how many days are left out of the year with no school?
3. In September, 1915, Kate had been to school for six years. In what year did she begin school?
4. The Lincoln School was built in 1897. How long ago was that?

1. Find the product of 213 Check your result by 42
   42 213
   126
   42
   84
   8946

2. Multiply 324 by 26. Check your result by multiplying 26 by 324.

3. Find the products. Check each answer by multiplying.

a.	*b.*	*c.*	*d.*	*e.*	*f.*	*g.*
312	428	248	96	189	398	72
28	19	24	65	49	18	66

4. 623 children went on Mrs. Straus' excursion. Mrs. Straus paid $.69 for the round-trip fare for each child. How much did she pay in all? You may multiply 69 by 623 or multiply 623 by 69. *But be sure to put $ and . in the right places in your result.*

5. 297 persons paid 15 cents each to come to the school entertainment. How much did they pay in all? Multiply 15 by 297 or 297 by 15, but be sure to put $ and . in the right places in your result.

6. The children in the Adams School gave 20 cents apiece to help buy swings, teeter-boards, and other things for the playground. There were 488 children. How much did they give in all?

7. The total cost for the things for the playground was $110. How much more was needed than the children gave?

Sometimes you need to use very large numbers like 10,736 sq. ft., or like forty thousand or a million. $450 is 45,000¢ (forty-five thousand cents). The wall of one side of your schoolroom contains about thirty thousand square inches (30,000 sq. in.). There are 86,400 seconds in a day.

1. Guess how many feet there are in 25 miles.
2. Find the right answer by multiplying. There are 5,280 ft. in one mile.
3. How near did you guess?
4. Guess how many sheets of paper like this there would be in a pile ten feet high.
5. Find the right answer, counting 260 sheets to an inch.
6. How near did you guess?
7. Guess how many pounds 3 empty freight cars weigh.
8. Find the right answer, counting 36,450 pounds as the weight of one freight car.
9. How near did you guess?
10. Name some place that you think is about 5000 feet from the school. About 10,000 ft. from the school. About 25,000 ft. from the school. About 50,000 ft. from the school. About 95,000 ft. or 18 miles from the school.

Find the quotients. Put $ and . in each quotient to show which numbers mean dollars and which numbers mean cents.

11.	12.	13.	14.	15.
2|$164.50	5|$326.25	3|$136.38	4|$18.24	8|$38.48

1. Copy this. Write the missing numbers. Show it to your teacher to be sure you have them all right.

$10 \times 10 = \ldots$	$10 \times 100 =$	$10 \times 1000 =$
$10 \times 20 = \ldots$	$10 \times 200 =$	$10 \times 2000 =$
$100 \times 10 = \ldots$	$100 \times 100 =$	$100 \times 1000 =$
$100 \times 30 = \ldots$	$100 \times 300 =$	$100 \times 3000 =$

To multiply by 10, annex 0
To multiply by 100, annex 00

2. State the products:

a.	*b.*	*c.*	*d.*	*e.*	*f.*	*g.*	*h.*
216	216	472	472	250	250	975	975
10	100	100	10	10	100	10	100

3. Write the products:

a.	*b.*	*c.*	*d.*	*e.*	*f.*	*g.*	*h.*
35	25	16	796	144	400	700	500
100	10	100	100	10	100	10	100

4. Examine these:

381	*381*	*628*	*628*	*$3.58*	*$3.58*
90	*90*	*20*	*20*	*.60*	*.60*
000	*34290*	*000*	*12560*	*0 00*	*$214.80*
3429		*1256*		*214 8*	
34290		*12560*		*$214.80*	

5. Write the products:

a.	*b.*	*c.*	*d.*	*e.*	*f.*	*g.*	*h.*
$2.71	$4.80	$6.75	$5.61	$3.15	$4.32	$9.42	$8.05
40	20	30	90	40	80	60	70

0 times any number = 0

6. State the products:

21	21	23	23	43	43	43	12	12	11
4	40	3	30	2	20	200	5	50	60

1. Find the products:

a.	*b*	*c.*	*d.*	*e.*	*f.*	*g.*
329	708	225	750	409	3875	4625
213	432	630	192	25	9	18

2. Find the products:

a.		*b.*	*c.*
625	*0 × 625 = 0. Write two 0s, one under each 0.*	175	342
300	*Write the 5 of 15 under the 3.*	500	200

3. Look carefully at the two ways of doing this example.

142	142	*0 × 142 = 000, but we need not write the 000.*
302	302	*Write the 6 under the 3 of 302.*
284	284	*The 426 counts as 42,600 in adding.*
000	426	
426	42,884	
42,884		

4. Find the products:

a.	*b.*	*c.*	*d.*
463	375	144	280
204	105	308	102

5. Check your answers to *a*, *b*, *c*, *d*, by multiplying, using 204, 105, 308, and 102 as multiplicands.

204	105	308	102
463	375	144	280

6. Find the products:

a.	*b.*	*c.*	*d.*	*e.*	*f.*	*g.*
$26.50	$12.75	$3.49	$1.98	$7.98	$52.45	$2.75
7	23	90	204	68	305	508

h.	*i.*	*j.*	*k.*	*l.*	*m.*	*n.*
308	560	250	816	125	640	640
207	403	125	90	600	609	400

Write as many correct answers as you can in five minutes.*

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

33. Problems

Solve as many as you can in 10 minutes.

1. The schoolroom has 6 rows, 7 desks in a row, and two extra desks. How many desks has it in all?
2. Miss Adams' class had 37 pupils when school opened. Four new children joined the class. During September, 9 pupils were changed to another class. How many were in the class Oct. 1?
3. Alice is reading a book of 85 pages. She has read 25 pages. How long will it take her to finish it if she reads 10 pages an hour?
4. Will is reading a book of 90 pages. He has read 60 pages. How many pages must he read per hour to finish the book in two hours?

* To the Teacher.—In this and similar drills on the following pages, the pupils need not copy the numbers. Have them lay a piece of paper over the page, write answers on it, folding under to write answers for the second row, when necessary.

34. Practice

Subtract. Write the differences. See how many you can get correct in five minutes.

1.	2.	3.	4.	5.	6.
\$10.00	\$25.00	\$15.00	\$12.75	\$17.50	\$10.00
5.89	16.75	3.05	2.67	8.14	3.47
7.	**8.**	**9.**	**10.**	**11.**	**12.**
\$18.25	\$16.42	\$43.18	\$10.00	\$25.00	\$15.00
14.35	4.11	37.50	6.08	21.34	8.98
13.	**14.**	**15.**	**16.**	**17.**	**18.**
\$50.00	\$39.12	\$21.13	\$20.75	\$10.25	\$16.50
26.46	27.25	6.12	14.11	5.60	7.50

35. Problems

Solve as many as you can in 15 minutes.

1. Mary is 9, Lucy is 11, Dora is 13. In how many years will Mary be 18? How old will Lucy be then? How old will Dora be?
2. Kate's baby sister is two years and a half old. How many months old is she?
3. Which is longer, a year and a half or 15 months? How much longer?
4. A train leaves Boston at 3:15 P.M. and arrives at Springfield at 5:45 P.M. How long does this train take to go from Boston to Springfield?
5. How far does a train travel in 4 hours at the rate of 32 miles per hour?
6. Frank walked 12 miles to his uncle's farm. He started at 9 A.M. and reached there at 1 P.M. How many miles per hour did he walk?

Write the quotients. See how many you can do correctly in 5 minutes. If your work is correct there will be no remainders.

1.	2.	3.	4.	5.
$8\overline{)3696}$	$3\overline{)813}$	$6\overline{)5748}$	$9\overline{)5184}$	$4\overline{)2956}$
6.	**7.**	**8.**	**9.**	**10.**
$9\overline{)2385}$	$7\overline{)4459}$	$8\overline{)5112}$	$5\overline{)3625}$	$8\overline{)1856}$
11.	**12.**	**13.**	**14.**	**15.**
$6\overline{)\$19.38}$	$8\overline{)\$79.12}$	$9\overline{)\$78.66}$	$7\overline{)\$66.71}$	$9\overline{)\$47.16}$

37. Problems

Solve as many as you can in 15 minutes.

1. Alice put a dozen eggs under each of three hens, Reddy, Whitey, and Rocky. All of Reddy's hatched, all but two of Whitey's, and all but one of Rocky's. How many of the eggs hatched?
2. Dora wishes to fill 9 fancy baskets, putting 4 red apples and 4 yellow apples in each. How many apples will she need?
3. Nell receives 2 cents a day for 3 weeks for making her big sister's bed. How much does she receive in all?
4. The postman brought 25 letters to Paul's house Monday; 1 was for Paul, 2 were for Louise, 3 were for Mrs. Leroy. The rest were for Mr. Leroy. How many letters did Mr. Leroy get?
5. On the ball field there are two teams of 9 boys each, and 7 substitutes. In all there are . . . boys.

Divide each of these numbers by 7. Write the quotients and remainders. Then divide each by 4. Then by 9. Then by 5.

875 1500 650 365 1000 4896

39. Problems

Solve as many as you can in 20 minutes.

1. There are 38 pupils in Miss Williams' class and 32 in Miss Brown's. The principal wants to make the two classes equal in size. What must he do?
2. Lucy baked two dozen cakes. She sent 6 to her aunt, and the family ate 9 for supper. Lucy found only 9 left and thought her brother had taken one. Was she right?
3. How many badges 8 inches long can be cut from 2 yd. of ribbon?
4. How many feet of fence are needed to go around all four sides of a pen 20 ft. long and 10 ft. wide?
5. The boys want to measure off a line 30 yd. long from home plate to first base. They have a pole 10 feet long. What should they do?
6. Alice feeds her chickens 1 pt. of corn a day. How long will two pecks last her?
7. A gardener sets out plants 8 in a row. How many rows can he fill with 50 plants. How many plants will be left over?
8. The front of a three-story building has 6 windows in the first story and 7 windows in each of the other stories. How many flags are required to hang two flags in each window?

Copy carefully and find the products. Make all your figures clear when you multiply. Place each figure just where it belongs. Do as much as you can do perfectly in 20 minutes.

1.	2.	3.	4.	5.	6.	7.
725	875	367	524	819	275	368
144	268	150	176	112	105	257

8.	9.	10.	11.	12.	13.	14.
$2.40	$4.08	$1.75	$3.75	$2.25	$8.25	$4.50
336	214	456	230	108	105	18

41. Problems

1. How much will 6 melons cost at 2 for 25¢?
2. Nell bought 2 lb. sugar at 7¢ a pound and a 5-cent box of matches. She gave the man a quarter of a dollar. How much change should she receive?
3. Henry bought 15 marbles at 5 for a cent and 12 at 3 for a cent. How much should he pay?
4. John bought 2½ dozen buns at 10¢ a dozen and paid with a dollar bill. How much change should he receive?
5. Mary's mother said, "Get 1 dozen rolls for Mrs. Brown, 1½ dozen for Mrs. Howard, six rolls for Mrs. Macy, and 2 dozen for me." How many dozen rolls should Mary buy?
6. What is the price per pound when you pay 10¢ for ¼ lb.?
7. When candy is 20 cents a pound, what part of a pound do you get for 10¢? For 5¢?

The Sanitary Laundry Price List

Shirts,	*15*	*White coats,*	*25*
Collars,	*3*	*White towels,*	*3*
Cuffs, per pair,	*4*	*Stockings, per pair,*	*2*

Find the cost of laundering:

8. 2 shirts, 4 collars, and 3 pairs of cuffs.
9. Half a dozen collars, 4 pairs of cuffs, and 3 pairs of stockings.
10. 1 white coat, 3 shirts, and 5 collars.
11. 1 white coat, 2 shirts, 4 collars, and 4 pairs of stockings.
12. 2 coats, 5 towels, 2 shirts, and 5 collars.

Special Sale: Highest Grade Tools

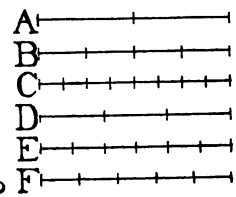
Hammers	*Chisels*	*Bits*
1¼-lb., 66¢	*¼-inch, 33¢*	*⅜-inch, 40¢*
1½-lb., 67¢	*⅜-inch, 35¢*	*⅝-inch, 45¢*
2-lb., 68¢	*½-inch, 37¢*	*⅞-inch, 50¢*

Find the cost of —

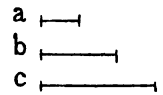
13. Two 1½-lb. hammers, a ½-inch chisel, and a ⅜-inch bit.
14. A 1¼-lb. hammer, two ⅜-inch chisels, and two ⅝-inch bits.
15. A 2-lb. hammer, two ¼-inch chisels, and two ⅞-inch bits.
16. Two sets of bits, each set containing one ⅜-inch bit, one ⅝-inch bit, and one ⅞-inch bit.
17. A set containing three chisels, one of each size.
18. Will has 95 cents. How much more does he need to buy a 1¼-lb. hammer and a ⅝-inch bit.

Sometimes you need to use numbers smaller than 1. Sometimes, when you buy ribbon, you do not buy a whole yard, but only $\frac{5}{8}$ yd., or $\frac{3}{4}$ yd., or $\frac{7}{8}$ yd. When you buy candy you often buy $\frac{1}{4}$ lb. or $\frac{1}{2}$ lb.

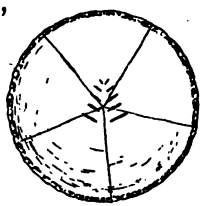
Look at these inch lengths.



1. Which is divided into quarters or fourths or $\frac{1}{4}$s?
2. Which is divided into fifths or $\frac{1}{5}$s?
3. Which is divided into sixths or $\frac{1}{6}$s?
4. Which is divided into eighths or $\frac{1}{8}$s?
5. Which of these lines is $\frac{1}{3}$ in. long?
6. Which is $\frac{3}{5}$ inches long? Which is $\frac{2}{5}$ in. long?



7. Take a sheet of paper and your rule. Draw a line $\frac{1}{8}$ inch long; mark it "$\frac{1}{8}$ in."
8. Draw a line $\frac{3}{8}$ in. and mark it.
9. Draw a line $\frac{7}{8}$ in. and mark it.
10. Draw a pie cut in quarters or $\frac{1}{4}$s.
11. Draw a pie cut in sixths or $\frac{1}{6}$s.
12. Draw a pie with one quarter gone. Mark it "$\frac{3}{4}$ of a pie."



This pie is cut in fifths, or $\frac{1}{5}$s

13. Draw a pie with one sixth gone. Mark it.
14. Draw a bottle one third full of ink.
15. Draw a bottle two thirds full of ink.
16. Draw a bottle half full of ink.
17. Draw a line $\frac{1}{2}$ ft. long. Mark it.
18. Draw a line $\frac{1}{3}$ ft. long. Mark it.

This bottle is $\frac{2}{3}$ full of ink

19. Draw a line $\frac{2}{3}$ ft. long. $\frac{3}{4}$ ft. long. $\frac{1}{6}$ ft. long.
20. Draw 1 sq. in. $\frac{1}{4}$ sq. in. $\frac{3}{4}$ sq. in. $\frac{1}{8}$ sq. in.

$\frac{1}{2}$ $\frac{1}{3}$ $\frac{2}{3}$ $\frac{1}{4}$ $\frac{3}{4}$ $\frac{1}{5}$ $\frac{2}{5}$ are called **fractions.**

43. Parts of an Inch, Parts of a Foot, and Parts of a Yard

1. Hold your hands about 1 yd. apart. 2. Hold them about $\frac{1}{8}$ yd. apart.
3. Show $\frac{3}{8}$ yd. $\frac{5}{8}$ yd. $\frac{7}{8}$ yd.
4. Show $\frac{1}{3}$ yd. $\frac{2}{3}$ yd. $1\frac{1}{3}$ yd. (a yard and a third of a yard more).
5. Draw $1\frac{2}{3}$ yd. on the blackboard. 2 yd. $2\frac{1}{3}$ yd.
6. Hold your hands $\frac{1}{6}$ ft. apart. Hold them $\frac{2}{6}$ or $\frac{1}{3}$ ft. apart.
7. Show 1 ft. $1\frac{1}{6}$ ft. $\frac{3}{6}$ ft. or $\frac{1}{2}$ ft. $\frac{4}{6}$ ft. or $\frac{2}{3}$ ft.
8. Hold your hands 2 ft. apart. $2\frac{1}{2}$ ft. 3 ft. $3\frac{1}{2}$ ft.
9. Which is longest, $\frac{1}{2}$ in., $\frac{1}{3}$ in., $\frac{1}{4}$ in., $\frac{1}{6}$ in., or $\frac{1}{8}$ in.?
10. Which is shortest? 11. Which is half as long as $\frac{1}{2}$ inch?
12. Which is longest, $\frac{1}{8}$ yd., $\frac{3}{8}$ yd., $\frac{5}{8}$ yd., or $\frac{7}{8}$ yd.?
13. Which is shortest?
14. How many inches are there in $\frac{1}{2}$ ft.? In $\frac{1}{3}$ ft.? In $\frac{1}{4}$ ft.? In $\frac{1}{6}$ ft.? In $\frac{5}{6}$ ft.?

Take your rule.

a. ⊢——⊣

b. ⊢————⊣

c. ⊢————⊣

d. ⊢————⊣

e. ⊢————⊣

f. ⊢————⊣

15. Which of these lines is $\frac{3}{8}$ in. long? Which is $1\frac{3}{8}$ in.?
16. Which is $2\frac{3}{8}$ in.? Which is $3\frac{3}{8}$ in.? Which is $1\frac{7}{8}$ in.?
17. Which is $2\frac{7}{8}$ in.?
18. How many inches are there in $\frac{1}{2}$ yd.? (*Think* $2\overline{)36}$)
19. How many inches are there in $\frac{1}{3}$ yd.? 20. In $\frac{2}{3}$ yd.?

Supply the missing numbers. Do A first. Then do B. Then do C; and so on.

A.
$\frac{1}{2}$ of 12 =
$\frac{1}{2}$ of 20 =
$\frac{1}{2}$ of 100 =
$\frac{1}{2}$ of 10 =
$\frac{1}{2}$ of 16 =
$\frac{1}{2}$ of 24 =

B.
$\frac{1}{4}$ of 12 =
$\frac{1}{4}$ of 60 =
$\frac{1}{4}$ of 100 =
$\frac{1}{4}$ of 48 =
$\frac{1}{4}$ of 36 =

C.
$\frac{1}{3}$ of 9 =
$\frac{1}{3}$ of 12 =
$\frac{1}{3}$ of 30 =
$\frac{1}{3}$ of 75 =
$\frac{1}{3}$ of 15 =
$\frac{1}{3}$ of 60 =
$\frac{1}{3}$ of 36 =
$\frac{1}{3}$ of 18 =

D.
$\frac{1}{5}$ of 10 =
$\frac{1}{5}$ of 25 =
$\frac{1}{5}$ of 30 =
$\frac{1}{5}$ of 50 =
$\frac{1}{5}$ of 45 =
$\frac{1}{5}$ of 60 =

E.
$\frac{1}{6}$ of 12 =
$\frac{1}{6}$ of 24 =
$\frac{1}{6}$ of 60 =
$\frac{1}{6}$ of 72 =
$\frac{1}{6}$ of 600 =
$\frac{1}{6}$ of 18 =

F.
$\frac{1}{8}$ of 40 =
$\frac{1}{8}$ of 32 =
$\frac{1}{8}$ of 80 =
$\frac{1}{8}$ of 16 =
$\frac{1}{8}$ of 24 =
$\frac{1}{8}$ of 48 =
$\frac{1}{8}$ of 72 =
$\frac{1}{8}$ of 56 =

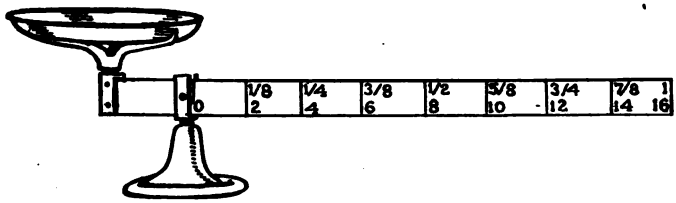
G.
$\frac{1}{4}$ of 12 =
$\frac{3}{4}$ of 12 =
$\frac{1}{3}$ of 12 =
$\frac{2}{3}$ of 12 =

H.
$\frac{1}{3}$ of 24 =
$\frac{1}{4}$ of 24 =
$\frac{1}{6}$ of 24 =
$\frac{1}{8}$ of 24 =
$\frac{1}{2}$ of 48 =
$\frac{1}{3}$ of 48 =
$\frac{1}{4}$ of 48 =

I.
6 = ... of 12
3 = ... of 12
4 = ... of 12
4 = ... of 24
6 = ... of 24
8 = ... of 24

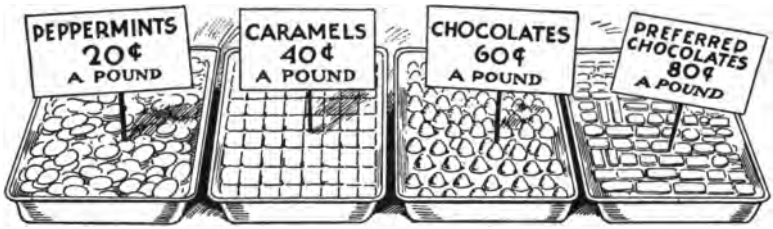
J.
30 = ... of 60
15 = ... of 60
10 = ... of 60
2 = ... of 10
2 = ... of 8
2 = ... of 12
2 = ... of 16
3 = ... of 15
3 = ... of 18
3 = ... of 6
3 = ... of 9
3 = ... of 24
8 = ... of 48

K.
5 = ... of 20
5 = ... of 15
5 = ... of 25
5 = ... of 40
5 = ... of 30
4 = ... of 32
3 = ... of 18
4 = ... of 20



1. The top line of numbers is for parts of a pound. What is the bottom line for?
2. Read along the scale, saying, "⅛ of a pound = 2 ounces, ¼ of a pound = 4 ounces, ⅜ of a pound = 6 ounces," and so on.
3. Shut your eyes and count by eighths of a pound and ounces, saying "⅛ lb. = . . . oz., ⅜ lb. or ¼ lb. = . . . oz., ⅜ lb. = . . . oz., ⅝ lb. or ½ lb. = . . . oz."
4. Count by fourths of a pound and ounces, saying, "¼ lb. = . . . oz., ¾ or ½ lb. = . . . oz., ¾ lb. = . . . oz., 1 lb. = . . . oz., 1¼ lb. = . . . oz., 1¾ lb. = . . . oz., 1½ lb. = . . . oz., 1¾ lb. = . . . oz., 2 lb. = . . . oz., 2¼ lb. = . . . oz."
5. Count by half pounds and ounces, saying, "½ lb. = . . . oz., 1 lb. = . . . oz., 1½ lb. = . . . oz.," and so on up to five pounds.
6. Supply the missing numbers:

A.	B.
⅛ of 16 =	½ of 16 =
⅜ of 16 =	⅞ lb. = . . . oz.
⅝ of 16 =	⅜ lb. = . . . oz.
⅞ of 16 =	1½ lb. = . . . oz.
¼ of 16 =	2½ lb. = . . . oz.
¾ of 16 =	2⅜ lb. = . . . oz.



Answer the questions and supply the right numbers where the dots are.

1. Find the cost of ¼ pound of peppermints. ¼ lb. caramels. ¼ lb. chocolates. ¼ lb. preferred chocolates.
2. Find the cost of ½ lb. peppermints. ½ lb. caramels. ½ lb. chocolates. ½ lb. preferred chocolates.
3. What part of a pound of peppermints do you get for 5¢? For 10¢? For 15¢?
4. Mary buys 5¢ worth of caramels. Does she get ½ lb. or ¼ lb. or ⅛ lb.?
5. For 10¢ you can get . . . lb. peppermints or . . . lb. caramels or . . . lb. preferred chocolates.
6. The storeman puts up special boxes containing ⅝ lb. caramels. What do you think he charges for a box?
7. What do you think he charges for a box containing ⅝ lb. of preferred chocolates?
8. Tell the missing numbers:

¼ of 20 =	⅛ of 80 =	½ of 40 =	½ of 60 =
¾ of 20 =	⅜ of 80 =	⅕ of 40 =	⅓ of 60 =
¾ of 60 =	⅞ of 80 =	⅗ of 40 =	⅔ of 60 =
¾ of 80 =	⅜ of 40 =	¼ of 40 =	⅚ of 60 =

1. John, Dick, and Will bought a bag of marbles for 5¢. John paid 1¢, Dick paid 2¢, Will paid 2¢. There were 40 marbles. How many of the marbles should John get? How many should Dick get? How many should Will get?
2. Nell and Kate bought 12 rolls of colored paper for 3¢. Nell paid 1¢, Kate paid 2¢. How many of the rolls should Nell get? How many should Kate get?
3. Fred and Joe bought a bag of popcorn for 5¢. Fred paid 2¢. Joe paid 3¢. What part of the popcorn did Fred pay for?
4. Mary and Alice bought a roll of ribbon for 50¢. Mary paid 30¢. Alice paid 20¢. What part of the ribbon did Mary pay for? What part did Alice pay for?

48.

State the missing numbers:

A.	B.	C.	D.
$\frac{1}{5}$ of 10 =	$\frac{2}{3}$ of 18 =	$\frac{3}{4}$ of 36 =	$1\frac{1}{2}$ lb. = . . oz.
$\frac{2}{5}$ of 10 =	$\frac{2}{3}$ of 75 =	$\frac{2}{5}$ of 20 =	$2\frac{1}{4}$ lb. = . . oz.
$\frac{3}{5}$ of 10 =	$\frac{1}{6}$ of 60 =	$\frac{5}{6}$ of 36 =	$2\frac{3}{4}$ lb. = . . oz.
$\frac{4}{5}$ of 10 =	$\frac{5}{6}$ of 60 =	$\frac{3}{8}$ of 32 =	$2\frac{1}{2}$ ft. = . . in.
$\frac{2}{5}$ of 15 =	$\frac{3}{8}$ of 32 =	$\frac{2}{3}$ of 36 =	$3\frac{1}{4}$ ft. = . . in.
$\frac{2}{5}$ of 25 =	$\frac{3}{8}$ of 40 =	$\frac{3}{5}$ of 100 =	$\frac{3}{8}$ lb. = . . oz.
$\frac{2}{5}$ of 50 =	$\frac{3}{8}$ of 24 =	$\frac{4}{5}$ of 100 =	$1\frac{3}{8}$ lb. = . . oz.
$\frac{2}{3}$ of 12 =	$\frac{3}{8}$ of 16 =	$\frac{5}{8}$ of 56 =	$\frac{1}{4}$ yd. = . . in.
$\frac{3}{4}$ of 12 =	$\frac{5}{8}$ of 16 =	$\frac{3}{4}$ of 100 =	$1\frac{1}{4}$ yd. = . . in.
$\frac{1}{6}$ of 12 =	$\frac{5}{8}$ of 40 =	$\frac{7}{8}$ of 16 =	$1\frac{1}{2}$ yd. = . . in.
$\frac{5}{6}$ of 12 =	$\frac{5}{8}$ of 80 =	$\frac{2}{3}$ of 30 =	$2\frac{1}{2}$ yd. = . . in.

1. Edward and Robert buy a collection of foreign stamps for 25¢. Edward pays 15¢, Robert pays 10¢. There were 715 stamps. So Edward takes $\frac{3}{5}$ of the stamps and Robert takes $\frac{2}{5}$. How many stamps shall Edward take? How many shall Robert take?

Write $5\overline{)715}$ to find $\frac{1}{5}$ of 715. Multiply the quotient by 3 to find Edward's share. How do you find Robert's share?

2. Dick and James bought an 8¢ collection of stamps. Dick paid 5¢ and James paid 3¢. There were 120 stamps to be divided. How many should Dick take? How many should James take?
3. Henry and Albert bought a 40¢ collection of stamps. Henry paid 25¢ and Albert paid 15¢. There were 1000 stamps to be divided. How many eighths of the stamps should Henry get? How many stamps should he get?
4. Find $\frac{5}{8}$ of 144. 5. $\frac{3}{5}$ of 640. 6. $\frac{3}{8}$ of 5280. 7. $\frac{1}{3}$ of 231. 8. $\frac{3}{4}$ of 196.
9. Find $\frac{2}{5}$ of \$23.75. 10. $\frac{3}{8}$ of \$9.68. 11. $\frac{2}{3}$ of \$3.99. 12. $\frac{3}{4}$ of \$5.00.
13. Find $\frac{1}{2}$ of 960. 14. $\frac{1}{3}$ of 960. 15. $\frac{1}{4}$ of 960. 16. $\frac{1}{5}$ of 960. 17. $\frac{1}{6}$ of 960. 18. $\frac{1}{8}$ of 960.

50.

1. Count by $\frac{1}{2}$s to 8, beginning $\frac{1}{2}$, 1, $1\frac{1}{2}$.
2. Count by $\frac{1}{3}$s to 9, beginning $\frac{1}{3}$, $\frac{2}{3}$, 1, $1\frac{1}{3}$.
3. Count by $\frac{1}{4}$s to 5, beginning $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, 1, $1\frac{1}{4}$, $1\frac{1}{2}$.
4. Count by $\frac{1}{5}$s to 5, beginning $1\frac{1}{5}$, $1\frac{2}{5}$, $1\frac{3}{5}$, $1\frac{4}{5}$, 2.

At the Lincoln School each child in the fourth grade is given a mark every month. 100 is the highest mark a child can get.

1. Mary had 90 in arithmetic in Sept., 95 in Oct., and 94 in Nov. What was her average in arithmetic for the three months?

The **average** *equals the sum of the marks divided by the number of marks there are.*

2. John had 60 in Sept., 74 in Oct., and 70 in Nov. What was his average?
3. Up till Jan., Nell had 90, 95, 93, and 94. What was her average for the four months?
4. If she has 98 in Jan. what will her average be for the first five months?

The class had three tests in arithmetic in September. 10 was the highest a child could get in a test.

5. John had 8 in the first test, 9 in the second, and 8 in the third. What was his average for the three?

$8 + 9 + 8 = 25$

$3\overline{)25}$ *Write the 1 after the quotient over the divisor like this:* $8\frac{1}{3}$. $8\frac{1}{3}$ *is right, for 3 8s* $= 24$, *3 thirds* $= 1$, 24 *and* $1 = 25$.

6. Alice had 9 in the first, 10 in the second, and 9 in the third. What was her average for the three?
7. Joe had 6 in the first, 7 in the second, and 9 in the third. What was Joe's average?
8. In Oct. the class had four tests. Dick had 9, 8, 7, and 9. What was his average?

$9 + 8 + 7 + 9 = 33$

$4\overline{)33}$ *Write the 1 after the quotient over the divisor like this:* $8\frac{1}{4}$. $8\frac{1}{4}$ *is right for* $4 \times 8 = 32$, $4 \times \frac{1}{4} = 1$, $32 + 1 = 33$.

The teacher will give you 10 minutes for each of these tests. Do as many as you can get right in the 10 minutes. Mark yourself on each test, counting 1 for each right answer. Find your average for the two tests.

Test I

You need not copy the examples. Write answers to the first five on the top line of a sheet of paper. Fold this under. Write the answers to the next five on another line.

1. Add	2. Subtract	3. Multiply	4. Divide	5. Multiply
139 564 273	580 74	275 9	$8\overline{)1856}$	275 60

6. Multiply	7. Divide	8. Add	9. Subtract	10. Divide
		125 289		
$1.98 7	$7\overline{)2233}$	145 309	5280 2750	$6\overline{)1524}$

Test II

1. Add	2. Subtract	3. Multiply	4. Divide	5. Multiply
189 350 225	860 38	325 8	$9\overline{)3078}$	416 30

6. Multiply	7. Divide	8. Add	9. Subtract	10. Divide
		94 325		
$2.79 6	$6\overline{)2508}$	140 238	5280 1325	$8\overline{)1936}$

Mary lives in the country and keeps hens. She keeps account of just how many eggs each hen lays each week. Her account book looks like this for July. Each hen has a letter as its name. The numbers give the number of eggs each hen laid each week.

	A	B	C	D	E	F	G	H
July 1 to 8	7	2	4	6	5	4	3	5
July 8 to 15	4	2	5	4	4	4	2	4
July 15 to 22	6	1	3	5	3	3	2	4
July 22 to 29	5	0	4	5	4	2	2	4
July 29 to Aug. 5	4	0	2	5	3	1	1	4
Total July 1 to Aug. 5	26							
Average per week	5⅕							

1. Find the total and average for hens B, C, D, E, F, G, and H, as Mary has done for hen A. Be sure to write ⅕ or ⅖ or ⅗ or ⅘ when it is needed.
2. How many eggs did Mary get from all 8 hens the first week? The second week? The third? The fourth? The fifth? In all five weeks?
3. Mary gave her mother a dozen and a half of these eggs, and sold the rest. How many dozen did she sell?
4. She sold them for 30¢ a dozen. How much did she receive?
5. It costs more for food for the hens in some months than in others. The average cost for food for one hen for one month Mary reckons at 14¢. What is the cost for one hen for one year?
6. What is the cost for 8 hens for one year?
7. What is the cost for 13 hens for 6 months?

Here are some prices at Valenti's Fruit Store.

Peaches	*Pears*	*Oranges*	*Melons*
3¢ each	*4¢ each*	*5¢ each*	*15¢ each*
2 for 5	*3 for 10*	*6 for 25*	*7 for a dollar*

1. When you buy 2 peaches for 5¢ what does it cost you for each peach?

Think $2\overline{)5}$

2. When you buy 3 pears for 10¢ what does it cost you for each pear?

Think $3\overline{)10}$

3. When you buy 6 oranges for 25¢ what does it cost you for each orange?
4. Mary's father sells milk to the creamery. Sometimes he gets 2½¢ a quart. How much does he get for every two quarts he sells at 2½¢ a quart?
5. When you buy 7 melons for a dollar what does it cost you for each melon? (We read $\frac{2}{7}$ as "two sevenths.")
6. If you buy marbles at 3 for a cent, how much does each marble cost you?
7. If you buy picture postcards at 2 for a cent, how much does each postcard cost you?
8. How much more does a peach cost when you buy one at a time than when you buy two at a time, at Valenti's prices?
9. What does it cost you for a dozen oranges, at the rate of 6 for 25¢?
10. What does it cost you for a dozen pears, at the rate of 3 for 10¢?

1. Tell what it costs for one thing when you get 3 for a cent.
2. When you get 5 for a cent. 2 for 1¢. 8 for 1¢. 4 for 1¢.
3. When you get 2 for 5¢. 3 for 10¢. 6 for 25¢.
4. When you get 3 for 5¢.

Think, "I am dividing 5 by 3. 1 and 2 remainder means 1⅔."

5. When you get 4 for 15¢.

Think, "I am dividing 15 by 4. 3 and 3 remainder means 3¾."

6. When you get 3 for 50¢. 7 for 10¢. 8 for 15¢.
7. When you get 6 for 10¢. (Say ⅔ for ⅙.)
8. When you get 8 for 50¢. (Say ¼ for ⅜.)
9. When you get 4 for 10¢. (Say ½ for ¾.)
10. When you get 6 for 25¢. 6 for 10¢. 3 for 10¢.
11. When you get 4 for 25¢. 4 for 15¢. 4 for 10¢. 4 for 5¢. 4 for 30¢. 4 for 50¢.
12. When you get 8 for 10¢. 8 for 25¢. 8 for 15¢. 8 for 50¢.
13. When you get 2 for 5¢. 2 for 25¢. 2 for 10¢. 2 for $1.00.
14. Tell what it costs for one thing when you get—

2 for 5¢	3 for 10¢	2 for 25¢	3 for 50¢
3 for 5¢	4 for 10¢	3 for 25¢	6 for 50¢
4 for 5¢	6 for 10¢	4 for 25¢	8 for 50¢
2 for 1¢	7 for 10¢	6 for 25¢	8 for 1¢
6 for 1¢	8 for 10¢	7 for 25¢	4 for 1¢

15. At 2 for a cent, how many marbles do you get for 4¢?

Mary gets different prices for the eggs she sells at different times of the year.

1. At 20¢ a dozen, what does she get for 2 dozen? For ½ dozen? For 2½ dozen? For 3½ dozen? For 5 dozen?
2. At 24¢ a dozen what does she receive for 1½ dozen? For 2 doz.? For ½ doz.?
3. At 30¢ per doz. what does she receive for ½ doz.? For 1½ doz.? For 4 doz.? For 2½ doz.? For 6 eggs? For 4 eggs or ⅓ doz.? For 8 eggs or ⅔ doz.?
4. At 32¢ per doz. what does she receive for ½ doz.? For 3 doz.? For 1½ doz.?

57.

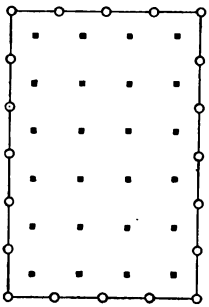
Write the quotients. The first row shows the way.

37½	*138⅓*	*26⅔*	*153¾*		*53¼*
2|75	*3|415*	*3|80*	*4|615*		*4|213*
1.	2.	3.	4.	5.	6.
2|115	3|190	4|75	4|135	5|726	5|265
7.	8.	9.	10.	11.	12.
3|281	2|335	5|117	4|297	4|100	5|428
13.	14.	15.	16.	17.	18.
4|695	6|139	2|475	3|505	8|185	8|361

State the quotients. The first row shows the way.

A.	B.	C.	D.
19 ÷ 2 = 9½	29 ÷ 3 = 9⅔	23 ÷ 4 = 5¾	45 ÷ 8 = 5⅝
9 ÷ 2 =	10 ÷ 3 =	15 ÷ 4 =	35 ÷ 8 =
17 ÷ 2 =	17 ÷ 3 =	25 ÷ 4 =	19 ÷ 8 =

This is a plan of a little orchard that Henry wants for himself. Each little square stands for a peach tree. ¼ inch stands for 1 rod. Each little circle stands for a fence post.



1. How many rods long is it?
2. How many feet long is it?

   Remember that 1 rod = 16½ ft.
3. How many rods wide is it?
4. How many feet wide is it?
5. How many trees does the plan show?
6. How far apart are they?
7. How many rods of fence wire will Dick need, for all four sides?
8. How much will the wire fence cost at 35¢ per rod?
9. Henry's uncle promises Henry 5 fence posts for each Saturday Henry will help him. How many days must Henry help his uncle in order to get the fence posts?
10. Henry's father lets him keep for himself two thirds of the money he earns from a strawberry bed on the farm. If Henry sells 150 quarts of strawberries at 10¢ a quart, what will his share of the money be?
11. Henry hopes to get 25 bushels of peaches the third year after he sets out the trees. How much will he receive if he sells them for $1.05 a bushel?

1. Henry's father bought 200 trees to set out. Eleven of them looked so weak that he did not set them out. How many did he set out?
2. He set them out 9 in a row. How many rows did he have?
3. He set them in straight lines 1 rod apart each way. Draw a plan of the whole orchard, using ¼ inch for a rod, and making a dot for each peach tree.
4. He built a fence around the orchard ½ rod distant from the outside line of trees. Draw this fence on your plan. What part of an inch will you use for ½ rod?
5. What is the shape of the field inclosed by the fence—a triangle, a circle, a rectangle, a pentagon, or a hexagon?
6. How many rods long is it?
7. How many rods wide is it?
8. How many square rods does it contain?
9. Is the orchard about ⅓ acre or about 1⅓ acres or about 3 acres?
10. Is the orchard about 5 times as big as Henry's, or about 10 times as big, or about 20 times as as big?
11. How much did the fence cost at 35¢ per rod?

1 acre = 160 sq. rd.

12. How many square rods are there in ½ acre?
13. In ⅓ acre? 14. In ¼ acre? 15. In ⅕ acre?
16. In ⅙ acre? 17. In ⅛ acre? 18. In 6 acres?
19. In an acre and a half? 20. In 2¼ acres?

60. How Lewis Earns Money

Lewis Drake lives on a farm. Every spring he plants an acre of corn. In 1914 he harvested 46 bushels. In 1915 he harvested 71 bushels. In 1916 he harvested 100 bushels.

1. How much more did he harvest in 1915 than in 1914?
2. How much more did he harvest in 1916 than in 1915?
3. The record for his county for a boy of his age was 119 bushels from one acre. How much more was that than Lewis' best record?
4. In 1914 he received 52¢ per bushel. How much did he receive for 46 bushels?
5. He paid out, for ploughing, seed, and fertilizer, $8.75. How much more did he receive than he paid out?

61. How Elsie Earns Money

Elsie Brown lives in a city. She makes very beautiful doll's clothes, which her father sells to a big New York toy store.

1. Last year she made six dresses which sold for $3.25 each. The materials for all six cost $5.64. How much more did Elsie receive for the dresses than the material cost her?
2. She also made three dresses which sold for $6.25, $7.50, and $8.75. The materials for all three cost $7.92. How much was Elsie's profit on these three dresses?
3. She designed a cheap dress that was very pretty and sold six dozen of them for 35 cents each. How much did she receive for these dresses?

1. Just before Christmas Frank's father sent 360 oranges to be divided among the children in Frank's class. There are 29 children. How many oranges should each child receive? How many oranges will be left over?

Here is the best way to find out:

$$\begin{array}{r} 12 \text{ and } 12 \text{ remainder} \\ 29\overline{)360} \\ \underline{29} \\ 70 \\ \underline{58} \\ 12 \end{array}$$

Think how many 29s there are in 36. 1 is right.
Write 1 over the 6 of 36. Multiply 29 by 1.
Write the 29 under the 36. Subtract 29 from 36.
Write the 0 of 360 after the 7.
Think how many 29s there are in 70. 2 is right.
Write 2 over the 0 of 360. Multiply 29 by 2.
Write the 58 under 70. Subtract 58 from 70.
There is 12 remainder.
Each child gets 12 oranges, and there are 12 left over. This is right, for 12 multiplied by 29 = 348, and 348 + 12 = 360.

2. 472 apples are to be divided equally among 21 children. How many apples does each child receive and how many will be left over?

Divide. Find the quotients and remainders. Copy the numbers very carefully.

3.	4.	5.	6.	7.
$32\overline{)685}$	$23\overline{)512}$	$41\overline{)1691}$	$21\overline{)1495}$	$24\overline{)798}$

8. $31\overline{)99{,}587}$

In No. 8, keep on dividing by 31 until you have used the 5, the 8, and the 7, and have four figures in the quotient.

9.	10.	11.	12.	13.
$22\overline{)253}$	$22\overline{)2895}$	$21\overline{)8891}$	$22\overline{)290}$	$32\overline{)16{,}368}$

Check your results for 9, 10, 11, 12, and 13.

1. The boys and girls of the Welfare Club plan to earn money to buy a victrola. There are 23 boys and girls. They can get a good second-hand victrola for $5.75. How much must each earn if they divide the cost equally?

Here is the best way to find out:

```
  $.25      Think how many 23s there are in 57.  2 is right.
23|$5.75    Write 2 over the 7 of 57.  Multiply 23 by 2.
  46        Write 46 under 57 and subtract.  Write the 5 of 575
  115         after the 11.
  115       Think how many 23s there are in 115.  5 is right.
            Write 5 over the 5 of 575.  Multiply 23 by 5.
            Write the 115 under the 115 that is there and subtract.
            There is no remainder.
            Put $ and the decimal point where they belong.
            Each child must earn 25 cents.  This is right, for $.25
            multiplied by 23 = $5.75.
```

2. Divide $71.76 equally among 23 persons. How much is each person's share?

3. Check your result for No. 2 by multiplying the quotient by the divisor.

Find the quotients. Check each quotient by multiplying it by the divisor.

4.	5.	6.	7.	8.
23|$99.13	25|$18.50	21|$129.15	13|$29.25	32|$73.92

1 bushel = 32 qt.

9. How many bushels are there in 288 qt.? 10. In 192 qt.? 11. In 416 qt.?

1. Besides the land used for paths, the school garden has 6100 sq. ft. for the children to plant. There are 254 children. How many sq. ft. will each child have for his garden if the 6100 sq. ft. is divided? How many sq. ft. will be left over?

$254\overline{)6100}$ *Think how many 254s there are in 610. Three is wrong, for* $3 \times 254 = 762$, *which is more than 610.*

2. The children at Hillside farm worked hard picking berries all last summer and picked in all 744 qt. They sold them all in crates, 24 quarts to a crate. How many crates did they sell?
3. Divide 8 dozen oranges among 22 children. How many oranges will each child get? How many will be left over?

Find the quotients and remainders. When there is 0 remainder write "and no r."

4. $21\overline{)85}$ 5. $25\overline{)85}$ 6. $17\overline{)72}$ 7. $25\overline{)72}$ 8. $35\overline{)72}$
9. $25\overline{)100}$ 10. $31\overline{)100}$ 11. $23\overline{)496}$ 12. $23\overline{)6285}$
13. $61\overline{)250}$ 14. $43\overline{)1338}$ 15. $83\overline{)249}$

The number to be divided is called the **dividend.**
The number by which you divide is called the **divisor.**

16. Name the dividends in examples 4 to 15.
17. Name the divisors in examples 4 to 15.
18. Check your answers to examples 12, 13, 14, and 15. Multiply the divisor by the quotient and add the remainder. The result will be the dividend if your work is correct.

Find the quotients and remainders. If there is 0 remainder, write "and no r." after the quotient. Check your answers by multiplying and adding.

1.	2.	3.	4.	5.
21|466	21|12,894	21|133	31|744	31|190
6.	**7.**	**8.**	**9.**	**10.**
31|10,391	89|1963	69|2139	92|368	25|575

Find the quotients and remainders. Sometimes you may think of a wrong figure for the quotient. Then you must see whether it is too large or too small and change it. But try to think of the right number the first time.

11. 28|817	Are there 3 28s in 81 or only 2?	18. 151|375	Shall you try 3 or 2?
12. 47|992	Are there 2 47s in 99 or only 1?	19. 123|375	Shall you try 3 or 2?
13. 27|538	Are there 2 27s in 53 or only 1?	20. 225|650	Shall you try 3 or 2?
14. 17|476	Are there 3 17s in 47 or only 2?	21. 25|425	Shall you try 2 or 1?
15. 358|1062	Try 2 as the quotient figure. How do you know 2 is right and not 3?	22. 15|470	Shall you try 4 or 3?
16. 139|276	Try 1. Why is 2 wrong?	23. 15|615	Shall you try 4 or 3?
17. 312|1249	Try 4. Why is 3 wrong?	24. 21|1495	Shall you try 7 or 6 or 5?

(*Use pencil and paper when you need to.*)

1. 14 boys plan to buy a football together. It costs 98¢. How much must each boy pay?
2. They plan to buy a second-hand catcher's mask for 70¢. Must each boy pay 7¢ or 6¢ or 5¢?
3. Tennis balls cost 25¢ each, $3.00 a dozen. Do you get 6, 7, or 8 for $1.75? Do you get 7, 8, or 9 for $2.25? Do you get 5 or 6 for $1.25?
4. How many yards of ribbon that costs 15¢ a yard do you get for 60¢? For 45¢? For 75¢? For 90¢? For $1.05?
5. How many yards of cloth that costs 18¢ a yard do you get for 36¢? For 90¢? How much do 3 yards of it cost? How much will 2½ yards cost?
6. Tickets to the concert cost 75¢ each. How much do three tickets cost? How many tickets will $2.00 buy, and how much will there be left over? How many tickets will $3.00 buy? How many tickets will $4.00 buy and how much will be left over? Will $5.00 buy 7 tickets? Will $6.00 buy 8 tickets?
7. Nell's small stamp-book holds 16 stamps on a page. How many pages will 32 stamps fill? 64 stamps? How many stamps will fill 6 pages? How many stamps will fill 5 pages? How many pages will 100 stamps fill and how many stamps will be left over?
8. Nell's large stamp-book holds 54 stamps on a page. How many pages will 500 stamps fill, and how many stamps will be left over?

67. At the Fish Market

Frank helps his father Saturdays in his father's fish market. He tries not to keep a customer waiting. So he finds the cost of a purchase quickly, without pencil and paper whenever he can. He found the cost of each of these purchases without pencil or paper and did not make a single mistake. See if you can do as well. ½ is the way business men write "*one half*."

1. 3 lb. flounder.
2. 4 lb. cod.
3. 2½ lb. haddock.
4. 2 lb. bluefish.
5. 3¼ lb. haddock.
6. 5½ lb. bluefish.
7. 3 lb. cod.
8. 2½ lb. bluefish.
9. 6 lb. cod.
10. 5 lb. cod.
11. 4 lb. flounder.
12. 6 lb. haddock.
13. 2 lb. flounder.
14. 1½ lb. flounder (call the cost of ½ lb. flounder 6 cents)
15. 2½ lb. flounder.
16. 7 lb. haddock.
17. 8 lb. cod.
18. 10 lb. cod.
19. 3 lb. bluefish.
20. 4½ lb. haddock.
21. 5½ lb. haddock.

The prices were:
Flounder, 11¢ per lb.
Haddock, 12¢ per lb.
Bluefish, 14¢ per lb.
Cod, 15¢ per lb.

22. 9 lb. haddock.
23. 7 lb. haddock.
24. 5 lb. bluefish.
25. 7 lb. flounder.
26. 4 lb. bluefish.
27. 4½ lb. bluefish.
28. 8 lb. haddock.
29. 8 lb. flounder.
30. 6 lb. flounder.
31. 1½ lb. cod (call the cost of ½ lb. cod 8 cents).
32. 2½ lb. cod.
33. 4½ lb. cod.

68.

Find the products:

A.		B.		C.		D.	
2	11s = ...	2	12s = ...	2	25s = ...	2	15s = ...
3	11s = ...	3	12s = ...	3	25s = ...	3	15s = ...
4	11s = ...	4	12s = ...	4	25s = ...	4	15s = ...
5	11s = ...	5	12s = ...	5	25s = ...	5	15s = ...
6	11s = ...	6	12s = ...	6	25s = ...	6	15s = ...
7	11s = ...	7	12s = ...	7	25s = ...	7	15s = ...
8	11s = ...	8	12s = ...	8	25s = ...	8	15s = ...

Study this page. Then try page 180 again.

1. Count by 11s to 132, beginning 11, 22, 33.
2. Count by 12s to 144, beginning 12, 24, 36.
3. Count by 25s to 300, beginning 25, 50, 75.
4. State the missing numbers:

A.	B.	C.	D.
3 11s =	5 11s =	8 ft. = . . . in.	2 dozen =
4 12s =	3 12s =	10 ft. = . . . in.	4 dozen =
5 12s =	6 12s =	7 ft. = . . . in.	10 dozen =
6 11s =	12 11s =	4 ft. = . . . in.	5 dozen =
9 11s =	2 12s =	6 ft. = . . . in.	7 dozen =
7 12s =	9 12s =	9 ft. = . . . in.	12 dozen =
8 12s =	7 11s =	11 ft. = . . . in.	9 dozen =
11 11s =	12 12s =	5 ft. = . . . in.	6 dozen =

5. Count by 25s to $2.50, saying, "25 cents, 50 cents, 75 cents, one dollar," and so on.
6. Count by 15s to $1.50.
7. Find the products. Do not use pencil. Think what they are.

A.	B.	C.	D.	E.
2 × 25	3 × 15	2 × 12	4 × 11	6 × 25
3 × 25	10 × 15	2 × 15	4 × 15	6 × 15
5 × 25	4 × 15	2 × 25	4 × 12	6 × 12
10 × 25	2 × 15	2 × 11	4 × 25	6 × 11
4 × 25	7 × 15	3 × 25	5 × 11	7 × 12
6 × 25	9 × 15	3 × 15	5 × 12	7 × 15
8 × 25	5 × 15	3 × 11	5 × 15	7 × 25
7 × 25	8 × 15	3 × 12	5 × 25	7 × 11
9 × 25	6 × 15	8 × 12	9 × 12	8 × 25

State the missing numbers:

A.	B.	C.
36 = ... 12s	44 = ... 11s	50 = ... 25s
60 = ... 12s	88 = ... 11s	125 = ... 25s
24 = ... 12s	77 = ... 11s	75 = ... 25s
48 = ... 12s	55 = ... 11s	200 = ... 25s
144 = ... 12s	99 = ... 11s	250 = ... 25s
108 = ... 12s	110 = ... 11s	175 = ... 25s
72 = ... 12s	33 = ... 11s	225 = ... 25s
96 = ... 12s	66 = ... 11s	150 = ... 25s
84 = ... 12s	22 = ... 11s	100 = ... 25s

71.

Find the quotients and remainders. If you need to use paper and pencil to find them, you may. But find as many as you can without pencil and paper. Do Row A first. Then do Row B. Then Row C, etc.

Row A.	$11\overline{)45}$	$12\overline{)45}$	$25\overline{)45}$	$15\overline{)45}$	$21\overline{)45}$	$22\overline{)45}$
Row B.	$25\overline{)55}$	$11\overline{)55}$	$12\overline{)55}$	$15\overline{)55}$	$22\overline{)55}$	$30\overline{)55}$
Row C.	$12\overline{)60}$	$25\overline{)60}$	$15\overline{)60}$	$11\overline{)60}$	$30\overline{)60}$	$21\overline{)60}$
Row D.	$12\overline{)75}$	$11\overline{)75}$	$15\overline{)75}$	$25\overline{)75}$	$30\overline{)75}$	$35\overline{)75}$
Row E.	$11\overline{)100}$	$12\overline{)100}$	$25\overline{)100}$	$15\overline{)100}$	$30\overline{)100}$	$22\overline{)100}$
Row F.	$11\overline{)96}$	$12\overline{)96}$	$25\overline{)96}$	$15\overline{)96}$	$30\overline{)96}$	$22\overline{)96}$
Row G.	$25\overline{)105}$	$11\overline{)105}$	$15\overline{)105}$	$12\overline{)105}$	$22\overline{)105}$	$35\overline{)105}$
Row H.	$12\overline{)64}$	$15\overline{)64}$	$25\overline{)64}$	$11\overline{)64}$	$22\overline{)64}$	$21\overline{)64}$
Row I.	$11\overline{)80}$	$12\overline{)80}$	$15\overline{)80}$	$25\overline{)80}$	$35\overline{)80}$	$21\overline{)80}$
Row J.	$25\overline{)200}$	$30\overline{)200}$	$75\overline{)200}$	$63\overline{)200}$	$65\overline{)200}$	$66\overline{)200}$

Do section 71 again. Do all the first column first. Then do the second column, then the third, and so on.

It is Christmas time and the children are getting ready to give a Christmas party.

1. They plan to cut out 100 gold stars. The teacher says: "I will make one for a sample. You make the rest." There are 33 children. How many stars should each child make?

2. They wish to make 12 paper chains, each chain to have 50 links. The teacher makes 6 links for samples. They make the rest. How many links should each child make?

3. They find that they can make 72 links from a large sheet of paper. How many links will 9 sheets make?

4. If they use 9 sheets how many links can they spoil and still have 600 for chains?

5. 16 of the children divide equally the work of making eight dozen cornucopias. How many should each of the 16 children make?

6. 4 of the big boys go to the woods to get evergreens. The other 13 children help the teacher write invitations. How many will they write in all if each child writes 7? If each child writes 8? If each child writes 9? If each child writes 10?

1. Tell the missing numbers:

A.	B.	C.
30¢ = .. × 6¢	25¢ = .. × 5¢	16¢ = .. × 2¢
24¢ = .. × 8¢	21¢ = .. × 3¢	35¢ = .. × 7¢
50¢ = .. × 10¢	$1.25 = .. × 25¢	$1.75 = .. × 25¢
50¢ = .. × 25¢	$2.00 = .. × 25¢	96¢ = .. × 12¢
75¢ = .. × 25¢	40¢ = .. × 8¢	$1.08 = .. × 12¢
$1.00 = .. × 10¢	75¢ = .. × 15¢	$1.44 = .. × 12¢
$1.00 = .. × 25¢	$1.50 = .. × 25¢	$1.50 = .. × 15¢
$25.00 = .. × $5.00	45¢ = .. × 15¢	$ .60 = .. × 12¢
$20.00 = .. × $5.00	90¢ = .. × 15¢	$ .80 = .. × 10¢
$40.00 = .. × $5.00	60¢ = .. × 15¢	$1.00 = .. × 20¢

2. Read columns A, B, and C again, saying, "6 cents is contained in 30 cents five times"; "8 cents is contained in 24 cents three times," etc.
3. Read them again, saying, "30 cents divided into 6-cent amounts will make five of them"; "24 cents divided into 8-cent amounts will make 3 of them," etc.
4. Read them again, saying, "For 30 cents you can buy five 6-cent articles." "For 24 cents you can buy three 8-cent articles," etc.
5. Read them again, saying, "If you save 6¢ a week, it will take you five weeks to save 30 cents." "If you save 8 cents a week, it will take you three weeks to save 24 cents," etc.

(*With pencil*)

6. What will food for 408 boys cost at $2.09 per boy?
7. What will food for 605 men cost at $3.06 per man?
8. What will 809 tickets cost at $7.05 each?

1. John wishes to earn $17.25 to buy a bicycle. He can get $.75 a week for working at the store. In how many weeks can he earn enough to buy the bicycle?

2. Mary, who is in high school, earns $14.00 every month by working evenings. In how many months will she earn enough to buy a typewriter for $70.00?

75|1725 The quotient means weeks. *14|70 The quotient means months.*

To find out how many times a certain amount of money is contained in some other amount of money, write both amounts as cents or write both amounts as dollars. Then divide.

On Booster Day the stores will sell any 25-cent article for 19¢.

3. How many 25-cent articles can be bought on Booster Day for 75¢? How many cents will be left over?

4. How many can you buy for $1.25, and how many cents will you have left over?

5. How many for $1.00? 6. For $4.50? 7. For $4.75? 8. For $2.50?

The stores sell any 50-cent article for 39¢ on Booster Day.

9. How many 50-cent articles can be bought for $1.00, and how many cents will be left over?

10. For $2.50? 11. For $8.75? 12. For $5.00? 13. For $1.25?

14. In how many weeks can you save $21.00, if you save 12¢ per week? 15. If you save 25¢ per week? 16. 28¢ per week? 17. 75¢ per week?

1. State the missing numbers:

1 lb. = ... oz.	1 bu. = ... qt.	4 pk. = ... qt.
2 lb. = ... oz.	2 bu. = ... qt.	2 pk. = ... qt.
½ lb. = ... oz.	3 bu. = ... qt.	1 pk. = ... qt.
4 lb. = ... oz.	½ bu. = ... qt.	½ pk. = ... qt.
¼ lb. = ... oz.	¼ bu. = ... qt.	¼ pk. = ... qt.
⅛ lb. = ... oz.	⅛ bu. = ... qt.	⅛ pk. = ... qt.

2. What part of a pound = 4 ounces? 8 oz.? 2 oz.?
3. What part of a peck = 1 qt.? 2 qt.? 4 qt.?
4. What part of a bushel = 16 qt.? 8 qt.? 4 qt.?
5. What part of a bushel = 1 pk.? 2 pk.? 4 pk.?

6. State the missing numbers:

A.	B.	C.
6 ft. = ... in.	1 yd. = ... in.	¼ lb. = ... oz.
4 ft. = ... in.	½ yd. = ... in.	¾ lb. = ... oz.
3 ft. = ... in.	¼ yd. = ... in.	¼ pk. = ... qt.
2 ft. = ... in.	¾ yd. = ... in.	¾ pk. = ... qt.
½ ft. = ... in.		¼ yd. = ... in.
⅓ ft. = ... in.	½ hr. = ... min.	¾ yd. = ... in.
¼ ft. = ... in.	¼ hr. = ... min.	¼ bu. = ... qt.
⅙ ft. = ... in.	¾ hr. = ... min.	¾ bu. = ... qt.

7. What part of a foot = 6 in.? 4 in.? 3 in.? 2 in.?
8. What part of a yard = 9 in.? 18 in.? 12 in.?
9. What part of an hour = 15 min.? 30 min.? 45 min.?
10. What part of a dollar = 25¢? 50¢? 75¢?
11. What part of 40 is 8? 5? 20? 10?
12. What part of 60 is 10? 15? 20? 30?
13. What part of 24 is 3? 4? 6? 8? 12?

1. Supply the missing numbers:

A.	B.	C.
3 pk. = .. qt.	2½ ft. = .. in.	2½ hr. = .. min.
3½ pk. = .. qt.	2¼ ft. = .. in.	2¼ hr. = .. min.
1½ pk. = .. qt.	4¼ ft. = .. in.	2¾ hr. = .. min.

D. At 20¢ per lb., ¼ lb. candy costs ...¢. ¾ lb. costs ...¢.

E. At 30¢ per doz., 1½ doz. oranges cost ...¢. 2½ doz. cost ...¢.

F. At 40¢ per pk., ½ pk. apples cost ...¢. 1½ pk. cost ...¢.

G. At 16¢ per lb., ⅛ lb. pepper costs ...¢. ⅜ lb. costs ...¢.

H. At 32¢ per lb., ⅜ lb. butter costs ...¢. ⅝ lb. costs ...¢.

I. At 48¢ per yd., 1⅛ yd. cloth cost ...¢. ⅞ yd. costs ...¢.

Chicken is 24¢ per lb. Turkey is 32¢ per lb.

2. Find the cost of a turkey that weighs 21⅜ lb.

$.32
21⅜
32
64
672
12
$6.84

First multiply $.32 by 21. Then add ⅜ of 32. Put $ and a decimal point where they belong.

3. Find the cost of —

a. 7⅛ lb. chicken.	*b.* 13¾ lb. turkey.	*c.* 9⅜ lb. turkey.
d. 4¾ lb. chicken.	*e.* 16¾ lb. turkey.	*f.* 6⅞ lb. chicken.
g. 3⅝ lb. chicken.	*h.* 12⅝ lb. turkey.	*i.* 19½ lb. turkey.

77.

1. There are 196 lb. flour in one barrel. How many pounds are there in ¼ barrel? 2. In ⅛ barrel? 3. In ½ barrel? 4. In 5 barrels? 5. 1½ barrels?
6. There are 1760 yd. in one mile. How many yards equal ½ mile? 7. ¼ mile? 8. Three quarters of a mile? 9. One eighth of a mile? 10. 2 miles? 11. A mile and a half?
12. How many feet are there in a mile? 13. In 3 miles? 14. In ⅙ mi.? 15. In a mile and a quarter?

78.

1. Find ⅜ of 144. 2. ⅜ of 192. 3. ⅝ of 2000. 4. ¾ of 5280.
5. Find ⅜ of 640. 6. ⅞ of 128. 7. ¾ of $5.00. 8. ⅜ of $24.88.
9. Find ½ of $12.96. 10. ⅓ of $12.96. 11. ⅔ of $12.96.
12. ⅜ of $12.96.
13. Multiply 144 by 3½. 14. By 2¼. 15. By 14¾. 16. By 4⅝.
17. Multiply 640 by 7¾. 18. By 36¼. 19. By 19¼.

79. At the Butcher Shop

Will helped his father in the store one Saturday. These were the prices per pound of the meats he sold:

Sirloin steak, 28¢	Loin chops, 32¢	Salt Pork, 16¢
Round steak, 24¢	Shoulder of lamb, 16¢	Bacon, 22¢
Chuck steak, 14¢		Ham, 20¢
Rib roast, 20¢		Sausage, 18¢

Will found the correct cost for each of these orders. Can you do as well? Write the answers:

1. 2½ lb. sirloin steak.
2. 7¼ lb. rib roast.
3. 1½ lb. bacon.
4. ¾ lb. ham.
5. 3½ lb. chuck steak.
6. ¼ lb. salt pork.
7. ½ lb. round steak.
8. 5¾ lb. shoulder of lamb.
9. 1¾ lb. sirloin steak.
10. 6¼ lb. ham.
11. 2½ lb. sausage.
12. ½ lb. bacon.
13. ¾ lb. round steak.
14. 8¾ lb. rib roast.
15. 1¼ lb. sirloin steak.
16. 6¼ lb. shoulder of lamb.
17. 4½ lb. bacon.
18. ¾ lb. salt pork.
19. 1½ lb. sausage.
20. 3¼ lb. sirloin steak.
21. 3¼ lb. salt pork.
22. 2¼ lb. round steak.
23. 2½ lb. chuck steak.
24. ½ lb. ham.
25. 1¾ lb. salt pork.
26. ¾ lb. loin chops.
27. 4¾ lb. shoulder of lamb.
28. ½ lb. sausage.
29. 2½ lb. bacon.
30. 1¾ lb. ham.

31. State the products:

$2\frac{1}{2} \times 12 =$ $5\frac{1}{4} \times 12 =$ $4\frac{3}{4} \times 12 =$ $2\frac{1}{3} \times 12 =$

$1\frac{1}{8} \times 40 =$ $3\frac{3}{8} \times 40 =$ $3\frac{3}{4} \times 36 =$ $4\frac{2}{3} \times 15 =$

80. Long Division and Multiplication

1. Find $\frac{1}{16}$ of 240. $(16\overline{)240})$ Check by multiplying the quotient by the divisor.
2. Find $\frac{1}{25}$ of 9825. Check by multiplying the quotient by the divisor.
3. Find $\frac{1}{16}$ of 3744. 4. Find $\frac{1}{25}$ of 6475.

Divide each of these numbers by 73. If your work is all right there will be no remainders.

5.	6.	7.	8.	9.
15,768	30,441	45,844	22,849	54,896

Find the quotients and remainders:

10. $38\overline{)1875}$ Is 5 or 4 right as the first figure in the quotient?

11. $67\overline{)2512}$ Is 3 or 4 right as the first figure in the quotient?

12. $29\overline{)2018}$ Do you think of 29 as about 20 or as about 30?

13. $58\overline{)1675}$ Do you think of 58 as about 50 or as about 60?

14. $36\overline{)917}$	15. $28\overline{)500}$	16. $45\overline{)810}$	17. $54\overline{)1192}$
18. $28\overline{)725}$	19. $47\overline{)900}$	20. $23\overline{)460}$	21. $69\overline{)215}$

81.

22. How many quarts are there in 28 bushels?

23. How many weeks will it take Nell to save \$2.75 if she saves 15 cents a week?

24. How many tickets at 35 cents each must Alice sell to make \$10.50 in all?

25. If Fred earns 75 cents a week, how many weeks will it take him to earn \$15.00?

26. At the rate of 35 miles per hour, how many hours will it take a train to go 175 miles?

Find the products:

27.	28.	29.	30.	31.	32.	33.	34.
620	398	418	752	840	216	535	925
325	807	900	630	104	160	144	508

35.	36.	37.	38.	39.	40.	41.	42.
567	965	375	289	498	850	709	614
700	360	208	550	600	309	878	400

1. Mr. Russell receives 60¢ per qt. for his cream. How much does he receive for 19¾ qt. cream sold Jan. 1 to 7?

$.60	*Multiply $.60 by 19*
19¾	
540	
60	
$11.40	
.45	*Then add ¾ of $.60*
$11.85	

2. How much does he receive for 18½ qt. cream sold Jan. 8 to 14?
3. How much does he receive for 16¾ qt. cream sold Jan. 15 to 21?
4. How much does he receive for 17¼ qt. cream sold Jan. 22 to 28?
5. One month he did not deliver the cream himself, but sold it at his farm for 52¢ per qt. How much did he receive for 61¼ qt. at 52¢?

Last summer he sold fresh unsalted butter for 48¢ per pound and salted butter for 34¢ per pound.

6. He sold Mrs. Lewis 13¾ lb. unsalted butter. How much should Mrs. Lewis pay?
7. He sold Mrs. Howard 26½ lb. salted butter. How much should Mrs. Howard pay?
8. He sold Mrs. Edwards 17¼ lb. unsalted butter and 31½ lb. salted butter. How much should Mrs. Edwards pay in all?
9. Mrs. Williams had 7¼ lb. unsalted butter and 18½ lb. salted butter. How much should she pay in all?

1. State the product of each pair of numbers:

A.	B.	C.	D.
10×2	100×4	1000×9	10×8
10×5	100×8	1000×6	100×8
10×9	100×3	1000×15	1000×8
10×7	100×6	1000×75	100×25
10×25	100×25	1000×125	1000×75
10×12	100×12	1000×10	10×75
10×15	100×10	1000×100	10×30
10×10	100×35	1000×43	100×30
10×100	100×375	1000×217	1000×30
10×256	100×1000	1000×1000	1000×60

To multiply a number by 10, annex 0 to the number so that every hundred will be a thousand, every ten will be a hundred, and every one will be a ten.

To multiply a number by 100, annex 00 to the number so that every hundred will be ten thousand, every ten will be a thousand, and every one will be a hundred.

To multiply a number by 1000, annex 000 to the number so that every hundred will be a hundred thousand, every ten will be ten thousand, and every one will be a thousand.

E.	F.	G.	H.
10×20	1000×125	10×100	10×150
100×30	100×125	1000×100	100×2500
1000×60	10×125	100×100	1000×180
1000×80	100×200	100×51000	10×4217
10×10	10×400	10×51000	100×396
100×10	1000×300	1000×1000	10×3600
1000×18	100×500	1000×150	1000×3510

State the missing numbers:

A.	B.	C.
40 = ... 10s	160 = ... 10s	700 = ... 10s
80 = ... 10s	90 = ... 10s	800 = ... 10s
30 = ... 10s	290 = ... 10s	900 = ... 10s
150 = ... 10s	390 = ... 10s	1000 = ... 10s
250 = ... 10s	400 = ... 10s	3000 = ... 10s
120 = ... 10s	600 = ... 10s	4000 = ... 10s

D.	E.	F.
900 = ... 100s	1600 = ... 100s	29000 = ... 100s
200 = ... 100s	3400 = ... 100s	30000 = ... 100s
800 = ... 100s	3900 = ... 100s	70000 = ... 100s
900 = ... 100s	4000 = ... 100s	60000 = ... 100s
1000 = ... 100s	9000 = ... 100s	80000 = ... 100s
2000 = ... 100s	15000 = ... 100s	8000 = ... 100s
6000 = ... 100s	12000 = ... 100s	800 = ... 100s

To divide a number ending in 0 or 00 or 000 by 10, reject the last 0 so that every thousand will be a hundred, every hundred a ten, and every ten a one.

To divide a number ending in 00 or 000 by 100, reject the last two 0s so that every thousand will be a ten and every hundred will be a one.

Make a rule for dividing a number ending in 000 by 1000.

G.	H.	I.
50000 ÷ 10 =	58000 ÷ 100 =	61400 ÷ 100 =
600 ÷ 10 =	2790 ÷ 10 =	720 ÷ 10 =
369000 ÷ 1000 =	50000 ÷ 1000 =	72000 ÷ 10 =
7000 ÷ 1000 =	6000 ÷ 100 =	50000 ÷ 10 =
10000 ÷ 1000 =	10000 ÷ 10 =	10000 ÷ 100 =

1. Supply the missing numbers. r. stands for remainder.

A.	B.	C.
4 60s =	270 = .. 90s	140 = .. 20s
9 20s =	450 = .. 90s	150 = .. 20s and .. r.
240 = .. 60s	360 = .. 90s	150 = .. 30s
180 = .. 20s	360 = .. 60s	150 = .. 40s and .. r.
120 = .. 20s	360 = .. 40s	150 = .. 50s
160 = .. 40s	400 = .. 40s	150 = .. 60s and .. r.
160 = .. 20s	400 = .. 80s	160 = .. 70s and .. r.
150 = .. 50s	400 = .. 50s	160 = .. 60s and .. r.
150 = .. 30s	300 = .. 60s	160 = .. 80s
180 = .. 30s	640 = .. 80s	170 = .. 20s and .. r.

2. State the quotients and remainders when you divide:

D. 180 by 30, 40, 50, 60, 70, 80.
E. 190 by 30, 40, 50, 60, 70, 80, 90.
F. 200 by 30, 40, 50, 60, 70, 80, 90.
G. 210 by 30, 40, 50, 60, 70, 80, 90.

86.

Write the quotients and remainders. Do not write any other numbers unless you need to:

1.	2.	3.	4.	5.	6.
30|260	30|261	50|260	50|265	50|267	60|240
7.	8.	9.	10.	11.	12.
60|270	60|271	90|270	90|274	90|278	90|280
13.	14.	15.	16.	17.	18.
30|280	30|282	40|282	50|282	70|282	90|282
19.	20.	21.	22.	23.	24.
40|295	90|295	40|300	50|300	70|300	70|305

These are a grocer's prices for certain things by the dozen and for a single one. He sells a half dozen at half the price of a dozen. Find out how much you save by buying 6 all at one time instead of buying them one at a time.

	Doz.	Each
1. Evaporated Milk	$1.00	$.09
2. Puffed Rice	1.60	.14
3. Puffed Wheat	1.10	.10
4. Canned Soup	1.90	.17
5. Sardines	1.80	.16
6. Beans (No. 2 cans)	1.50	.13
7. Pork and Beans	1.70	.15
8. Peas (No. 2 cans)	1.40	.12
9. Tomatoes (extra cans)	3.20	.28
10. Ripe olives (qt. cans)	7.20	.65

11. The prices for P. and T. olive oil are:

1-gal. can	$3.25
½-gal. can	1.75
¼-gal. can	.95
⅛-gal. can	.50

Compare the cost of a gallon of olive oil when you buy it in a gallon can, in half-gallon cans, in quarter-gallon cans, and in cans holding one eighth of a gallon.

12. Vanilla extract is sold at 26¢ for a 2-oz. bottle, 50¢ for a 4-oz. bottle, $1.95 for a bottle containing 1 pt., and $3.80 for a bottle containing 1 qt. What is the price per pound when you buy it in 2-oz. bottles? When you buy it in quart bottles (counting 1 pt. as a pound)?

13. Make two other problems about buying vanilla extract in quantity.

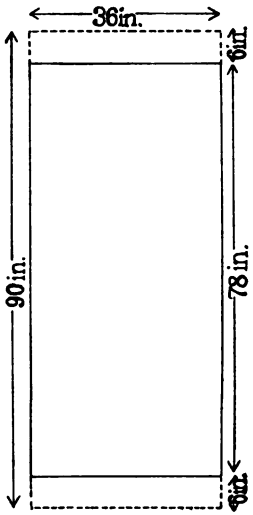
14. Find the cost per pound for prunes at $2.75 for 25 lb. 15. At 4 lb. for 50¢.

16. Find the cost of strawberries at 3 boxes for 50¢.

17. How many boxes would you give for $1.00 at that price?

1. Last summer John used to hunt for golf balls every day. One morning he found four. He sold one for 25¢, one for 20¢, one for 15¢, and one for 10¢. What was the average amount he received for one golf ball?
2. That afternoon he found five more and sold 3 for 15¢ each and 2 for 10¢ each. What was the average amount for one of these five?
3. During the first week he sold 32 golf balls, getting in all $4.50. What was the average amount that he received per ball that week?
4. John's sister Mary picks blueberries and sells them. Monday she sold four quarts at 15¢ per qt. and eight quarts in one lot for $1.00. What was the average amount she received per quart? What do you think $\frac{4}{12}$ of a cent equals — $\frac{1}{2}$¢, $\frac{1}{3}$¢, or $\frac{1}{4}$¢?
5. Wednesday she sold 4 qt. at 2 qt. for 25¢, and 7 qt. for 15¢ per quart. What was the average price she received per qt. on Wednesday?
6. In August she sold 215 qt. berries, receiving in all $27.95. What was the average price per qt.?
7. Mary reckons that she spent 142 hours in picking the 215 quarts of berries, 18 hours in sorting them, and 26 hours in going to people's houses to sell them. How much did she receive on the average per hour of time spent?
8. She bought six dresses, one for $.98, two for $1.08 each, two for $1.29 each, and one for $2.31. What was the total cost of the six? What was the average cost per dress?

1. Mary plans to buy material for four curtains for her room. This is her plan for one of the curtains. How many yards of material 36 in. wide will she need for all four curtains?



Each curtain 3 ft. wide, 6½ ft. long, with 6 in. hem at top and bottom.

2. What will the material cost at 13¢ per yd.? At 16¢ per yd.? At 21¢ per yd.? At 28¢ per yd.?

3. John plans to buy some full-sized carpenter's tools. He wants a saw, a plane, and a level at $1.25 each; a hatchet, a hammer, and a mallet at 46¢ each; 3 chisels at 24¢, 38¢, and 42¢; and a brace and bit set for $2.25. How much will it cost for all, adding 63¢ for freight?

4. At the lumber yard John found a pile of 10-inch boards of odd lengths and bought them for 15¢ per board. There were 163 of them. How much did John pay for the lot?

5. He bought 36 pieces of lumber, each 2 inches by 4 inches on the end and of different lengths, for $4.50. What was the average cost per piece? What part of a cent do you think $\frac{18}{36}$ is?

You can add and subtract and multiply and divide with the largest numbers that there are in just the same way as you have been doing.

Add and write the sums:

1.	2.	3.	4.	5.
				43
41521	73125	2871	47536	1265
23534	82415	312	813	3291
61523	21345	91654	2492	71425
		34298	91235	82380

6. Add and write the sum:

214 (two hundred fourteen ones)
214,000 (two hundred fourteen thousands)
214,000,000 (two hundred fourteen millions)

7. We read 158,394 in words as one hundred fifty-eight thousand three hundred ninety-four.
8. Read in words: 325,675. 325,142,325.
9. Write in words:

5000 5137 9000 9275 16,000 16,423
58,000 158,000 296,000 296,452 214,561

10. Write in numbers:

Fourteen million six hundred seventeen thousand three hundred fourteen. Sixty million sixteen thousand five hundred forty.

11. How many thousands are there in a million?
12. How many ones or units are there in 100×100?
13. How many hundreds are there in 100,000?
14. How many hundreds are there in one thousand?

1 thousand = 10 hundreds or 1000 ones
1 million = 1000 thousands

1. How many seconds are there in a minute? In an hour? In 24 hours?
2. There are 5280 ft. in a mile. How many inches is that?
3. How many inches are there in 75 miles?
4. How many ounces are there in a ton?
5. Tell something that you think weighs 100,000 lb.
6. Tell something that you think weighs 1,000,000 lb.
7. Tell something that you think costs as much as $10,000,000.

92.

1. Estimate what the product of 4261×3524 will be. Will it be about a hundred thousand or about a million or about ten million or about a hundred million?
2. Estimate the total weight in pounds of a train of thirty-six empty freight cars. Find the true weight, counting each car as 35,000 lb.
3. How near was your estimate?
4. Which do you think will be larger, 31 miles or 159,768 feet? Guess how much larger.
5. Which really is larger? How much larger?
6. The children guessed how many square inches there were in the floor of the big hall in the Lincoln School. Mary guessed 575,000, Kate guessed 575,250, Grace guessed 666,666, Alice guessed 615,750. The right answer was 762,048. How near was Mary's estimate? Kate's? Grace's? Alice's?

7. Which do you think will be larger, 9135×2143 or 4712×4831?
8. Which is larger? How much larger?
9. Alice gave this problem: "Which is larger, a dozen dozen dozen dozen or a hundred dozen dozen? How much larger?" Find the right answer.
10. Fred gave this one: "Which is larger, 456,654 or 456×654? How much larger?" Find the right answer.
11. Helen gave this one: "How many hundred hundreds are there in a thousand thousands?" Find the right answer.
12. How many miles equal 528,000 feet?
13. How many pounds equal a thousand tons?
14. What is the largest number that you can write with six figures?
15. How much is 100×100? 1000×1000?
16. How many hundred thousands are there in a million?
17. Make problems about 1 million. About 10 million.

93.

Find the quotients and remainders.

1.	2.	3.	4.
$312\overline{)970,612}$	$421\overline{)500,325}$	$513\overline{)800,250}$	$291\overline{)600,575}$

Check your results for 1, 2, 3, and 4. Find the product of the divisor and quotient and add the remainder.

Find the quotients and remainders:

1. 30309 and 14 r.

75|2273189
225
231
225
689
675
14

Think "There are three 75s in 227." Write the 3 and the 225.
Think "There is not even one 75 in 23." Write the 0.
Think "There are three 75s in 231." Write the 3 and the 225.
Think "There is not even one 75 in 68." Write the 0.
Think "There are nine 75s in 689." Write the 9 and the 675.

2. 15|4,612,612

3. 27|280,938

4. 14|2918

5. 45|9300

Check your results to 2, 3, 4, and 5 by finding the product of the divisor and quotient and adding the remainder to it.

6. 2005009

25|50125225
50
125
125
225
225

Think "There are two 25s in 50." Write the 2 and the 50.
There is not even one 25 in 1. Write 0.
There is not even one 25 in 12. Write 0.
There are five 25s in 125. Write the 5 and the 125.
There is not even one 25 in 2. Write 0.
There is not even one 25 in 22. Write 0.
There are nine 25s in 225. Write the 9 and the 225.

7. 15|45,135

8. 18|36,108

9. 13|26,117

10. 75|15,225

Check your results to 7, 8, 9, and 10.

Divide each of these numbers by 825. If your work is all correct there will be no remainders.

11. 252,450

12. 578,325

13. 447,975

14. 748,275

1. Divide 536,250 by 825. What will the last figure in the quotient be?

$$\begin{array}{r} 650 \\ 825\overline{)536250} \\ \underline{4950} \\ 4125 \\ \underline{4125} \end{array}$$

Think "There is not even one 825 in 0." Write 0 in the quotient over the 0 of 536,250.

2. Divide 975 by 32. What is the quotient and what is the remainder?

$$\begin{array}{r} 3 \\ 32\overline{)975} \\ \underline{96} \\ 15 \end{array}$$

Think "There is not even one 32 in 15." What will you write as the last quotient figure?
Think "There is 15 remainder."

Find the quotients and remainders:

3.	4.	5.	6.	7.	8.
$41\overline{)820}$	$23\overline{)475}$	$19\overline{)400}$	$39\overline{)400}$	$25\overline{)750}$	$25\overline{)5250}$

Check your answers to 3, 4, 5, 6, 7, and 8.

9.	10.	11.	12.	13.	14.
$15\overline{)905}$	$15\overline{)610}$	$15\overline{)780}$	$16\overline{)1632}$	$75\overline{)5250}$	$24\overline{)492}$

96.

State the quotients:

1.	2.	3.	4.
$20\overline{)40}$	$20\overline{)400}$	$20\overline{)4000}$	$20\overline{)60,000}$
Think $2\overline{)4}$	*Think* $2\overline{)40}$	*Think* $2\overline{)400}$	*Think* $2\overline{)6000}$
5.	**6.**	**7.**	**8.**
$300\overline{)600}$	$300\overline{)36,000}$	$300\overline{)15,000}$	$4000\overline{)80,000}$
Think $3\overline{)6}$	*Think* $3\overline{)360}$	*Think* $3\overline{)150}$	*Think* $4\overline{)80}$
9.	**10.**	**11.**	**12.**
$50\overline{)4200}$	$500\overline{)42,000}$	$60\overline{)420}$	$6000\overline{)42,000}$

1. Divide 76,500 by 1500.

You may do this just as you have always done.

```
      51
1500|76500
    7500
    1500
    1500
```

But this is sometimes quicker. Reject 00 from both divisor and dividend. Then divide.*

```
      51
15Ø0|765ØØ
      75
      15
      15
```

2. Divide 19,200 by 160.

You may do this just as you have always done.

```
     120
160|19200
   160
   320
   320
     0
```

But this is sometimes quicker. Reject one 0 from both divisor and dividend. Then divide.

```
     120
16Ø|192ØØ
    16
    32
    32
     0
```

3. George owes $31.20 on his motorcycle. How long will it take him to pay it at $1.95 per week?

4. At $.80 per week? 5. At $3.90 per week?

6. If he pays $1.30 per week? $1.20 per week?

7. Paul's uncle gave him $12.00 to spend during vacation. How many weeks will it last if Paul spends 75¢ a week?

8. If he spends $1.00 a week? 9. If he spends $1.20 a week?

*To the Teacher.—The rejection of 0, or of 00, is probably *not* a good practice except when the quotient is obvious on inspection. The saving of time is very slight. In accounting it is desirable to have the full numbers appear. Save with gifted computers, fewer errors will be made if the full numbers are used. The logic of the procedure when United States money is to be divided is confusing to pupils.

The girls were looking over their report cards. They had marks for Oct., Nov., and Dec. Each girl added all her marks and then divided to find her average.

Here are the marks:

	Alice Stern			Grace Brown			Nell Adams		
	Oct.	Nov.	Dec.	Oct.	Nov.	Dec.	Oct.	Nov.	Dec.
R.	90	85	92	75	80	75	85	86	90
A.	95	95	90	81	78	80	90	85	85
S.	85	80	85	85	85	82	80	75	76
G.	90	90	90	85	83	80	82	80	80
W.	98	90	94	75	80	77	85	87	88
P.		92	86		81	85		91	90

1. Find the average for each girl.
   Do not write "and 14 remainder." Write $14\frac{14}{17}$.
   Do not write "and 7 remainder." Write $14\frac{7}{17}$.
2. About how much higher was Alice's average than Grace's?
3. Find out exactly how much higher it was if you can.
4. In which month did Alice do best?
5. In which month did Grace do best?
6. In which month did Nell do best?

The marks on the first line are for reading (R). Those on the second line for arithmetic (A). Those on the third line are for spelling (S). Those on the fourth line are for geography (G). W stands for writing. P stands for physiology.

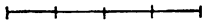
7. Find each girl's average in reading (R).
8. Find each girl's average in arithmetic (A).
9. Find each girl's average in spelling (S).
10. In what subject did Grace beat Alice?
11. In what subject did Nell beat Alice?

George keeps account of how much he earns. In the first quarter last year he earned \$13.30. In the second quarter he earned \$16.25. In the third quarter he earned \$20.65. In the fourth quarter he earned \$8.75.

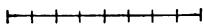
1. How many weeks are there in a quarter of a year? (1 yr. = 52 wk.)
2. What were George's average earnings per week in the first quarter? In the second? In the third? In the fourth?

Remember to put a decimal point in your quotients to show which numbers mean dollars and which numbers mean cents. Do not write "and 3 remainder" or "and 4 remainder. "Write $\frac{5}{13}$ and $\frac{4}{13}$.

3. What were his average earnings per week for all four quarters together?
4. George hopes to earn an average of \$1.50 per week, next year. How much will that be for the whole year?
5. He has 50 dollars in the savings bank. The bank pays him four cents a year for each dollar. How much does he get a year for letting the bank use his \$50?
6. Henry has a regular job as delivery boy for Mr. Peters. He receives \$1.60 per week. How much does he receive in 5 weeks? In 10 weeks?
7. He is saving to buy a bicycle that he can get for \$15.00. He has \$5.40 saved already. How much more must he save to have \$15.00?
8. How many weeks will it take him to save the \$9.60 if he saves all his pay each week?



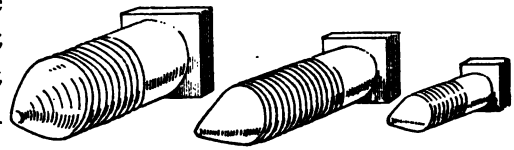
1. Is this inch divided into halves or fourths or fifths or sixths ($\frac{1}{2}$s or $\frac{1}{4}$s or $\frac{1}{5}$s or $\frac{1}{6}$s)?



2. How is this inch divided?

3. How many ounces = $\frac{1}{2}$ lb.? $\frac{1}{4}$ lb.? $\frac{1}{8}$ lb.? $\frac{1}{16}$ lb.?

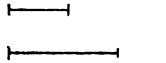
4. Which of these bolts will fit a hole that is $\frac{3}{16}$ inch across?



5. Which of them will fit a hole that is $\frac{5}{16}$ inch across?

6. Which of them will fit a hole that is $\frac{7}{16}$ inch across?

7. How many $\frac{1}{16}$ of an inch long do you think each of these lines is? Estimate. Then measure with your rule and see if you were right.



1 dime = $\frac{1}{10}$ dollar
1 cent = $\frac{1}{10}$ dime
1 mill = $\frac{1}{10}$ cent

8. How many dimes = $\frac{3}{10}$ dollar? 9. How many cents = $\frac{7}{10}$ dime?

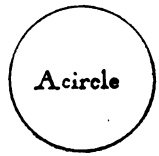
Chocolate Coconut Sponge Pound

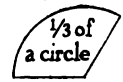
10. Which of these cakes is divided into $\frac{1}{5}$s (fifths)?

11. Which is cut into $\frac{1}{3}$s (thirds)? Into $\frac{1}{10}$s (tenths)?

12. Read each of these numbers. Tell whether it is less than $\frac{1}{2}$ or equal to $\frac{1}{2}$ or more than $\frac{1}{2}$.

$\frac{1}{3}$, $\frac{2}{3}$, $\frac{1}{4}$, $\frac{2}{4}$, $\frac{3}{4}$, $\frac{3}{8}$, $\frac{4}{8}$, $\frac{5}{8}$, $\frac{1}{5}$, $\frac{4}{5}$, $\frac{3}{10}$, $\frac{5}{10}$, $\frac{7}{10}$, $\frac{5}{16}$, $\frac{8}{16}$, $\frac{11}{16}$, $\frac{3}{6}$, $\frac{4}{6}$, $\frac{5}{6}$

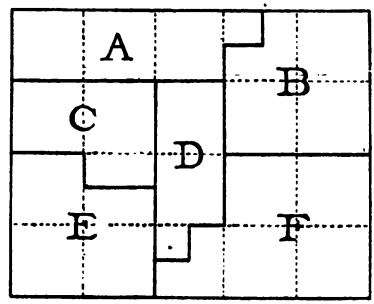




1. Draw ¼ of a circle.
2. Draw ⅔ of a circle.
3. Draw ¼ of a square inch.
4. Draw ¾ sq. in.

In this picture a square like this stands for one acre.

5. Which field contains 2½ acres?
6. Which field contains 2¼ acres?
7. Which field contains 3½ acres?
8. Which field contains 3¼ acres?
9. Which field contains 3¾ acres?
10. Which field contains 4¾ acres?



102.

1. Mr. Valenti sells oranges at 3 cents apiece, 4 for 10 cents. What is the cost of 1 orange when you buy 4 at a time?
2. What is the cost per article when you get —

3 for 5¢?	4 for 5¢?	6 for 10¢?	8 for 15¢?
3 for 10¢?	4 for 10¢?	6 for 25¢?	8 for 25¢?
3 for 20¢?	4 for 25¢?	6 for 50¢?	2 for a cent?
3 for 25¢?	4 for 50¢?	8 for 10¢?	3 for a cent?

3. What is the cost per article when you get —

10 for a cent? 8 for a cent? 6 for 1¢?
4 for 1¢? 5 for 1¢?

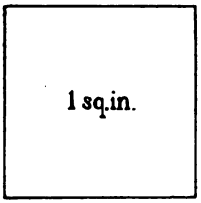
– = 1/16 in.
— = 2/16 or 1/8 in
—— = 3/16 in.
——— = 4/16 or 1/4 in.
———— = 5/16 in.
————— = 6/16 or 3/8 in.
————— = 7/16 in.
————— = 8/16 or 1/2 in.
————— = 9/16 in.

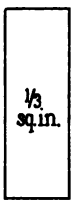
Numbers like $\frac{1}{2}$, $\frac{1}{3}$, $\frac{2}{3}$, $\frac{1}{4}$, $\frac{2}{4}$, $\frac{3}{4}$, $\frac{1}{5}$, $\frac{2}{5}$, $\frac{3}{5}$, etc., are called fractions.

Sometimes we write fractions like this: 1/2, 1/3, 2/3, 1/4, 2/4, 3/4, 1/5, 2/5, 3/5.

1. Write as many different fractions as you can in 15 minutes. Write them in a column like this:

1/2
1/3
2/3





2. Write words for ten fractions like this:

1/2 means one half
1/3 means one third
2/3 means two thirds

3. Read each of these fractions and tell whether it means more than half a pound or less than half a pound:

1/16 lb.	15/16 lb.	3/16 lb.	1/8 lb.
1/5 lb.	4/5 lb.	7/8 lb.	3/8 lb.
5/16 lb.	2/3 lb.	9/10 lb.	7/10 lb.
3/10 lb.	3/4 lb.		

4. Tell which of these fractions mean exactly 1/2 lb.:
3/4 lb. 2/3 lb. 2/5 lb. 3/5 lb. 3/6 lb. 3/8 lb. 4/5 lb.
4/8 lb. 4/10 lb. 5/10 lb. 7/10 lb. 3/16 lb. 8/16 lb.

5. Tell which of these fractions mean exactly 1/4 in.
5/8 in. 3/8 in. 1/8 in. 4/16 in. 5/16 in. 2/8 in. 1/2 in.

Take your rule.

1. Draw a line $\frac{1}{2}$ in. long. Add $\frac{1}{2}$ in. to it. How long is it now?
2. Draw a line $\frac{1}{4}$ in. long. Add $\frac{1}{4}$ in. to it. How long is it now?
3. Add $\frac{1}{8}$ in. to $\frac{3}{8}$ in.
4. Add $\frac{3}{8}$ in. to $\frac{3}{8}$ in.
5. Add $\frac{3}{8}$ in. to $\frac{5}{8}$ in.
6. Add $\frac{1}{4}$ in. to $\frac{3}{4}$ in.
7. Read and say the sums:

A. 2 pt. and 3 pt. =
3 yd. and 4 yd. =
$\frac{2}{3}$ and $\frac{1}{3}$ =

B. 4 lb. and 2 lb. =
$\frac{4}{10}$ and $\frac{3}{10}$ =
1 third and 1 third =

C. 2 ft. and 1 ft. =
$\frac{2}{3}$ and $\frac{1}{3}$ =
$\frac{1}{4}$ and $\frac{1}{4}$ =

D. $\frac{5}{16}$ and $\frac{3}{16}$ and $\frac{1}{16}$ =
$\frac{3}{8}$ and $\frac{3}{8}$ and $\frac{1}{8}$ =
$\frac{3}{16}$ and $\frac{7}{16}$ and $\frac{3}{16}$ =

E. 2 fifths and 1 fifth and 1 fifth =
$\frac{3}{8}$ and $\frac{1}{8}$ and $\frac{1}{8}$ =
$\frac{3}{10}$ and $\frac{3}{10}$ and $\frac{1}{10}$ =

8. Say the sums:

a.	*b.*	*c.*	*d.*	*e.*	*f.*	*g.*	*h.*
$\frac{1}{8}$	$\frac{1}{5}$	$\frac{1}{16}$	$\frac{1}{8}$	$\frac{3}{16}$		$\frac{1}{4}$	$\frac{3}{10}$
$\frac{3}{8}$	$\frac{1}{5}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{7}{16}$	$\frac{4}{10}$	$\frac{1}{4}$	$\frac{1}{10}$
$\frac{3}{8}$	$\frac{2}{5}$	$\frac{3}{16}$	$\frac{1}{8}$	$\frac{1}{16}$	$\frac{3}{10}$	$\frac{1}{4}$	$\frac{3}{10}$

105.

State the sums. Say 1 for two $\frac{1}{3}$s. Say $1\frac{1}{2}$ for three $\frac{1}{3}$s. Say 1 for three $\frac{1}{3}$s.

a.	*b.*	*c.*	*d.*	*e.*	*f.*	*g.*	
$\frac{1}{2}$		$\frac{1}{3}$			$\frac{1}{5}$		*Think what*
$\frac{1}{2}$	$\frac{1}{3}$	$\frac{1}{3}$	$\frac{2}{5}$	$\frac{2}{10}$	$\frac{2}{5}$	$\frac{1}{4}$	*to say for*
$\frac{1}{2}$	$\frac{1}{3}$	$\frac{1}{3}$	$\frac{2}{5}$	$\frac{3}{10}$	$\frac{2}{5}$	$\frac{3}{4}$	*four $\frac{1}{4}$s.*

1. Mary's father sells cream. He keeps account of what he sells, like this:

Quarts of Cream Sold Jan. 1 to 7	
Mon.	3¼
Tues.	3
Wed.	3
Th.	2
Fri.	3¼
Sat.	3
Sun.	2¼

How much did he sell in the week of Jan. 1–7? Add the ¼s first.

2. How much did he sell in each of these weeks? Write ½ for ⅔.

	Jan. 8–14 Qt.	Jan. 15–21 Qt.	Jan. 22–28 Qt.	Jan. 29–Feb. 4 Qt.
M.	2	2	2	2¼
Tu.	3	2¼	2	3
W.	3¼	3	3	2¼
Th.	2	2	3	3
F.	3	2¼	2¼	3¼
Sat.	3	3	2	4
Sun.	2¼	2¼	3	2¼

Think 1 for ⁴⁄₄. *Add the 1 to the qt. column.*

107.

Write the sums. Think 1 for ⁴⁄₄ or ²⁄₂ and add the 1 to the ones column.

a.		*b.*	*c.*	*d.*	*e.*	*f.*	*g.*
4¼		26	23	31	18	75	35
3	*Add*	31	28	28	13¼	53	89
9¼	*the*	19½	30¼	17	16¼	31¼	45
5¼	*¼s*	23	17	29	17¼	60¼	62½
4¼	*first.*	26½	28¼	25½	19¼	81¼	62½

Lucy's mother sells eggs. Here is her account of what she sold in six weeks.

DAILY SALES OF EGGS IN DOZENS

	1st Week	2d Week	3d Week	4th Week	5th Week	6th Week
M.	1	1½	2	1	1½	
Tu.	1	2½	2	2	1½	1½
W.	2	½	1	2	½	1
Th.	1½	2	1	1½	2½	2
F.	1½	1½	1½	2	1½	2½
Sat.	1½	2½	2½	1	1½	1½

1. How many dozen did she sell the first week?
2. How many dozen did she sell the second week?
3. How many dozen did she sell the third week?
4. The fourth week? 5. The fifth week? 6. The sixth week?

Think 1½ for three ½s, think 2½ for five ½s, think 3½ for seven ½s. Write the ½. Add the 1, 2, or 3 to the ones column.

109.

State the sums:

1.	2.	3.	4.	5.	6.	7.	8.
							1½
		⅜	1½	¼			1½
½	2½	⅜	2½	¼	⅓	2¼	2½
½	2½	⅜	2½	¼	⅔	7¼	1½

9.	10.	11.	12.	13.	14.	15.	16.
⅚	4	4⅚	¼	2¼	4¼	⅜	2⅜
⅙	3½	2⅙	¾	2¾	2¾	⅝	1⅝

Lucy's father sells fresh butter with no salt in it to some of his customers in $\frac{1}{4}$-lb. packages.

1. How much do three of these packages contain?
2. How much do five $\frac{1}{4}$-lb. packages contain—$1\frac{1}{4}$ lb. or $1\frac{1}{2}$ lb.?
3. How much do 6 contain? 4. How much do 7 contain—$1\frac{1}{4}$ lb. or $1\frac{1}{2}$ lb. or $1\frac{3}{4}$ lb.?
5. How many $\frac{1}{4}$-lb. packages equal 2 lb.?
6. Tell the missing numbers:

$\frac{7}{4}$ = 1 and $\frac{\quad}{4}$ $\quad \frac{8}{4}$ = . . . $\quad \frac{6}{4}$ = 1 and $\frac{\quad}{4}$ $\quad \frac{5}{4}$ = 1 and $\frac{\quad}{4}$

7. One customer takes $\frac{1}{4}$ lb. every day except Sunday. She takes . . . lb. in a week.
8. One customer takes $\frac{1}{4}$ lb. Mon., Wed., Thur., and Sat. She takes . . . lb. a week.
9. Lucy adds up the fresh butter sales for her father every week. See if you can add them without making a mistake.

For $\frac{5}{4}$ think $1\frac{1}{4}$. Write $\frac{1}{4}$. Add the 1.
For $\frac{6}{4}$ think $1\frac{2}{4}$. Write $\frac{2}{4}$. Add the 1.
For $\frac{7}{4}$ think $1\frac{3}{4}$. Write $\frac{3}{4}$. Add the 1.

Jan. 1–7	Jan. 8–14	Jan. 15–21	Jan. 22–28	Jan. 29–Feb. 4	Feb. 5–11
$3\frac{1}{4}$	$2\frac{1}{4}$	3	3	4	3
2	$2\frac{1}{4}$	3	$2\frac{1}{4}$	$3\frac{1}{4}$	4
$3\frac{1}{4}$	3	2	3	2	$3\frac{1}{4}$
$2\frac{1}{4}$	$2\frac{1}{4}$	3	$2\frac{1}{4}$	$3\frac{1}{4}$	2
5	$4\frac{1}{4}$	$6\frac{1}{4}$	$4\frac{1}{4}$	5	$6\frac{3}{4}$
$3\frac{1}{4}$	$3\frac{1}{4}$	$4\frac{1}{4}$	$3\frac{1}{4}$	$3\frac{3}{4}$	$2\frac{3}{4}$

Add and say the sums. Write what time it is when you begin. Write what time it is when you finish the whole page. Write how many minutes it took you. To-morrow add the numbers again. When you can do the whole page in 10 minutes, ask the teacher to test you to be sure that you have all the sums right.

1.	2.	3.	4.	5.	6.	7.	8.
$1\frac{1}{2}$	$2\frac{1}{4}$			2	$1\frac{1}{5}$		
3	$1\frac{1}{4}$	$1\frac{1}{4}$	$1\frac{1}{3}$	$3\frac{1}{2}$	3	$7\frac{1}{4}$	$3\frac{1}{2}$
$1\frac{1}{2}$	$2\frac{1}{4}$	$2\frac{1}{4}$	$1\frac{1}{3}$	$2\frac{1}{2}$	$4\frac{2}{5}$	$8\frac{1}{4}$	4

9.	10.	11.	12.	13.	14.	15.	16.
$1\frac{1}{4}$						$2\frac{1}{2}$	$2\frac{1}{4}$
$2\frac{1}{4}$	$3\frac{1}{2}$	$2\frac{1}{5}$	$3\frac{1}{4}$	$2\frac{1}{8}$	$1\frac{1}{8}$	$\frac{1}{2}$	$1\frac{3}{4}$
$4\frac{1}{4}$	$1\frac{1}{2}$	$4\frac{1}{5}$	$5\frac{1}{4}$	$1\frac{1}{8}$	$2\frac{3}{8}$	$1\frac{1}{2}$	3
$1\frac{1}{4}$	$4\frac{1}{2}$	$3\frac{3}{5}$	$5\frac{1}{4}$	$4\frac{1}{8}$	$1\frac{3}{8}$	$3\frac{1}{2}$	$1\frac{1}{4}$

17.	18.	19.	20.	21.	22.	23.	24.
	$1\frac{1}{8}$		$3\frac{1}{4}$	$1\frac{1}{2}$			$1\frac{1}{2}$
	3	$2\frac{1}{4}$	$2\frac{1}{4}$	$2\frac{1}{2}$			3
$5\frac{1}{4}$	$3\frac{1}{8}$	$3\frac{1}{4}$	$1\frac{1}{4}$	$1\frac{1}{2}$	$5\frac{3}{4}$	$5\frac{2}{5}$	3
4	2	2	$1\frac{3}{4}$	$3\frac{1}{2}$	2	10	$2\frac{1}{2}$
$5\frac{1}{4}$	$4\frac{3}{8}$	$1\frac{3}{4}$	$2\frac{1}{4}$	$4\frac{1}{2}$	$7\frac{1}{4}$	$10\frac{2}{5}$	$5\frac{1}{2}$

25.	26.	27.	28.	29.	30.	31.	32.
2	$2\frac{1}{4}$	$1\frac{1}{8}$				$3\frac{1}{4}$	
$4\frac{1}{8}$	4	1		$1\frac{1}{2}$		$2\frac{1}{4}$	$7\frac{1}{4}$
3	$3\frac{1}{4}$	$1\frac{1}{8}$	$2\frac{3}{4}$	2	$1\frac{3}{8}$	$4\frac{1}{4}$	5
$3\frac{1}{8}$	$3\frac{3}{4}$	$1\frac{5}{8}$	$9\frac{3}{4}$	$3\frac{1}{2}$	$1\frac{5}{8}$	$4\frac{3}{4}$	$4\frac{3}{4}$

33.	34.	35.	36.	37.	38.	39.	40.
			$1\frac{2}{5}$	$1\frac{1}{4}$			
$1\frac{1}{3}$		$4\frac{1}{4}$	2	4		$3\frac{3}{4}$	$1\frac{5}{8}$
1	$3\frac{3}{8}$	7	$1\frac{1}{5}$	$2\frac{1}{4}$	9	2	1
$2\frac{1}{3}$	$2\frac{5}{8}$	$6\frac{1}{4}$	$2\frac{1}{5}$	$3\frac{3}{4}$	$7\frac{1}{4}$	$4\frac{3}{4}$	$1\frac{3}{8}$

Write the sums. See how many right answers you can get in 15 minutes. Do not copy the numbers. Put a sheet of paper over the page. Write the sums for Row A on the top line of the sheet of paper. Then fold the paper and write the sums for Row B. The teacher will show you, if you need help.

To-morrow try again, and see if you can beat to-day's record. Some children in the fourth grade have done the whole page correctly in 15 minutes.

Row A.

27¼	43	60	97¼	79	59½
50	29½	89¾	59¼	87½	63
85¼	87	46	19¼	53½	49
47	50	27¾	68¼	48½	19½
96¼	15½	57	83¼	60½	47½

Row B.

36	49	20½	39	15	46¼
98¾	50⅓	48½	62	68¾	75
19	39	91½	70¼	49	93
40¼	46⅓	75½	59	53¼	19
57	63	69½	49¼	77¾	67¾

Row C.

29	80¼	58½	47	60½	43
47¼	65¼	18½	35	45	65¾
63	51¼	46½	50¾	79	29
70¼	39¼	79	92	19½	57
56¼	47¼	30½	69¾	88	79¼

Row D.

17	56¼	79	48¼	87	72½
49¼	27	59½	25¾	39⅓	48½
72	98	30½	60	48	16½
80¾	93¼	86	93¾	73⅓	30½
58	40	45½	78	64	59½

1. _____This line is $\frac{5}{8}$ inches long. How much must you add to it to make it 1 inch long?
2. _____This line is $\frac{1}{2}$ inch long. How much must you add to it to make it $\frac{3}{4}$ inch long?
3. _____This line is $\frac{9}{16}$ inch long. How much must you add to it to make it $\frac{13}{16}$ in. long?
4. How much must you add to a line $\frac{1}{8}$ in. long to make it $\frac{3}{8}$ in. long?
5. How much must you add to a line $\frac{5}{16}$ in. long to make it $\frac{9}{16}$ in. long?
6. How much must you add to a line $\frac{1}{8}$ in. long to make it 1 in. long?
7. How much must you add to this line ___ to make it $\frac{5}{8}$ inch long?
8. How much must you add to this line _____ to make it $\frac{7}{8}$ in. long?
9. How much more is three fourths of a pound than $\frac{1}{4}$ lb.?
10. How much longer is $\frac{4}{5}$ mile than $\frac{3}{5}$ mile?
11. How much longer is $\frac{3}{4}$ yd. than $\frac{1}{2}$ yd.?
12. What fraction must you add to the lower fraction to make it equal to the upper fraction?

a.	*b.*	*c.*	*d.*	*e.*	*f.*	*g.*	
$\frac{1}{2}$	$\frac{3}{4}$	$\frac{4}{5}$	$\frac{2}{3}$	$\frac{4}{5}$	$\frac{3}{4}$	$\frac{7}{8}$	
$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{5}$	$\frac{1}{3}$	$\frac{2}{5}$	$\frac{1}{2}$	$\frac{3}{8}$	*Say $\frac{1}{2}$ for $\frac{4}{8}$.*

13. What must you add to each of these fractions to make it equal to 1?

Remember that 1 = $\frac{8}{8}$ or $\frac{4}{4}$ or $\frac{8}{8}$.

$\frac{1}{2}$ $\frac{5}{8}$ $\frac{1}{4}$ $\frac{2}{3}$ $\frac{7}{8}$ $\frac{3}{4}$ $\frac{3}{8}$ $\frac{1}{8}$

1. Dora is making jelly. The recipe calls for 24 cups of sugar and she has only 21½. She has no time to go to the store so she has to borrow the sugar from a neighbor. How much must she get?

Subtract

24	*Think "½ and ½ = 1." Write ½.*
21½	*Think "2 and 2 = 4." Write the 2.*
2½	

2. A box full of soap weighs 29½ lb. The empty box weighs 3½ lb. How much does the soap alone weigh?
3. On July 1, Mr. Lewis bought a 50-lb. bag of ice-cream salt. On July 15 there were just 11½ lb. left. How much had he used in the two weeks?
4. Grace promised to pick 30 qt. blueberries for her mother. So far she has picked 18½ qt. How many more quarts must she pick?

Subtract. Write the differences.

5.	6.	7.	8.	9.	10.	11.	12.
25	75	48	32	36	24	100	50
11½	23½	14½	18½	12½	19½	37½	12½

13.	14.	15.	16.	17.	18.	19.	20.
62½	58½	37½	87½	64½	37½	87½	37½
19½	26½	15	61½	18	21	12½	18

21.	22.	23.	24.	25.	26.	27.	28.
75	60	43½	62½	28	81½	50	45
12½	44½	13½	28	12½	37	13½	13½

Find the quotients and remainders. Check each result by multiplying the quotient by the divisor and adding the remainder to the product.

		1.	2.	3.	4.	5.	6.	7.
Divide	719 by	21	39	62	51	48	25	15
		8.	9.	10.	11.	12.	13.	14.
Divide	895 by	32	38	71	73	13	17	25
		15.	16.	17.	18.	19.	20.	21.
Divide	750 by	13	16	18	15	24	26	50
		22.	23.	24.	25.	26.	27.	28.
Divide	2680 by	428	192	253	161	148	122	112
		29.	30.	31.	32.	33.	34.	35.
Divide	2850 by	18	15	13	25	32	82	93
		36.	37.	38.	39.	40.	41.	42.
Divide	7540 by	15	26	34	81	46	65	74
		43.	44.	45.	46.	47.	48.	49.
Divide	$10.00 by	25	15	36	24	40	18	72

50. Divide 2628 by 25. Put 0 where it belongs in the quotient.

51. Divide 10,825 by 105. 52. Divide 252,179 by 84.

		53.	54.	55.	56.	57.	58.	59.
Divide	7684 by	15	16	17	18	19	20	21
		60.	61.	62.	63.	64.	65.	66.
Divide	3925 by	37	46	53	68	25	32	30

Find the products. Check each result by using the multiplicand as multiplier.

67.	68.	69.	70.	71.	72.	73.
308	714	810	225	407	319	506
132	300	205	900	250	108	207

(Without pencil.)

1. How many postage stamps are there in a sheet 8 stamps wide and 10 stamps long?
2. How many inches long is a yard and a quarter?
3. How many three-quart cans can be filled from 6 gallons of milk?
4. Alice went to sleep at 8 P.M. She woke up at 6 A.M. How many hours did she sleep?
5. What part of a year is 6 months? 3 months? 2 mo.?
6. How many 10-acre fields can be made from ½ sq. mi. or 320 acres?
7. How many ounces equal ¼ lb.? ½ lb.? ¾ lb.?
8. If 1 peck of apples makes 3 quarts of cider, how much cider will 2 bushels of apples make?
9. What is the cost of a cement path 4 ft. wide and 25 ft. long, at 14¢ per sq. ft.?
10. How many seats are there in 9 classrooms, each containing 40 seats?
11. How many inches are there in 2 ft. 8 inches?
12. How many farms of 80 acres each can be made from 1 sq. mi. or 640 acres?
13. George starts to walk 10 miles to his grandfather's house. He walks 7½ miles of the way before lunch. How much farther has he to walk?
14. Dick and Joe had a walking match of 1 hour. Dick walked 5⅝ miles, Joe walked 4⅜ miles. How much farther did Dick go in the hour?
15. On railroad trains a child from 5 to 12 years old pays half the fare for an adult. If the fare for an adult from New York to Chicago is $20, what does a 9-year-old child pay?

16. A rectangular lot containing 3200 sq. ft. is 40 ft. wide. How long is it?
17. If $\frac{1}{8}$ inch stands for 1 foot on a plan of a house, how much will $1\frac{1}{2}$ inch stand for?
18. What part of a yard is 9 inches?
19. What part of a foot is 4 inches?
20. How many weeks will it take John to earn $24 for a bicycle if he earns $2 a week?
21. A blanket is 72 inches long. How many feet long is it?
22. When you get $\frac{1}{4}$ lb. candy for 5 cents, what is the price per pound?
23. What does it cost for a dozen oranges at the rate of 3 for 10¢?

117. Review. Mixed Problems

(With pencil.)

1. One ton equals 2000 lb. How many pounds equal $\frac{5}{8}$ ton?
2. One mile equals 1760 yd. How many yards equal $\frac{1}{4}$ mile?
3. One acre equals 160 square rods. How many square rods are there in each of these fields?

4. If one gallon of paint will paint 160 sq. ft., how many gallons are needed to paint a piazza floor that is 8 ft. by 40 ft.?
5. A barrel full of flour weighs $218\frac{1}{2}$ lb. The flour weighs 196 lb. How much will the empty barrel weigh?

6. If a short block is 264 ft., how many short blocks make a mile or 5280 ft.?

7. A long block is 880 ft. How many long blocks make a mile?

8. Mr. Roberts bought a horse for $175, a wagon for $115, and a harness for $28. How much did he pay for all?

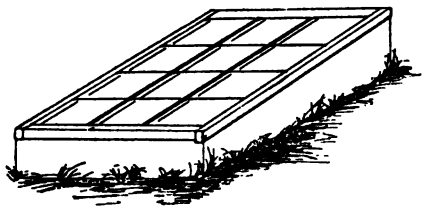
9. Mr. Gordon bought an automobile for $490, and two extra tires for $16.50 each. How much did he pay in all?

10. How much less did Mr. Roberts pay than Mr. Gordon?

11. A tub full of butter weighs $53\frac{7}{8}$ lb. The empty tub weighs $3\frac{5}{8}$ lb. How much does the butter weigh?

12. How much is left of a 50-yard piece of gingham
    (*a*) After $17\frac{1}{2}$ yd. are sold?
    (*b*) After $8\frac{1}{2}$ more yards are sold?
    (*c*) After $5\frac{1}{4}$ more yards are sold?

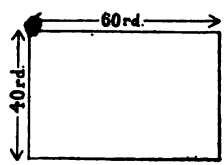
13. How many eggs are required to fill 27 orders for 2 dozen each?



14. How many panes of glass are required for 15 cold-frames like the one in the picture?

15. Which cost more, 7 Jersey cows at $135 each or 9 Holstein cows at $100 each? How much more?

16. Mrs. Howard uses 3 pints of milk a day. How many quarts does she use in 2 weeks?
17. How many slips, each 5 in. by 8 in., can be cut from a sheet of paper 20 in. by 24 in.?
18. A church has 88 pews each seating 5 persons, and 36 pews each seating 4 persons. How many persons can be seated in all?
19. Dick lifted a dumb-bell 34 times. His big brother lifted it a hundred times and said, "That is more than three times as many times as you lifted it." Was he right?
20. How many boxes of apples can be carried in a train of 29 freight cars, if each car holds 360 boxes?
21. At \$2.75 a day, how much does Mr. Andrews earn in 26 days?
22. How many days will it take him to earn \$33.00?
23. Joe's big brother receives 35¢ an hour for regular work and 55¢ an hour for overtime. How much does he get in a week when he works 48 hr. at regular work and 12 hr. overtime?
24. There are 160 sq. rods in an acre. How many acres are there in this field?



25. At \$1.38 per sq. yd., what will it cost for linoleum for a kitchen floor 9 ft. by 12 ft.?
26. How many trees are there in an orchard of 28 rows, with 48 trees in each row?
27. Mr. Norton sold 328 barrels of apples at \$2.15 per barrel, and 294 barrels of apples at \$2.45 per barrel. How much did he receive in all?

28. At 35 miles per hour, how long will it take a train to go 1085 miles?

29. A special train ran from New York to Albany without stops in exactly 3 hr. The distance is 143 mi. How many miles did the train go per hour?

30. On Mrs. Jones's birthday Mr. Jones hired an automobile for 3½ hours. How much did it cost at $2.00 an hour? They went 30 miles from 2 till 3:30 P.M. How fast did they go?

31. How many miles per hour is the rate of —
   a. a boy walking 12 miles in 4 hours?
   b. a horse going 56 miles in 14 hours?
   c. an automobile going 162 miles in 9 hours?
   d. a train going 928 miles in 32 hours?

32. How many miles per day is the rate of —
   a. A steamboat going 6048 miles in 18 days?
   b. A caravan going 1000 miles in 25 days?

33. At 250 lb. per barrel, how many barrels of potatoes are there in 15 tons of potatoes of 2000 lb. each?

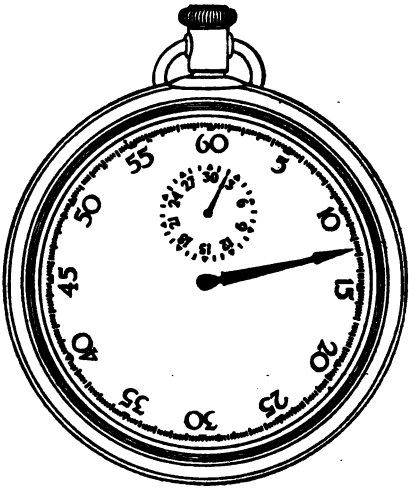
34. Mount McKinley is 20,300 ft. above the level of the sea. Is that about 3 miles, or about 4 miles, or about 5 miles high?

35. How much change should I receive from a twenty-dollar bill, if I buy three railroad tickets at $2.18 each?

36. Lucy planted 48 seeds. She expected ¾ of them to come up. 35 came up. Was that more or less than she expected?

37. She sold 1½ dozen plants at 3 for 10 cents. How much did she receive?

In one class at the Lincoln School every boy and girl who was well ran 50 yards as fast as he could. The teacher timed them with a stop watch. Here are some of the times in seconds:



Boys		Girls	
Alfred	$10\frac{1}{5}$	**Alice**	$10\frac{2}{5}$
Arthur	$8\frac{3}{5}$	**Clara**	$9\frac{1}{5}$
Ben	$8\frac{2}{5}$	**Ella**	$11\frac{3}{5}$
Charles	$7\frac{4}{5}$	**Kate**	$8\frac{4}{5}$
Dick	9	**Helen**	$14\frac{1}{5}$

1. Which boy ran in the shortest time? Who was next? What was the difference between their times?
2. How much under 10 seconds was Arthur's time? Ben's? Charles's? Dick's? Clara's? Kate's?
3. How much over 10 sec. was Alfred's time? Alice's? Ella's? Helen's?

121.

Find the sums.

Think of $\frac{6}{5}$ as $1\frac{1}{5}$. Write $\frac{1}{5}$ and add the 1 to the ones column.
Think of $\frac{8}{5}$ as $1\frac{3}{5}$. Write $\frac{3}{5}$ and add the 1 to the ones column.

How will you think of $\frac{9}{5}$? Of $\frac{10}{5}$? Of $\frac{11}{5}$?

1.	2.	3.	4.	5.	6.	7.	8.
	$6\frac{2}{5}$		$8\frac{1}{5}$	$9\frac{1}{5}$	$7\frac{3}{5}$	$7\frac{2}{5}$	
$8\frac{2}{5}$	$6\frac{3}{5}$	$11\frac{1}{5}$	$8\frac{2}{5}$	$9\frac{4}{5}$	$8\frac{3}{5}$	$6\frac{4}{5}$	$12\frac{3}{5}$
$7\frac{4}{5}$	$5\frac{3}{5}$	$10\frac{4}{5}$	$7\frac{2}{5}$	$8\frac{4}{5}$	$6\frac{3}{5}$	$5\frac{4}{5}$	$11\frac{3}{5}$

1. Count by fifths from 1 to 3, saying, "1 = 5/5, 1 1/5 = 6/5, 1 2/5 = 7/5," and so on.

2. Read these lines, supplying the missing numbers:

$1 = \frac{\quad}{5}$ $1\frac{1}{5} = \frac{\quad}{5}$ $1\frac{2}{5} = \frac{\quad}{5}$ $1\frac{3}{5} = \frac{\quad}{5}$ $1\frac{4}{5} = \frac{\quad}{5}$

3. Find the differences in Ex. *a*, *b*, *c*, etc.:

Think of $1\frac{1}{5}$ as $\frac{6}{5}$. Think of $1\frac{2}{5}$ as $\frac{7}{5}$. How will you think of $1\frac{4}{5}$? Of $1\frac{3}{5}$? Of 1?

a.	*b.*	*c.*	*d.*	*e.*	*f.*	*g.*	*h.*
$1\frac{1}{5}$	$1\frac{3}{5}$	$1\frac{2}{5}$	$1\frac{1}{5}$	$1\frac{1}{5}$	$1\frac{3}{5}$	$1\frac{3}{5}$	1
$\frac{3}{5}$	$\frac{4}{5}$	$\frac{3}{5}$	$\frac{4}{5}$	$\frac{2}{5}$	$\frac{4}{5}$	$\frac{2}{5}$	$\frac{3}{5}$

Check your answers by adding.

4. Alice's time for the 50-yd. race was $10\frac{2}{5}$ seconds. Kate's was $8\frac{4}{5}$. How much shorter was Kate's time?

$10\frac{2}{5}$ *$\frac{4}{5}$ is more than $\frac{2}{5}$. So increase $\frac{2}{5}$ to $\frac{7}{5}$.*
$8\frac{4}{5}$ *Think "$\frac{4}{5}$ and $\frac{3}{5}$ = $\frac{7}{5}$." Write $\frac{3}{5}$. Increase 8 to 9.*

5. Charles's time was $7\frac{4}{5}$ sec. Alfred's was $10\frac{1}{5}$ sec. How much shorter was Charles's time?

123.

These are the times for some boys running a quarter of a mile. The letters A, B, C, D, E, F, G, H, and I stand for the boys' names.

A. $59\frac{3}{5}$	D. $63\frac{1}{5}$	G. 70
B. 60	E. $63\frac{4}{5}$	H. $72\frac{3}{5}$
C. $62\frac{1}{5}$	F. $67\frac{2}{5}$	I. $75\frac{4}{5}$

1. Find the difference between the times of A and B.
2. Of A and C. 3. A and D. 4. A and E.
5. A and H. 6. A and I.

7. Between the times of B and C. 8. B and D.
9. Between the times of C and G. 10. C and H.
11. C and I.
12. Between the times of D and F. 13. D and G.
14. D and H.
15. Between the times of E and F. 16. E and G.
17. E and H.
18. Between the times of F and G. 19. F and H.

124.

1. How much must you add to $\frac{1}{4}$ in. to make 1 in.?
2. To $\frac{3}{4}$ in. to make 1 in.? To $\frac{3}{4}$ in. to make $1\frac{1}{4}$ in.?
3. How much must you add to each of these fractions to make 1?

a.	*b.*	*c.*	*d.*	*e.*	*f.*	*g.*	*h.*	*i.*	*j.*
$\frac{1}{2}$	$\frac{1}{3}$	$\frac{1}{4}$	$\frac{1}{8}$	$\frac{3}{4}$	$\frac{2}{3}$	$\frac{2}{5}$	$\frac{4}{5}$	$\frac{1}{8}$	$\frac{3}{8}$

4. Nell and her mother bought a remnant or "left-over" piece of dress goods $6\frac{1}{4}$ yd. long. The pattern they used required only $4\frac{3}{4}$ yd. How much more cloth did they have than they needed?

$6\frac{1}{4}$ *Increase* $\frac{1}{4}$ *to* $\frac{5}{4}$.
$4\frac{3}{4}$ *Think* "$\frac{3}{4}$ *and* ... $= \frac{5}{4}$." *Write* $\frac{1}{2}$ *for* $\frac{2}{4}$.
Increase 4 to 5.

5. They used $2\frac{1}{4}$ yd. from a 5-yd. roll of ribbon. How much was left?
6. Find the differences. Check each result by adding.

a.	*b.*	*c.*	*d.*	*e.*	*f.*	*g.*
15	10	$27\frac{1}{4}$	$35\frac{1}{4}$	10	10	29
$2\frac{1}{4}$	$1\frac{3}{4}$	$13\frac{3}{4}$	$17\frac{1}{4}$	$7\frac{1}{2}$	$3\frac{2}{5}$	$8\frac{3}{4}$

Mr. Stern sells dry goods. Each long piece of cloth in his store has a tag like this. The top number on the left side tells how many yards long the piece of cloth was in the beginning. Every time that a customer buys some of the cloth, Mr. Stern or the clerk writes the number of yards sold on the right-hand side of the tag.

Piece No. 301G			
Stock	Yd.	Sales	Yd.
Jan. 1	50		$4\frac{3}{4}$
			$6\frac{1}{4}$
			$8\frac{1}{2}$
			$2\frac{1}{4}$
		Jan. Total	$21\frac{3}{4}$
Feb. 1	$28\frac{1}{4}$		4
			$5\frac{1}{4}$
			$2\frac{3}{4}$
			$3\frac{3}{4}$
		Feb. Total	$15\frac{3}{4}$
Mar. 1	$12\frac{1}{2}$		

1. How does Mr. Stern find out how much of a piece of cloth he has sold?
2. How does he find out just how much he has left in that piece without spending time in measuring it?
3. Play that you are Mr. Stern. Make a tag for a piece of cloth. Then put numbers on it to show how long it was on Jan. 1, how much you sold, and how much you had left.

126. Stock and Sales

1. Find the Jan. total sales, the Feb. 1 stock, the Feb. total sales, and the Mar. 1 stock for Piece No. 401A.

When you add or subtract with $\frac{1}{2}$, and $\frac{1}{4}$, or $\frac{3}{4}$, you may think of the $\frac{1}{2}$ as $\frac{2}{4}$.

2. Do the same for Piece No. 521A. 3. Do the same for Piece No. 106B. 4. Do the same for Piece No. 211B. 5. For No. 31C. 6. For No. 68C.

Piece No. 401A			
Stock	Yd.	Sales	Yd.
Jan. 1	50		2¼
			6½
			4¼
			7¼
		Jan. Total	
Feb. 1			4¾
			3¾
			3½
			5
		Feb. Total	
Mar. 1			

Piece No. 521A			
Stock	Yd.	Sales	Yd.
Jan. 1	39¼		2¼
			1½
			3¼
			1¾
		Jan. Total	
Feb. 1			1½
			2
			1¼
			3
		Feb. Total	
Mar. 1			

Piece No. 106B			
Stock	Yd.	Sales	Yd.
Jan. 1	42½		6¼
			5¼
			5¼
			4½
		Jan. Total	
Feb. 1			4¾
			2
			5½
			3
		Feb. Total	
Mar. 1			

Piece No. 211B			
Stock	Yd.	Sales	Yd.
Jan. 1	48¾		1¼
			¾
			¾
			1½
		Jan. Total	
Feb. 1			1½
			1½
			1¼
			1½
		Feb. Total	
Mar. 1			

Piece No. 31C			
Stock	Yd.	Sales	Yd.
Jan. 1	43½		2¼
			2
			1¾
			1¾
		Jan. Total	
Feb. 1			5¼
			5
			4¼
			5¼
		Feb. Total	
Mar. 1			

Piece No. 68C			
Stock	Yd.	Sales	Yd.
Jan. 1	48		4½
			4¼
			3¾
			5¼
		Jan. Total	
Feb. 1			4
			3¾
			4¼
			5½
		Feb. Total	
Mar. 1			

Add and state the sums. Think of $\frac{4}{3}$ as $1\frac{1}{3}$. Think of $\frac{5}{3}$ as $1\frac{2}{3}$. Think of $\frac{6}{3}$ as 2.

1.	2.	3.	4.	5.	6.	7.	8.
			$2\frac{1}{3}$	$2\frac{1}{4}$		$\frac{1}{3}$	
$2\frac{1}{3}$	$6\frac{1}{4}$	$1\frac{1}{3}$	$1\frac{1}{3}$	$3\frac{1}{4}$	$\frac{2}{3}$	$\frac{2}{3}$	$5\frac{2}{3}$
$3\frac{1}{3}$	$2\frac{1}{4}$	$1\frac{2}{3}$	$4\frac{1}{3}$	$2\frac{1}{4}$	$\frac{1}{3}$	$\frac{2}{3}$	$5\frac{2}{3}$

9.	10.	11.	12.	13.	14.	15.	16.
	$2\frac{1}{3}$		$4\frac{2}{3}$	$5\frac{3}{4}$	$4\frac{2}{3}$		
$9\frac{3}{4}$	$3\frac{1}{3}$	$12\frac{1}{3}$	$1\frac{2}{3}$	$6\frac{1}{4}$	$6\frac{1}{3}$	$10\frac{1}{3}$	$10\frac{1}{2}$
$8\frac{1}{4}$	$1\frac{2}{3}$	$15\frac{1}{3}$	$3\frac{2}{3}$	$5\frac{3}{4}$	$2\frac{2}{3}$	$25\frac{2}{3}$	$35\frac{1}{2}$

128.

Subtract. State the differences:

17.	18.	19.	20.	21.	
8	9	15	$4\frac{2}{3}$	$9\frac{1}{3}$	*Increase $\frac{1}{3}$ to $\frac{4}{3}$.*
$3\frac{1}{3}$	$6\frac{2}{3}$	$6\frac{1}{4}$	$2\frac{2}{3}$	$3\frac{2}{3}$	*Increase 3 to 4.*

22.	23.	24.	25.	26.	27.	28.
$12\frac{1}{3}$	$6\frac{1}{3}$	$9\frac{2}{3}$	10	$8\frac{1}{3}$	10	$7\frac{2}{3}$
$6\frac{2}{3}$	$2\frac{2}{3}$	$5\frac{1}{3}$	$8\frac{1}{3}$	$4\frac{2}{3}$	$7\frac{1}{2}$	$3\frac{1}{3}$

129.

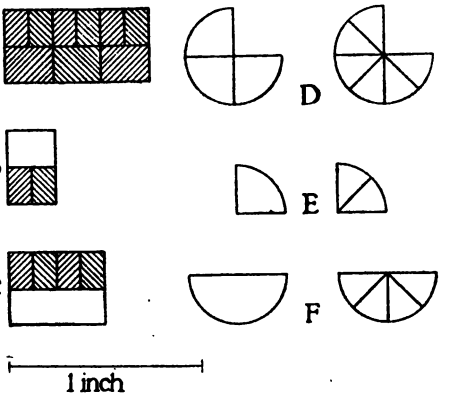
Subtract. Write the differences:

29.	30.	31.	32.	33.	34.
$116\frac{1}{3}$	$47\frac{1}{4}$	$34\frac{2}{5}$	75	50	287
$83\frac{2}{3}$	$19\frac{3}{4}$	$17\frac{4}{5}$	$8\frac{1}{3}$	$12\frac{1}{2}$	$159\frac{2}{3}$

35.	36.	37.	38.	39.	40.
98	36	$86\frac{1}{3}$	25	$47\frac{3}{5}$	517
$83\frac{1}{3}$	$18\frac{3}{4}$	$49\frac{1}{3}$	$16\frac{2}{3}$	$27\frac{1}{5}$	$86\frac{3}{4}$

41.	42.	43.	44.	45.	46.
$87\frac{1}{2}$	$50\frac{1}{3}$	$33\frac{1}{3}$	$99\frac{2}{5}$	$56\frac{1}{5}$	500
$37\frac{1}{2}$	$24\frac{2}{3}$	15	$98\frac{3}{5}$	$49\frac{4}{5}$	$281\frac{2}{3}$

1. Which of these pictures show that $\frac{1}{2} = \frac{4}{8}$?
2. Which show that $\frac{1}{4} = \frac{2}{8}$?
3. Which show that $\frac{3}{4} = \frac{6}{8}$?
4. Find the sums as is shown in the first line.



$\frac{7}{8} + \frac{1}{2} = (\frac{7}{8} + \frac{4}{8}) = \frac{11}{8}$ *or* $1\frac{3}{8}$

$\frac{5}{8} + \frac{1}{2}$

$\frac{1}{2} + \frac{3}{8}$

$\frac{1}{2} + \frac{1}{8}$

$\frac{1}{4} + \frac{1}{8}$

$\frac{3}{8} + \frac{3}{4} = (\frac{3}{8} + \frac{6}{8}) = \frac{9}{8}$ *or* $1\frac{1}{8}$

$\frac{5}{8} + \frac{3}{4}$

$\frac{7}{8} + \frac{1}{4}$

$\frac{3}{4} + \frac{1}{8}$

$\frac{7}{8} + \frac{3}{4}$

131. Making Candy

1. Nell and Grace made candy to sell at the fair. They put in 5 lb. sugar, 1 lb. milk, ½ lb. walnuts, ⅛ lb. butter, and ¼ lb. chocolate. How many pounds of materials did they use?

5
1
½
⅛
¼

Think of $\frac{1}{4}$ *as* $\frac{2}{8}$
Think of $\frac{1}{2}$ *as* $\frac{4}{8}$

2. When the candy was made they weighed it. They had just $5\frac{3}{4}$ lb. How much of the $6\frac{7}{8}$ lb. of materials which they put in had gone off in bubbles or stuck to the kettle?

Find the number of pounds of materials used in each of these recipes. If you need to, think of ½ as 4/8; think of ¼ as 2/8; think of ¾ as 6/8.

1.	2.	3.	4.	5.	6.	7.
6	⅛	3		4	4	¼
½	1½	1½	⅛	1¼	1	1½
1¼	1	¼	¼	⅜	¼	1½
2	6	⅛	2	1	⅝	3

8.	9.	10.	11.	12.	13.	14.
⅛						
¼	1½	¼	2⅜	2½	¼	
1½	1½	3¾	⅜	1½	3	1½
8	⅛	⅛	⅛	⅛	⅛	¾
3	3	1	4	⅛	½	2

133. Buying Remnants

Remnants at ⅓ to ½ Regular Prices
Lengths from ½ yd. to 5 yd.
Ginghams, 8¢ per yd. Serges, 16¢ per yd. Flannels, 24¢ per yd.

1. Mrs. Andrews bought two pieces of gingham. One was 2⅜ yd.; the other was 1¾ yd. How many yd. did she buy in all? How much did the gingham cost in all? How much change should she receive from a two-dollar bill?
2. Mrs. Johnson bought three pieces of flannel. One was 1⅛ yd., the second was 1½ yd., the third was 1⅝ yd. How many yd. did she buy in all? How much did the flannel cost? How much change should she receive from a two-dollar bill?

Find the total amount of cloth and the cost of each of these purchases:

3. Three serge remnants, $1\frac{1}{2}$, $4\frac{1}{4}$, and $1\frac{3}{8}$ yd. long.
4. Four gingham remnants, $2\frac{1}{8}$, $3\frac{1}{4}$, $4\frac{1}{4}$, and $2\frac{3}{4}$ yd. long.
5. Four serge remnants, $1\frac{1}{2}$, $1\frac{3}{4}$, $2\frac{3}{8}$, and $3\frac{1}{8}$ yd. long.
6. Four flannel remnants, $1\frac{5}{8}$, $2\frac{5}{8}$, $2\frac{3}{4}$, and $4\frac{1}{8}$ yd. long.

134.

1. James and Fred are making a canvas canoe. The book says that $12\frac{1}{2}$ yd. are required to make a canoe of the size that they wish. They have a piece $8\frac{3}{8}$ yd. long. How many yd. more do they need? (Think of $\frac{1}{2}$ as $\frac{4}{8}$.)
2. Fred's older brother is making a larger canoe that requires $17\frac{1}{2}$ yd. of canvas. He has one 10-yd. piece and a remnant $5\frac{1}{4}$ yd. long. How much more does he need?
3. How much must you add to $4\frac{3}{4}$ yd. to have $6\frac{7}{8}$ yd.?
4. How much must you add to $5\frac{1}{2}$ yd. to have $10\frac{3}{4}$ yd.?
5. How much must you add to $6\frac{1}{2}$ to have $9\frac{5}{8}$?

135.

Subtract. State the differences:

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
$\frac{1}{2}$	$\frac{1}{4}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{3}{8}$	$\frac{7}{8}$	$\frac{7}{8}$	$\frac{3}{4}$
$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$

11.	12.	13.	14.	15.	16.	17.	18.	19.	20.
$\frac{3}{4}$	$\frac{1}{2}$	$\frac{7}{8}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{5}{8}$	$\frac{7}{8}$	$4\frac{1}{2}$	$5\frac{3}{4}$	$3\frac{5}{8}$
$\frac{1}{8}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	$2\frac{1}{8}$	$2\frac{1}{2}$	$1\frac{1}{2}$

1. Read these lines, supplying the missing numbers:

A. $\frac{9}{8} = 1\frac{}{8}$, $\frac{11}{8} = 1\frac{}{8}$, $\frac{14}{8} = 1\frac{}{8}$, or $1\frac{}{4}$, $\frac{12}{8} = 1\frac{}{8}$ or $1\frac{}{4}$.

B. $1\frac{1}{8} = \frac{}{8}$, $1\frac{3}{8} = \frac{}{8}$, $1\frac{5}{8} = \frac{}{8}$, $1\frac{7}{8} = \frac{}{8}$.

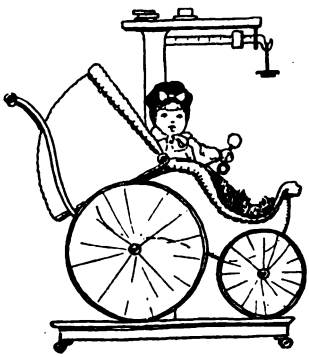
C. $1\frac{1}{4} = 1\frac{}{8}$, or $\frac{}{8}$, $1\frac{3}{4} = 1\frac{}{8}$ or $\frac{}{8}$, $1\frac{1}{2} = 1\frac{}{8}$ or $\frac{}{8}$.

2. Find the differences. You may think of $1\frac{1}{8}$ as $\frac{9}{8}$. Think of $1\frac{3}{8}$ as $\frac{11}{8}$. Think of $1\frac{1}{2}$ as $\frac{12}{8}$ or $\frac{6}{4}$. Think of $1\frac{1}{4}$ as $\frac{10}{8}$ or $\frac{5}{4}$.

a.	*b.*	*c.*	*d.*	*e.*	*f.*	*g.*	*h.*
$1\frac{1}{8}$	$1\frac{3}{8}$	$1\frac{5}{8}$	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	$1\frac{3}{8}$	$1\frac{1}{4}$
$\frac{1}{2}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{5}{8}$	$\frac{7}{8}$	$\frac{7}{8}$	$\frac{3}{4}$	$\frac{3}{8}$

i.	*j.*	*k.*	*l.*	*m.*	*n.*	*o.*	*p.*
$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{1}{8}$	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{3}{8}$
$\frac{3}{4}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{7}{8}$	$\frac{5}{8}$

137. Weighing the Baby



The baby and the baby carriage weigh $38\frac{1}{8}$ lb. The baby carriage without the baby weighs $14\frac{1}{2}$ lb.

How much does the baby weigh?

$38\frac{1}{8}$ *Think* "$\frac{1}{2} = \frac{4}{8}$, $1\frac{1}{8} = \frac{9}{8}$."
$14\frac{1}{2}$ *Think* "$\frac{4}{8}$ *and* $\frac{5}{8} = \frac{9}{8}$."
$23\frac{5}{8}$ *Write* $\frac{5}{8}$. *Increase the 4 of 14 to 5.*

Check your result by adding $23\frac{5}{8}$ *and* $14\frac{1}{2}$.

Nell's baby sister weighed $7\frac{3}{8}$ lb. when it was born and $9\frac{1}{4}$ lb. when it was a month old. How much did it gain in the first month?

$9\frac{1}{4}$ *Think* "$1\frac{1}{4} = \frac{10}{8}$."
$7\frac{3}{8}$ *Think* "$\frac{3}{8}$ *and*... $= \frac{10}{8}$."
Write $\frac{7}{8}$. *Increase the 7 to 8.*
Check your result by adding.

This table of numbers tells what Nell's baby sister Mary weighed every two months from the time she was born till she was a year old.

Weight of Mary Adams	
When born	$7\frac{3}{8}$ **lb.**
2 months old	$11\frac{1}{4}$ **lb.**
4 months old	$14\frac{1}{8}$ **lb.**
6 months old	$15\frac{3}{4}$ **lb.**
8 months old	$17\frac{5}{8}$ **lb.**
10 months old	$19\frac{1}{2}$ **lb.**
12 months old	$21\frac{3}{6}$ **lb.**

1. How much did the Adams baby gain in the first two months?
2. How much did the Adams baby gain in the second two months?
3. In the third two months? 4. In the fourth two months?
5. From the time it was 8 months old till it was 10 months old?
6. In the last two months?
7. From the time it was born till it was 6 months old?

This table of numbers tells how much Alice Stern's baby brother Alfred weighed.

Weight of Alfred Stern	
At 0 months	$7\frac{7}{8}$ lb.
At 2 months	$9\frac{3}{4}$ lb.
At 4 months	$11\frac{5}{8}$ lb.
At 6 months	$13\frac{1}{4}$ lb.
At 8 months	$16\frac{5}{8}$ lb.
At 10 months	$19\frac{1}{4}$ lb.
At 12 months	$23\frac{1}{8}$ lb.

Mrs. Stern keeps account of how much the baby gains every two months and writes it in a table like this.

Gain from 0 to 2 months =	
Gain from 2 to 4 months =	
Gain from 4 to 6 months =	
Gain from 6 to 8 months =	
Gain from 8 to 10 months =	
Gain from 10 to 12 months =	

8. Copy this table of gains. Find what the numbers are for each space in the table and put them in.
9. Make a table of gains like it for the Adams baby from your answers to 1, 2, 3, 4, 5, and 6 on page 233.
10. Make and solve problems about which baby weighed the most and gained the most.

138.

When you add or subtract with $\frac{1}{2}$s and $\frac{1}{3}$s, or with $\frac{1}{2}$s and $\frac{1}{6}$s, or with $\frac{1}{3}$s and $\frac{1}{6}$s, think of $\frac{1}{2}$ as $\frac{3}{6}$, $\frac{1}{3}$ as $\frac{2}{6}$, $\frac{2}{3}$ as $\frac{4}{6}$.

Find the sums:

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
$\frac{1}{3}$	$\frac{2}{3}$	$\frac{1}{3}$	$\frac{5}{6}$	$\frac{1}{6}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{5}{6}$	$4\frac{5}{6}$	$3\frac{1}{2}$
$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{6}$	$\frac{1}{3}$	$\frac{1}{3}$	$\frac{5}{6}$	$\frac{1}{6}$	$\frac{2}{3}$	$2\frac{2}{3}$	$3\frac{2}{3}$

11.	12.	13.	14.	15.	16.	17.	18.	19.	20.
$\frac{5}{6}$	$\frac{2}{3}$	$\frac{1}{3}$	$\frac{1}{6}$	$\frac{2}{3}$	$\frac{1}{2}$	$\frac{1}{6}$	$3\frac{1}{2}$	$2\frac{5}{6}$	$4\frac{1}{3}$
$\frac{1}{2}$	$\frac{1}{6}$	$\frac{5}{6}$	$\frac{1}{2}$	$\frac{5}{6}$	$\frac{2}{3}$	$\frac{2}{3}$	$2\frac{1}{3}$	$5\frac{1}{2}$	$2\frac{5}{6}$

Read these lines, supplying the missing numbers:

A. $\frac{7}{6} = 1—$ $\frac{11}{6} = 1—$ $\frac{4}{3} = 1\frac{1}{3}$ or 1_{6} $\frac{5}{3} = 1\frac{2}{3}$ or 1_{6}

B. $1\frac{1}{6} = {}_{6}$ $1\frac{2}{6} = {}_{6}$ $1\frac{3}{6} = {}_{6}$ $1\frac{5}{6} = {}_{6}$

C. $1\frac{1}{3} = 1_{6}$ or ${}_{6}$ $1\frac{1}{2} = 1_{6}$ or ${}_{6}$ $1\frac{2}{3} = 1_{6}$ or ${}_{6}$

Find the differences. Think of $1\frac{1}{6}$ as $\frac{7}{6}$, $1\frac{1}{3}$ as $\frac{8}{6}$, $1\frac{1}{2}$ as $\frac{9}{6}$.

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
$\frac{5}{6}$	$\frac{2}{3}$	$\frac{1}{3}$	$\frac{2}{3}$	$\frac{5}{6}$	$\frac{5}{6}$	$\frac{2}{3}$	$1\frac{1}{6}$	$1\frac{1}{3}$	$1\frac{1}{2}$
$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{6}$	$\frac{1}{2}$	$\frac{1}{3}$	$\frac{2}{3}$	$\frac{1}{6}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{2}{3}$

11.	12.	13.	14.	15.	16.	17.	18.	19.	20.
$1\frac{1}{6}$	$1\frac{1}{3}$	$1\frac{1}{2}$	$1\frac{1}{6}$	$1\frac{1}{6}$	$1\frac{1}{8}$	$1\frac{3}{8}$	$1\frac{2}{3}$	$1\frac{1}{4}$	$1\frac{1}{2}$
$\frac{1}{3}$	$\frac{5}{6}$	$\frac{5}{6}$	$\frac{5}{6}$	$\frac{2}{3}$	$\frac{1}{4}$	$\frac{3}{4}$	$\frac{5}{6}$	$\frac{1}{2}$	$\frac{7}{8}$

140.

Subtract. Write the differences:

1.	2.	3.	4.	5.	6.	7.	8.
9	$8\frac{1}{8}$	4	7	$6\frac{7}{8}$	9	$6\frac{5}{8}$	$8\frac{3}{8}$
$5\frac{1}{2}$	$3\frac{1}{4}$	$1\frac{3}{4}$	$2\frac{1}{4}$	$2\frac{3}{8}$	$3\frac{1}{8}$	$4\frac{3}{8}$	$5\frac{1}{8}$

9.	10.	11.	12.	13.	14.	15.	16.
$9\frac{1}{4}$	$6\frac{1}{2}$	$8\frac{1}{2}$	$6\frac{7}{8}$	$9\frac{1}{2}$	$7\frac{1}{2}$	$3\frac{1}{2}$	$8\frac{3}{4}$
$7\frac{1}{8}$	$2\frac{3}{4}$	7	$3\frac{1}{8}$	$6\frac{1}{8}$	$4\frac{3}{8}$	$1\frac{1}{2}$	6

17.	18.	19.	20.	21.	22.	23.	24.
$8\frac{1}{4}$	7	$9\frac{1}{2}$	$6\frac{5}{8}$	$8\frac{3}{4}$	$7\frac{1}{8}$	8	$6\frac{3}{8}$
5	$5\frac{3}{8}$	$5\frac{1}{4}$	4	$2\frac{1}{4}$	$4\frac{1}{8}$	$3\frac{5}{8}$	$5\frac{1}{4}$

25.	26.	27.	28.	29.	30.	31.	32.
$8\frac{5}{8}$	$5\frac{1}{4}$	$9\frac{1}{4}$	$7\frac{1}{8}$	$6\frac{3}{4}$	$4\frac{1}{4}$	$9\frac{1}{4}$	$9\frac{7}{8}$
$4\frac{1}{8}$	$2\frac{1}{4}$	$6\frac{5}{8}$	3	$5\frac{3}{4}$	$2\frac{3}{8}$	$7\frac{3}{4}$	$5\frac{5}{8}$

33.	34.	35.	36.	37.	38.
$96\frac{1}{8}$	$118\frac{1}{2}$	$75\frac{5}{8}$	$129\frac{1}{8}$	$107\frac{3}{4}$	$159\frac{7}{8}$
$68\frac{3}{4}$	$86\frac{5}{8}$	$53\frac{3}{4}$	$93\frac{3}{8}$	$49\frac{5}{8}$	$74\frac{3}{4}$

1. Helen's exact average for December was $87\frac{1}{3}$. Kate's was $84\frac{1}{2}$. How much higher was Helen's than Kate's?

$87\frac{1}{3}$ How do you think of $\frac{1}{2}$ and $\frac{1}{3}$?
$84\frac{1}{2}$ How do you think of $1\frac{1}{6}$?
How do you change the 4?

2. Find the exact average for each girl. Write the answers clearly so that you can see them easily. You will use them in solving problems 3, 4, 5, 6, 7, and 8.

	Alice	Dora	Emma	Grace	Louise	Mary	Nell	Rebecca
Reading	91	87	83	81	79	77	76	73
Language	88	78	82	79	73	78	73	75
Arithmetic	89	85	79	75	84	87	89	80
Spelling	90	79	75	80	82	91	68	81
Geography	91	87	83	75	78	85	73	79
Writing	90	88	75	72	93	92	95	78

3. Which girl had the highest average?
4. How much higher was her average than the next highest?
5. How much difference was there between the highest and the lowest girl?
6. Was Emma's average higher or lower than Louise's? How much?
7. How much difference was there between Alice's average and Dora's?
8. How much difference was there between Mary's average and Nell's?
9. Write five other problems about these averages, and solve each of them.

Find the products when you multiply—

	1.	2.	3.	4.	5.	6.	7.
675 by	214	697	308	450	222	900	807
	8.	9.	10.	11.	12.	13.	14.
930 by	452	785	400	609	530	303	981
	15.	16.	17.	18.	19.	20.	21.
408 by	627	800	194	305	278	903	618
	22.	23.	24.	25.	26.	27.	28.
$43.75 by	42	93	57	18	25	41	60

143.

State the quotients and remainders:

1.	2.	3.	4.	5.	6.
15|100	12|100	25|105	16|50	16|70	25|70
7.	8.	9.	10.	11.	12.
12|75	16|35	15|75	30|100	21|45	24|50
13.	14.	15.	16.	17.	18.
25|125	40|100	12|55	25|160	35|105	22|75
19.	20.	21.	22.	23.	24.
35|100	45|150	55|150	15|50	12|40	50|450
25.	26.	27.	28.	29.	30.
24|72	60|250	15|42	75|250	24|45	75|300

144.

Find the quotients and remainders when you divide

	1.	2.	3.	4.	5.	6.	7.
6385 by	24	15	36	75	144	70	298
	8.	9.	10.	11.	12.	13.	14.
9062 by	52	61	35	94	127	116	83
	15.	16.	17.	18.	19.	20.	21.
$50.75 by	14	87	60	45	25	15	75

Check each result to be sure that it is correct.

Velvet is \$1.20 per yard. Find the cost of —

1.	2.	3.	4.	5.	6.
1½ yd.	1¼ yd.	1¾ yd.	⅜ yd.	⅝ yd.	1⅛ yd.

Extra black silk is \$2.00 per yd. Find the cost of —

7.	8.	9.	10.	11.	12.
5½ yd.	2⅛ yd.	3⅜ yd.	⅞ yd.	6¼ yd.	5¾ yd.

Cotton serge is 16¢ per yd. Find the cost of —

13.	14.	15.	16.	17.	18.
2½ yd.	3¼ yd.	1⅝ yd.	2⅜ yd.	5 yd.	5¾ yd.

146.

Poplin is 64¢ a yard. Find the cost of —

1.	2.	3.	4.	5.	6.
2½ yd.	6¼ yd.	3⅛ yd.	5⅜ yd.	8¾ yd.	7⅝ yd.

Crepe de chine is 48¢ a yard. Find the cost of —

7.	8.	9.	10.	11.	12.
4¼ yd.	9½ yd.	7¾ yd.	2⅛ yd.	3⅝ yd.	4⅞ yd.

147.

What is the cost for one article when you get —

A.	B.	C.
2 for 1¢?	2 for 10¢?	6 for 10¢?
3 for 1¢?	2 for 15¢?	6 for 50¢?
4 for 1¢?	2 for 25¢?	5 for 1¢?
2 for 5¢?	3 for 10¢?	6 for 15¢?
3 for 5¢?	3 for 25¢?	8 for 1¢?
4 for 5¢?	3 for 20¢?	8 for 25¢?
4 for 10¢?	6 for 1¢?	8 for 15¢?
4 for 25¢?	6 for 25¢?	8 for 50¢?

1. Find the average of 90, 95, 92, 97.
2. Find the average of 86, 91, 83, 90, 92, 93.
3. Find the average of 74, 76, 75, 76.
4. Find the average of 68, 70, 71.
5. Find the average of 97, 96, 90.
6. Find the average of 90, 90, 93, 90, 89.
7. Find the average of 68, 66, 71, 70, 74, 66, 62, 73.
8. Find the average of 88, 80, 91, 94, 93, 97, 90, 83,

149. Review

Say the sums. Say them again. See if you can say them all in 5 minutes and have them all right.

A.

								1/8	1/4	1/8	1/4
1/2	1/2	1/8	7/8	3/8	2/3	3/4	5/8	1/2	1/2	1/4	3/4
1/4	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2

B.

						1/4	1/4	3/8	5/8	1/8	1/8
1/8	1/4	1/2	3/4	5/8	3/8	1/2	1/8	1/4	3/4	3/8	1/2
1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4

C.

							1/8	1/4	1/4	1/2	3/4
1/2	3/4	1/4	3/8	1/8	7/8	5/8	1/2	3/8	1/8	5/8	1/2
3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4

D.

1/4	7/8			1/4	1/8	3/8		3/4			1/8
1/2	1/4	5/8	3/8	1/2	1/2	1/4	3/4	1/2	5/8	3/4	3/4
5/8	3/8	7/8	1/8	3/8	5/8	5/8	7/8	3/8	3/8	1/8	5/8

Write the sums:

1.	2.	3.	4.	5.	6.	7.
$9\frac{1}{2}$	$3\frac{1}{8}$	7	6	$62\frac{1}{8}$	95	48
$8\frac{1}{2}$	$5\frac{3}{4}$	$2\frac{1}{2}$	$4\frac{1}{2}$	96	68	$97\frac{7}{8}$
6	7	8	9	$59\frac{3}{8}$	$85\frac{7}{8}$	73
$2\frac{1}{2}$	$5\frac{1}{4}$	$6\frac{3}{4}$	$6\frac{5}{8}$	$78\frac{1}{4}$	$37\frac{3}{8}$	$69\frac{1}{2}$

8.	9.	10.	11.	12.	13.	14.
5	$2\frac{1}{8}$	3	5	$67\frac{1}{4}$	$86\frac{1}{8}$	$93\frac{3}{4}$
$7\frac{3}{8}$	$6\frac{5}{8}$	$8\frac{3}{8}$	$9\frac{3}{4}$	38	44	$79\frac{1}{4}$
$6\frac{1}{4}$	5	7	4	$99\frac{1}{2}$	$83\frac{5}{8}$	$65\frac{1}{4}$
$8\frac{5}{8}$	$7\frac{1}{2}$	$4\frac{3}{4}$	$8\frac{1}{4}$	$26\frac{1}{2}$	$59\frac{3}{4}$	$82\frac{1}{4}$

15.	16.	17.	18.	19.	20.	21.
9	5	$8\frac{3}{4}$	4	$87\frac{7}{8}$	69	56
2	$3\frac{5}{8}$	$5\frac{1}{2}$	$4\frac{1}{4}$	36	$47\frac{7}{8}$	$28\frac{1}{8}$
$8\frac{1}{4}$	9	3	$3\frac{1}{8}$	$97\frac{3}{4}$	87	$96\frac{1}{2}$
$5\frac{3}{4}$	$9\frac{1}{4}$	$4\frac{1}{2}$	$6\frac{3}{8}$	52	$68\frac{1}{4}$	$79\frac{3}{8}$

151. Review

1. What must you add to each of these fractions to make 1?

$\frac{1}{2}$ $\frac{1}{3}$ $\frac{1}{8}$ $\frac{1}{4}$ $\frac{1}{6}$ $\frac{1}{5}$ $\frac{3}{4}$ $\frac{3}{8}$ $\frac{2}{3}$ $\frac{7}{8}$ $\frac{5}{8}$

2. What must you add to the smaller fraction to make the larger fraction?

$\frac{1}{2}$	$\frac{7}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{5}{8}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{7}{8}$	$\frac{3}{4}$	$\frac{1}{4}$
$\frac{1}{8}$	$\frac{3}{8}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{8}$

$\frac{7}{8}$	$\frac{3}{4}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	$\frac{3}{8}$	$\frac{3}{4}$	$\frac{5}{8}$	$\frac{3}{4}$
$\frac{3}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{5}{8}$	$\frac{1}{4}$	$\frac{1}{8}$

1. The round-trip fare for one child to Shady Lake is $1.05. How much will it cost for eighteen children?
2. Alice has saved $4.45. How much more does she need to buy a dress at $2.75 and a hat at $2.25?
3. A train that usually arrives at half past ten was 17 minutes late. When did it arrive?
4. A train of 16 cars, all filled with apples, brought 2304 barrels of apples. What was the average number of barrels in one car?
5. How many miles per hour does a steamboat go that makes a trip of 306 miles in 17 hours?
6. How far will an automobile go in $3\frac{1}{2}$ hours at the rate of 18 miles an hour?
7. Mr. Gordon spends $25.80 a year for newspapers and magazines. What is the cost per month?
8. There are 144 pencils in one gross. How many pencils are there in $4\frac{1}{2}$ gross?
9. How many are there in three fourths of a gross?
10. How many square feet are there in a garden that is 72 ft. by 34 ft.?
11. How many gallons of ice cream are needed to give two dishes of ice cream to each of 112 children, if one gallon makes 32 dishes of ice cream?
12. 1 square mile equals 640 acres. How many acres are there in a town 6 miles long and 6 miles wide?
13. George and Will buy a collection of 500 stamps for 25 cents. George pays 10 cents. Will pays 15 cents. How many stamps should George have? How many should Will have?

14. How much more do three quarts of thick cream at 80¢ a quart cost than five quarts of thin cream at 40¢ a quart?
15. The fourth-grade children bought a picture for the school. It cost $5.25. There were 35 children. How much should each child pay if they divide the cost equally?
16. How many boxes of berries are there in 15 crates if each crate contains 24 boxes?
17. Grace has three stamp books filled with stamps. One book has 24 pages with 16 stamps on a page. The second book has 32 pages with 30 stamps on a page. The third book has 48 pages with 42 stamps on a page. How many stamps are there in all three books?
18. Find the cost of a turkey that weighs 17½ lb. at 32¢ per pound.
19. How many hours will it take an automobile to go 175 miles if it goes 25 miles per hour?
20. Will earned $68.64 last year. How much did he average per week? (1 year equals 52 weeks.)
21. He hopes to earn an average of $1.50 per week next year. How much would that make for the whole year?
22. Mr. Russell sold 31½ lb. butter the first week in June and 33¼ lb. butter the second week. How much did he sell in all?
23. A baby weighed 7⅞ lb. when it was born and 26¼ lb. when it was one year old. How much had it gained in the year?

24. A tub of butter weighs 43¼ lb. The empty tub weighs 3¾ lb. How much does the butter weigh?
25. How much is the butter worth at 28¢ per pound?
26. A wagon loaded with coal weighs 4952 lb. The empty wagon weighs 838 lb. How much does the coal weigh?
27. How many half-pint glasses will 3 gallons of lemonade make?
28. If a gallon of paint is enough for 160 sq. ft., how many gallons will be required to paint both sides of a fence 4 ft. high and 260 ft. long?
29. How many square feet of wall paper are there in a roll 18 yards long and 2 ft. wide?
30. A ten-dollar bill equals how many 5-cent pieces?
31. Mr. Russell sold 255 lb. of butter in 17 weeks. How many pounds did he sell per week?
32. How much cloth is needed to make a suit if the coat takes 4¼ yd., the vest 1⅛ yd., and the trousers 2⅛ yd.?
33. The fare to Richmond is $1.25 for an adult and $.63 for a child under 12. How much will it cost for three adults and two children?
34. Helen promised to read 150 pages of a book about gardening. She has read 45 pages. How long will it take her to read the rest if she reads 15 pages an hour?
35. George ran a quarter of a mile in exactly 1¾ minutes. Did it take him more than 100 seconds?

COMMON MEASURES

Length

1 inch or 1 in.

12 inches = 1 foot (ft.)
3 feet = 1 yard (yd.)
16½ feet = 1 rod (rd.)
5280 feet = 1 mile (mi.)
320 rods = 1 mile (mi.)

Liquid Measure

4 gills = 1 pint (pt.)
2 pints = 1 quart (qt.)
4 quarts = 1 gallon (gal.)

Dry Measure

2 pints = 1 quart (qt.)
8 quarts = 1 peck (pk.)
4 pecks = 1 bushel (bu.)

Time

60 seconds = 1 minute (min.)
60 minutes = 1 hour (hr.)
24 hours = 1 day (da.)
7 days = 1 week (wk.)
365 days = 1 year (yr.)
Leap years have 366 days

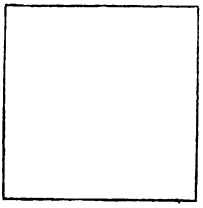
Money

10 cents = 1 dime
10 dimes = 1 dollar

Weight

16 ounces = 1 pound (lb.)
2000 pounds = 1 ton (T.)

Area



One square inch
or
1 sq. in.

144 sq. in. = 1 square foot (sq. ft.)
9 sq. ft = 1 square yard (sq. yd.)
272¼ sq. ft. = 1 square rod (sq. rd.)
160 square rods = 1 acre (A.)
640 acres = 1 square mile (sq. mi.)

1 sq. ft. = a square 1 ft. long and 1 ft. wide
1 sq. rd. = a square a rod long and a rod wide

INDEX

No attempt is made to index the details of computations or problems. The page references are, as a rule, only to the first two or three appearances of the topic in question. The numbers refer to pages.

ANSWERS: PART I

Answers to problems to be solved mentally and to written computations whose correctness should be obvious to inspection, are, as a rule, not given here.

The heavy-face numbers refer to the sections.

36

2. 49
3. 37
4. 48
5. 39
7. 48

38

1. 78
2. 86
3. 87

39

1. 88¢
2. 28¢
3. 57¢
4. 35¢
5. 69¢
6. 65¢
7. 58¢

40

1. 58
2. 86
3. 68
4. 75
5. 69
6. 89
7. 79
8. 68
9. 87
10. 89

40 (con.)

11. 99
12. 96
13. 79
14. 88
15. 88
16. 98
17. 99
18. 78
19. 88
20. 79

41

2. 72
3. 13
4. 22
5. 22
6. 73
7. 72
8. 53

42

1. 33
2. 52
3. 41
4. 16
5. 44
6. 31
7. 44
8. 21
9. 23
10. 23
11. 45

42 (con.)

12. 26
13. 52
14. 31
15. 74
16. 41
17. 21
18. 62
19. 58
20. 35
21. 22
22. 64
23. 24
24. 27
25. 42
26. 45
27. 23
28. 32
29. 31
30. 21
31. 24
32. 21
1. 88
2. 23
3. 79
4. 86
5. 33
6. 88
7. 23

44

2. 52
3. 91
4. 68

44 (con.)

5. 77
6. 82
7. 59

45

1. 86
2. 57
3. 89
4. 78
5. 54
6. 79
7. 89
8. 65
9. 97
10. 90
11. 78
12. 80
13. 80
14. 74
15. 89
16. 77
17. 93
18. 90
19. 96
20. 76
21. 86
22. 80
23. 86
24. 96
25. 79
26. 96
27. 99
28. 87

45 (con.)

29. 88
30. 77
31. 96
32. 79

46

I. 10
1. 16
2. 4
3. 20
4. 25
5. 7
6. 32
7. 23
8. 20
9. 5
10. 10
11. 30
12. 20
13. 20
14. 27
15. 20
16. 53
17. 12
18. 20
19. 5
20. 3
21. 3
22. 10
23. 25
24. 12
25. 8
26. 20

46 (con.)

27. 30
28. 32
29. 30
30. 10
31. 4
32. 23
33. 30

58

6. 92

7*a*. 62
b. 66
c. 42
d. 73
e. 71
f. 66
g. 71
h. 78
i. 62
j. 75

59

Ex. 3, 6, 8, 11, 15, and 19 are wrong.

61

1. $6.93
2. $9.54
3. $9.44
4. $9.16
5. $9.82

Answers: Part I

61 (con.)

Ord. 1. $12.92
" 2. $8.84
" 3. $12.44
" 4. $9.33
" 5. $10.97
" 6. $4.30
" 7. $3.67
" 8. $2.35
" 9. $38.25
" 10. $6.20

62

1. $1.34
2. $2.13
3. $1.88
4. $1.62

63

1. $1.67
2. $1.98
3. $1.86
4. $2.76
5. $2.42
6. $1.85
7. $1.82
8. Mary $1.62
   Nell $1.47
   Alice $1.27
   Grace $1.07

64

9. 625
11. Tom, Will, and John
12. George
13. John
14. 167, 147
    18, 35

64 (con.)

15. 17
16. Tom

65

1. 11¢
2. 21¢
3. 13¢
4. 22¢
   5¢
   7¢
   25¢
   4¢
   32¢
   28¢
   15¢
   16¢
5. 18¢
6. 13¢
   15¢
   6¢
   19¢
   7¢
   4¢
   17¢
   20¢
7. 73¢
8. 57¢
   36¢
   32¢
   22¢
   12¢
   41¢
   78¢
   83¢
   64¢
   75¢
   25¢
   50¢
   60¢
9. 18¢

65 (con.)

10. 18¢
a. 865
b. 777
c. 940
d. 891
e. 760
f. 782
g. 651

66

A 1. 443
2. 175
3. 65
4. 257
5. 479
6. 425
7. 353

B 1. 334
2. 38
3. 26
4. 67
B 5. 70
6. 48
7. 28

C 1. 45
2. 45
3. 225
4. 19
5. 9
6. 154
7. 34

D 1. 178
2. 29
3. 50
4. 173
5. 278
6. 306
7. 261

E 1. 58
2. 23

66 (con.)

E 3. 40
4. 53
5. 578
6. 508
7. 9

F 1. 507
2. 298
3. 159
4. 15
5. 210
6. 68
7. 230

69

1. 35
   55
   70
2. 55
   35
   35
3. 65
4. 55
5. 10

70

1. $7.12
2. $8.85
3. $3.87
4. $2.57
5. $1.50
6. $1.27
7. $2.51

78

1. $8.11
2. $8.48
3. $1.64
4. $6.90

78 (con.)

5. $8.97
6. $5.97
7. $3.16
8. 443
9. 375
10. 75
11. 424
12. 90
13. 174
14. 478
15. 407
16. 598
17. 259
18. 15
19. 221
20. 300
21. 50
22. 82¢
23. 64¢
24. No
25. $1.09
26. $1.44
27. 6¢
    $6.78

86

1. 128
2. 64
3. 96
5. 168
6. 126
7. 69
8. 88
9. 155¢, or $1.55

87

2. 123
3. 66

Answers: Part I

87 (con.)

4. 168
5. 88
6. 159
7. 86
8. 68
9. 88
10. 129
11. 156
12. 96
13. 69
14. 82
15. 204
16. 28
17. 639
18. 428
19. 936
20. 864
21. 693
22. 396
23. 628
24. 486

89

1. 168
2. 880
3. 860
4. 684
5. 150
6. 408
7. 806
8. 360
9. 639
10. 930
11. 408
12. 996
13. 808
14. 626
15. 990
16. 909
17. 204

89 (con.)

18. 126
19. 55
20. 164
21. 800

90

2. $4.48
3. $10.80
4. $6.93
5. $9.60
6. $3.69
7. $4.08
8. $4.55

91

1. 625
2. 875
3. 336
4. 994
5. 115
6. 129
7. 805
8. 738
9. 688
10. 1032
11. 852
12. 424
13. 860
14. 645
15. 750
16. 900
17. $15.00
18. $5.00
19. $7.50
20. $1.50
21. $3.60
22. $9.60
23. $9.10
24. 918

92

1. 762
2. 852
3. 315
4. 256
5. 984
6. 868
10. 750
11. 870
12. 920
13. 770
14. 931
15. 918
20. 120
21. 364
22. 108
23. 256
24. 730

93

5*a*. $7.95
b. $3.24
c. $3.90
d. $8.82
e. $8.12
f. $5.85
g. $8.15
h. $3.68

96

5. 160
6. 28
7. 18
8. 368
9. 972
10. 762
11. 430
12. 616
13. 189
14. 128

97

5*a*. 175
b. 875
c. 108
d. 761
e. 850
f. 384
g. 1656
h. 333
6*a*. 228
b. 532

100

10. $7.94
11. $7.82
12. $8.55
13. $2.13
14. 85
15. 13
16. 584
17. 20

101

5. 351
6. 331
7. 408
8. 341
9. 331
10. 310
11. 359
12. 345
13. 384
14. 351
15. $1.23
16. 37¢
17. $3.00
18. $5.25
19. $1.59
20. $4.15
21. $3.43

101 (con.)

22. $8.64
23. $8.64
24. $8.75
25. $7.00
26. $8.35
27. $7.00
28. $9.54
29. $8.25
30. 889
31. 940
32. 848
33. 975
34. 999
35. 684

102

5. 406
900
522
848
832
600
840
612

105

5*a*. 623
b. 294
c. 720
d. 981
e. 996
f. 432
g. 570
h. 474

106

3. 32¢
4. 21¢

106 (con.)

6. 33
43
31
41
42
73

107

1. 230
2. 230
3. 30
4. 70
5. 30
6. 210
7. 70
8. 80
9. 41
10. 30
11. 320
12. 7
13. 90
14. 22
15. 423
16. 70
17. 121
18. 21
19. 30

108

1. 64¢
2. 48¢
3. 7¢
4. $4.48
5. 71

110

1. 23, 2 r.
2. 36

110 (con.)

3. 23, 3 r.
4. 21, 3 r.
5. 17
6. 21, 3 r.
7. 13
8. 75, 1 r.
9. 14
10. 216
11. 237, 3 r.
12. 225
13. 302, 1 r.
14. 14
15. 404, 1 r.
16. 30
17. 31
18. 133, 2 r.
19. 54
20. 75
21. 36
22. 71, 1 r.
23. 54, 1 r.
24. 22, 3 r.

112

1. 21, 3 r.
2. 18, 1 r.
3. 21, 8 r.
4. 17
5. 35
6. 54, 1 r.
7. 23
8. 124
9. 86, 6 r.
10. 38, 3 r.
11. 35, 4 r.
12. 17, 5 r.
13. 59
14. 85, 5 r.
15. 97, 6 r.
16. 31, 3 r.

112 (con.)

17. 28, 2 r.
18. 13, 2 r.
19. 119, 2 r.
20. 28, 2 r.
21. 32
22. 39
23. 27
24. 73
25. 67
26. 43
27. 32
28. 75
29. 36
30. 48
31. 34
32. 91
33. 76
34. 37
35. 62
36. 58
37. 85
38. 66
39. 45
40. 85
41. 48
42. 28
43. 14
44. 33
45. 45
46. 57
47. 37
48. 94
49. 87

115

1. $2.34
2. $4.32
3. $3.36
4. $10.08
5. $3.78

115 (con.)

6. $2.50
7. $2.75
8. $1.75
9. 96¢
10. 39¢
11. Tom
12. 16¢

118

9. $8.35

119

1. $2.25
2. $5.94
3. $5.25
4. $1.40
5. 10¢
6. 54
7. 17 hr.
8. $5.00
9. $4.50
10. $2.45
11. $1.05
12. $2.20
13. $2.80

123

1. 805
2. 912
3. 483
4. 931
5. 561
6. 874
7. 800
8. 50
9. 539
10. 584
11. 105

123 (con.)

12. 227
13. 74
14. 178
15. $8.88
16. $8.45
17. $5.10
18. $8.40
19. $9.72
20. $9.40
21. $9.03
22. 58
23. 59
24. 53
25. 30
26. 70
27. 53
28. 82

126

2. 53, 3 r.
3. 54, 1 r.
4. 32, 6 r.
5. 73, 1 r.
6. 24, 2 r.
7. 33, 2 r.
8. 83
9. 125
10. 36, 1 r.
11. 73, 4 r.
12. 64, 2 r.
13. 82
14. $1.68
15. $8.48
16. $7.62
17. $8.75
18. $9.00
19. $9.60
20. $5.85
21. 83¢
22. 83¢

126 (con.)

23. 87¢
24. 76¢
25. 89¢

127

11*a*. 58
b. 52
c. 50
d. 46
e. 45
f. 47
g. 51
h. 44
i. 41
j. 55
k. 50
l. 44
15. 49¢
16. 23¢

131

1. 16
2. 30
3. 47
4. 17
5. 24
6. 20
7. 15
8. 25
9. 33
10. 8
11. 23
12. 15

132

1. 18
2. 36
3. 72

132 (con.)

4. 432
5. 89
6. 384
7. 7, $\frac{1}{2}$, $\frac{1}{4}$
8. $\frac{1}{2}$
9. $\frac{1}{4}$
10. $\frac{1}{2}$
11. $\frac{1}{3}$
12. $\frac{1}{3}$

136

1. 9
2. 2376
6. 1848 ft.
7. 2508
8. 792
9. 1452
10. 2640

137

1. 8052
2. 1342
3. 8100

140

1. 330
165
110
2. 44
3. 528
4. 660
5. 2640
6600
6. 118 ft.
7. 396
8. 8:48 A.M.
9. 8:42 A.M.
10. 8:40 A.M.

141

1. $1.10
2. 22
3. $1.40
4. 40

142

1. $1.05
2. $2.25
3. $2.30
4. $5.60
5. $1.73
6. $1.90

143

1. 527
805
921
770
678
824
485
694
2. 214
253
32
267
430
200
466
461
3. 702
954
486
261
243
405
999
990

143 (con.)

4. 924
623
798
749
672
525
875
980
5. 904
600
552
960
672
296
232
528
6. ÷6 78, 4 r.
162, 4 r.
133, 2 r.
101, 2 r.
141, 3 r.
112, 3 r.
91, 4 r.
57, 3 r.
÷7 67, 3 r.
139, 3 r.
114, 2 r.
86, 6 r.
121, 2 r.
96, 3 r.
78, 4 r.
49, 2 r.
÷8 59
122
100
76
106, 1 r.
84, 3 r.
68, 6 r.
43, 1 r.

Answers: Part I

143 (con.)

÷9 52, 4 r.
108, 4 r.
88, 8 r.
67, 5 r.
94, 3 r.
75
61, 1 r.
38, 3 r.

145

5. $3.35
6. 49
7. 28
8. 1960 lb.

147

4. 16
7. 48
8. 8
9. $1.20
10. $4.80

148

1st. 36¢
2d. 32¢
3d. 66¢
4th. 36¢
5th. 45¢
6th. 25¢
7th. $2.02
8th. 29¢
9th. 22¢
10th. 19¢
11th. $3.64
12th. 37¢
13th. $1.04
14th. 66¢
15th. 33¢
16th. $2.82
17th. $2.82
18th. 84¢
19th. 71¢
20th. 40¢

153

1. 93, 3 r.
2. 83, 2 r.
3. 85
4. 18
5. 92, 7 r.
6. 16, 6 r.
7. 25
8. 92, 6 r.
9. 62, 4 r.
10. 75
11. 27, 7 r.
12. 65
13. 12, 3 r.
14. 21, 7 r.
15. 32
16. $9.27
17. $8.70
18. $8.72
19. $9.52
20. $9.45

155

A 1. 921
2. 935
3. 328
4. 892
5. 722
6. 851
7. 299
B 8. 764
9. 850
10. 217
11. 690
12. 291
13. 634
14. 293

156

1. 464
2. 406
3. 575
4. 158

156 (con.)

5. 50
6. 206
7. 168
8. 63
9. 18
10. 32
11. 375
12. 251
13. 302
14. 83
15. 308
16. 264
17. 607
18. 598
19. 225
20. 480
21. 500

ANSWERS: PART II

1

1. 361 mi.
2. 83 mi.
3. $12.00
4. $2.00
5. 64
6. 640
7. Ten
8. 4
9. 200
10. $12.32
11. $2.25
12. 25¢
13. 6
14. 24
15. 300
16. 138
17. 315

3

1. 963
2. 1030
3. 897
4. 995
5. 698
6. 978
7. 825
8. 894
9. 357
10. 302
11. 69
12. 200
13. 375
14. 134
15. 1255
16. 768
17. 965

3 (con.)

18. 959
19. 927
20. 1100
21. 972
22. 960

5

1. 31, 1 r.
2. 46, 7 r.
3. 383, 1 r.
4. 212, 3 r.
5. 155, 5 r.
6. 255
7. 264, 2 r.
8. 175
9. 520

5 (con.)

10. 122, 3 r.
11. 311, 7 r.
12. 817, 1 r.
13. 206, 1 r.
14. 408
15. 403, 1 r.
16. 302, 2 r.
17. 305, 2 r.
18. 505, 3 r.
19. 506, 2 r.
20. 103, 1 r.

7

7648
9827
4356

7 (con.)

6578
9070
6888

8

1. 7684
2. 5372
3. 9745
4. 6570
5. 7036
6. 4906
7. 8204
8. 6320
9. 8067
10. 2609
11. 7000

Answers: Part II

8 (con.)

12. 7400
13. 7430
14. 7432
15. 3006
16. 3060
17. 5600
18. 9207
19. 9359
20. 9227
21. 6217
22. 7445
23. 8381
24. 7662

9

1. 432
2. 864
3. 5184
4. 1250
7. 3312

10

1. 9775
3. 1296
5. 672
6. 6048
7. 1311
8. 1376

11

1. 10,048
2. 216
3. 9372
4. 8883
5. 5952
6. 10,296
7. 5304
8. 6556

11 (con.)

9. 2340
10. 2520
11. 6440
12. 11,160
13. 7350
14. 2400
15. 6900
16. 8800
17. 6890
18. 4738
19. 2484
20. 2940
21. 7007
22. 205
23. 108
24. 309
25. 52
26. 2010
27. 600

12

1. $22.75
2. $27.75
3. $28.75
4. $71.28
5. $42.50
6. $48.86
7. $57.85
8. $67.20
9. $104.72

13

1. 5880
2. 960
3. 7840
4. 8260
5. 7680
6. 8540
7. 8750

13 (con.)

8. 3560
9. $62.50
10. $82.50
11. $70.00
12. $90.30
13. $62.10
14. $81.60
15. $84.00

14

1. 51 mi.
2. 288 mi.
3. 376 mi.
4. 4950 mi.
5. 28 mi.

17

3. 644
4. 673
5. 1385
6. 5034
7. 368
8. 2322
9. 249
10. 284

18

1. 37¢
2. 71¢
3. 80¢
4. $1.00
5. $1.52
6. 77¢
7. $2.15
8. $1.05
10. 58¢
11. 80¢
12. $1.80

18 (con.)

13. $3.70
14. $5.90
15. No

19

23. 8
24. 10 dimes and 20 nickels
25. 50
26. 100
27. 4
28. 10

20

1. 31 ft.
2. 12 ft.
   7 ft.
   9 ft.
   28 ft.
3. 31 ft. and 28 ft.
4. 868
5. 440
   112
   64
   108
   81
   63

22

4. 21780
5. 10890
   14520
6. 8712
7. 5445
8. 80
9. 40

Answers: Part II

22 (con.)

10. 20
11. 320
12. 640
13. 1600
14. The second field is larger
15. 23040
16. 160
17. ½ sq. mi.

23

3. The second. 24 sq. ft.
4. 1320
5. 500 yd. 60 yd.
6. 1760
7. 400 min. 160 min.
8. 5760 yd.
9. 100 min.
10. The first. 8 mi.
11. 448
12. 320
13. 40
14. 384
15. 80 min.

24

5. 240
6. 35 min.
7. 25 min.
8. 8:35
9. 30
10. 9

27

1. 36
2. 185
3. 1909

28

2. 8424
3*a*. 8736
b. 8132
c. 5952
d. 6240
e. 9261
f. .7164
g. 4752
4. $429.87
5. $44.55
6. $97.60
7. $12.40

29

2. 132,000
5. 31,200
8. 109,350 lb.
11. $82.25
12. $65.25
13. $45.46
14. $4.56
15. $4.81

30

5*a*. $108.40
b. $96.00
c. $202.50
d. $504.90
e. $126.00
f. $345.60
g. $565.20
h. $563.50

31

1*a*. 70,077
b. 305,856
c. 141,750
d. 144,000
e. 10,225
f. 34,875
g. 83,250
2*a*. 187,500
b. 87,500
c. 68,400
4*a*. 94,452
b. 39,375
c. 44,352
d. 28,560
6*a*. $185.50
b. $293.25
c. $314.10
d. $403.92
e. $542.64
f. $15,997.25
g. $1397.00
h. 63,756
i. 225,680
j. 31,250
k. 73,440
l. 75,000
m. 389,760
n. 256,000

32

1. 56
2. 58
3. 59
4. 52
5. 56
6. 55
7. 55
8. 45
9. 64

32 (con.)

10. 58
11. 62
12. 61

33

1. 44
2. 32
3. 6 hr.
4. 15

34

1. $4.11
2. $8.25
3. $11.95
4. $10.08
5. $9.36
6. $6.53
7. $3.90
8. $12.31
9. $5.68
10. $3.92
11. $3.66
12. $6.02
13. $23.54
14. $11.87
15. $15.01
16. $6.64
17. $4.65
18. $9.00

36

1. 462
2. 271
3. 958
4. 576
5. 739
6. 265
7. 637
8. 639

Answers: Part II

36 (con.)

9. 725
10. 232
11. $3.23
12. $9.89
13. $8.74
14. $9.53
15. $5.24

37

1. 33
2. 72
3. 42¢
4. 19
5. 25

38

÷7 125
214, 2 r.
92, 6 r.
52, 1 r.
142, 6 r.
4896, 3 r.
÷4 218, 3 r.
375
162, 2 r.
91, 1 r.
250
1224
÷9 97, 2 r.
166, 6 r.
72, 2 r.
40, 5 r.
111, 5 r.
544
÷5 175
300
130
73
200
979, 1 r.

39

2. No
3. 9
4. 60
6. 32 da.
7. 6, 2 r.
8. 40

40

1. 104,400
2. 234,500
3. 55,050
4. 92,224
5. 91,728
6. 28,875
7. 94,576
8. $806.40
9. $873.12
10. $798.00
11. $862.50
12. $243.00
13. $866.25
14. $81.00

41

1. 75¢
2. 6¢
3. 7¢
4. 75¢
5. 5
6. 40¢
7. ½, ¼
8. 54¢
9. 40¢
10. 85¢
11. 75¢
12. $1.10
13. $2.11
14. $2.26
15. $2.34

41 (con.)

16. $2.70
17. $1.05
18. 16¢

49

1. 428
429
2. 75
45
3. 5
625
4. 90
5. 384
6. 1980
7. 77
8. 147
9. $9.50
10. $3.63
11. $2.66
12. $3.75
13. 480
14. 320
15. 240
16. 192
17. 160
18. 120

51

1. 93
2. 68
3. 93
4. 94
6. 9⅓
7. 7⅓

52

Test I

1. 976
2. 506
3. 2475
4. 232
5. 16,500
6. $13.86
7. 319
8. 868
9. 2530
10. 254

Test II

1. 764
2. 822
3. 2600
4. 342
5. 12,480
6. $16.74
7. 418
8. 797
9. 3955
10. 242

53

1. B. 5, 1
C. 18, 3⅗
D. 25, 5
E. 19, 3⅘
F. 14, 2⅖
G. 10, 2
H. 21, 4⅕
2. 36, 29, 27, 26, 20, 138
3. 10
4. $3.00
5. $1.68
6. $13.44
7. $10.92

Answers: Part II

57

1. 57½
2. 63⅓
3. 18¾
4. 33¾
5. 145⅛
6. 53
7. 93⅜
8. 167½
9. 23⅖
10. 74¼
11. 25
12. 85⅗
13. 173¾
14. 23⅙
15. 237½
16. 168⅛
17. 23⅛
18. 45⅛

58

1. 6
2. 99
3. 4
4. 66
5. 24
6. 1 rd.
7. 20
8. $7.00
9. 4
10. $10.00
11. $26.25

59

1. 189
2. 21
4. ⅛
6. 21
7. 9
8. 189

59 (con.)

9. 1⅓
10. 10
11. $21.00
12. 80
13. 53⅓
14. 40
15. 32
16. 26⅔
17. 20
18. 960
19. 240
20. 360

60

4. 23.92
5. 15.17

61

1. $13.96
2. $14.58
3. $25.20

62

2. 22, 10 r.
3. 21, 13 r.
4. 22, 6 r.
5. 41, 10 r.
6. 71, 4 r.
7. 33, 6 r.
8. 3212, 15 r.
9. 11, 11 r.
10. 131, 13 r.
11. 423, 8 r.
12. 13, 4 r.
13. 511, 6 r.

63

2. $3.12
4. $4.31
5. 74¢
6. $6.15
7. $2.25
8. $2.31
9. 9
10. 6
11. 13

64

1. 24, 4 r.
2. 31
3. 4, 8 r.
4. 4, 1 r.
5. 3, 10 r.
6. 4, 4 r.
7. 2, 22 r.
8. 2, 2 r.
9. 4
10. 3, 7 r.
11. 21, 13 r.
12. 273, 6 r.
13. 4, 6 r.
14. 31, 5 r.
15. 3

65

1. 22, 4 r.
2. 614
3. 6, 7 r.
4. 24
5. 6, 4 r.
6. 335, 6 r.
7. 22, 5 r.
8. 31
9. 4
10. 23
11. 29, 5 r.
12. 21, 5 r.

65 (con.)

13. 19, 25 r.
14. 28
15. 2, 346 r.
16. 1, 137 r.
17. 4, 1 r.
18. 2, 73 r.
19. 3, 6 r.
20. 2, 200 r.
21. 17
22. 31, 5 r.
23. 41
24. 71, 4 r.

66

1. 7¢
2. 5¢
3. 7, 9, 5
4. 4, 3, 5, 6, 7
5. 2, 5, 54¢, 45¢
6. $2.25
   2 and 50¢ r.,
   4, 5 and 25¢ r.
   No. Yes
7. 2, 4, 96, 80, 6 and 4 r.
8. 9 pages, 14 stamps left over

67

1. 33¢
2. 60¢
3. 30¢
4. 28¢
5. 39¢
6. 77¢
7. 45¢

Answers: Part II

67 (con.)

8. 35¢
9. 90¢
10. 75¢
11. 44¢
12. 72¢
13. 22¢
14. 17¢
15. 28¢
16. 84¢
17. $1.20
18. $1.50
19. 42¢
20. 54¢
21. 66¢
22. $1.08
23. 84¢
24. 70¢
25. 77¢
26. 56¢
27. 63¢
28. 96¢
29. 88¢
30. 66¢
31. 23¢
32. 38¢
33. 68¢

71

A. 4, 1 r.
3, 9 r.
1, 20 r.
3
2, 3 r.
2, 1 r.

B. 2, 5 r.
5
4, 7 r.
3, 10 r.
2, 11 r.
1, 25 r.

71 (con.)

C. 5
2, 10 r.
4
5, 5 r.
2
2, 18 r.

D. 6, 3 r.
6, 9 r.
5
3
2, 15 r.
2, 5 r.

E. 9, 1 r.
8, 4 r.
4
6, 10 r.
3, 10 r.
4, 12 r.

F. 8, 8 r.
8
3, 21 r.
6, 6 r.
3, 6 r.
4, 8 r.

G. 4, 5 r.
9, 6 r.
7
8, 9 r.
4, 17 r.
3

H. 5, 4 r.
4, 4 r.
2, 14 r.
5, 9 r.
2, 20 r.
3, 1 r.

I. 7, 3 r.
6, 8 r.
5, 5 r.
3, 5 r.

71 (con.)

2, 10 r.
3, 17 r.

J. 8
6, 20 r.
2, 50 r.
3, 11 r.
3, 5 r.
3, 2 r.

72

1. 3
2. 18
3. 648
4. 48
5. 6
6. 91, 104, 117, 130

73

6. $852.72
7. $1851.30
8. $5703.45

74

1. 23
2. 5
3. 3, 18 r.
4. 6, 11 r.
5. 5, 5 r.
6. 23, 13 r.
7. 25
8. 13, 3 r.
9. 2, 22 r.
10. 6, 16 r.
11. 22, 7 r.
12. 12, 32 r.
13. 3, 8 r.
14. 175
15. 84
16. 75
17. 28

76

3*a*. $1.71
b. $4.40
c. $3.00
d. $1.52
e. $5.36
f. $1.65
g. 87¢
h. $4.04
i. $6.24

77

1. 49
2. 24½
3. 98
4. 980
5. 294
6. 880
7. 440
8. 1320
9. 220
10. 3520
11. 2640
12. 5280
13. 15,840
14. 880
15. 6600

78

1. 54
2. 72
3. 1250
4. 3960
5. 240
6. 112
7. $3.75
8. $9.33
9. $6.48
10. $4.32
11. $8.64

78 (con.)

12. $4.86
13. 504
14. 324
15. 2124
16. 666
17. 4960
18. 23,200
19. 12,320

79

1. 70¢
2. $1.45
3. 33¢
4. 15¢
5. 49¢
6. 4¢
7. 12¢
8. 92¢
9. 49¢
10. $1.25
11. 45¢
12. 11¢
13. 18¢
14. $1.75
15. 35¢
16. $1.00
17. 99¢
18. 12¢
19. 27¢
20. 91¢
21. 52¢
22. 54¢
23. 35¢
24. 10¢
25. 28¢
26. 24¢
27. 76¢
28. 9¢
29. 55¢
30. 35¢

Answers: Part II

80

1. 15
2. 393
3. 234
4. 259
5. 216
6. 417
7. 628
8. 313
9. 752
10. 49, 3 r.
11. 37, 33 r.
12. 69, 17 r.
13. 28, 51 r.
14. 25, 17 r.
15. 17, 24 r.
16. 18
17. 22, 4 r.
18. 25, 25 r.
19. 20, 20 r.
20. 20
21. 3, 8 r.

81

22. 896
23. 18⅛
24. 30
25. 20
26. 5
27. 20,150
28. 321,186
29. 376,200
30. 473,760
31. 87,360
32. 34,560
33. 77,040
34. 469,900
35. 396,900
36. 347,400
37. 78,000
38. 158,950

81 (con.)

39. 298,800
40. 262,650
41. 622,502
42. 245,600

82

2. $11.10
3. $10.05
4. $10.35
5. $31.85
6. $6.60
7. $9.01
8. $18.99
9. $9.77

86

1. 8, 20 r.
2. 8, 21 r.
3. 5, 10 r.
4. 5, 15 r.
5. 5, 17 r.
6. 4
7. 4, 30 r.
8. 4, 31 r.
9. 3
10. 3, 4 r.
11. 3, 8 r.
12. 3, 10 r.
13. 9, 10 r.
14. 9, 12 r.
15. 7, 2 r.
16. 5, 32 r.
17. 4, 2 r.
18. 3, 12 r.
19. 7, 15 r.
20. 3, 25 r.
21. 7, 20 r.
22. 6
23. 4, 20 r.
24. 4, 25 r.

87

1. 4¢
2. 4¢
3. 5¢
4. 7¢
5. 6¢
6. 3¢
7. 5¢
8. 2¢
9. 8¢
10. 30¢
11. 25¢ more
    55¢ more
    75¢ more
12. $2.08
    $1.90
14. 11¢
15. 12½¢
16. 16⅔¢
17. 6

88

1. 17½¢
2. 13¢
3. 14$\frac{3}{32}$¢
4. 13$\frac{1}{12}$¢
   ⅓¢
5. 14$\frac{1}{11}$¢
6. 13¢
7. 15$\frac{5}{186}$¢
8. $8.03
   $1.33⅓

89

1. 10
2. $1.30
   $1.60
   $2.10
   $2.80
3. $9.05

89 (con.)

4. $24.45
5. 12$\frac{13}{60}$¢
   ½

90

1. 126,578
2. 176,885
3. 129,135
4. 142,076
5. 158,404
6. 214,214,214
10. 14,617,314
    60,016,540
11. 1000
12. 10,000
13. 1000
14. 10

91

1. 60
   360
   8640
2. 63,360
3. 4,752,000
4. 32,000

92

1. About ten million
2. 1,260,000
5. 31 mi.
   3912
6. 187,048
   186,798
   95,382
   146,298
8. The latter.
   3,187,367

92 (con.)

9. The former. 6336
10. The former. 158,430
11. 100
12. 100
13. 2,000,000
14. 999,999
15. 10,000
    1,000,000
16. 10

93

1. 3110, 292 r.
2. 1188, 177 r.
3. 1559, 513 r.
4. 2063, 242 r.

94

2. 307,507, 7 r.
3. 10,405, 3 r.
4. 208, 6 r.
5. 206, 30 r.
7. 3009
8. 2006
9. 2009
10. 203
11. 306
12. 701
13. 543
14. 907

95

2. 30, 15 r.
3. 20
4. 23, 15 r.
5. 21, 1 r.
6. 10, 10 r.

95 (con.)

7. 30
8. 210
9. 60, 5 r.
10. 40, 10 r.
11. 52
12. 102
13. 70
14. 20, 12 r.

97

3. 16 wk.
4. 39 wk.
5. 8 wk.
6. 24 wk.
7. 16 wk.
8. 12 wk.
9. 10 wk.

98

1. $89\frac{14}{17}$
   $80\frac{7}{17}$
   $84\frac{7}{17}$
2. 9
3. $9\frac{7}{17}$
4. Oct.
5. Nov.
6. Dec.
7. 89
   $76\frac{2}{3}$
   87
8. $93\frac{1}{3}$
   $79\frac{2}{3}$
   $86\frac{2}{3}$
9. $83\frac{1}{3}$
   84
   77
10. S.
11. P.

99

1. 13
2. $\$1.02\frac{1}{2}$
   $\$1.25$
   $\$1.58\frac{11}{12}$
   $67\frac{1}{2}$¢
3. $1.14
4. $78.00
5. $2.00
6. $8.00
   $16.00
7. $9.60
8. 6

106

1. $19\frac{3}{4}$ qt.
2. $18\frac{1}{2}$ qt.
   $16\frac{3}{4}$ qt.
   $17\frac{1}{4}$ qt.
   20 qt.

107

a. 26
b. 126
c. $126\frac{1}{2}$
d. $130\frac{1}{2}$
e. 84
f. $300\frac{3}{4}$
g. 294

108

1. $8\frac{1}{2}$
2. $10\frac{1}{2}$
3. 10
4. $9\frac{1}{2}$
5. 9
6. $8\frac{1}{2}$

110

9. 19
   $17\frac{1}{4}$
   $21\frac{1}{2}$
   18
   $21\frac{1}{4}$
   $21\frac{3}{4}$

111

1. 6
2. $5\frac{3}{4}$
3. $3\frac{1}{2}$
4. $2\frac{2}{3}$
5. 8
6. $8\frac{3}{5}$
7. $15\frac{1}{2}$
8. $7\frac{1}{2}$
9. 9
10. $9\frac{1}{2}$
11. $9\frac{4}{5}$
12. $13\frac{3}{4}$
13. $7\frac{3}{8}$
14. $4\frac{7}{8}$
15. 8
16. $8\frac{1}{4}$
17. $14\frac{1}{2}$
18. $13\frac{5}{8}$
19. $9\frac{1}{4}$
20. $10\frac{3}{4}$
21. $13\frac{1}{2}$
22. 15
23. $25\frac{1}{5}$
24. $15\frac{1}{2}$
25. $12\frac{1}{4}$
26. $13\frac{1}{4}$
27. $4\frac{7}{8}$
28. $12\frac{1}{2}$
29. 7
30. 3
31. $14\frac{1}{2}$
32. 17

Answers: Part II

111 (con.)

33. $4\frac{3}{8}$
34. 6
35. $17\frac{1}{2}$
36. $6\frac{4}{5}$
37. $11\frac{1}{4}$
38. $16\frac{1}{4}$
39. $10\frac{1}{2}$
40. 4

112

A. $305\frac{3}{4}$
225
$280\frac{1}{2}$
$327\frac{1}{4}$
329
$238\frac{1}{2}$
B. 251
$247\frac{2}{3}$
$305\frac{1}{2}$
$279\frac{1}{2}$
$263\frac{3}{4}$
301
C. $265\frac{3}{4}$
$283\frac{1}{4}$
233
$294\frac{1}{2}$
292
274
D. 277
$314\frac{1}{2}$
$300\frac{1}{2}$
$305\frac{3}{4}$
$311\frac{2}{3}$
$227\frac{1}{2}$

114

2. 26 lb.
3. $38\frac{1}{2}$ lb.
4. $11\frac{1}{2}$
5. $13\frac{1}{2}$
6. $51\frac{1}{2}$
7. $33\frac{1}{2}$
8. $13\frac{1}{2}$
9. $23\frac{1}{2}$
10. $4\frac{1}{2}$
11. $62\frac{1}{2}$
12. $37\frac{1}{2}$
13. 43
14. 32
15. $22\frac{1}{2}$
16. 26
17. $46\frac{1}{2}$
18. $16\frac{1}{2}$
19. 75
20. $19\frac{1}{2}$
21. $62\frac{1}{2}$
22. $15\frac{1}{2}$
23. 30
24. $34\frac{1}{2}$
25. $15\frac{1}{2}$
26. $44\frac{1}{2}$
27. $36\frac{1}{2}$
28. $31\frac{1}{2}$

115

1. 34, 5 r.
2. 18, 7 r.
3. 11, 37 r.
4. 14, 5 r.
5. 14, 47 r.
6. 28, 19 r.
7. 47, 14 r.
8. 27, 31 r.
9. 23, 21 r.
10. 12, 43 r.
11. 12, 19 r.
12. 68, 11 r.
13. 52, 11 r.
14. 35, 20 r.
15. 57, 9 r.
16. 46, 14 r.
17. 41, 12 r.
18. 50
19. 31, 6 r.
20. 28, 22 r.
21. 15
22. 6, 112 r.
23. 13, 184 r.
24. 10, 150 r.
25. 16, 104 r.
26. 18, 16 r.
27. 21, 118 r.
28. 23, 112 r.
29. 158, 6 r.
30. 190
31. 219, 3 r.
32. 114
33. 89, 2 r.
34. 34, 62 r.
35. 30, 60 r.
36. 502, 10 r.
37. 290
38. 22, 26 r.
39. 93, 7 r.
40. 163, 42 r.
41. 116
42. 101, 66 r.
43. \$.40 or 40¢
44. 66¢, 10¢ r.
45. 27¢, 28¢ r.
46. 41¢, 16¢ r.
47. 25¢
48. 55¢, 10¢ r.
49. 13¢, 64¢ r.
50. 105, 3 r.
51. 103, 10 r.
52. 3002, 11 r.
53. 512, 4 r.
54. 480, 4 r.
55. 452
56. 426, 16 r.
57. 404, 8 r.
58. 384, 4 r.
59. 365, 19 r.
60. 106, 3 r.
61. 85, 15 r.
62. 74, 3 r.
63. 57, 49 r.
64. 157
65. 122, 21 r.
66. 130, 25 r.
67. 40,656
68. 214,200
69. 166,050
70. 202,500
71. 101,750
72. 66,352
73. 104,742

117

1. 1250
2. 440
3. 128, 96 and 64
4. 2 gal.
5. $22\frac{1}{2}$ lb.
6. 20
7. 6
8. \$318.00
9. \$523.00
10. \$205.00
11. $50\frac{1}{4}$ lb.
12*a*. $32\frac{1}{2}$ yd.
b. 24 yd.
c. $18\frac{3}{4}$ yd.
d. 15 yd.
13. 648
14. 7 Jerseys \$45.00
15. 180

Answers: Part II

118

16. 21
17. 12
18. 584
19. No
20. 10,440
21. $71.50
22. 12
23. $23.40
24. 15
25. $16.56
26. 1344
27. $1425.50

119

28. 31 hr.
29. 47⅔ mi.
30. $7.00, 20 mi. per hour
31*a*. 3
b. 4
c. 18
d. 29

119 (con.)

32*a*. 336
b. 40
33. 120
34. 4
35. $13.46
36. Less
37. 60¢

120

1. Charles
   Ben
   ⅜ sec.
2. 1⅜ sec.
   1⅜ sec.
   2⅛ sec.
   1 sec.
   ⅛ sec.
   1⅛ sec.
3. ⅛ sec.
   ⅜ sec.
   1⅜ sec.
   4⅛ sec.

121

1. 16⅛
2. 18⅜
3. 22
4. 24
5. 274⅛
6. 22⅜
7. 20
8. 24⅛

122

4. 1⅜ sec.
5. 2⅜ sec.

123

1. ⅜ sec.
2. 2⅜ sec.
3. 3⅜ sec.
4. 4⅛ sec.
5. 13 sec.
6. 16⅛ sec.
7. 2⅜ sec.
8. 3⅛ sec.

123 (con.)

9. 7⅛ sec.
10. 10⅜ sec.
11. 13⅜ sec.
12. 4⅛ sec.
13. 6⅜ sec.
14. 9⅜ sec.
15. 3⅜ sec.
16. 6⅛ sec.
17. 8⅜ sec.
18. 2⅜ sec.
19. 5⅛ sec.

124

4. 1½ yd.
5. 2¾ yd.
6*a*. 12¾
b. 8¼
c. 13½
d. 18
e. 2½
f. 6⅜
g. 20¼

126

1. 20¼ yd.
   29¾ yd.
   17 yd.
   12¾ yd.
2. 8¾ yd.
   30½ yd.
   7¾ yd.
   22¾ yd.
3. 21¼ yd.
   21¼ yd.
   15¼ yd.
   6 yd.
4. 4¼ yd.
   44½ yd.
   5¾ yd.
   38¾ yd.
5. 7¾ yd.
   35¾ yd.
   19¾ yd.
   16 yd.
6. 17¾ yd.
   30¼ yd.
   17½ yd.
   12¾ yd.

127

1. 5⅔
2. 8½
3. 3
4. 8
5. 7¾
6. 1
7. 1⅓
8. 11⅓
9. 18
10. 7⅓
11. 27⅔
12. 10
13. 17¾
14. 13⅜

127 (con.)

15. 36
16. 46

128

17. 4⅔
18. 2⅓
19. 8¾
20. 2
21. 5⅔
22. 5⅔
23. 3⅔
24. 4⅓
25. 1⅓
26. 3⅔

128 (con.)

27. 2½
28. 4⅓

129

29. 32⅔
30. 27½
31. 16⅔
32. 68⅔
33. 37½
34. 127⅓
35. 14⅔
36. 17¼
37. 37

129 (con.)

38. 8⅓
39. 20⅗
40. 430¼
41. 50
42. 25⅔
43. 18⅓
44. ⅘
45. 6⅔
46. 218⅓

131

1. 6⅞
2. 1⅛ lb.

132

1. 9¾
2. 8⅝
3. 4⅞
4. 2⅜
5. 6⅝
6. 5⅞
7. 6¼
8. 12⅞
9. 6⅛
10. 5⅛
11. 6⅞
12. 4¼
13. 3⅞
14. 4¼

133

1. 4⅛ yd.
   33¢
   $1.67
2. 4¼ yd.
   $1.02
   $.98 or 98¢
3. 7⅛ yd.
   $1.14
4. 12⅜ yd.
   99¢
5. 8¾ yd.
   $1.40
6. 11⅛ yd.
   $2.67

Answers: Part II

134

1. $4\frac{1}{8}$ yd.
2. $2\frac{1}{4}$ yd.
3. $2\frac{1}{8}$ yd.
4. $5\frac{1}{4}$ yd.
5. $3\frac{1}{8}$

135

1. $\frac{3}{8}$
2. $\frac{1}{8}$
3. $\frac{3}{8}$
4. $\frac{3}{8}$
5. $\frac{1}{4}$
6. $\frac{1}{8}$
7. $\frac{1}{8}$
8. $\frac{1}{2}$
9. $\frac{3}{8}$
10. $\frac{1}{8}$
11. $\frac{5}{8}$
12. $\frac{1}{4}$
13. $\frac{5}{8}$
14. $\frac{1}{4}$
15. $\frac{1}{2}$
16. $\frac{1}{8}$
17. $\frac{1}{8}$
18. $2\frac{3}{8}$
19. $3\frac{1}{4}$
20. $2\frac{1}{8}$

136

2*a*. $\frac{5}{8}$
b. $\frac{7}{8}$
c. $\frac{7}{8}$
d. $\frac{5}{8}$
e. $\frac{5}{8}$
f. $\frac{7}{8}$
g. $\frac{5}{8}$
h. $\frac{7}{8}$
i. $\frac{1}{2}$
j. $\frac{7}{8}$

136 (con.)

2*k*. $\frac{3}{8}$
l. $\frac{7}{8}$
m. $\frac{3}{4}$
n. $\frac{1}{2}$
o. $\frac{3}{8}$
p. $\frac{3}{4}$

137

1. $3\frac{7}{8}$ lb.
2. $2\frac{7}{8}$ lb.
3. $1\frac{5}{8}$ lb.
4. $1\frac{7}{8}$ lb.
5. $1\frac{7}{8}$ lb.
6. $1\frac{7}{8}$ lb.
7. $8\frac{3}{8}$ lb.
8. $1\frac{7}{8}$ lb.
   $1\frac{7}{8}$ lb.
   $1\frac{5}{8}$ lb.
   $3\frac{3}{8}$ lb.
   $2\frac{5}{8}$ lb.
   $3\frac{7}{8}$ lb.

138

1. $\frac{5}{6}$
2. $1\frac{1}{6}$
3. $\frac{1}{2}$
4. $1\frac{1}{6}$
5. $\frac{1}{2}$
6. $1\frac{1}{3}$
7. $\frac{2}{3}$
8. $1\frac{1}{2}$
9. $7\frac{1}{2}$
10. $7\frac{1}{6}$
11. $1\frac{1}{3}$
12. $\frac{5}{6}$
13. $1\frac{1}{6}$
14. $\frac{2}{3}$
15. $1\frac{1}{2}$
16. $1\frac{1}{6}$

138 (con.)

17. $\frac{5}{6}$
18. $5\frac{5}{6}$
19. $8\frac{1}{3}$
20. $7\frac{1}{6}$

139

1. $\frac{1}{3}$
2. $\frac{1}{6}$
3. $\frac{1}{6}$
4. $\frac{1}{6}$
5. $\frac{1}{2}$
6. $\frac{1}{6}$
7. $\frac{1}{2}$
8. $\frac{2}{3}$
9. $\frac{5}{6}$
10. $\frac{5}{6}$
11. $\frac{5}{6}$
12. $\frac{1}{2}$
13. $\frac{2}{3}$
14. $\frac{1}{3}$
15. $\frac{1}{2}$
16. $\frac{7}{8}$
17. $\frac{5}{8}$
18. $\frac{5}{6}$
19. $\frac{3}{4}$
20. $\frac{5}{8}$

140

1. $3\frac{1}{2}$
2. $4\frac{7}{8}$
3. $2\frac{1}{4}$
4. $4\frac{3}{4}$
5. $4\frac{1}{2}$
6. $5\frac{7}{8}$
7. $2\frac{1}{4}$
8. $3\frac{1}{4}$
9. $2\frac{1}{8}$
10. $3\frac{3}{4}$
11. $1\frac{1}{2}$

140 (con.)

12. $3\frac{3}{4}$
13. $3\frac{3}{8}$
14. $3\frac{1}{8}$
15. 2
16. $2\frac{3}{4}$
17. $3\frac{1}{4}$
18. $1\frac{5}{8}$
19. $4\frac{1}{4}$
20. $2\frac{5}{8}$
21. $6\frac{1}{2}$
22. 3
23. $4\frac{3}{8}$
24. $1\frac{1}{8}$
25. $4\frac{1}{2}$
26. 3
27. $2\frac{5}{8}$
28. $4\frac{1}{8}$
29. 1
30. $1\frac{7}{8}$
31. $1\frac{1}{2}$
32. $4\frac{1}{4}$
33. $27\frac{3}{8}$
34. $31\frac{7}{8}$
35. $21\frac{7}{8}$
36. $35\frac{3}{4}$
37. $58\frac{1}{8}$
38. $85\frac{1}{8}$

141

1. $2\frac{5}{6}$
2. Al. $89\frac{5}{6}$
   Do. 84
   Em. $79\frac{1}{2}$
   Gr. 77
   Lo. $81\frac{1}{2}$
   Ma. 85
   Ne. 79
   Re. $77\frac{3}{8}$
3. Alice
4. $4\frac{5}{6}$

141 (con.)

5. $12\frac{5}{6}$
6. Lower.
   2
7. $5\frac{5}{6}$
8. 6

142

1. 144,450
2. 470,475
3. 207,900
4. 303,750
5. 149,850
6. 607,500
7. 544,725
8. 420,360
9. 730,050
10. 372,000
11. 566,370
12. 492,900
13. 281,790
14. 912,330
15. 255,816
16. 326,400
17. 79,152
18. 124,440
19. 113,424
20. 368,424
21. 252,144
22. $1837.50
23. $4068.75
24. $2493.75
25. $787.50
26. $1093.75
27. $1793.75
28. $2625.00

143

1. 6, 10 r.
2. 8, 4 r.

143 (con.)

3. 4, 5 r.
4. 3, 2 r.
5. 4, 6 r.
6. 2, 20 r.
7. 6, 3 r.
8. 2, 3 r.
9. 5
10. 3, 10 r.
11. 2, 3 r.
12. 2, 2 r.
13. 5
14. 2, 20 r.
15. 4, 7 r.
16. 6, 10 r.
17. 3
18. 3, 9 r.
19. 2, 30 r.
20. 3, 15 r.
21. 2, 40 r.
22. 3, 5 r.
23. 3, 4 r.
24. 9
25. 3
26. 4, 10 r.
27. 2, 12 r.
28. 3, 25 r.
29. 1, 21 r.
30. 4

144

1. 266, 1 r.
2. 425, 10 r.
3. 177, 13 r.
4. 85, 10 r.
5. 44, 49 r.
6. 91, 15 r.
7. 21, 127 r.
8. 174, 14 r.
9. 148, 34 r.
10. 258, 32 r.

144 (con.)

11. 96, 38 r.
12. 71, 45 r.
13. 78, 14 r.
14. 109, 15 r.
15. \$3.62, 7¢ r.
16. \$.58, 29¢ r.
17. \$.84, 35¢ r.
18. \$1.12, 35¢ r.
19. \$2.03
20. \$3.38, 5¢ r.
21. \$.67, 50¢ r.

145

1. \$1.80
2. \$1.50
3. \$2.10
4. 45¢
5. 75¢
6. \$1.35
7. \$11.00
8. \$4.25
9. \$6.75
10. \$1.75
11. \$12.50
12. \$11.50
13. 40¢
14. 52¢
15. 26¢
16. 38¢
17. 80¢
18. 92¢

146

1. \$1.60
2. \$4.00
3. \$2.00
4. \$3.44
5. \$5.60
6. \$4.88

146 (con.)

7. \$2.04
8. \$4.56
9. \$3.72
10. \$1.02
11. \$1.74
12. \$2.34

148

1. 93½
2. 89⅙
3. 75¼
4. 69⅜
5. 94⅓
6. 90⅜
7. 68¾
8. 89½

150

1. 26½
2. 21⅛
3. 24¼
4. 26⅛
5. 295¾
6. 286¼
7. 288⅜
8. 27¼
9. 21¼
10. 23⅛
11. 27
12. 231¼
13. 273½
14. 320½
15. 25
16. 26⅞
17. 21¾
18. 17¾
19. 273⅝
20. 272⅛
21. 260

152

1. \$18.90
2. 55¢
3. 10:47
4. 144
5. 18
6. 63 mi.
7. \$2.15
8. 648
9. 108
10. 2448 ft.
11. 7
12. 23,040
13. 200,300
14. 40¢
15. 15¢
16. 360
17. 3360
18. \$5.60
19. 7
20. \$1.32
21. \$78.00
22. 64¾ lb.
23. 18⅜ lb.
24. 39½ lb.
25. \$11.06
26. 4114 lb.
27. 48
28. 6½
29. 108 ft.
30. 200
31. 15
32. 7½ yd.
33. \$5.01
34. 7 hr.
35. Yes