

STRAYER-UPTON
PRACTICAL ARITHMETICS



THREE-BOOK SERIES

SECOND BOOK

PRACTICAL ARITHMETICS — SECOND BOOK

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George D. Strayer and Clifford B. Upton

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PREFACE

THIS series of books aims to give the child the ability to compute easily and accurately, and to enable him to interpret and solve the quantitative situations which he will meet in everyday life. In the achievement of this aim, these books incorporate the most valuable findings of modern experimentation in the teaching of arithmetic, including the results of important researches conducted by the authors themselves. These books present only those methods and materials which have been thoroughly tested in the classroom by many experienced teachers.

It is an established principle of teaching that nothing stimulates a pupil's interest so much as the satisfaction he gets from his ability to do things successfully. If he finds himself steadily perfecting new skills in arithmetic, he will look forward to his arithmetic period and will approach each new problem with intelligent interest. In accordance with this principle, these texts require the pupil to take only one new step at a time and supply him with enough exercises to assure mastery of that step before proceeding to the next one. Thus the constant stimulus of success is made possible for the pupil.

In this book the following features are worthy of note:

1. This book is written for children, in language with which they are familiar. The greatest care has been taken in the selection of the vocabulary.
2. The problems relate to the life and interests of the pupils. They are *real problems* in every sense of the word.

3. Motivation is the keynote of successful work in arithmetic. When a new topic is being presented, the pupils should know why the topic is important and how it is used in life. This fundamental principle of teaching is applied throughout this series of books by presenting every new operation or detail of a process in connection with an interesting motivating problem that treats of some situation with which the child is familiar.

4. The explanations of new principles and processes have been made as simple and clear as possible.

5. All the abstract exercises have been scientifically constructed so as to provide drill on all the fundamental number combinations, with ample repetition of those recognized as most difficult. The pupil thereby acquires that automatic mastery of the basic combinations which is so essential to rapid and accurate computation.

6. The total number of abstract exercises in this book is far greater than that usually found in elementary school texts. All these exercises have been graded with extreme care with reference to the difficulty of the steps involved.

7. The checking of computations is one of the most important habits that a child can form. Throughout this book checking is taught early in the presentation of each new operation and is constantly required in connection with all exercises.

8. A series of 84 Improvement Tests, covering whole numbers, fractions, and decimals, is included. These tests provide the most efficient and interesting means yet devised for keeping alive skills already learned while the pupil is studying new topics. For example, when the pupil

is studying the addition and subtraction of fractions, the Improvement Tests provide the drill on whole numbers that is necessary to keep these skills active. These tests have the further advantage that the total time required to give and score them is less than 30 minutes a week, thus leaving ample time to be devoted to the new work of the grade. For further information concerning these tests, see pages 16-20 and 497 of this book.

9. This book provides an exceptionally full and generous program of diagnostic and remedial work. Frequent diagnostic tests are given throughout the book, with keyed references to remedial exercises.

10. The carefully planned instruction in problem solving, which was given in the First Book of this series, is continued in this book. In addition to a large number of one-step problems in which the technical language expressions of arithmetic are frequently reviewed, special attention is now given to the solution of problems of two or more steps, with emphasis upon those types of two-step and three-step problems that occur most frequently in everyday life.

There are very few pages in the book on which all the problems may be worked by using the same operation, such as addition only. There are, on the other hand, many pages containing problems of different kinds, each of which the pupil has to study carefully before selecting the operation to be performed. By developing the pupil's initiative in this way and also by centering attention on the more common types of problems, as stated above, the pupil's ability in problem solving is developed systematically as his skill in computation.

11. A series of tests on problem solving is also provided throughout the book. These tests cover types of problem situations with which every pupil should be familiar. An important feature of these tests is that they not only measure the pupil's mastery of types of thinking frequently employed in problem solving, but they also check his ability to interpret important language expressions and technical phrases peculiar to arithmetic. These tests are arranged in groups known as Groups A, B, and C. Each group consists of three tests; thus, Group A consists of Tests A1, A2, and A3. The problems on Test A1 cover the same variety and types of problem situations and the same range of difficulty as those found on Tests A2 and A3. A pupil, therefore, should do better on the second and third tests of any group than on the first test. Thus the pupil has the satisfaction of seeing himself grow in problem-solving ability. The problems on the tests of Groups B and C cover, in similar manner, other sets of type problems.

12. This book contains many interesting projects and units of work involving quantitative relationships.

13. Full provision has been made for pupils of varying levels of ability. For those of average and below-average ability a large number of well-graded exercises is provided. For pupils of superior ability more difficult exercises, marked with a star (*), are furnished. The diagnostic tests indicate the needs of each pupil and give references to suitable remedial work.

GEORGE DRAYTON STRAYER
CLIFFORD BREWSTER UPTON

CONTENTS

	PAGE
CHAPTER I	
CASH ACCOUNTS	1
ADDITION AND SUBTRACTION	5
IMPROVEMENT TESTS	16
MULTIPLICATION AND DIVISION	21
PROBLEM SOLVING	52
READING AND WRITING NUMBERS	60
FRACTIONS	62
ADDING AND SUBTRACTING FRACTIONS	69
MULTIPLYING FRACTIONS	116
REVIEW	141
CHAPTER II	
DIVIDING FRACTIONS	145
PROBLEMS	157
COMPARING NUMBERS	163
HILLS	176
MEASURES	182
AREAS	198
SCALE DRAWING	202
VOLUMES	204
READING AND WRITING DECIMALS	210
ADDING AND SUBTRACTING DECIMALS	214
MULTIPLYING DECIMALS	223
GRAPHS	232
DIVIDING DECIMALS	241
REVIEW	248

CHAPTER III

	PAGE
IMPROVEMENT TESTS	257
REVIEW OF WHOLE NUMBERS	262
PROBLEM SOLVING	279
FRACTIONS	285
ADDING AND SUBTRACTING FRACTIONS	288
MULTIPLYING AND DIVIDING FRACTIONS	296
REVIEW	303
READING DECIMALS	311
ADDING AND SUBTRACTING DECIMALS	318
MULTIPLYING DECIMALS	330
DIVIDING DECIMALS	345
REVIEW	364

CHAPTER IV

BILLS AND RECEIPTS	369
CHECKS	373
WHOLE NUMBERS, FRACTIONS, AND DECIMALS	375
HARDER WORK IN DECIMALS	389
PERCENTAGE	396
PROBLEM SOLVING	426
APPLICATIONS OF PERCENTAGE	431
REVIEW	445
GRAPHS	450
MEASURES	459
REVIEW	489
TABLES FOR REFERENCE	496
SUGGESTIONS TO TEACHERS	497
INDEX	498



CHAPTER I

OUR NATURE STUDY CLUB

- Our Nature Study Club has 35 members who pay weekly dues of \$.05 each. How much does Ted, the treasurer, collect in dues in 1 week? in 4 weeks?
- During the first four weeks Ted pays out the following amounts. How much does he pay in all?
 - \$1.15 for glass and cement to make an aquarium.
 - \$1.50 for bird records for the phonograph.
 - \$.75 for a blue print outfit.
 - \$.49 for a box of blue print paper.
 - \$2.75 to rent a motion picture film of wild animals.
- If the total amount Ted receives during the four weeks is \$7.00, how much has he left after paying out the amounts mentioned in ex. 2?
The next page shows how Ted keeps his accounts.

TED'S ACCOUNT BOOK

As treasurer of the Nature Study Club, Ted keeps this account of all the money he receives and spends.

Received				Paid Out			
Sept.	12	Dues	1 75	Sept.	15	Glass and cement	1 15
"	19	Dues	1 75	"	20	Photograph records	1 50
"	26	Dues	1 75	"	28	Blue print outfit	75
Oct.	3	Dues	1 75	Oct.	2	Blue print paper	49
				"	6	Film rent	2 75
				"	6	Cash on hand	36
			7 00				7 00
Oct.	6	Cash on hand	36				

How much in all does Ted receive during the four weeks? How much in all does he spend?

Ted subtracts the \$6.64 he spends from the \$7.00 he receives, which gives \$.36 as the amount of cash he *should* have on hand. This is his balance. He counts his cash and finds that he really has \$.36 left. Then he writes "Cash on hand, \$.36" on the right side of his book, as shown above, and adds that side. The sum is \$7.00 and his book *balances* because the left side also totals \$7.00. He draws double lines under \$7.00 on both sides to show that the account above these lines is correct.

He now starts a new section of his account by writing "Cash on hand, \$.36" on the left side under \$7.00.

In balancing his book, if Ted finds that he has not \$.36 left, he tries to discover his mistake. If he has *less* than \$.36, he may have forgotten to record some amount that he has spent; if he has *more* than \$.36, he may have failed to record some amount that he has received.

TED CHECKS HIS ADDITION

Ted finds that the best way to add is to begin at the bottom of each column and add up. After obtaining the sum, he checks the work by beginning at the top of each column and adding down. If he gets the same sum each time, he considers that his work is correct.

Exercises

1. Here is the next section of Ted's account. Copy it, balance the account, and check the addition.

Received				Paid Out			
Oct.	6	Cash on hand	36	Oct.	14	Book of Birds	1 45
"	10	Dues	1 75	"	18	Rock specimens	2 40
"	17	Dues	1 75	"	25	Postage	12
"	24	Dues	1 75	"	31	Trip to park	2 50
"	31	Dues	1 75	Nov.	1	Cash on hand	

2. For the next four weeks Ted starts with a balance of \$.89 and receives \$1.75 in dues each week. He pays \$.65 for express on lantern slides, \$.95 for a class excursion, \$1.35 for "Book of Trees," \$.85 for lumber for bird houses, \$.75 for fish for the aquarium. Insert dates and make out and balance Ted's account. Check the work.

3. On Dec. 1 Ted has a balance of \$3.34. On Dec. 5 he collects dues of \$1.75 and each of the next two weeks he collects the same amount. He spends \$.75 for food for squirrels, \$1.65 for paper for costumes for a bird play, \$.95 for pictures of trees, \$.65 for express, \$1.00 for a prize for the best photograph of animals. Balance the account to find the amount he should have left. Check the work.

PERFECT MAGIC SQUARES

1. Add each row and each column in this magic square. Then add the three fractions along each of the dotted lines. If your work is right, you will get the same sum eight different times. This is a perfect magic square because it gives eight equal sums. It is much harder to make perfect magic squares than those on page 106.

$\frac{3}{4}$	$\frac{1}{2}$	$\frac{1}{2}$
$\frac{1}{3}$	$\frac{7}{12}$	$\frac{5}{6}$
$\frac{2}{3}$	$\frac{2}{3}$	$\frac{5}{12}$

Which of the following are perfect magic squares? Add each in eight different directions to find out:

2.

$\frac{1}{4}$	$\frac{9}{16}$	$\frac{1}{8}$
$\frac{3}{16}$	$\frac{5}{16}$	$\frac{7}{16}$
$\frac{1}{2}$	$\frac{1}{16}$	$\frac{3}{8}$

3.

$\frac{1}{3}$	$\frac{3}{2}$	$\frac{2}{3}$
$\frac{7}{6}$	$\frac{5}{6}$	$\frac{1}{2}$
1	$\frac{1}{6}$	$\frac{4}{3}$

4.

$\frac{2}{5}$	$\frac{9}{10}$	$\frac{1}{5}$
$\frac{3}{10}$	$\frac{1}{2}$	$\frac{7}{10}$
$\frac{4}{5}$	$\frac{1}{10}$	$\frac{3}{5}$

5.

$\frac{7}{8}$	$\frac{3}{2}$	$\frac{1}{8}$
$\frac{3}{4}$	$\frac{1}{2}$	$\frac{1}{4}$
$\frac{7}{8}$	$\frac{1}{2}$	$\frac{1}{8}$

6.

$\frac{2}{3}$	$\frac{3}{2}$	$\frac{1}{3}$
$\frac{1}{2}$	$\frac{5}{6}$	$\frac{7}{6}$
$\frac{4}{3}$	$\frac{1}{6}$	$\frac{6}{6}$

7.

$\frac{1}{2}$	$\frac{9}{10}$	$\frac{2}{5}$
$\frac{6}{5}$	$\frac{3}{10}$	$\frac{3}{10}$
$\frac{1}{10}$	$\frac{3}{5}$	$\frac{11}{10}$

8.

$\frac{1}{2}$	0	$\frac{5}{8}$
$\frac{1}{2}$	$\frac{3}{8}$	$\frac{1}{4}$
$\frac{1}{2}$	$\frac{3}{4}$	$\frac{1}{4}$

9.

$\frac{1}{5}$	$\frac{1}{4}$	$\frac{9}{20}$
$\frac{11}{20}$	$\frac{3}{10}$	$\frac{1}{20}$
$\frac{3}{20}$	$\frac{7}{20}$	$\frac{3}{5}$

10.

1	$\frac{1}{8}$	$\frac{3}{4}$
$\frac{3}{8}$	$\frac{5}{8}$	$\frac{7}{8}$
$\frac{1}{2}$	$\frac{9}{8}$	$\frac{1}{4}$

11.

$\frac{7}{8}$	$\frac{1}{8}$	$\frac{3}{4}$
$\frac{3}{8}$	$\frac{1}{2}$	$\frac{7}{8}$
$\frac{1}{2}$	$\frac{9}{8}$	$\frac{1}{8}$

12.

$\frac{3}{4}$	$\frac{1}{6}$	$\frac{7}{12}$
$\frac{1}{3}$	$\frac{1}{2}$	$\frac{2}{3}$
$\frac{5}{12}$	$\frac{5}{6}$	$\frac{1}{4}$

13.

$\frac{5}{12}$	$\frac{1}{8}$	$\frac{1}{6}$
$\frac{5}{24}$	$\frac{7}{24}$	$\frac{3}{8}$
$\frac{1}{4}$	$\frac{11}{24}$	$\frac{1}{6}$

DIAGNOSTIC TESTS

If you miss exercises in any row, you need more practice. The Help Pages tell you where to find it.

Divide, annexing 0's where necessary:

- | | | | HELP
PAGES |
|--------------------------|------------------------|-----------------------|---------------|
| 1. $3\overline{)78.9}$ | $9\overline{)4.14}$ | $5\overline{)6.025}$ | 243 |
| 2. $42\overline{)61.32}$ | $96\overline{)24.096}$ | $75\overline{)232.5}$ | 243 |
| 3. $85\overline{)1972}$ | $24\overline{)1524}$ | $18\overline{)175.5}$ | 246 |
| 4. $15\overline{)1176}$ | $52\overline{)335.4}$ | $65\overline{)5499}$ | 246 |
| 5. $92\overline{)5083}$ | $68\overline{)280.5}$ | $325\overline{)2548}$ | 246 |
| 6. $76\overline{)2565}$ | $84\overline{)5943}$ | $175\overline{)1491}$ | 246 |

Multiply the following:

- | | | | | |
|---|--|---|--|-----|
| 7. $\begin{array}{r} 6.15 \\ \times 25 \\ \hline \end{array}$ | $\begin{array}{r} 24.5 \\ \times 3 \\ \hline \end{array}$ | $\begin{array}{r} .006 \\ \times 2 \\ \hline \end{array}$ | $\begin{array}{r} 1.325 \\ \times 4 \\ \hline \end{array}$ | 224 |
| 8. $\begin{array}{r} 8.3 \\ \times 4.1 \\ \hline \end{array}$ | $\begin{array}{r} 2.05 \\ \times .4 \\ \hline \end{array}$ | $\begin{array}{r} 504 \\ \times .021 \\ \hline \end{array}$ | $\begin{array}{r} .73 \\ \times 1.8 \\ \hline \end{array}$ | 227 |

Change these decimals to common fractions:

9. .25 $.66\frac{2}{3}$.6 $.37\frac{1}{2}$.250 220

Change the following fractions to decimals:

10. $\frac{3}{4}$ $\frac{1}{8}$ $\frac{5}{8}$ $\frac{7}{15}$ $\frac{1}{16}$ 245

MAPLE SUGAR



1. A Vermont sugar orchard containing 2780 maple trees produced 8618 lb. of maple sugar. Find the average number of pounds produced per tree.

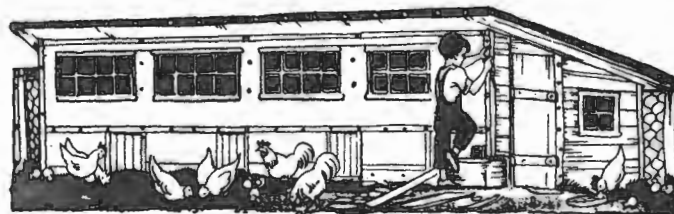
*2. To produce 8618 lb. of sugar, it was necessary to gather and evaporate 215,450 lb. of maple sap. What part of the sap was sugar?

3. It takes 8 lb. of maple sugar to make 1 gal. of maple sirup. How many gallons of sirup can be made from 8618 lb. of sugar?

4. Much of the maple sirup sold is made by mixing pure maple sirup with ordinary sugar. A merchant uses 3 lb. of maple sugar at 15¢ a pound and 5 lb. of white sugar at 5¢ a pound to make a gallon of "maple sirup," which he sold for \$2.45. How much did it cost him per gallon and what was his profit?

5. Another merchant mixed 5 lb. of high-grade maple sugar costing 24¢ a pound with 3 lb. of white sugar costing 5¢ a pound to make a gallon of "maple" sirup, which he sold for \$3.00. How much was his profit?

★HENRY'S CHICKENS



1. Henry wished to build a henhouse large enough for 60 hens. He was told that he should allow 5 sq. ft. of floor space for each hen. Would a house with a floor space $12' \times 20'$ be large enough? a house $12' \times 26'$?

2. Henry read that a henhouse should cost not over \$1.65 per hen housed. Henry paid \$73.20 for his house for 60 hens. How much per hen did his house cost?

3. Henry read also that he should feed each hen an average of 40 lb. of grain and 37.5 lb. of mash per year. If he followed this advice, how many pounds of grain did he buy for his 60 hens in a year and what was its cost at \$1.95 per 100 lb.? How many pounds of mash did he buy and what was its cost at \$2.25 per 100 lb.?

4. Add the expenses for grain and mash (ex. 3) to the \$73.20 paid for the henhouse and find Henry's total expense for the first year.

5. In a year Henry got 8760 eggs. How much did he receive for them if he sold them at an average of 35¢ a dozen? What was his total profit for the year if his total expenses for the year were \$170.63?

6. Might Henry expect his profit for the second year to be more or less than that for the first year? Why?

DIAGNOSTIC TESTS

If you miss exercises in any row, you need more practice.
The Help Pages tell you where to find it.

Add the following and check the work:

$$1. \begin{array}{r} 4\frac{1}{2} \\ \underline{5\frac{5}{8}} \end{array} \quad \begin{array}{r} 9\frac{1}{2} \\ \underline{7\frac{3}{8}} \end{array} \quad \begin{array}{r} 8\frac{3}{4} \\ \underline{8\frac{1}{4}} \end{array} \quad \begin{array}{r} 7\frac{1}{2} \\ \underline{4\frac{1}{2}} \end{array} \quad \begin{array}{r} 2\frac{3}{8} \\ \underline{6\frac{3}{8}} \end{array}$$

$$2. \begin{array}{r} 4\frac{3}{4} \\ \underline{6\frac{1}{2}} \\ \underline{3\frac{3}{8}} \end{array} \quad \begin{array}{r} 7\frac{5}{8} \\ \underline{2\frac{1}{2}} \\ \underline{7\frac{1}{2}} \end{array} \quad \begin{array}{r} 6\frac{1}{2} \\ \underline{1\frac{1}{10}} \\ \underline{9\frac{1}{4}} \end{array} \quad \begin{array}{r} 8\frac{3}{8} \\ \underline{2\frac{1}{2}} \\ \underline{5\frac{1}{2}} \end{array} \quad \begin{array}{r} 3\frac{1}{2} \\ \underline{3\frac{1}{4}} \\ \underline{7\frac{1}{2}} \end{array}$$

Subtract the following and check the work:

$$3. \begin{array}{r} 8\frac{1}{16} \\ \underline{1\frac{7}{8}} \end{array} \quad \begin{array}{r} 7\frac{1}{8} \\ \underline{4\frac{1}{2}} \end{array} \quad \begin{array}{r} 3\frac{7}{8} \\ \underline{2\frac{1}{2}} \end{array} \quad \begin{array}{r} 9 \\ \underline{2\frac{3}{4}} \end{array} \quad \begin{array}{r} 9\frac{3}{8} \\ \underline{8\frac{1}{2}} \end{array}$$

$$4. \begin{array}{r} 7\frac{3}{8} \\ \underline{6\frac{1}{2}} \end{array} \quad \begin{array}{r} 8\frac{1}{2} \\ \underline{4\frac{1}{2}} \end{array} \quad \begin{array}{r} 5\frac{1}{2} \\ \underline{3\frac{1}{2}} \end{array} \quad \begin{array}{r} 9\frac{3}{8} \\ \underline{6\frac{3}{4}} \end{array} \quad \begin{array}{r} 6\frac{3}{4} \\ \underline{3\frac{3}{4}} \end{array}$$

Multiply the following and check the work:

$$5. 18 \times \frac{7}{10} \quad \frac{5}{8} \times \frac{9}{10} \quad \frac{3}{5} \times \frac{5}{8}$$

$$6. \frac{7}{8} \times 10\frac{3}{4} \quad 2\frac{5}{8} \times 6\frac{3}{4} \quad 3\frac{3}{4} \times 1\frac{3}{4}$$

Divide the following and check the work:

$$7. \frac{5}{16} \div \frac{3}{8} \quad \frac{3}{4} \div \frac{3}{8} \quad 1\frac{5}{8} \div \frac{3}{4}$$

$$8. 4\frac{3}{8} \div 8\frac{1}{8} \quad 4\frac{1}{2} \div 1\frac{1}{8} \quad 6\frac{3}{4} \div 1\frac{1}{8}$$

HELP
PAGE

78, 99

78, 99
96, 101

89, 91

101

131

131

18

18

DIAGNOSTIC TESTS

If you miss exercises in any row, you need more practice.
The Help Pages tell you where to find it.

Add the following and check the work:

$$1. \begin{array}{r} 115 \\ 376 \\ 583 \\ 279 \\ 900 \\ 251 \\ 446 \\ 637 \end{array} \quad \begin{array}{r} 314 \\ 257 \\ 434 \\ 218 \\ 606 \\ 225 \\ 492 \\ 552 \end{array} \quad \begin{array}{r} 653 \\ 622 \\ 307 \\ 115 \\ 783 \\ 439 \\ 689 \\ 130 \end{array} \quad \begin{array}{r} 754 \\ 211 \\ 253 \\ 630 \\ 444 \\ 259 \\ 918 \\ 438 \end{array} \quad \begin{array}{r} 117 \\ 202 \\ 131 \\ 302 \\ 186 \\ 947 \\ 878 \\ 153 \end{array}$$

HELP
PAGES

7, 115

Subtract the following and check the work:

$$2. \begin{array}{r} \$501.33 \\ \underline{462.89} \end{array} \quad \begin{array}{r} \$676.14 \\ \underline{198.96} \end{array} \quad \begin{array}{r} \$800.00 \\ \underline{228.46} \end{array}$$

11, 115

Multiply the following and check the work:

$$3. \begin{array}{r} 297 \\ \underline{46} \end{array} \quad \begin{array}{r} 315 \\ \underline{38} \end{array} \quad \begin{array}{r} 9346 \\ \underline{52} \end{array} \quad \begin{array}{r} 2948 \\ \underline{97} \end{array}$$

23, 143

$$4. \begin{array}{r} 782 \\ \underline{825} \end{array} \quad \begin{array}{r} 648 \\ \underline{413} \end{array} \quad \begin{array}{r} 563 \\ \underline{706} \end{array} \quad \begin{array}{r} 307 \\ \underline{490} \end{array}$$

25, 143

Divide the following and check the work:

$$5. \begin{array}{r} 6 \overline{)744} \\ 5 \overline{)827} \\ 8 \overline{)4643} \end{array}$$

32

$$6. \begin{array}{r} 43 \overline{)26316} \\ 88 \overline{)46816} \\ 56 \overline{)17099} \end{array}$$

41

$$7. \begin{array}{r} 521 \overline{)19798} \\ 382 \overline{)36379} \\ 974 \overline{)61362} \end{array}$$

49

MISCELLANEOUS PROBLEMS

1. Frank weighs 84 lb. and Ruth weighs 63 lb. Joe says that Ruth weighs $\frac{2}{3}$ as much as Frank. Is he right? If not, how does Ruth's weight compare with Frank's?

*2. If you weighed 64 lb. a year ago and now weigh 80 lb., how many times as heavy are you now as you were a year ago? Write your answer as a mixed number and also as a mixed decimal with two decimal places.

3. Last year the Athletes played 25 baseball games and won .52 of them. How many games did they win?

4. Mrs. Parks wants to give each of the 30 children at Ida's party $\frac{1}{4}$ lb. of candy. How much will the candy cost at 58¢ a pound?

5. This chart shows how many inches of snow fell each month one winter in four of our cities. Find the total snowfall for each city. How much more snow fell in Albany than in each of the other cities?

	OMAHA	SEATTLE	ALBANY	RALPH
Dec.	0.5	11.2	17.1	0.6
Jan.	7.6	1.0	34.6	0
Feb.	0.7	17.4	9.6	0.1
Mar.	28.8	0.7	5.8	0

6. Each girl in a relay race ran 50 yd. The first girl on the Wilson Team took $8\frac{1}{2}$ sec., the second took $8\frac{7}{10}$ sec., the third took $9\frac{1}{2}$ sec., and the fourth took $8\frac{3}{4}$ sec. In how much more or less than 1 min. did the Wilson Team run the relay?

*7. Mr. Nye drove his car 8 hr. at an average of 28.7 mi. an hour. He used 14 gal. of gasoline. How many miles did his car average per gallon of gasoline?

PROMOTION TEST

If you can do the exercises on this page and on page 256, you are ready for the next grade.

Add the following and check the work:

1. 2.3	2. \$2.11	3. 62.4	4. 2.83	5. 6.125
5.7	.46	2.3	6.	2.500
<u>6.4</u>	<u>3.06</u>	<u>41.7</u>	<u>1.25</u>	<u>3.475</u>

Subtract the following and check the work:

6. 8.3	7. \$4.30	8. 6.25	9. 6.	10. 5.385
<u>2.7</u>	<u>.60</u>	<u>3.</u>	<u>2.35</u>	<u>.435</u>

11. Add these numbers: 4.27, 12.95, .85, and 1.79.

12. Change $5\frac{3}{4}$ to an improper fraction.

13. Change $\frac{20}{8}$ to a mixed number.

14. Reduce the fraction $\frac{3}{5}$ to lowest terms.

15. What part of a yard is 27 in.?

16. How many square feet are there in a garden that is 15 ft. long and 8 ft. wide?

17. Which has the greater volume, a box that is 6 ft. \times $4\frac{1}{2}$ ft. \times 4 ft. or a box that is $8\frac{1}{2}$ ft. \times 6 ft. \times 2 ft.?

Tell what numbers should be put in place of the dots:

- | | |
|--------------------------------------|--------------------------------------|
| 18. 54 in. = . . . yd. | 24. 19 bu. = . . . pk. |
| 19. $2\frac{1}{2}$ yd. = . . . in. | 25. $2\frac{1}{2}$ bu. = . . . qt. |
| 20. 18 ft. = . . . yd. | 26. 300 lb. = . . . cwt. |
| 21. $1\frac{1}{2}$ mi. = . . . ft. | 27. $10\frac{1}{2}$ lb. = . . . oz. |
| 22. $10\frac{1}{2}$ gal. = . . . qt. | 28. $3\frac{1}{4}$ min. = . . . sec. |
| 23. 104 qt. = . . . gal. | 29. $1\frac{3}{4}$ hr. = . . . min. |

PROMOTION TEST

Add. Check by going over the work again:

1. $6\frac{1}{2}$	2. $9\frac{7}{8}$	3. $6\frac{5}{8}$	4. $3\frac{1}{10}$	5. 0
$5\frac{1}{8}$	$2\frac{1}{8}$	$4\frac{3}{8}$	$2\frac{3}{8}$	7
<u>$8\frac{1}{4}$</u>	<u>$4\frac{1}{2}$</u>	<u>$8\frac{1}{4}$</u>	<u>$5\frac{1}{2}$</u>	

Subtract. Check the work by going over it again:

6. $9\frac{1}{2}$	7. $6\frac{1}{10}$	8. $9\frac{3}{4}$	9. $6\frac{3}{4}$	10. 5
$2\frac{3}{8}$	$5\frac{3}{10}$	$7\frac{3}{8}$	$1\frac{1}{4}$	
<u>$8\frac{1}{8}$</u>	<u>$1\frac{4}{10}$</u>	<u>$2\frac{1}{8}$</u>	<u>$5\frac{1}{4}$</u>	

Do the following. Check by going over the work:

11. $\frac{3}{4} \times 20$	17. $\frac{3}{5} \times \frac{5}{8}$	23. $25 \div \frac{5}{8}$	29. $\frac{5}{8} \div \frac{3}{4}$
12. $\frac{5}{8} \times 48$	18. $1\frac{1}{2} \times 41$	24. $18 \div 1\frac{2}{3}$	30. $\frac{9}{10} \div \frac{3}{8}$
13. $\frac{3}{8} \times 28$	19. $1\frac{1}{3} \times 1\frac{1}{2}$	25. $\frac{7}{10} \div 4$	31. $7\frac{1}{2} \div \frac{1}{8}$
14. $84 \times \frac{5}{8}$	20. $2\frac{3}{4} \times 92$	26. $\frac{4}{5} \div 10$	32. $1\frac{7}{8} \div \frac{1}{2}$
15. $16 \times 9\frac{1}{2}$	21. $\frac{5}{18} \times 1\frac{2}{3}$	27. $1\frac{1}{4} \div 5$	33. $1\frac{3}{8} \div 1\frac{1}{2}$
16. $26 \times 7\frac{1}{4}$	22. $7\frac{1}{2} \times 3\frac{1}{8}$	28. $3\frac{3}{4} \div 9$	34. $10 \div 3\frac{1}{2}$

Multiplication and Division of Decimals

In the division problems, express remainders as decimals

1. 6×84.3	10. 6.2×1.4	19. $3234 \div 58$
2. 8×19.5	11. $2.9 \times .03$	20. $1662 \div 24$
3. $4 \times .018$	12. $.27 \times 3.8$	21. $7938 \div 106$
4. 7×2.06	13. $.02 \times 0.4$	22. $53.94 \div 87$
5. 12×8.75	14. $250 \times .007$	23. $332.5 \div 95$
6. $48 \times .362$	15. $.406 \times 999$	24. $304.5 \div 110$
7. $95 \times .008$	16. 45.1×33.6	25. $802.9 \div 124$
8. $.16 \times 541$	17. $507.6 \div 12$	26. $43.384 \div 2$
9. 3.1×705	18. $61.36 \div 13$	27. $63.679 \div 77$



CHAPTER III

GETTING INTO PRACTICE AGAIN

Every fall when the boys begin to play football, they find that they must work hard to get their game into good form because they are "out of practice."

In the same way, if you have not had to add or subtract during the summer, you now find in computing that you, too, are "out of practice." You must get your arithmetic back into good form as soon as possible.

Arithmetic is very useful in everyday life. A business man, for example, has to add and subtract many times a day. Arithmetic doesn't help the business man very much, however, unless he can add and subtract quickly and accurately. It is important, therefore, for you to practice until you can compute faster and more accurately than you could last year.