COMPLETE GRADED ARITHMETIC: SEVENTH GRADE, PP. 549-684

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BY

GEORGE E. ATWOOD

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PREFACE

ALTHOUGH this book is similar in plan and arrangement to those of the series that precede it, the topical feature is a little more pronounced; for when a new subject is presented, more lessons are devoted exclusively to that topic. Following these lessons will be found several review lessons before the next new subject is taken up. Thus the best feature of the topically arranged text is retained, and the necessary frequent reviews are provided for in the arrangement of the work.

A prominent feature of the book, as of the preceding ones, is the abundance of oral exercises, which include questions in all subjects studied. These exercises aim to develop the power to solve many of these questions without the aid of the pencil, and they serve to give a better understanding of the various subjects.

To some extent the book contains a review of topics presented in preceding grades, but it is devoted mainly to the study of percentage and its applications. It is believed that teachers will declare the treatment of percentage most simple and rational. An effort has been made to simplify the subject by ignoring the usual division of it into cases, omitting altogether the unnecessary and meaningless terminology which usually accompanies it, and relating it more definitely to what has already been learned. Pupils are led to see that there are only three types of questions in the subject. In the first type of question they find 6 hundredths of a number as they learned to do in multiplication of decimals. In the second type they find the whole of a number from knowing 6 hundredths of it just as they long ago learned to do in their study

of fractions. In the third type they find what per cent of 820 41 is by dividing 41 by 1 per cent of 820. The use of decimals in percentage is thus reduced to a minimum. In the solution of problems in percentage and its applications emphasis is placed on determining the type of percentage question involved as the most important part of the solution.

In the preparation of this book the author has received valuable assistance from F. E. Spaulding, Supt. of Schools, Newton, Mass.; J. C. Lyford, Principal of Winslow Street School, Worcester, Mass.; Charles L. Van Cleve, Supt. of Schools, Mansfield, Ohio; and W. H. Baker, Instructor of Mathematics, State Normal School, San Jose, Cal., for which he desires to make grateful acknowledgment.

G. E. A.

COMPLETE GRADED ARITHMETIC

SEVENTH GRADE

The phrase, *per cent*, and the symbol, %, mean hundredths. 5% is $\frac{5}{100}$. 15% is $\frac{15}{100}$. 4.8% is $\frac{4.8}{100}$, etc.

Find 18% of 425.	$7\frac{1}{2}$% of 468.	48% of 6500.
4.25 = 1% of 425	4.68 = 1% of 468	65
18	$7\frac{1}{2}$	48
34.00	2.34	520
42.5	32.76	260
76.50 = 18% of 425	35.10 = $7\frac{1}{2}$% of 468	3120

Find 1.8% of 4375.	6.6% of 8750.	108% of 7500.
43.75 = 1% of 4375	87.5 = 1% of 8750	75
$1\frac{4}{5}$	$6\frac{4}{5}$	108
35.00	52.5	600
43.75	525.	75
78.75 = $1\frac{4}{5}$% of 4375	577.5 = $6\frac{4}{5}$% of 8750	8100

1. Find 26 per cent of $950. $4\frac{1}{2}$% of $8760. 4.4 per cent of 2500 men.

2. Find 55% of 980 children. 68% of 1350 bushels. 135% of $1640. 8.5% of $2400. $4\frac{3}{4}$% of $960.

3. A farmer raised 940 bushels of potatoes and sold 85% of them. How many bushels did he have left?

$10\% = \frac{1}{10}$.	$80\% = \frac{4}{5}$.	$16\frac{2}{3}\% = \frac{1}{6}$.	$12\frac{1}{2}\% = \frac{1}{8}$.
$20\% = \frac{1}{5}$.	$25\% = \frac{1}{4}$.	$83\frac{1}{3}\% = \frac{5}{6}$.	$37\frac{1}{2}\% = \frac{3}{8}$.
$40\% = \frac{2}{5}$.	$50\% = \frac{1}{2}$.	$33\frac{1}{3}\% = \frac{1}{3}$.	$62\frac{1}{2}\% = \frac{5}{8}$.
$60\% = \frac{3}{5}$.	$75\% = \frac{3}{4}$.	$66\frac{2}{3}\% = \frac{2}{3}$.	$87\frac{1}{2}\% = \frac{7}{8}$.

25% of 64 is $\frac{1}{4}$ of 64, or 16. $16\frac{2}{3}\%$ of 96 is $\frac{1}{6}$ of 96, or 16. $12\frac{1}{2}\%$ of 56 is $\frac{1}{8}$ of 56, or 7. $33\frac{1}{3}\%$ of 75 is 25.

$\frac{3}{4}\%$ of 6400 = $\frac{3}{4}$ of 64, or 48.

LESSON 1

1. Find 17% of 8600 bushels. 123% of 14,200. $5\frac{1}{8}\%$ of \$729. $\frac{4}{5}\%$ of \$93.75.

2. Find 8% of \$1275. 56% of \$475. $7\frac{1}{2}\%$ of 840 bushels. $14\frac{2}{3}\%$ of 7500 men.

3. Find $16\frac{1}{4}\%$ of 820 miles. 120% of \$1460. 25% of 18,824 pounds. $20\frac{3}{8}\%$ of 2463.

4. There are 540 pupils in a school, 45% of whom are boys. How many girls are there?

5. Find 12% of \$875. 65% of 7400. $18\frac{1}{3}\%$ of 960 sheep. $\frac{3}{4}\%$ of \$25,000. 5.8% of \$875.

6. A farmer raised 1024 bushels of grain, 25% of which was oats and the remainder wheat. How many bushels of each kind of grain did he raise?

7. A man had \$8600 in the bank. He drew out $7\frac{1}{2}\%$ of it at one time and 50% of the remainder at another time. How much did he have remaining in the bank?

8. A man had \$250,000 to invest. He invested 16% of it in railroad bonds, 45% of it in government bonds, and the remainder in real estate. Find each investment.

1. Find 1% of $2345. 1% of $85. $\frac{1}{2}$% of $4800. $\frac{1}{8}$% of $750. $\frac{1}{8}$% of $8800. $\frac{1}{4}$% of $600.

2. Find 9% of $600. 50% of an acre. $16\frac{2}{3}$% of a square foot. 100% of 7. 150% of 4 quarts.

3. A man sold 40% of his flock of four hundred sheep. How many did he have left?

4. Find 8% of 400. 10% of 320 boys. $33\frac{1}{3}$% of 24 books. 75% of 200 sheep. 25% of a square foot.

5. A man raised 1600 bushels of wheat and sold $87\frac{1}{2}$% of it. How many bushels did he keep?

6. If a man receives a salary of $6000 and spends 75% of it, how much does he save in 8 years?

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245 is 7% of what number? $45.36 is 6% of what?

$$\begin{array}{r|l} 7)245.00 & \\ 35.00 & \text{Since 245 is } \frac{7}{100} \text{ of some number, } \frac{1}{100} \text{ of the} \\ 3500 & \text{number is 35, and the whole number is 3500.} \end{array} \qquad \begin{array}{r|l} 6)\$45.36 & \\ 7.56 & \\ \$756 & \end{array}$$

1. 49 is 5% of what number? $180 is 24% of what?

2. 96 is 4% of what number? $225 is 18% of what?

3. A man bought a horse for $162, which was 24% of his money. How much did he have left?

When a number is increased by 15% of itself, the result is 115% of the number. When a number is diminished by 35% of itself, the result is 65% of the number.

4. What number increased by 14% of itself equals 969? By 8%, equals 1944? By 35%, equals 9558?

5. What number diminished by 8% of itself equals 414? By 5%, equals 3857? By 28%, equals $466.56?

LESSON 2

1. Find the number of which 310 is 8%. Of which 143.2 is 16%. Of which 4536 is 108%.

2. What number increased by 8% of itself equals 945? By 35%, equals 2268? By 4%, equals 8580?

3. What number diminished by 14% of itself equals 2924? By $7\frac{3}{8}$%, equals 1662? By 93%, equals 546?

4. A boy spent $1.76, which was $7\frac{1}{8}$% of his money. How much money did he have left?

5. Find the number of which 91.3 is $7\frac{1}{8}$%. Of which 1111 is $13\frac{3}{4}$%. Of which 302 is $\frac{1}{4}$%.

6. What number increased by 8% of itself equals 1377? By $17\frac{1}{2}$%, equals 2350? By 130%, equals 1955?

7. What number diminished by 18% of itself equals 3567? By $\frac{1}{4}$%, equals 2429.91? By .3%, equals 1395.8?

LESSON 3

1. Find the number of which 1378 is $17\frac{3}{8}$%. Of which 22.75 is $2\frac{1}{2}$%. Of which 22,750 is 130%.

2. A lady spent 28% of her money for a cloak that cost $49. How much money did she have left?

3. What number increased by 14% of itself equals 7739.46? By 40%, equals 595.7? By $\frac{5}{8}$%, equals 9982?

4. After a man's salary had been increased 15%, he received $4600. How much was it increased?

5. What number diminished by $13\frac{1}{8}$% of itself equals 8840? By .8%, equals 5084? By $\frac{5}{8}$%, equals 954?

6. A farmer lost 32% of his wheat by fire and had 1649 bushels left. How many bushels did he lose?

7. The number of boys in a school is 255, which is 34% of all the pupils. How many girls are there?