

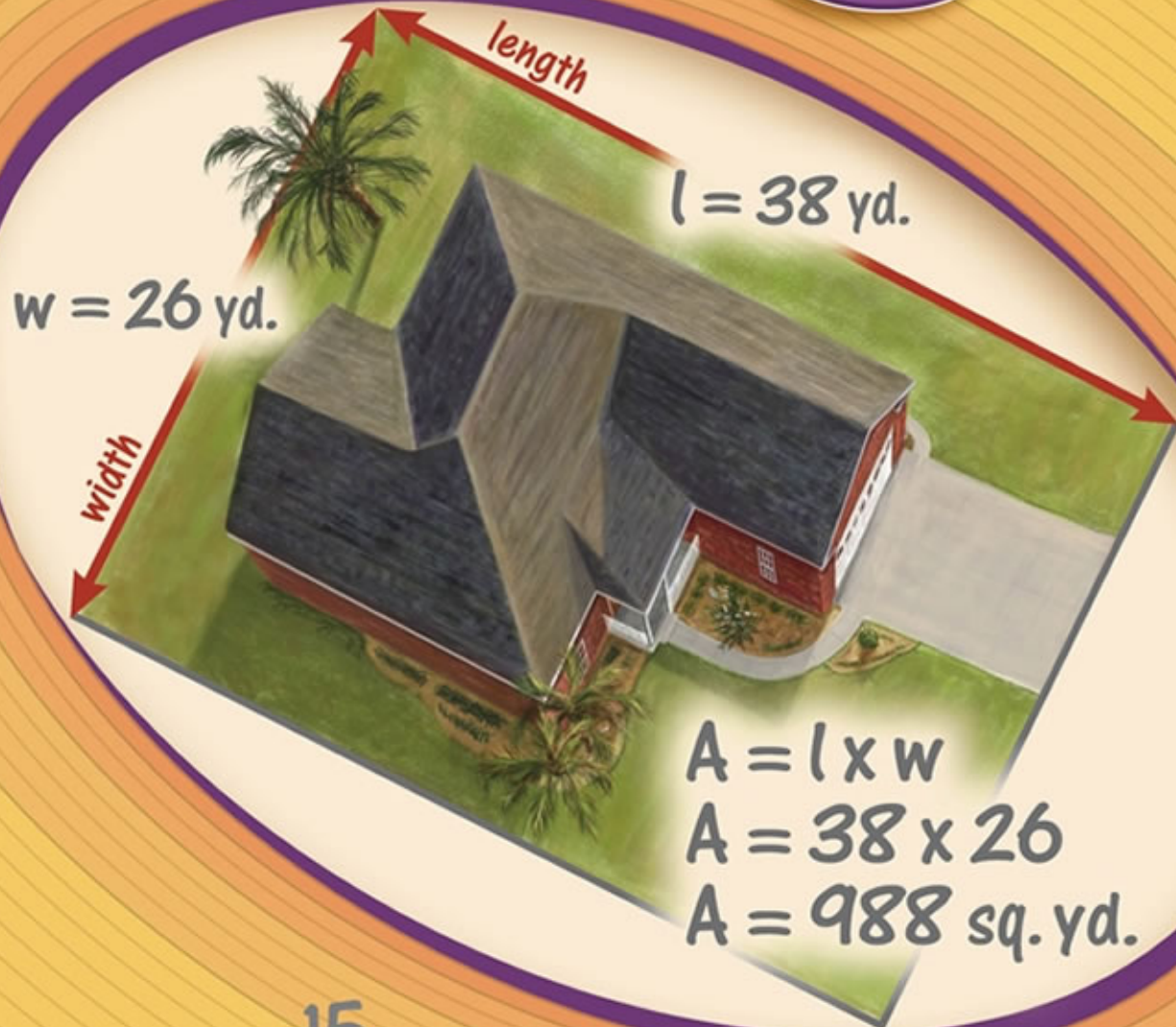
Arithmetic

Work-text

Fourth Edition

5

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$$n - 3 = \frac{15}{5}$$

 **abeka**

Traditional ARITHMETIC SERIES

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Arithmetic 5

Fourth Edition

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About the Text

Arithmetic 5 contains a variety of exercises involving new/review material in each lesson. The workbook includes 169 lessons (excluding tests), Supplementary Exercises, and Homework Exercises. The handbook at the end of the book contains facts, rules, and measures which are given throughout the workbook.

Although all new material is presented at top of a workbook page, the workbook is not designed to be used without a teacher.

Students need to *hear* a thorough explanation of each concept and *see* procedures demonstrated step by step by the teacher.

Arithmetic 5 Curriculum/Lesson Plans, available separately or as part of the Grade 5 Curriculum, and the Teacher Edition provide complete daily plans for teaching, reviewing, and testing. The Teacher Edition also includes solutions to all exercises in the text. *Student Quizzes, Tests, and Speed Drills* is correlated with the work-text.

Learning Objectives

- Recognize place value of numbers through billions.
- Know addition, subtraction, multiplication, and division facts and terminology. Carry in addition and borrow in subtraction. Multiply by one to four digits. Divide by one to three digits. Check/find missing numbers in addition, subtraction, multiplication, and division problems. Use casting out 9s to check answers.
- Solve story problems with one or more steps or with unnecessary information.
- Average numbers.
- Read/write Roman numerals.
- Estimate answers.
- Round off whole numbers, money, decimals, and mixed numbers.
- Use English and metric measures and convert measures within the same system. Solve measurement equations. Convert kilometers to miles and miles to kilometers.
- Know fraction terminology and how to work problems containing fractions. Add/subtract fractions with a common denominator or by having to find a common denominator. Recognize proper/improper fractions. Change mixed numbers to improper fractions/change improper fractions to mixed or whole numbers. Subtract fractions with borrowing. Write a remainder as a fraction. Multiply/divide fractions using cancellation. Round off mixed numbers.
- Factor whole numbers to find the greatest common factor.
- Find the least common multiple shared by two or more numbers.
- Understand the concept of probability.
- Write decimals as fractions. Add, subtract, multiply, or divide decimals. Compare decimals/order them from least to greatest. Rename decimals. Recognize terminating and repeating decimals. Learn common fraction-decimal equivalents. Round off to the tenth, hundredth, and nearest cent.
- Read a thermometer/learn temperature reference points. Understand and use negative temperatures. Convert from the Celsius scale to the Fahrenheit scale and from the Fahrenheit scale to the Celsius scale.
- Make correct change.
- Use the four axioms of algebra to solve equations.
- Read/draw pictographs, bar graphs, and line graphs. Plot points on a line graph.
- Read scale drawings.
- Understand the concept of percent.
- Recognize/draw geometric shapes and figures.
- Understand the concept of perimeter/use formulas to find the perimeter of rectangle and square.
- Understand the concept of area/use formulas to find area of rectangle and square.
- Find squares/square roots.

Arithmetic is...

- ▶ studying one aspect of the order of the real world and indirectly learning more about the God Who created the world using mathematics.
- ▶ learning to see process facts as part of the truth and order that God has built into reality.
- ▶ knowing that there is a right answer.
- ▶ working hard to get the right answer.
- ▶ learning to go from the concrete to the abstract, from the particular to the general, from content to concept.
- ▶ learning to see relationships between one truth and another.
- ▶ learning to be precise and exact in thinking.
- ▶ learning to apply mathematics skillfully in order to function in daily life.
- ▶ learning to believe in absolutes ($2 + 2$ always equals 4).
- ▶ establishing the extremely important skill of learning things by memory.
- ▶ learning to be fast and accurate in thinking.
- ▶ seeing how things work together.
- ▶ being prepared.
- ▶ finishing the job.
- ▶ working at a set pace.
- ▶ participating in healthy competition.
- ▶ learning to be thorough, orderly, careful, alert, obedient, persistent, cooperative, and honest.
- ▶ learning to master a received body of knowledge and apply it as one way to obey the command of Genesis 1:28 to subdue the earth and exercise dominion over it.

Adding Whole Numbers

Facts:

- Arithmetic** is the science of numbers.
- The six basic operations of arithmetic are *notation, numeration, addition, subtraction, multiplication, and division*.
- Notation** is the art of writing numbers. **Numeration** is the art of reading numbers.
- The Arabic numeration system uses base 10. The ten digits are 1, 2, 3, 4, 5, 6, 7, 8, 9, 0. The placement of each digit determines its value.
- Addition** is the process of putting like numbers together.
- The numbers added together are called **addends**, and the answer is the **sum**.
- The order of the addends may be changed without changing the sum ($6 + 3 = 3 + 6$).
- To find the sum, add downward. To check, add upward.

thousands
hundreds
tens
ones
5, 3 2 6

In 5,326, the digit 5 has a value of 5,000. In 6,253, the digit 5 has a value of 50.

156	addend	838	✓
387	addend	156	
+295	addend	387	
838	sum	+295	
		838	

$$\underbrace{84 + 62 + 34}_{\text{addends}} = 180_{\text{sum}}$$

Class Practice

(Green-lettered problems are additional practice.)

1. Write the ten Arabic digits in the blanks.

2. Write the value of each red digit.

a. 3,216

b. 9,487

c. 6,004

d. 7,582

e. 5,419

f. 8,925

g. 2,726

h. 4,973

i. 9,148

j. 7,356

3. Write the correct terms beside each number in a. Work all the problems. (For additional practice, see Supplementary Exercises pp. 307–311.)

a. 23 _____
+47 _____

b. 23 _____
42 _____
+87 _____

c. 49 _____
+58 _____

d. 14 _____
19 _____
+21 _____

e. 95 _____
+72 _____

f. 78 _____
24 _____
+54 _____

g. $75 + 25 + 63 =$ _____

h. $38 + 42 + 15 =$ _____

i. $44 + 53 + 9 =$ _____

4. Add and check.

$$\begin{array}{r} \text{a. } 58 \\ +27 \\ \hline \end{array}$$

$$\begin{array}{r} \text{b. } 68 \\ +39 \\ \hline \end{array}$$

$$\begin{array}{r} \text{c. } 42 \\ +59 \\ \hline \end{array}$$

$$\begin{array}{r} \text{d. } 78 \\ +56 \\ \hline \end{array}$$

$$\begin{array}{r} \text{e. } 91 \\ +29 \\ \hline \end{array}$$

$$\begin{array}{r} \text{f. } 56 \\ +79 \\ \hline \end{array}$$

$$\begin{array}{r} \text{g. } 19 \\ 37 \\ +25 \\ \hline \end{array}$$

$$\begin{array}{r} \text{h. } 76 \\ 58 \\ +29 \\ \hline \end{array}$$

$$\begin{array}{r} \text{i. } 97 \\ 59 \\ +78 \\ \hline \end{array}$$

$$\begin{array}{r} \text{j. } 56 \\ 48 \\ +27 \\ \hline \end{array}$$

$$\begin{array}{r} \text{k. } 88 \\ 28 \\ +14 \\ \hline \end{array}$$

$$\begin{array}{r} \text{l. } 74 \\ 48 \\ +12 \\ \hline \end{array}$$

5. Study the first problem and solve the other two problems. Story problems should be solved neatly on your notebook paper. (For additional practice, see Supplementary Exercises, pp. 344–349.)

- a. The book of Psalms in the Bible contains 150 chapters, and Proverbs contains 31 chapters. How many chapters do *both* books contain?

Setup:
$$\begin{array}{r} 150 \\ + 31 \\ \hline \end{array}$$

$$\begin{array}{r} 181 \\ \hline \end{array}$$
 chapters both books

- c. Miss Wheeler told the class about a trip she took to a Christian camp. On the way to camp, she traveled the side roads but took the interstate highway on her return trip. It took her 538 miles to get to camp and 479 miles to get home. How many miles did she travel in all?

- b. Miss Wheeler has 17 boys and 15 girls in her Sunday school class. How many children are in the class?

Study to show thyself approved unto God, a workman that needeth not to be ashamed, rightly dividing the word of truth. —2 Tim. 2:15

Review**6. Count by fours from 4 to 84.**

<u>4</u>	<u>8</u>	<u>12</u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u>84</u>

7. Add.

$$\begin{array}{r} \text{a. } 27 \\ 83 \\ +96 \\ \hline \end{array}$$

$$\begin{array}{r} \text{b. } 48 \\ 93 \\ +37 \\ \hline \end{array}$$

$$\begin{array}{r} \text{c. } 142 \\ 59 \\ +619 \\ \hline \end{array}$$

$$\begin{array}{r} \text{d. } 307 \\ 452 \\ + 94 \\ \hline \end{array}$$

$$\begin{array}{r} \text{e. } 98 \\ 57 \\ +76 \\ \hline \end{array}$$

$$\begin{array}{r} \text{f. } 237 \\ 658 \\ +483 \\ \hline \end{array}$$

$$\begin{array}{r} \text{g. } 16 \\ 23 \\ +18 \\ \hline \end{array}$$

$$\begin{array}{r} \text{h. } 9 \\ 5 \\ +7 \\ \hline \end{array}$$

$$\begin{array}{r} \text{i. } 27 \\ 15 \\ +93 \\ \hline \end{array}$$

$$\begin{array}{r} \text{j. } 68 \\ 25 \\ +48 \\ \hline \end{array}$$

$$\begin{array}{r} \text{k. } 95 \\ 58 \\ +23 \\ \hline \end{array}$$

$$\begin{array}{r} \text{l. } 804 \\ 932 \\ +687 \\ \hline \end{array}$$

Subtracting Whole Numbers

Facts:

1. **Subtraction** is the mathematical process of taking a like number away.
2. The number being subtracted is the **subtrahend**. The subtrahend is subtracted from the **minuend**. The answer is the **difference**.
3. To check a subtraction problem, add the subtrahend and the difference. The sum should be the minuend.

$$\begin{array}{r}
 132 \text{ minuend} \\
 - 46 \text{ subtrahend} \\
 \hline
 86 \text{ difference} \\
 + 46 \\
 \hline
 132 \checkmark
 \end{array}$$

Borrow 1 ten from 3 tens to get 12 ones. Borrow 1 hundred from 1 hundred to get 12 tens.

$$\begin{array}{ccc}
 15 & - & 9 = 6 \leftarrow \text{difference} \\
 \uparrow & & \uparrow \\
 \text{minuend} & & \text{subtrahend}
 \end{array}$$

Class Practice

1. Write the correct terms beside each number in *a*. Work all the problems.
(For additional practice, see Supplementary Exercises, pp. 312–315.)

a. $\begin{array}{r} 258 \\ -143 \\ \hline \end{array}$	b. $\begin{array}{r} 608 \\ -403 \\ \hline \end{array}$	c. $\begin{array}{r} 973 \\ -162 \\ \hline \end{array}$	d. $\begin{array}{r} 329 \\ -106 \\ \hline \end{array}$	e. $\begin{array}{r} 855 \\ -234 \\ \hline \end{array}$	f. $\begin{array}{r} 797 \\ -625 \\ \hline \end{array}$
---	---	---	---	---	---

2. Subtract. Borrow when necessary.

a. $\begin{array}{r} 34 \\ -16 \\ \hline \end{array}$	b. $\begin{array}{r} 72 \\ -29 \\ \hline \end{array}$	c. $\begin{array}{r} 54 \\ -12 \\ \hline \end{array}$	d. $\begin{array}{r} 342 \\ -139 \\ \hline \end{array}$	e. $\begin{array}{r} 671 \\ -290 \\ \hline \end{array}$	f. $\begin{array}{r} 478 \\ -329 \\ \hline \end{array}$
---	---	---	---	---	---

g. $\begin{array}{r} 65 \\ -27 \\ \hline \end{array}$	h. $\begin{array}{r} 46 \\ -37 \\ \hline \end{array}$	i. $\begin{array}{r} 94 \\ -14 \\ \hline \end{array}$	j. $\begin{array}{r} 601 \\ -180 \\ \hline \end{array}$	k. $\begin{array}{r} 265 \\ -173 \\ \hline \end{array}$	l. $\begin{array}{r} 506 \\ -452 \\ \hline \end{array}$
---	---	---	---	---	---

3. Subtract and check.

a. $\begin{array}{r} 432 \\ -168 \\ \hline \end{array}$	b. $\begin{array}{r} 149 \\ -87 \\ \hline \end{array}$	c. $\begin{array}{r} 326 \\ -188 \\ \hline \end{array}$	d. $\begin{array}{r} 541 \\ -463 \\ \hline \end{array}$	e. $\begin{array}{r} 200 \\ -198 \\ \hline \end{array}$
---	--	---	---	---

4. Solve these story problems.

- a. The Sears Tower in Chicago, Illinois, is 1,454 feet high. The Empire State Building in New York City, New York, is 1,250 feet high. How many feet higher is the Sears Tower than the Empire State Building?

- b. Nathan received a 327-page book about World War II from his Aunt Elizabeth. He has 39 pages left to read. How many pages has he read?



5. Add and check.

a.
$$\begin{array}{r} 328 \\ 416 \\ +902 \\ \hline \end{array}$$

b.
$$\begin{array}{r} 1,387 \\ +6,518 \\ \hline \end{array}$$

c.
$$\begin{array}{r} \$13.95 \\ 67.08 \\ +39.50 \\ \hline \end{array}$$

d.
$$\begin{array}{r} 92,974 \\ 12,326 \\ +8,498 \\ \hline \end{array}$$

e.
$$\begin{array}{r} 88 \\ 19 \\ +7 \\ \hline \end{array}$$

Review

6. Write the value of each red digit.

a. 9,30⁷

b. 6,⁴82

c. ⁴,915

d. 3,61²

e. 8,7⁶4

f. 2,9⁴4

g. ¹,095

h. 7,5²4

i. 5,8²3

j. ⁶,400

7. Write the answers.

a.
$$\begin{array}{r} 936 \\ 255 \\ +849 \\ \hline \end{array}$$

b.
$$\begin{array}{r} 3,306 \\ -1,917 \\ \hline \end{array}$$

c.
$$\begin{array}{r} 2,396 \\ -1,409 \\ \hline \end{array}$$

d.
$$\begin{array}{r} \$9.86 \\ 7.29 \\ +9.55 \\ \hline \end{array}$$

e.
$$\begin{array}{r} 301 \\ -169 \\ \hline \end{array}$$

8. Write the missing numbers.

a. $16 - \underline{\quad} = 7$

b. $5 + \underline{\quad} = 14$

c. $\underline{\quad} - 9 = 9$

d. $\underline{\quad} + 9 = 34$

e. $73 - \underline{\quad} = 28$

f. $\underline{\quad} - 15 = 45$

g. $100 - 16 = \underline{\quad}$

h. $87 + 25 = \underline{\quad}$

i. $72 - \underline{\quad} = 19$

j. $35 + \underline{\quad} = 52$

k. $\underline{\quad} - 31 = 18$

l. $\underline{\quad} + 49 = 68$

Multiplying Whole Numbers

Facts:

- Multiplication** is a quick way to put equal numbers together.
- The numbers being multiplied are the **factors**. Sometimes the factors are called the multiplicand and the multiplier. The answer is the **product**. The order of the factors may be changed without changing the product ($6 \times 3 = 3 \times 6$).
- If the multiplier has two non-zero digits, the problem will have two **partial products**.

$$\begin{array}{r}
 27 \text{ factor (multiplicand)} \\
 \times 51 \text{ factor (multiplier)} \\
 \hline
 27 \text{ partial product} \\
 + 135 \text{ partial product} \\
 \hline
 1,377 \text{ product}
 \end{array}$$

Class Practice

1. Write the correct terms beside each number in *a* and *k*. Work all the problems. (For additional practice, see Supplementary Exercises, pp. 316–318.)

a. $\begin{array}{r} 324 \\ \times 6 \\ \hline \end{array}$	b. $\begin{array}{r} 582 \\ \times 5 \\ \hline \end{array}$	c. $\begin{array}{r} 694 \\ \times 4 \\ \hline \end{array}$	d. $\begin{array}{r} 749 \\ \times 6 \\ \hline \end{array}$	e. $\begin{array}{r} 832 \\ \times 5 \\ \hline \end{array}$
---	---	---	---	---

f. $\begin{array}{r} 2,329 \\ \times 4 \\ \hline \end{array}$	g. $\begin{array}{r} 6,058 \\ \times 5 \\ \hline \end{array}$	h. $\begin{array}{r} 9,485 \\ \times 3 \\ \hline \end{array}$	i. $\begin{array}{r} 6,599 \\ \times 6 \\ \hline \end{array}$	j. $\begin{array}{r} 2,947 \\ \times 4 \\ \hline \end{array}$
---	---	---	---	---

k. $\begin{array}{r} 432 \\ \times 45 \\ \hline \end{array}$	l. $\begin{array}{r} 578 \\ \times 23 \\ \hline \end{array}$	m. $\begin{array}{r} 653 \\ \times 52 \\ \hline \end{array}$	n. $\begin{array}{r} 973 \\ \times 44 \\ \hline \end{array}$	o. $\begin{array}{r} 831 \\ \times 63 \\ \hline \end{array}$
--	--	--	--	--

p. $\begin{array}{r} 3,206 \\ \times 52 \\ \hline \end{array}$	q. $\begin{array}{r} 5,325 \\ \times 46 \\ \hline \end{array}$	r. $\begin{array}{r} 9,425 \\ \times 53 \\ \hline \end{array}$	s. $\begin{array}{r} 4,752 \\ \times 16 \\ \hline \end{array}$	t. $\begin{array}{r} 3,724 \\ \times 37 \\ \hline \end{array}$
--	--	--	--	--