A Tutor™ for CASAS GOALS 2 Student Edition

Aztec Paxen Publishing

Level B

Math

Sampler

Steck-Vaughn Adult Education

- Aligned to CASAS Math GOALS 2 and CCRS
- Pretest to identify strengths and weaknesses
- Step-by-step instruction and targeted practice to boost CASAS Math GOALS 2 scores
- Full-length practice test to build learners' confidence

Aztec Paxen Publishing

Math

A Tutor™ for CASAS GOALS 2 Student Edition

Level B

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ISBN: 979-8-89141-060-2

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Printed in the U.S.A.

334 PX2040 34 33 32 31 30 29 28 27 26 25

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About CASAS Math GOALS 2

CASAS stands for the Comprehensive Adult Student Assessment Systems. *GOALS* stands for Greater Opportunities for Adult Learning Success. The CASAS Math GOALS 2 tests are available in paper-and-pencil formats and online formats. CASAS Math GOALS 2 tests align with the CASAS Competencies and the Adult Education College and Career Readiness Standards (AE-CCR). The CASAS Math GOALS 2 tests measure progress on the basic skills that adults need to succeed on the job and in life.

There are five levels for the CASAS Math GOALS 2:

CASAS Math GOALS 2 Levels A, B, C, D, E

Test	Number of Items (approximate)	Maximum Allowable Testing Time
Math GOALS 2 Level A	33	50 minutes
Math GOALS 2 Level B	36	65 minutes
Math GOALS 2 Level C	36	75 minutes
Math GOALS 2 Level D	36	75 minutes
Math GOALS 2 Level E	36	90 minutes

These tests measure basic adult math skills and the ability to make calculations and solve word problems that relate to real-world situations and traditional academic contexts. The CASAS Math GOALS 2 test includes multiple-choice items with four answer options. Basic calculators are allowed. Formulas are provided.

The math tests include items from the following domains.

CASAS Math GOALS 2 Content Areas	Covered Domains				
	A	B	C	D	E
Number Sense and Operations	✦	✦	✦	✦	✦
Algebraic Thinking	✦	✦	✦	✦	✦
Geometry	✦	✦	✦	✦	✦
Measurement	✦	✦	✦		
Data Analysis	✦	✦	✦		✦
Statistics		✦	✦	✦	✦
Probability			✦	✦	✦

Using *A Tutor™ for CASAS Math GOALS 2 Student Edition*

Step-by-Step Instruction

Each lesson starts with step-by-step instruction on a math concept or skill. The instruction contains examples and guided practice items with feedback. This instruction is followed by independent practice items. All items are aligned to a College and Career Readiness Standard and a CASAS Competency. Math items address real-life scenarios, workplace topics, and academic contexts. Work all of the items in the lesson's practice and then check your work in the Answers and Explanations section in the back of the book.

Pretest

Begin by taking the pretest on pages 1–5. Use the Pretest Analysis Chart starting on page 243 to identify your areas of strength and the areas you need to review. The chart will refer you to specific lessons in this book for further study.

Unit Reviews

Unit reviews give you a chance to check your understanding and determine if you have mastered the skills taught in each unit. Use the corresponding Unit Review Analysis Charts on pages 245–261 to identify strengths and weaknesses. These charts will help you determine if you need to review any of the lessons before continuing to the next unit.

Strategies and Hints

Pay careful attention to the Strategies and Hints throughout this book. Strategies are test-taking tips that help you do better on the test. Hints give you extra information about a skill.

Practice Test

At the end of the book, there is a full-length practice test. This test is similar to the CASAS Math GOALS 2 test. It has the same number and type of questions. This assessment will give you an idea of what the real test is like. Use the Practice Test Analysis Chart on page 263 to identify areas you need to review.

Answers and Explanations

The answer key includes explanations for the correct answers to all practice items. After completing a lesson or unit review, check your answers on pages 207–243. For each item answered incorrectly, read the provided explanation and try reworking the item to obtain the correct answer. Please remember, there may be more than one way to solve a math problem. The explanations show one method of solving a problem. You may have used a different method than the one provided to correctly answer the question.

Additional Practice with *A Tutor™ for CASAS Math GOALS 2: Workbooks*

A Tutor™ for CASAS Math GOALS 2: Student Editions are designed to be used hand-in-hand with *A Tutor™ for CASAS Math GOALS 2: Workbooks,* which include practice sets for each lesson in the student editions. Each practice set provides additional items similar to those found on the CASAS Math GOALS 2 test.

- Use the practice sets after completing the corresponding student edition lesson if you feel you need additional practice.
- Use the practice sets after completing the unit reviews or Practice Test in the student edition for areas that need review and improvement.

Test-Taking Tips

- Read the directions very carefully.
- Read each question carefully. Make sure you know what you have to do.
- Read all of the answer options carefully, even if you think you know the answer.
- Answer all of the questions. If you cannot find the right answer, rule out the answers that you know are wrong. Then try to figure out the right answer. If you still do not know, make your best guess.
- Do not change an answer unless you are sure your first answer is wrong. Usually, your first idea is the correct answer.
- If you get nervous, stop and take a few breaths. Then start working again.

Lesson 1 Multi-Digit Whole Number Place Value

4.NBT.2

In base-ten numerals, each digit's place in a number represents a power of 10. The position of a digit in a number tells how much it is worth. This is called its place value. When a number is written in **expanded form**, the place value of each digit is expressed. For example, the number 517,423 in expanded form is 500,000 + 10,000 + 7,000 + 400 + 20 + 3.

100,000s	10,000s	1,000s	,	100s	10s	1s
5	1	7	,	4	2	3

Example **Janice is given the number 293,176. She needs to write the number in expanded form and tell the value of the digit 9.**

100,000s	10,000s	1,000s	,	100s	10s	1s
2	9	3	,	1	7	6

1) Use the place value to write the expanded form.
200,000 + 90,000 + 3,000 + 100 + 70 + 6

2) Identify the value of the digit 9 in the number 293,176.
The value of the 9 is 90,000.

Writing numbers using words involves converting numerical digits into their corresponding word forms. Here are tips to remember when writing numbers in **word form**:

- For numbers 21 to 99, hyphenate the tens and ones places. For example, 36 is thirty-six.
- For numbers with four or more digits, use commas after each magnitude word (such as *thousand* or *million*). For example, the number 74,623 in word form is seventy-four thousand, six hundred twenty-three.

Example **Write the following number using words: 153,678.**

1) Identify each digit's place value.

hundred thousands	ten thousands	thousands	,	hundreds	tens	ones
1	5	3	,	6	7	8

one hundred fifty-three thousand | six hundred seventy-eight

2) Group the digits, using the comma as a separation point.
153 (hundred thousands, ten thousands, and thousands) is to the left of the comma.
678 (hundreds, tens, and ones) is to the right of the comma.

3) Write the words for each group, followed by their magnitude word, if necessary.
one hundred fifty-three thousand, six hundred seventy-eight.

Guided Practice

What number does this expanded form represent?

60,000 + 1,000 + 200 + 50 + 3

A. 60,125 **B.** 60,153

C. 61,253 **D.** 61,523

Option C is correct. A place-value chart can be used.

ten thousands	thousands	,	hundreds	tens	ones
6	1	,	2	5	3

Or write the number as the sum of the values of each place:

60,000 + 1,000 + 200 + 50 + 3 = 61,253

Practice

Read each question. Select the correct answer.

1 What is the following number in word form?

89,325

A. eighty-nine thousand, three hundred twenty-five

B. eight ten thousand and nine, three hundred and twenty-five

C. eight ten-thousands, nine thousands, three hundreds, two tens, and five ones.

D. eighty-nine hundred thousands, three hundred twenty-five

2 What is the place value of each digit in the number 4,789?

A. 4 has a value of 400,000. 7 has a value of 7,000. 8 has a value of 800. 9 has a value of 90.

B. 4 has a value of 40,000. 7 has a value of 7,000. 8 has a value of 80. 9 has a value of 9.

C. 4 has a value of 4,000. 7 has a value of 700. 8 has a value of 80. 9 has a value of 9.

D. 4 has a value of 40,000. 7 has a value of 700. 8 has a value of 80. 9 has a value of 9.

3 What number does the following expanded form represent?

50,000 + 2,000 + 300 + 60 + 4

A. 52,634

B. 52,364

C. 52,234

D. 52,064

4 Lacey has earned 126,975 points on her airline travel card. What place value does the 2 have in the number of points Lacey earned?

A. 2 thousands (2,000)

B. 2 ones (2)

C. 2 hundred thousands (200,000)

D. 2 ten thousands (20,000)

5 What is the following number in expanded form?

395,248

A. 30,000 + 9,000 + 500 + 20 + 40 + 8

B. 300 + 90 + 5 + 200 + 40 + 8

C. 3,000 + 900,000 + 500 + 400 + 80

D. 300,000 + 90,000 + 5,000 + 200 + 40 + 8

Lesson 12 Decimals and Fractions

4.NF.6

Decimals are numbers that use a decimal point to represent parts of a whole. The number to the left of the decimal point is the whole number part. The number to the right of the decimal point shows the fractional part.

Fractions represent parts of a whole using a top number called the numerator and a bottom number called the denominator. The numerator represents how many parts are being considered. The denominator represents the total number of equal parts.

Decimals and fractions are two different ways to show the same value. For example, 0.5 is the same as $\frac{5}{10}$.

When the decimal ends in the tenths place, the denominator of the fraction is 10.

$$0.3 = \frac{3}{10}$$

1 or ones	.	$\frac{1}{10}$ or tenths
0	.	3

When the decimal ends in the hundredths place, the denominator of the fraction is 100.

$$0.25 = \frac{25}{100}$$

1 or ones	.	$\frac{1}{10}$ or tenths	$\frac{1}{100}$ or hundredths
0	.	2	5

Example **What is 0.45 written as a fraction?**

1) Identify the place value. Because the decimal ends in the hundredths place, the denominator of the fraction is 100.

2) Identify the numerator. The numerator is the number to the right of the decimal point. The numerator of the fraction is 45.

3) Write the denominator as 100 and the numerator as 45: $\frac{45}{100}$.

$0.45 = \frac{45}{100}$

Example **The length of a ribbon is 0.7 meter. What is the length of the ribbon written as a fraction?**

1) Identify the place value. Because the decimal ends in the tenths place, the denominator of the fraction is 10.

2) Identify the numerator. The numerator is the number to the right of the decimal point. The numerator of the fraction is 7.

3) Write the denominator as 10 and the numerator as 7: $\frac{7}{10}$.

$0.7 = \frac{7}{10}$

Guided Practice

What is 0.4 as a fraction?

A. $\frac{40}{10}$

B. $\frac{0.4}{10}$

C. $\frac{4}{10}$

D. $\frac{4}{100}$

Option C is correct. Because the decimal ends in the tenths place, the denominator of the fraction is 10. The numerator is the number to the right of the decimal point, so the numerator of the fraction is 4. $0.4 = \frac{4}{10}$.

Practice

Read each question. Select the correct answer.

1 What is 0.3 written as a fraction?

A. $\frac{3}{10}$

B. $\frac{0.3}{10}$

C. $\frac{3}{100}$

D. $\frac{3}{5}$

2 What is 0.75 written as a fraction?

A. $\frac{75}{10}$

B. $\frac{7.5}{10}$

C. $\frac{75}{100}$

D. $\frac{7}{5}$

3 Maria buys 0.08 kilograms of spices. What fraction describes the number of kilograms of spices Maria buys?

A. $\frac{100}{8}$

B. $\frac{80}{10}$

C. $\frac{8}{10}$

D. $\frac{8}{100}$

4 How is 0.06 written as a fraction?

A. $\frac{6}{10}$

B. $\frac{60}{10}$

C. $\frac{6}{100}$

D. $\frac{0.6}{10}$

5 A recipe calls for 0.50 liter of milk. What fraction describes the number of liters of milk?

A. $\frac{0.5}{10}$

B. $\frac{50}{10}$

C. $\frac{5}{100}$

D. $\frac{50}{100}$

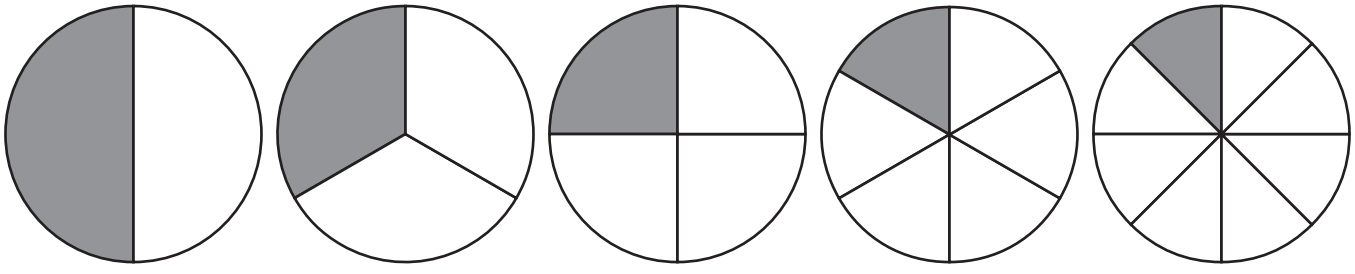
Lesson 19 Represent Unit Fractions

3.NF.1

A **fraction** is a number that names part of a whole or part of a group.

$\frac{1}{4}$ ← **numerator** (the top number) shows the number of equal parts counted.
$\frac{1}{4}$ ← **denominator** (the bottom number) shows the total number of equal parts in the whole.

Some common benchmark fractions include the following:



$\frac{1}{2}$	$\frac{1}{3}$	$\frac{1}{4}$	$\frac{1}{6}$	$\frac{1}{8}$
one-half	**one-third**	**one-fourth**	**one-sixth**	**one-eighth**
half, halves	**thirds**	**fourths**	**sixths**	**eighths**

The denominator tells how many equal-sized pieces the whole is broken into. As the number of equal-sized pieces in the whole increases, the size of each piece decreases.

Examples

What fraction names the shaded part?

1) Count the number of equal parts.
There are 3 equal parts.

2) Count the parts that are shaded.
One part is shaded.

3) Name the fraction that shows the shaded part.
The shaded part is $\frac{1}{3}$ of the whole.

What fraction names the part that is *not* shaded?

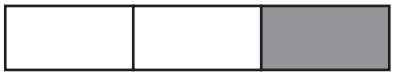
1) Count the number of equal parts.
There are 3 equal parts.

2) Count the parts that are not shaded.
Two parts are not shaded.

3) Name the fraction that shows the part that is not shaded.
The part that is not shaded is $\frac{2}{3}$ of the whole.

Guided Practice

Which model shows $\frac{1}{4}$?

A. 

B.

C.

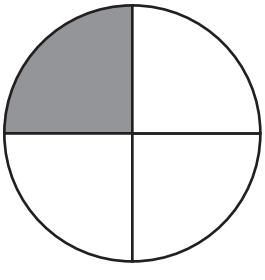
D.

Option B is correct. There are 4 equal parts in the shape. One of four equal parts is shaded. The fraction is $\frac{1}{4}$.

Practice

Read each question. Select the correct answer.

1 What fraction names the shaded part?



A. $\frac{3}{4}$ B. $\frac{1}{2}$

C. $\frac{1}{3}$ D. $\frac{1}{4}$

2 A shape is divided into 3 equal parts. The shape has been divided into which of the following?

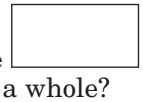
A. halves B. thirds

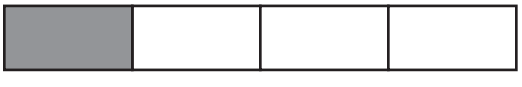
C. fourths D. sixths

3 How many halves make a whole?

A. 2 B. 3

C. 4 D. 6

4 How many more  need to be shaded to make a whole?



A. 4 B. 3

C. 2 D. 1

5 Nate cut a piece of wood into 4 equal pieces. What fraction word names 1 piece?

A. one-half B. one-fourth

C. one-sixth D. one-third

6 What fraction names the part that is *not* shaded?

A. $\frac{1}{2}$ B. $\frac{2}{4}$

C. $\frac{1}{3}$ D. $\frac{2}{3}$

Lesson 29 Add and Subtract Fractions with the Same Denominator

4.NF.3, 4.NF.3.a, 4.NF.3.b, 4.NF.3.d

When you add or subtract fractions with common denominators, you are working with parts of a whole.

When fractions have the same denominator, add or subtract the numerators and use the same denominator.

There are different methods you can use to add and subtract fractions, such as bar models and number lines.

Example **Add.**

$$\frac{1}{4} + \frac{1}{4} + \frac{1}{4}$$

Use a Bar Model

1) Look at the bar models divided into fourths. The bar model is divided into four equal parts. Three of the parts are shaded.

2) The bottom number of a fraction, called the *denominator,* is the number of equal parts in the whole. In this case, the denominator is 4 because the whole is divided into four equal parts. Add the top numbers of the fractions. These are called the *numerators.*

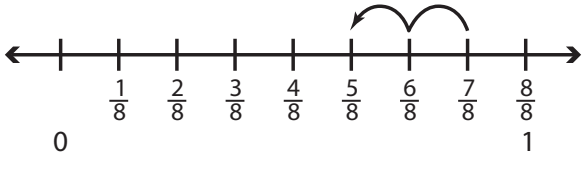
$$\frac{1}{4} + \frac{1}{4} + \frac{1}{4} = \frac{3}{4}$$

Example **Subtract.**

$$\frac{7}{8} - \frac{2}{8}$$

Use a Number Line

1) Draw a number line for 0 to 1. Divide the number line into 8 equal parts. Then, label the eighths.



2) Starting at $\frac{7}{8}$, count back two eighths to subtract $\frac{2}{8}$.

$$\frac{7}{8} - \frac{2}{8} = \frac{5}{8}$$

Guided Practice

What is $\frac{4}{6} + \frac{2}{6}$?

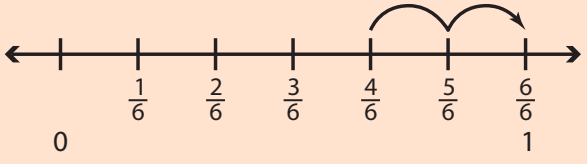
A. $\frac{2}{6}$

B. $\frac{6}{6}$

C. $\frac{6}{12}$

D. 6

Option B is correct. Use a number line. Starting at $\frac{4}{6}$ count up two-sixths.



Strategy

Draw a bar model or a number line to get a quick picture of the problem.

Practice

Read each question. Select the correct answer.

1 What is $\frac{1}{4} + \frac{2}{4}$?

A. $\frac{3}{4}$

B. $\frac{3}{8}$

C. 3

D. 4

2 Which expression is equal to $\frac{4}{5}$?

A. $\frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4}$

B. $4 + 4 + 4 + 4 + 4$

C. $\frac{1}{5} + \frac{1}{5} + \frac{1}{5} + \frac{1}{5}$

D. $5 + 5 + 5 + 5$

3 What is $\frac{6}{8} - \frac{3}{8}$?

A. $\frac{2}{8}$

B. $\frac{3}{8}$

C. $\frac{9}{8}$

D. $\frac{9}{16}$

4 Which expression is equal to $\frac{9}{12}$?

A. $\frac{1}{12} + \frac{1}{12} + \frac{1}{12}$

B. $\frac{1}{9} + \frac{1}{12}$

C. $\frac{6}{9} + \frac{6}{9}$

D. $\frac{3}{12} + \frac{6}{12}$

5 Trey doubles a recipe that requires $\frac{2}{3}$ cup of sugar. How much sugar does Trey need?

A. $\frac{4}{3}$ cup

B. $\frac{6}{3}$ cups

C. $\frac{8}{3}$ cups

D. $\frac{9}{3}$ cups

6 Jen wants to run $\frac{9}{10}$ mile. She has already run $\frac{3}{10}$ mile. How much farther does Jen need to run?

A. $\frac{1}{10}$ mile

B. $\frac{3}{10}$ mile

C. $\frac{6}{10}$ mile

D. $\frac{9}{10}$ mile

7 Sophia needs $\frac{1}{4}$ yard of fabric to make 1 square of a quilt. How much fabric will she need to make 4 squares?

A. $\frac{1}{4}$ yard

B. $\frac{2}{8}$ yard

C. $\frac{2}{4}$ yard

D. $\frac{4}{4}$ yard

8 Tom cut a pizza into 8 equal pieces. He ate 1 piece for lunch and 2 more pieces for dinner. How much of the pizza is left?

A. $\frac{3}{8}$

B. $\frac{5}{8}$

C. $\frac{1}{2}$

D. $\frac{8}{8}$

Lesson 43 Evaluate Expressions with Grouping Symbols

5.OA.1

The order of operations is the agreed-upon order in which operations are carried out when evaluating mathematical expressions. The order is this:

P—parentheses
E—exponents

M—multiplication	and	**D**—division	from left to right
A—addition	and	**S**—subtraction	from left to right

First, simplify within parentheses (or other grouping symbols), then exponents, then multiplication and division in order from left to right, and then addition and subtraction in order from left to right.

Examples Simplify each expression.

$12 \times 4 \div 6$

1) This expression contains only multiplication and division, so complete each operation in order from left to right.

$12 \times 4 = 48$
$48 \div 6 = 8$

So, $12 \times 4 \div 6 = 8$.

$3(5 + 2) \times 2(6 \div 2) - 4$

1) Complete the operations within the parentheses first. So, the expression becomes

$3(7) \times 2(3) - 4$

2) Complete the multiplication next.

$3 \times 7 = 21$
$21 \times 2 = 42$
$42 \times 3 = 126$
$126 - 4$

3) Complete the subtraction last.

$126 - 4 = 122$

So, $3(5 + 2) \times 2(6 \div 2) - 4 = 122$.

Guided Practice

What is the value of the expression?
$9 - 4 + 5$

A. 0 **B.** 5
C. 10 **D.** 18

Option C is correct. Complete the addition and subtraction in order from left to right.

$9 - 4 = 5$

$5 + 5 = 10$

Strategy

If PEMDAS is difficult to remember, use the letters in an expression that you can remember easily. Many people use the expression "**P**lease **E**xcuse **M**y **D**ear **A**unt **S**ally."

Practice

Read each question. Select the correct answer.

1 What is the value of the expression?

$17 \times 8 + 14 \div 2$

A. 41 **B.** 75

C. 143 **D.** 187

2 What is the value of the expression?

$(8 \div 2) \times (16 - 5)$

A. 22 **B.** 36

C. 44 **D.** 59

3 What is the value of the expression?

$(96 - 32) \div 4$

A. 16 **B.** 18

C. 24 **D.** 88

4 What is the value of the expression?

$(100 + 50) \div 6 \times 2$

A. 25 **B.** 45

C. 50 **D.** 100

Use the information to answer questions 5 and 6.

Josh bought 2 hamburgers for $4.25 each and 2 orders of onion rings for $2.35 each. He also bought 2 medium drinks for $1.50 each.

5 Which expression represents the situation?

A. $\$4.25 + \$2.35 + \$1.50$

B. $(2 \times \$4.25) + (2 \times \$2.35) + (2 \times \$1.50)$

C. $4 \times (\$4.25 + \$2.35) + \$1.50$

D. $2 \times \$4.25 + 2 \times \$2.35 + \$1.50$

6 How much did Josh spend all together?

A. $8.10 **B.** $12.35

C. $16.20 **D.** $27.90

---

7 According to the order of operations, which operation is completed first?

A. multiplication and division

B. addition and subtraction

C. exponents

D. simplify within parentheses

Use the information to answer questions 8 and 9.

Joan worked 40 hours this week and was paid $15.00 per hour. Her expenses for the week included a phone bill ($42), groceries ($120), a tank of gas ($35.52), and an oil change ($21.50). On Friday, she bought 2 small pizzas ($8.75 each).

8 Which expression represents the situation?

A. $(40 \times 15) - 42 - 120 - 35.52 - 21.50 - (2 \times 8.75)$

B. $(40 \times 15) + 42 + 120 + 35.52 + 21.50 + 8.75$

C. $(40 \times 15) - 42 - 120 - 35.52 - 21.50 + (2 \times 8.75)$

D. $40 \times 15 + 42 + 120 + 35.52 - (21.50 + 2 \times 8.75)$

9 How much money does Joan have left?

A. $536.52 **B.** $827.77

C. $372.23 **D.** $363.48

Use the information to answer questions 10 and 11.

Lynda makes jewelry that she sells in a local gift shop. She usually pays $3.25 per foot for copper wire. Last week, the wire was on sale for $2.44 per foot. Lynda bought 50 feet of wire.

10 Which expression represents how much money Lynda saved in total?

A. $\$2.44 \times 50 - \$3.25$

B. $\$3.25 \times 50 - \$2.44$

C. $(\$3.25 - \$2.44) \times 50$

D. $\$2.44 \times 50$

11 How much money did Lynda save in total?

A. $40.50 **B.** $81

C. $122 **D.** $160.06

Unit 6 Algebraic Thinking: Algebraic Expressions, Equations, and Graphs

Lesson 54 Write Expressions

6.EE.2, 6.EE.2.a, 6.EE.2.b

You can translate verbal or written words into mathematical expressions. Translating words into an expression helps you to visualize and understand the math. For example, "five subtracted from x" can be written as "$x - 5$." The letter x in the expression represents an unknown quantity. A letter that represents an unknown quantity is called a *variable*. A mathematical expression that includes a variable is an algebraic expression.

Example **Write "the sum of eight and an unknown quantity" as an algebraic expression.**

1) Identify all of the numbers and operations in the written expression. The numbers are 8 and an "unknown" quantity that can be called x. The single operation is represented by the word "sum," which indicates addition.

2) Translate the words into an algebraic expression: $8 + x$.

Here are some other mathematical terms you can use to identify the parts of an algebraic expression.

Term	Definition	Example
term	a single number or variable in an expression or equation	$6x$, 5, and 23 are the **terms** in $6x + 5 = 23$.
coefficient	a number multiplied by a variable	6 is the **coefficient** in the expression $6x$.
sum	the result of an addition problem	10 is the **sum** of $5 + 5$.
difference	the result of a subtraction problem	3 is the **difference** of $7 - 4$.
product	the result of a multiplication problem	42 is the **product** of 6×7.
factor	the terms in a multiplication problem	6 and 7 are the **factors** in $6 \times 7 = 42$.
quotient	the result of a division problem	9 is the **quotient** of $72 \div 8$.

Example **Identify the parts of the algebraic expression $6z(3 + 5)$, using the mathematical terms *sum, term, product, factor, coefficient,* and *variable*.**

1) Translate the expression into words: Six times an unknown quantity, z, multiplied by the sum of three and five.

2) Describe the expression using mathematical terms. The expression $6z(3 + 5)$ is the product of two factors. One factor is $6z$, which is itself the product of two factors (coefficient 6 and variable z). The second factor is $(3 + 5)$, which is the sum of the terms 3 and 5.

Guided Practice

Which algebraic expression can be translated as *the quotient of an unknown quantity and 14*?

A. $t - 14$ **C.** $t \times 14$

B. $t + 14$ **D.** $t \div 14$

Option D is correct. A quotient is the result of dividing. The symbol ÷ means "divided by."

Hint

You can use any letter in the alphabet as a variable.

Practice

Read each question. Select the correct answer.

1 Which algebraic expression *cannot* be translated as *three times a distance d*?

A. $3d$ **B.** $3 + d$

C. $3 \times d$ **D.** $3 \cdot d$

2 How can the algebraic expression $6(s + 7)$ be written in words?

A. six times an unknown quantity plus seven

B. six plus an unknown quantity plus seven

C. six times the sum of an unknown quantity and seven

D. six divided by an unknown quantity and seven

3 Which algebraic expression can be read as *two less than the product of five and an unknown quantity*?

A. $2 - 5x$

B. $5x - 2$

C. $5 - 2 + x$

D. $2 - 5 + x$

4 Which number is a coefficient in the algebraic expression $\frac{9(12b + 1)}{15}$?

A. 1 **B.** 9

C. 12 **D.** 15

5 Which expression means *four times the difference between an unknown quantity and seven*?

A. $4r - 7$ **B.** $4(7 - r)$

C. $4(r - 7)$ **D.** $4 \times r - 7$

6 Rajesh spends \$55.16 on g gallons of gasoline. Which algebraic expression represents the cost of a gallon of gas?

A. $55.16 - g$ **B.** $\frac{55.16}{g}$

C. $55.16 + g$ **D.** $\frac{g}{55.16}$

7 The length of a rectangle is three feet less than twice its width. Which algebraic expression represents the length of the rectangle?

A. $2w - 3$ **B.** $3 - 2w$

C. $2(w - 3)$ **D.** $(3 - 2)w$

8 Bagels at a local bakery cost \$0.75 each. Which algebraic expression represents the cost of d bagels?

A. $\frac{0.75}{d}$ **B.** $0.75d$

C. $\frac{d}{0.75}$ **D.** $0.75 + d$

9 Elena rents a car for the weekend. She is charged \$35 a day plus 10¢ a mile. Which algebraic expression represents Elena's cost to rent the car for three days if she drives a total of m miles?

A. $3(35 + 0.10m)$ **B.** $3(35) + 10m$

C. $35 + 0.10m$ **D.** $3(35) + 0.10m$

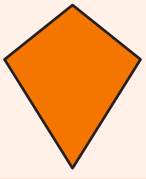
Lesson 61 Polygons

5.G.3

Two-dimensional shapes, or **polygons**, are closed figures formed by three or more line segments and are named by the number of their sides. There are regular polygons and irregular polygons. In regular polygons, all sides and angles are equal. In irregular polygons, at least one side or angle is different than the others in the shape. The table lists some common polygons.

Number of Sides	3	4	5	6	7	8
Polygon Name	triangle	quadrilateral	pentagon	hexagon	heptagon	octagon

The table shows special types of quadrilaterals.

Name	square	rectangle	rhombus	parallelogram	trapezoid	kite
Shape						

To **compose** a two-dimensional shape means to combine two or more two-dimensional shapes to make a new shape.

Example

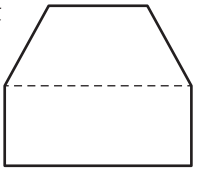
Ji-Yeong is using six large pavers to form a patio. The pavers are in the shape of triangles, as shown, and he wants the patio to be in the shape of a regular hexagon. How can Ji-Yeong arrange the pavers to form a regular hexagonal-shaped patio?

1) Describe a triangle and a regular hexagon. A triangle has three sides, and a regular hexagon has six sides with all sides and angles equal.

2) Arrange six triangles to form a hexagon. The triangles can be rotated and moved to form a regular hexagon.

Guided Practice

Brianna use two boards to build the table shown. What is the shape of the tabletop?



A. rectangle **B.** hexagon

C. kite **D.** heptagon

Option B is correct. The tabletop has six sides. It is a hexagon.

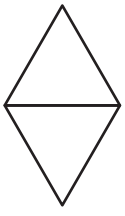
Strategy

Count the number of sides to determine the name of the polygon. The new shape has 6 sides, so it is a hexagon.

Practice

Read each question. Select the correct answer.

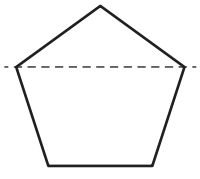
1 Abdi designs windows at his job. He combines two equilateral triangles, as shown.



What is the shape of the new window Abdi designed?

A. kite
B. rectangle
C. rhombus
D. triangle

2 This shape will be cut along the dotted line.

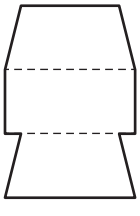


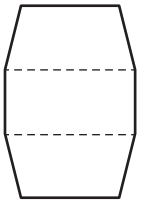
Which two shapes will result from the cut?

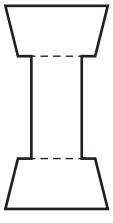
A. triangle and square
B. triangle and trapezoid
C. triangle and rectangle
D. triangle and parallelogram

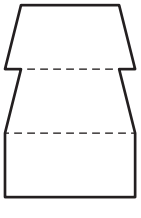
3 Hal baked a cake for a retirement party. He cut it into the pieces shown. The original shape of the cake was an octagon.

What is the shape of the original cake?

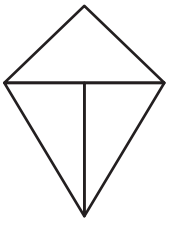
A.


B.


C.


D.


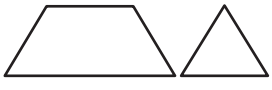
4 Malinalli is designing a kite for her children. She makes the kite shown.

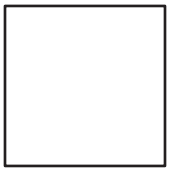


Which shapes does Malinalli use to make her kite?

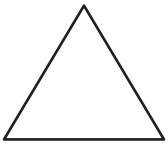
A. three triangles
B. one triangle and one rhombus
C. two triangles and one rhombus
D. one trapezoid and two triangles

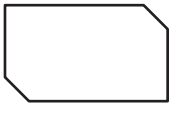
5 Which shape can be made from the two shapes shown?



A.


B.

C.


D.


Unit 8 Geometry and Measurement: Perimeter, Area, and Volume

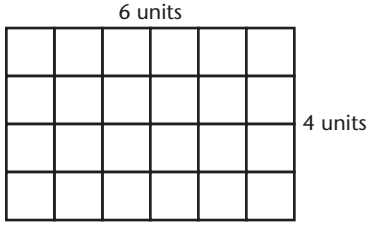
Lesson 78 Understanding the Area Formula

3.MD.7, 3.MD.7.a, 3.MD.7.b, 3.MD.7.c

You can count the number of unit squares that cover a rectangle to find its area. You can also multiply the length by the width to find the area.

Area = length × width

Example What is the area of this rectangle?



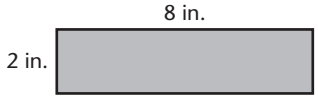
1) Find the length of the rectangle. — Length = 6 units

2) Find the width of the rectangle. — Width = 4 units

3) Multiply the length by the width to find the area of the rectangle. — 6 units × 4 units = 24 square units

The area of the rectangle is 24 square units.

Example What is the area of this rectangle?



1) Find the length and width of the rectangle. — Length = 8 in.

Width = 2 in.

2) Multiply the length by the width to find the area of the rectangle. — 8 in. × 2 in. = 16 in.^{2}

The area of the rectangle is 16 square inches.

Guided Practice

Rick's bedroom is 7 feet wide and 10 feet long. What is the area of his bedroom?

A. 18 square feet

B. 36 square feet

C. 40 square feet

D. 70 square feet

Option D is correct. 7 feet × 10 feet = 70 square feet

Hint

Remember that area is always given in square units because the length and width are multiplied.

Practice

Read each question. Select the correct answer.

1 Jan painted a wall that is 9 feet high and 11 feet long. What is the area of the wall?

A. 81 square feet

B. 90 square feet

C. 99 square feet

D. 100 square feet

2 Sue has a rug that is 5 feet wide and 8 feet long. What is the area of the rug?

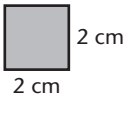
A. 16 square feet

B. 40 square feet

C. 58 square feet

D. 85 square feet

3 What is the area of this square?



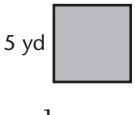
A. 4 square centimeters

B. 6 square centimeters

C. 8 square centimeters

D. 10 square centimeters

4 What is the area of this square?



A. 5 square yards

B. 10 square yards

C. 20 square yards

D. 25 square yards

5 Ian wants to buy carpeting for his living room. The room is 9 feet wide by 9 feet long. How much carpeting should Ian buy?

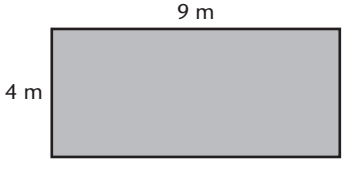
A. 24 square feet

B. 48 square feet

C. 81 square feet

D. 90 square feet

6 What is the area of this rectangle?



A. 27 square meters

B. 36 square meters

C. 45 square meters

D. 54 square meters

7 Ted has a garden that is 7 feet long and 8 feet wide. What is the area of the garden?

A. 56 square feet

B. 63 square feet

C. 64 square feet

D. 72 square feet

8 Jai has 48 bathroom floor tiles that are each 1 square foot. What size bathroom floor could Jai cover?

A. 4 feet wide by 8 feet long

B. 6 feet wide by 8 feet long

C. 7 feet wide by 8 feet long

D. 8 feet wide by 8 feet long

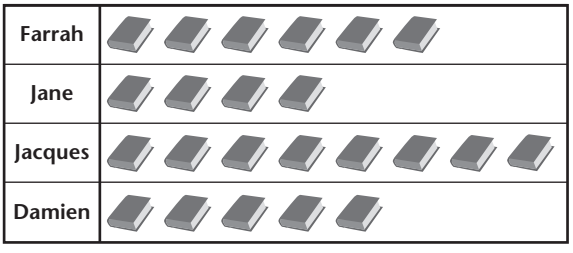
Lesson 85 Picture Graphs and Bar Graphs

3.MD.3

Picture graphs and bar graphs are visual representations of mathematical data. You can use graphs to organize and analyze information.

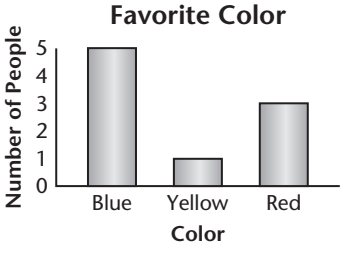
Example **A book club asked members how many books they read last year. Who read the *most* books? Who read the *fewest*? What is the difference between the *greatest* and *least* number of books?**

Books per Year



1) Find who read the most books and how many books he or she read. Jacques has the most pictures of books, 8. Each picture is equivalent to 2 books read. Jacques read $8 \times 2 = 16$ books.
2) Find who read the fewest books and how many. Jane has the fewest pictures of books, 4. Each picture is equivalent to 2 books read. Jane read $4 \times 2 = 8$ books.
3) Subtract to find the difference: $16 - 8 = 8$. So, Jacques read the most books. Jane read the fewest. Jacques read 8 more books than Jane.

Example **A survey asked people to identify their favorite color. How many people chose yellow or blue?**

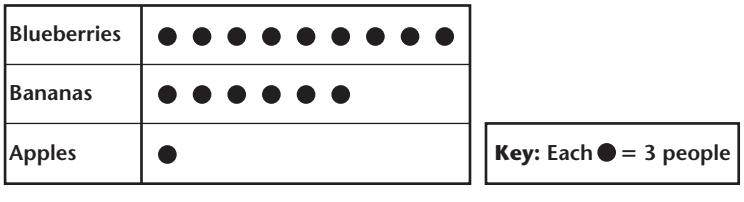


1) Find how many people chose yellow. The bar representing yellow has a height of 1 on the axis, so 1 person chose yellow.
2) Find how many people chose blue. The bar representing blue has a height of 5 on the axis, so 5 people chose blue.
3) Add to find the total: $1 + 5 = 6$. So, 6 people chose yellow or blue as their favorite color.

Guided Practice

A survey asked people to identify their favorite fruit. How many fewer people prefer apples than bananas?

Favorite Fruits



A. 21 **B.** 15 **C.** 7 **D.** 5

Option B is correct. Each picture on the graph represents 3 people. There are 6 circles for bananas and 1 circle for apples. $6 - 1 = 5$; $5 \times 3 = 15$.

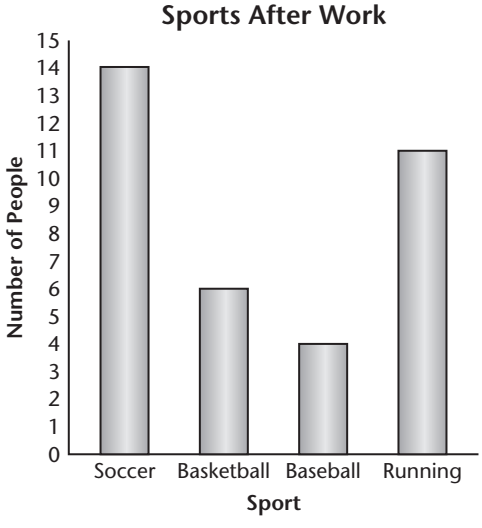
Hint

The key of a graph will tell you what each picture represents.

Practice

Read each question. Select the correct answer.

Use the bar graph to answer questions 1 through 3.



1 Which sport do the fewest number of people play after work?

A. Running

B. Baseball

C. Basketball

D. Soccer

2 How many more people play soccer than run after work?

A. 3 people

B. 11 people

C. 14 people

D. 25 people

3 Which statement is *true*?

A. Fewer people like running than basketball and baseball combined.

B. Running is the most popular sport after work.

C. Fewer people like soccer than running and basketball combined.

D. More people play soccer than every other sport combined.

Use the picture graph to answer questions 4 through 7.

Lunch Beverages Consumed in the Cafe

Milk	1
Juice	4
Water	10
Coffee	7

Key: Each = 5 glasses

4 How many glasses of milk and juice did people have with lunch?

A. 4

B. 5

C. 20

D. 25

5 How many fewer glasses of milk than coffee did people have with lunch?

A. 6

B. 8

C. 30

D. 40

6 How many fewer glasses of juice than water did people have with lunch?

A. 10

B. 25

C. 30

D. 45

7 How many total beverages did people have with lunch?

A. 21 glasses

B. 22 glasses

C. 105 glasses

D. 110 glasses