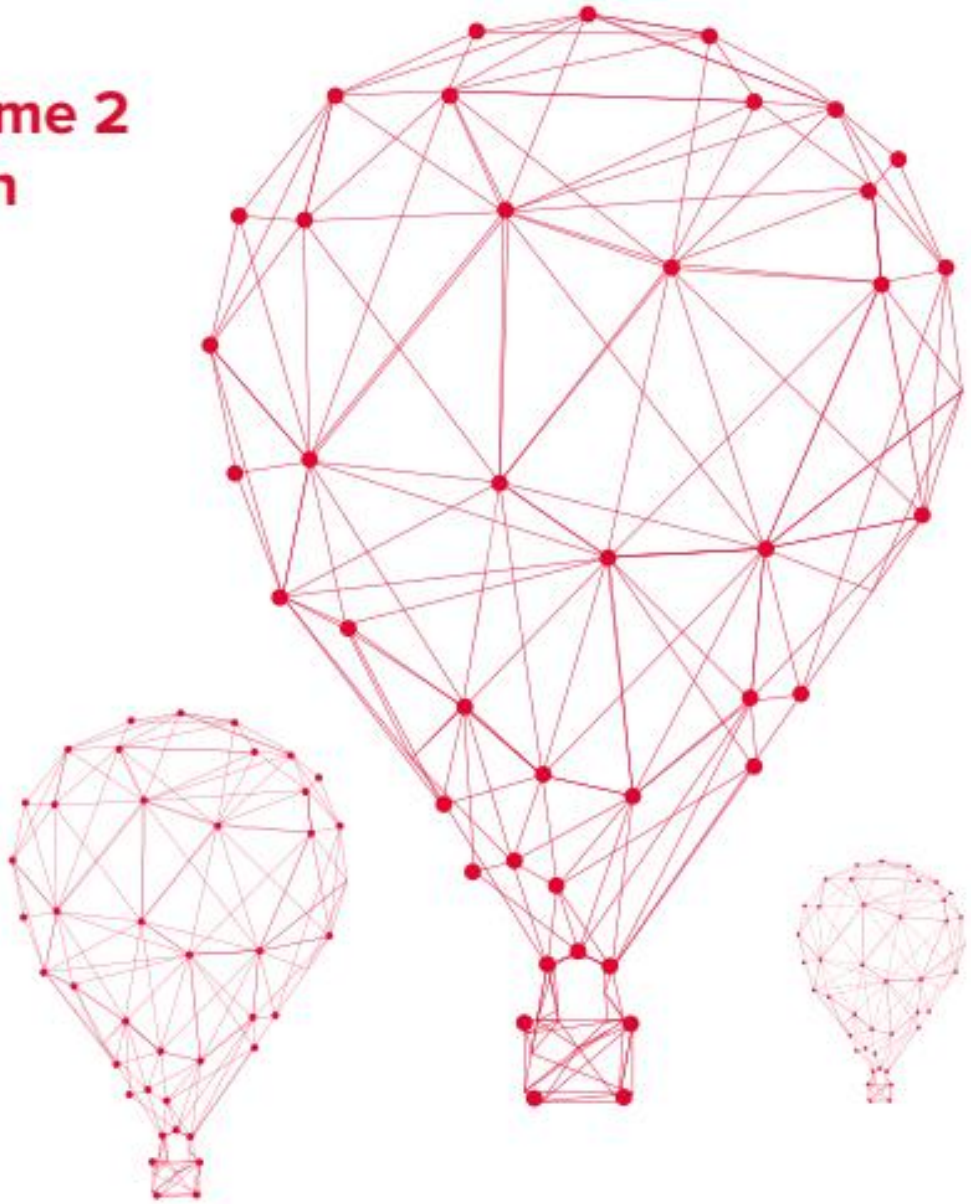
UNITED ARAB EMIRATES
MINISTRY OF EDUCATION

2023-2024

Reveal MATH®

UAE Edition
Grade 4 • Volume 2
Student Edition



Mc Graw Hill

Reveal MATH®

Student Edition

Grade 4 • Volume 2

Back cover: Ray Wise/Moment/Getty Images

mheducation.com/prek-12

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ISBN: 978-0-07-683907-0
MHID: 0-07-683907-9

Printed in the United States of America.

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Contents in Brief

Welcome to *Reveal Math*!

We are excited that you have made us part of your math journey.

Throughout this school year, you will explore new concepts and develop new skills. You will expand your math thinking and problem-solving skills. You will be encouraged to persevere as you solve problems, working both on your own and with your classmates.

With *Reveal Math*, you will experience activities to spark curiosity and challenge your thinking. In each lesson, you will engage in sense-making activities that will make you a better problem solver. You will have different learning experiences to help you build understanding.

We look forward to revealing to you the wonder and excitement of math.

The *Reveal Math* authors

The *Reveal Math* Authorship Team

McGraw-Hill teamed up with expert mathematicians to create a program centered around you, the student, to make sure each and every one of you can find joy and understanding in the math classroom.

Ralph Connelly, Ph.D.
Authority on the development of early mathematical understanding.

Annie Fetter
Advocate for students' ideas and student thinking that fosters strong problem solvers.

Linda Gojak, M.Ed.
Expert in both theory and practice of strong mathematics instruction.

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Champion for number sense and the achievement of all students.

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Creator of learning tools that make connections through visual-kinesthetic techniques.

Unit 8

Fraction Equivalence

Unit 9

Addition and Subtraction Meanings and Strategies with Fractions

Unit 10

Addition and Subtraction Strategies with Mixed Numbers

Unit 11

Multiply Fractions by Whole Numbers

Unit 12

Decimal Fractions

Unit 13

Units of Measurement and Data

Unit 14

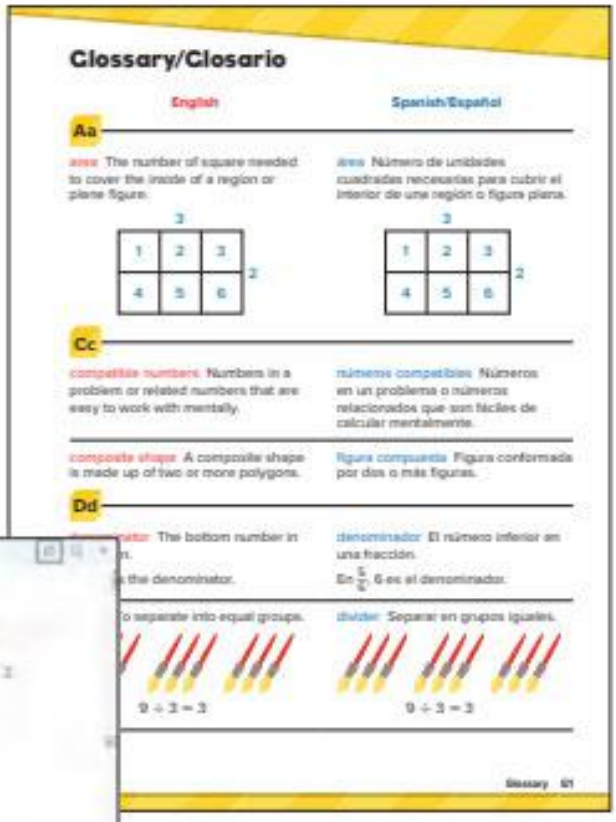
Geometric Figures

Let's Talk About Math!

Throughout this year, you will explore the language of mathematics as you talk about math with your classmates. You are going to learn many new words this year. Use these resources as you expand your vocabulary.

Glossary

In the back of this book, you will fi d a glossary with defi itions for your reference.



Interactive Glossary

The Interactive Glossary will support you as you work through your Interactive Student Edition and complete assignments online.

Jump into Learning!

You can fi d all the resources you need from your **Student Dashboard**.

1. Easily access scheduled work or assessments from the To-Do List.
2. View speci c lesson resources throughout the course.
3. Review the previously completed work and see your scores.
4. Access the Interactive Student Edition and the eToolkit easily with quick links.

You can use your **Interactive Student Edition** to complete assignments and practice and reference lesson content.

1. Use the slide numbers to nd your page number.
2. Type or draw to work out problems and respond to questions.
3. Check your answers as you go through your assignment.

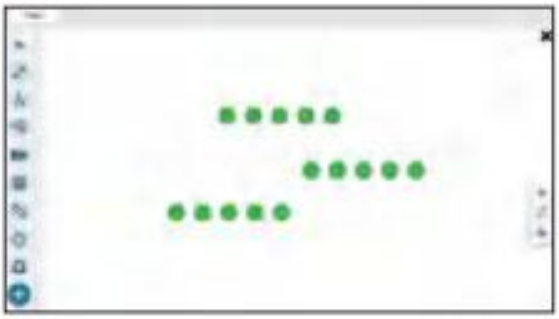
Access Lesson Supports Online!

In addition to your Interactive Student Edition, access these supports online while you practice.

MATH REPLAY | GO ONLINE

Need an Instant Replay of the Lesson Content?

Math Replay videos o er a 1–2 minute overview of the lesson concept to use as a reference while you are practicing or completing your homework.



Virtual Tools to Help You Problem Solve

You can access the eToolkit at any time from your Student Dashboard. You will have access to the following manipulatives:

- Counters
- Base-Ten Blocks
- Array Builder
- Fraction Model
- Bucket Balance
- Geometry Sketch
- Money
- Fact Triangles
- Number Line
- and more!

Key Concepts and Learning Objectives

Key Concept **Habits of Mind and Classroom Norms for Productive Math Learning**

- I make sense of problems and think about numbers and quantities. (Unit 1)
- I share my thinking with my classmates. (Unit 1)
- I can use math to make sense of everyday problems. (Unit 1)
- I see patterns in math. (Unit 1)
- I describe my math story. (Unit 1)
- I work productively with my classmates. (Unit 1)

Key Concept **Place Value, Multi-Digit Arithmetic, and Properties of Operations**

- I can read and write numbers up to one million in multiple forms. (Unit 2)
- I can round multi-digit numbers to any place-value position. (Unit 2)
- I can add and subtract whole numbers within 1,000,000 using the standard algorithm. (Unit 3)
- I can solve multi-step word problems using the four operations and assess the reasonableness of answers. (Units 3, 4, 6, 7)
- I can distinguish multiplicative comparison from additive comparison. (Unit 4)
- I can generate a number or shape pattern that follows a given rule and identify apparent features of the pattern that were not explicit in the rule itself. (Unit 5)
- I can nd all factor pairs for a whole number from 1–100. (Unit 5)
- I can determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number. (Unit 5)
- I can determine whether a given whole number in the range 1–100 is prime or composite. (Unit 5)
- I can multiply a whole number of up to four digits by a 1-digit whole number and multiply two 2-digit numbers. (Unit 6)
- I can nd whole-number quotients and remainders with up to four-digit dividends and one-digit divisors. (Unit 7)

Key Concept **Fractions**

- I can use fraction models to explain why two fractions are equivalent and generate equivalent fractions. (Unit 8)
- I can compare two fractions using benchmark fractions or by generating equivalent fractions. (Unit 8)
- I can decompose a fraction or mixed number into a sum of fractions with the same denominator. (Units 9, 10)
- I can add and subtract fractions and mixed numbers with like denominators. (Units 9, 10)
- I can multiply a fraction or a mixed number. (Unit 11)
- I can represent fractions with denominators of 10 or 100 using decimal notation and compare two decimals to hundredths. (Unit 12)
- I can add fractions with denominators 10 and 100 by using equivalent fractions. (Unit 12)

Key Concept **Measurement and Data**

- I can convert larger units of measurement to smaller equivalent units. (Unit 13)
- I can determine and apply the formulas for the area and perimeter of a rectangle. (Unit 13)
- I can display and interpret measurement data in line plots to solve problems. (Unit 13)

Key Concept **Analyze and Classify Geometric Shapes**

- I can identify and draw points, lines, line segments, and rays. (Unit 14)
- I can classify angles as right, acute, or obtuse, and measure and draw angles. (Unit 14)
- I can draw perpendicular and parallel lines and identify them in 2-dimensional gures. (Unit 14)
- I can recognize that when an angle is decomposed into parts, the angle measure of the whole is the sum of the angle measure of the parts. (Unit 14)
- I can classify 2-dimensional gures by the presence or absence of parallel and perpendicular lines, or the presence or absence of angles of a speci ed size. (Unit 14)
- I can recognize a line of symmetry for a 2-dimensional gure. (Unit 14)
- I can explain how to nd lines of symmetry on 2-dimensional gures. (Unit 14)

Math is...

How would you complete this sentence?

Math is.....

Math is not just carrying out operations and solving equations.

Math is...

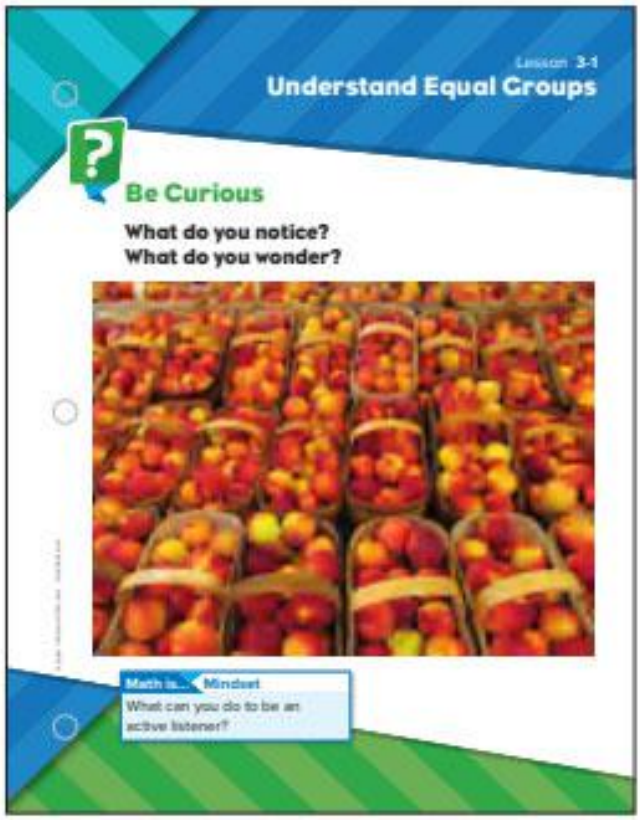
- working together
- nding patterns
- sharing ideas
- listening thoughtfully to our classmates
- sticking with a task even when it is a little challenging

In *Reveal Math*, you will develop the habits of mind that strong doers of math have. You will see that math is all around us.

Let's be Doers of Mathematics

Remember, math is more than getting the right answer. It is a tool for understanding the world around you. It is a language to communicate and collaborate. Be mindful of these prompts throughout the year to access the power of math.

1. **Math is... Mine**
   - Mindset
2. **Math is... Exploring and Thinking**
   - Planning
   - Connections
   - Thinking
3. **Math is... In My World**
   - In My World
   - Modeling
   - Choosing Tools
4. **Math is... Explaining and Sharing**
   - Explaining
   - Sharing
   - Precision
5. **Math is... Finding Patterns**
   - Patterns
   - Generalizations
6. **Math is... Ours**
   - Mindset



Math is... Mindset

What can you do to be an active listener?

Explore the Exciting World of STEM!

Ever wonder how math applies in the real world? In each unit, you will learn about a STEM career that engages in mathematics to make a positive impact in society, from protecting our parks to exploring outer space. Throughout the unit, you will have opportunities to dig into the STEM career through digital simulations and projects.

STEM Career Kid: Meet Hiro

Let the STEM Career Kid introduce their career and talk about their respective job responsibilities.

Math In Action: Ocean Engineer

Watch the Math in Action to see how the math you are learning applies to the real world and help problem solve.

Hi, I'm Hiro.

I want to know everything about our oceans. The ocean has amazing plants and animals. I want to be an ocean engineer when I grow up to make sure our oceans are protected and everyone can enjoy them.

Unit 8

Fraction Equivalence

Focus Question

How can I use equivalent fractions to help me compare fractions?

IGNITE!

Name _____

Folds and Fractions

Directions

Take a large square piece of paper. Label the square as shown in the figure below.

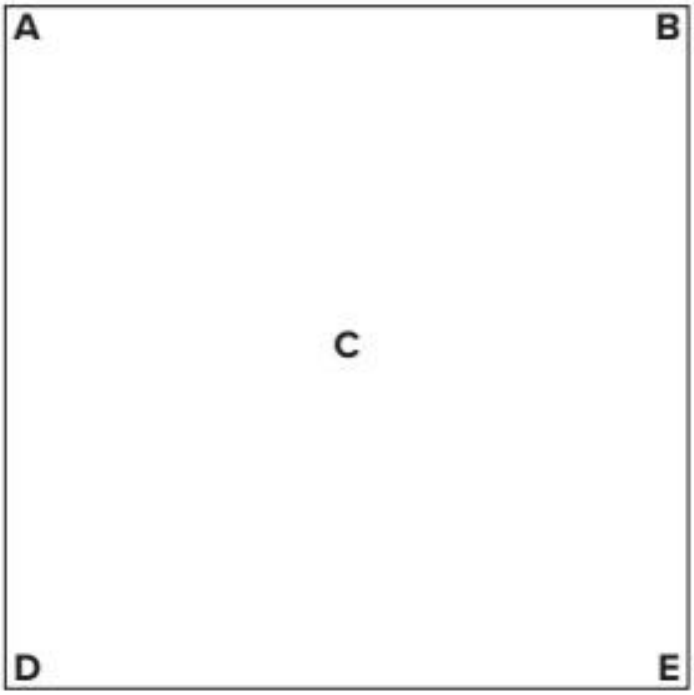
a. Fold edge AB to edge DE. Make a crease, then open it up again.

b. Fold edge AD to edge BE. Make a crease, then open it up again.

c. Fold corner A diagonally to corner E. Make a crease, then open it up again.

d. Fold corner D diagonally to corner B. Make a crease, then open it up again.

e. Fold corners A, B, D, and E to center C. Make creases, then open it up again.



Lesson 8-1

Equivalent Fractions

Be Curious

How are they the same?
How are they different?

Math is... Mindset

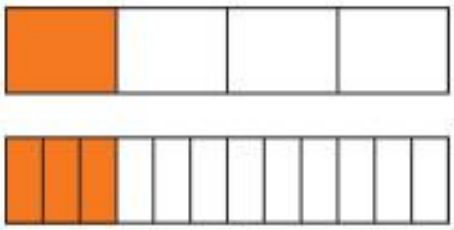
How do you show that you are listening attentively?

Learn

Marcy and Xavier are reading the same book. Marcy says she read $\frac{1}{4}$ of the book. Xavier says he read $\frac{3}{12}$ of the book.

How can you determine whether they read the same amount?

One Way Use Fraction Strips

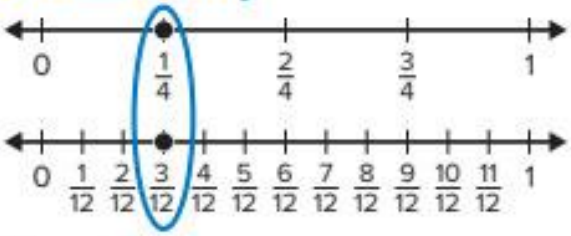


$\frac{1}{4}$ and $\frac{3}{12}$ represent the same amount.
They are **equivalent fractions**.

Math is... Patterns

What patterns do you see in the representations?

Another Way Use Number Lines

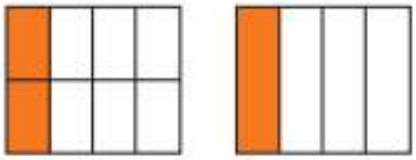


$\frac{1}{4}$ and $\frac{3}{12}$ are at the same point on the number line.
Marcy and Xavier read the same amount of the book.

Equivalent fractions represent the same part of the whole or the same point on a number line.

Work Together

Are $\frac{2}{8}$ and $\frac{1}{4}$ equivalent fractions? Use the fraction models to explain.



On My Own

Name _____

Are the fractions equivalent?

1. $\frac{2}{6}$ and $\frac{4}{12}$ _____

2. $\frac{4}{10}$ and $\frac{3}{6}$ _____

3. $\frac{3}{8}$ and $\frac{1}{3}$ _____

4. $\frac{8}{10}$ and $\frac{4}{5}$ _____

Use the representation to find the missing number in the equivalent fractions.

5. $\frac{2}{4} = \frac{\square}{8}$

6. $\frac{8}{12} = \frac{\square}{6}$

7. Kathy lives $\frac{2}{4}$ mile from the park. Charles lives $\frac{6}{12}$ mile from the park. Do they live the same distance from the park? Explain.

8. Faye and Omar ate the same amount of a small quesadilla. Faye's quesadilla was cut into 4 pieces and Omar's was cut into 8 pieces. How many pieces might they each have eaten? Explain your reasoning.

9. Eva used a number line to represent a fraction equivalent to $\frac{1}{2}$. The point on Eva's number line is 5 intervals from 0. What equivalent fraction does her point represent? Explain.

10. **STEM Connection** Malik uses a laser to make a $\frac{2}{10}$ millimeter cut. What unit fraction is equivalent to $\frac{2}{10}$?

11. Bus A and Bus B start their routes at 7:00 a.m. Bus A stops at Second Street every $\frac{1}{3}$ hour. Bus B stops at Second Street every $\frac{1}{6}$ hour. Will the buses ever stop at Second Street at the same time within an hour? Use a representation to justify your answer.

12. **Extend Your Thinking** Cora's mug holds $\frac{1}{8}$ gallon of water. She will use her mug to fill a container that holds $\frac{3}{4}$ gallon of water. How many times will Cora fill and empty her mug to fill th container? Explain your reasoning.

Reflect

How can a representation help you determine whether two fractions are equivalent?

Math is... Mindset

How did you show that you were listening attentively today?

Lesson 8-2

Generate Equivalent Fractions Using Models

Be Curious

Which Doesn't Belong?

$\frac{1}{4}$ $\frac{3}{12}$ $\frac{2}{5}$ $\frac{2}{8}$

Math is... Mindset

Why is it useful to consider different possible solutions to a problem?

Learn

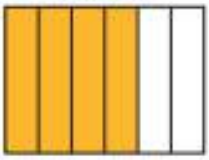
Alexa and Sari got pizzas that are the same size. Alexa cut her pizza into 6 equal-sized pieces and ate $\frac{4}{6}$ of her pizza. Sari ate the same amount of her pizza, but cut her pizza into smaller equal-sized pieces.

What fraction of her pizza could Sara have eaten?

You can find fractions that are equivalent to $\frac{4}{6}$.

One Way Use fraction models.

Alexa

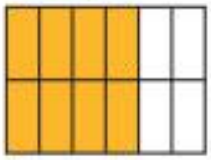


6 equal parts.

4 are shaded.

$\frac{4}{6}$

Sari



12 equal parts.

8 are shaded.

$\frac{8}{12}$

Sari could have eaten $\frac{8}{12}$ of her pizza.

Another Way Rewrite $\frac{4}{6}$ with a different denominator.

To generate an equivalent fraction, multiply the numerator and denominator by a fraction equal to 1.

$\frac{4 \times 2}{6 \times 2} = \frac{8}{12}$ $\frac{2}{2} = 1$

$\frac{4 \times 3}{6 \times 3} = \frac{12}{18}$ $\frac{3}{3} = 1$

Sari could have eaten $\frac{12}{18}$ of her pizza.

You can multiply the numerator and denominator by a fraction equal to 1 to find an equivalent fraction.

Math is... Modeling

What other operations could you use to generate equivalent fractions?

Work Together

What fraction is missing from the pattern? Explain how you can find the equivalent fraction.

$\frac{3}{4} = \frac{6}{8} = \frac{?}{?} = \frac{12}{16}$

On My Own

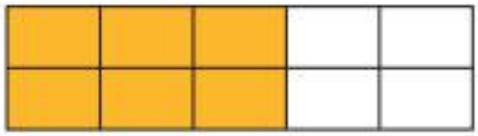
Name _____

Use the representation to find an equivalent fraction.

1.

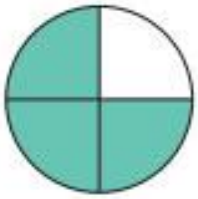
$\frac{2}{3} = \frac{\square}{\square}$

2.



$\frac{6}{10} = \frac{\square}{\square}$

3.



$\frac{3}{4} = \frac{\square}{\square}$

4.

$\frac{4}{5} = \frac{\square}{\square}$

Find the missing number in the equivalent fraction. Explain how you determined the number.

5. $\frac{1}{5} = \frac{2}{\square}$

6. $\frac{3}{4} = \frac{75}{\square}$

7. $\frac{14}{12} = \frac{\square}{6}$

8. $\frac{12}{9} = \frac{\square}{3}$

9. Sanjay bought a half gallon of green tea. He pours all the tea into 4 glasses so that each glass has the same amount. How much of a gallon is in each glass? Explain your thinking.

10. Name two fractions that are represented by the model. Explain your reasoning.

11. **Error Analysis** Theo says $\frac{2}{4}$ and $\frac{4}{6}$ are equivalent fractions. How would you respond to Theo?

12. **Extend Your Thinking** Are the fractions $\frac{6}{4}$ and $\frac{9}{6}$ equivalent? Explain your reasoning.

Reflect

How did patterns between equivalent fractions help you solve problems in the lesson?

Math is... Mindset

How was it useful to consider different possible solutions to a problem?

Lesson 8-3

Generate Equivalent Fractions Using Number Lines

Be Curious

What do you notice?
What do you wonder?

Math is... Mindset

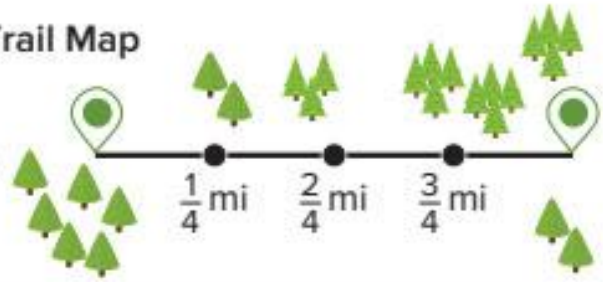
How can you organize your work to be successful?

Learn

Evan has hiked $\frac{9}{12}$ mile on a trail.

Carlos has hiked $\frac{1}{2}$ mile on the same trail.

How can you determine where each person is on the trail?



You can multiply the numerator and denominator by 2 to generate an equivalent fraction for $\frac{1}{2}$.

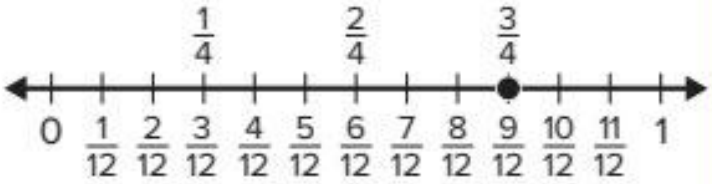
$\frac{1 \times 2}{2 \times 2} = \frac{2}{4}$

Carlos is at $\frac{2}{4}$ mile on the trail.

You can divide the numerator and denominator by 3 to generate an equivalent fraction for $\frac{9}{12}$.

$\frac{9 \div 3}{12 \div 3} = \frac{3}{4}$

Evan is at $\frac{3}{4}$ mile on the trail.



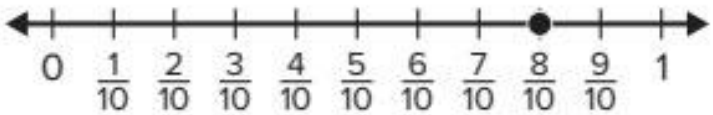
Math is... Modeling

How are the number lines and the equations related?

You can multiply or divide the numerator and denominator of a fraction by a fraction equal to 1 to generate equivalent fractions.

Work Together

What fraction is equivalent to $\frac{8}{10}$? Use the number line and multiplication or division to explain your answer.



On My Own

Name _____

Use the number line to find an equivalent fraction.

1. 

$\frac{1}{3} = \frac{\square}{\square}$

2. 

$\frac{6}{8} = \frac{\square}{\square}$

3. 

$\frac{6}{12} = \frac{\square}{\square}$

4. 

$\frac{5}{6} = \frac{\square}{\square}$

Find the missing number in the equivalent fraction. Explain how you used multiplication or division to determine the number.

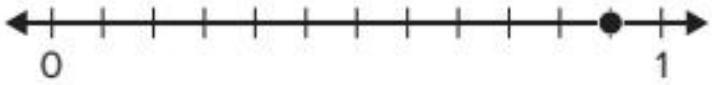
5. $\frac{4}{3} = \frac{\square}{12}$

6. $\frac{4}{12} = \frac{2}{\square}$

7. $\frac{10}{8} = \frac{5}{\square}$

8. $\frac{1}{4} = \frac{\square}{12}$

9. Kurt placed the point on the number line for $\frac{3}{4}$. Do you agree with Kurt? Explain why or why not.



10. A race has water stations set up every $\frac{1}{3}$ mile. Ashwin has run $\frac{3}{12}$ mile in the race so far. Has Ashwin run past a water station? Explain your reasoning.

11. Nina says the point on the number line represents the fraction $\frac{4}{6}$.

a. How can you use the number line to find an equivalent fraction?

b. How can you use multiplication or division to explain the equivalence?

12. Extend Your Thinking What fraction can be written as an equivalent number of fourths and an equivalent number of sixths? Justify your answer.

Reflect

What patterns did you notice when you found equivalent fractions on the number line?

Math is... Mindset

How has organizing your work helped you to be successful?

Lesson **8-4**

Compare Fractions Using Benchmarks

Be Curious

What do you see?

Math is... Mindset

What strengths will you rely on to be successful today?

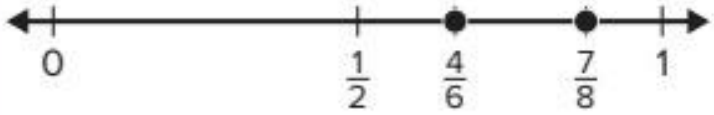
Learn

Jade used different colors of ribbon to decorate a board.

Ribbon Color	Amount Used
Red	$\frac{4}{6}$ yard
Green	$\frac{7}{8}$ yard
Blue	$\frac{5}{12}$ yard

How can Jade compare the amount of red ribbon she used to the amounts she used for the other colors?

You can compare fractions to a benchmark number.



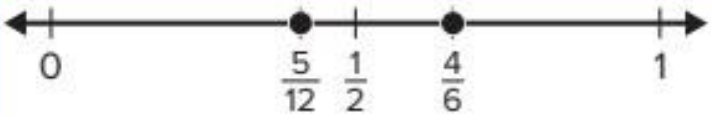
Math is... Thinking

How do benchmark numbers help you determine how two fractions are related?

$\frac{7}{8}$ is close to 1.

$\frac{4}{6}$ is close to $\frac{1}{2}$. $\frac{7}{8} > \frac{4}{6}$.

Jade used more green than red ribbon.



$\frac{4}{6}$ is greater than $\frac{1}{2}$ and $\frac{5}{12}$ is less than $\frac{1}{2}$. $\frac{4}{6} > \frac{5}{12}$. Jade used more red than blue ribbon.

You can use the benchmark numbers 0, $\frac{1}{2}$, and 1 to compare fractions.

Work Together

How can you use benchmark numbers to compare $\frac{2}{10}$ and $\frac{4}{5}$? Use a fraction model to justify your comparison.

On My Own

MATH REPLAY | GO ONLINE

Name _____

How can you compare the fractions using benchmark numbers? Write >, <, or = to record the comparison.

1. $\frac{4}{6} \bigcirc \frac{9}{10}$

2. $\frac{6}{12} \bigcirc \frac{4}{8}$

3. $\frac{3}{4} \bigcirc \frac{4}{10}$

4. $\frac{4}{3} \bigcirc \frac{7}{8}$

5. Which fractions are greater than $\frac{7}{12}$? Choose all that apply.

   A. $\frac{2}{10}$ B. $\frac{6}{5}$

   C. $\frac{3}{6}$ D. $\frac{8}{10}$

6. Which fractions are less than $\frac{5}{8}$? Choose all that apply.

   A. $\frac{2}{6}$ B. $\frac{3}{2}$

   C. $\frac{9}{10}$ D. $\frac{4}{12}$

7. Oscar ran $\frac{7}{8}$ mile on Tuesday and $\frac{6}{10}$ mile on Thursday. On which day did Oscar run a greater distance? Explain your thinking.

8. Ron is comparing two fractions. He says he knows which fraction is greater by comparing them to the benchmark fraction $\frac{1}{2}$. What two fractions could Ron be comparing? Explain your reasoning.

9. Aldwin and Rashika each cut their sub sandwich into fifths. They each ate about half of their sandwich but ate a different number of pieces. How many pieces of their sandwich did each person eat?

10. **STEM Connection** Three-fifths of the aterials a welder needs for a project are aluminum and $\frac{2}{6}$ are stainless steel. Does the welder need more steel or more aluminum? Explain your reasoning.

11. Jacob has finished $\frac{1}{2}$ of today's reading assignment. Anushka has finished more of the assignment than Jaco . What fraction of the assignment could Anushka have finished? Explain your reasoning

12 Malai and Nina are each doing the same puzzle. Malai finished $\frac{10}{12}$ of his puzzle. Nina finished $\frac{5}{8}$ of her puzzle. Did Malai finish more or less of the puzzle than Nina? Explain your reasoning.

13. **Extend Your Thinking** Stella says she can compare the fractions $\frac{5}{6}$ and $\frac{7}{8}$ using their closeness to 1. What reasoning can Stella use to compare the fractions?

Reflect

How did you think like a mathematician when comparing fractions?

Math is... Mindset

What strengths helped you to be successful today?

Lesson **8-5**

Other Ways to Compare Fractions

Be Curious

How are they the same?
How are they different?

Lisa's garden

Linda's garden

Trevor's garden

Math is... Mindset

How can you show others that you value their ideas?

Learn

Marta's father made two pasta dishes. The table shows how much cheese and sauce he used in the dishes.

How can you compare the amounts of cheese he used?

How can you compare the amounts of sauce he used?

Ingredient	Amount
Parmesan Cheese	$\frac{3}{4}$ cup
Mozzarella Cheese	$\frac{5}{8}$ cup
Marinara Sauce	$\frac{2}{3}$ liter
Meat Sauce	$\frac{4}{5}$ liter

You can compare $\frac{3}{4}$ and $\frac{5}{8}$ using an equivalent fraction so the fractions have **like denominators.**

$$\frac{3}{4} \rightarrow \frac{6}{8} \quad > \quad \frac{5}{8} \rightarrow \frac{5}{8}$$

Six $\frac{1}{8}$ parts > five $\frac{1}{8}$ parts

Marsha used more parmesan cheese then mozzarella cheese.

You can compare $\frac{2}{3}$ and $\frac{4}{5}$ using an equivalent fraction so the fractions have **like numerators.**

$$\frac{2}{3} \rightarrow \frac{4}{6} \quad < \quad \frac{4}{5} \rightarrow \frac{4}{5}$$

Four $\frac{1}{6}$ parts < four $\frac{1}{5}$ parts

Marsha used less marinara sauce than meat sauce.

Fractions are easier to compare when the numerators or denominators are the same. You can use equivalent fractions to create like numerators or like denominators.

Math is... Thinking

What other numbers could be used as denominators?

Work Together

Hannah ate $\frac{3}{4}$ of a small apple. Her brother ate $\frac{7}{12}$ of a large apple. Hannah says she ate more than her brother because $\frac{3}{4} = \frac{9}{12}$ and $\frac{9}{12} > \frac{7}{12}$. How would you respond to Hannah?

On My Own

Name _____

Write >, <, or = to compare the fractions. Explain your reasoning for each comparison.

1. $\frac{3}{5} \bigcirc \frac{8}{10}$

2. $\frac{2}{6} \bigcirc \frac{1}{3}$

3. $\frac{4}{12} \bigcirc \frac{2}{5}$

4. $\frac{3}{4} \bigcirc \frac{6}{10}$

5. $\frac{2}{4} \bigcirc \frac{5}{10}$

6. $\frac{7}{12} \bigcirc \frac{2}{3}$

7. Russel and Toby each bought a medium box of popcorn. Russel ate $\frac{3}{5}$ of his popcorn and Toby ate $\frac{6}{8}$ of his popcorn. Did Russel eat more popcorn than Toby? Explain your reasoning.

8. Klaya compares two fractions. She writes one of the fractions as an equivalent fraction so the fractions have like denominators. What fractions might Klaya be comparing? Explain your reasoning.

9. Ethan and Petra have the same number of raffle ti ets to sell. Ethan sold $\frac{1}{4}$ of his raffle ti ets. Petra sold $\frac{3}{8}$ of her raffl tickets. Who sold more tickets? Explain your reasoning.

10. Lilliana compares $\frac{4}{10}$ and $\frac{8}{12}$ by finding equivalent fractions. B ad compares the same fractions using a benchmark fraction. Which strategy do you think is more efficient to compare the fractio ? Explain your reasoning.

11. Error Analysis Janet's family eats $\frac{4}{8}$ of a large pizza. Julie's family eats $\frac{3}{6}$ of a small pizza. Julie says her family ate the same amount as Janet's family because $\frac{4}{8} = \frac{3}{6}$. Is Julie correct? Explain.

12. Extend Your Thinking How can you use equivalent fractions to compare $\frac{2}{3}$ and $\frac{3}{4}$?

Reflect

How do you determine which strategy to use when comparing fractions with different numerators and denominators?

Math is... Mindset

How have you shown others that you value their ideas?

Unit 8

Comparing Fractions

Name _____

For each problem, use >, <, or = symbol to show how the fractions compare.

1. $\frac{3}{8}$ ☐ $\frac{4}{7}$

Circle the symbol that goes in the ☐.

> < =

Explain or show why you chose that symbol.

2. $\frac{2}{3}$ ☐ $\frac{4}{6}$

Circle the symbol that goes in the ☐.

> < =

Explain or show why you chose that symbol.

For each problem, use >, <, or = symbol to show how the fractions compare.

3. $\frac{4}{5}$ ☐ $\frac{7}{8}$

Circle the symbol that goes in the ☐.

> < =

Explain or show why you chose that symbol.

4. $\frac{3}{5}$ ☐ $\frac{2}{9}$

Circle the symbol that goes in the ☐.

> < =

Explain or show why you chose that symbol.

Reflect On Your Learning

I'm confused. — I'm still learning. — I understand. — I can teach someone else.

Unit Review

Name _____

Vocabulary Review

Choose the correct word(s) to complete the sentence.

benchmark fraction	like denominators
equivalent fractions	numerator
denominator	

1. _____ represent the same part of a given whole. (Lesson 8-1)

2. When two or more fractions have the same denominators, they have _____. (Lesson 8-5)

3. The _____ is the number in the fraction that tells you how many equal-sized parts are in the whole. (Lesson 8-2)

4. The part of the fraction that tells how many of the equal parts are being used is the _____. Lesson 8-2)

5. You can use a _____ to help you compare the size of fractions. (Lesson 8-4)

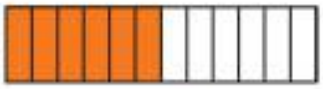
Review

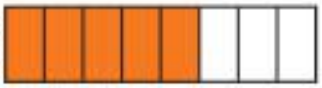
6. Which fractions are equivalent to $\frac{3}{6}$? Choose all that apply. (Lessons 8-1, 8-2)

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

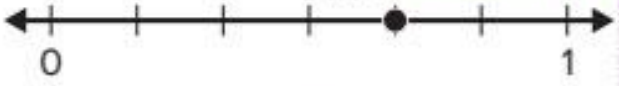
B. $\frac{2}{3}$ 

C. $\frac{2}{5}$ 

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

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

7. Which fractions are equivalent to the point on the number line? Choose all that apply. (Lessons 8-1, 8-3)



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

B. $\frac{2}{3}$

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

D. $\frac{8}{12}$

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

F. $\frac{6}{8}$

8. Which fraction is equivalent to $\frac{4}{10}$? (Lesson 8-1)

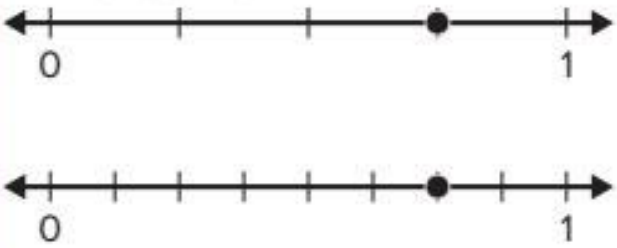
A. $\frac{2}{5}$

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

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

D. $\frac{4}{5}$

9. Look at the points on the number line.



Use the number lines to explain why the two fractions are equivalent. (Lessons 8-1, 8-3)

Would $\frac{5}{6}$ be an equivalent fraction to the fractions shown? Explain your answer. (Lessons 8-1, 8-3)

10. What is the unknown number in the equation? (Lesson 8-1)

$$\frac{16}{12} = \frac{\square}{3}$$

MATH REPLAY | GO ONLINE

11. Match each fraction to the benchmark number it is closest to. (Lesson 8-4)

Closest to 0	$\frac{2}{4}$
	$\frac{2}{10}$
Closest to $\frac{1}{2}$	$\frac{3}{5}$
	$\frac{1}{8}$
Closest to 1	$\frac{5}{6}$
	$\frac{7}{8}$

12. Complete the comparisons using >, <, and =. (Lessons 8-4, 8-5)

$\frac{3}{4}$ ◯ $\frac{10}{12}$

$\frac{2}{6}$ ◯ $\frac{4}{5}$

$\frac{7}{8}$ ◯ $\frac{6}{10}$

13. Which fractions are greater than $\frac{3}{8}$? Choose all that apply. (Lessons 8-4, 8-5)

A. $\frac{1}{6}$ **B.** $\frac{1}{4}$

C. $\frac{2}{3}$ **D.** $\frac{4}{5}$

E. $\frac{2}{12}$ **F.** $\frac{5}{10}$

14. Tonya reads $\frac{5}{8}$ of the book. Christina reads $\frac{3}{4}$ of the same book.

Part A. Who read more of the book? Explain your reasoning. (Lesson 8-5)

Part B. By the end of the following week, Tonya read $\frac{9}{12}$ of the book. Christina did not have time to read any more of the book. How does the amount Tonya read compare to the amount Christina read? Explain your reasoning. (Lesson 8-5)

15. Gilda plants tomatoes in $\frac{3}{10}$ of her garden and lettuce in $\frac{2}{5}$ of her garden. Did Gilda plant more tomatoes or lettuce in her garden? Explain your answer. (Lesson 8-5)

Performance Task

Two laser shows at a concert include red, blue, and green light. The table gives the fraction of the total that each color is used at each show.

Laser Color	Amount in First Show	Amount in Second Show
Red	$\frac{5}{12}$	$\frac{1}{3}$
Blue	$\frac{1}{5}$	$\frac{5}{12}$
Green	$\frac{3}{10}$	$\frac{1}{4}$

Part A. Which color was used the most in the first show? Which color was used the least? Explain your answers.

Part B. Which color(s) were used less in the second show than in the first show? Explain your answer(s).

Part C. Which color(s) were used more in the second show than in the first show? Explain your reasoning.

Reflect

What are some different strategies that you can use to compare fractions?

Unit 8

Fluency Practice

Name _____

Fluency Strategy

You can use an **algorithm** to subtract two whole numbers.

6,784 − 1,253 = ?

Subtract from right to left. Subtract the ones, tens, hundreds, then thousands.

$$\begin{array}{r} 6,784 \\ -\ 1,253 \\ \hline 5,531 \end{array}$$

1. How can you use an **algorithm** to subtract 586 − 214 = ?

Fluency Flash

Write the difference in the place-value chart.

2.

	thousands	hundreds	tens	ones
	4	8	3	9
−	2	0	1	3

3.

	thousands	hundreds	tens	ones
	9	7	6	8
−	3	2	2	5

Fluency Check

Find the sum, difference, or product.

4. 2,546 − 1,234 = _____
5. 7 × 6 = _____
6. 3,782 + 4,016 = _____
7. 857 − 234 = _____
8. 5,796 − 2,482 = _____
9. 52,140 + 6,527 = _____
10. 8 × 7 = _____
11. 8 × 9 = _____
12. 6,986 − 872 = _____
13. 34,765 − 13,410 = _____
14. 45,316 − 3,201 = _____
15. 9 × 4 = _____
16. 257,884 − 53,612 = _____
17. 9,542 + 315 = _____

Fluency Talk

How would you subtract two numbers that have a different number of digits?

How is the addition algorithm like the subtraction algorithm? How is it different?

Unit 9

Addition and Subtraction Meanings and Strategies with Fractions

Focus Question

How can I add and subtract fractions with like denominators?

STEM video | GO ONLINE

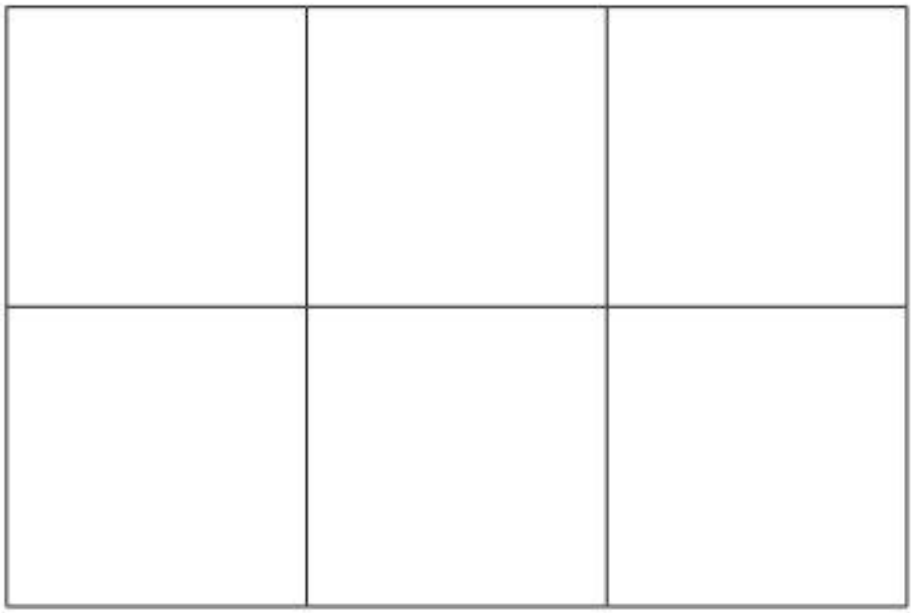
IGNITE!

Name _____

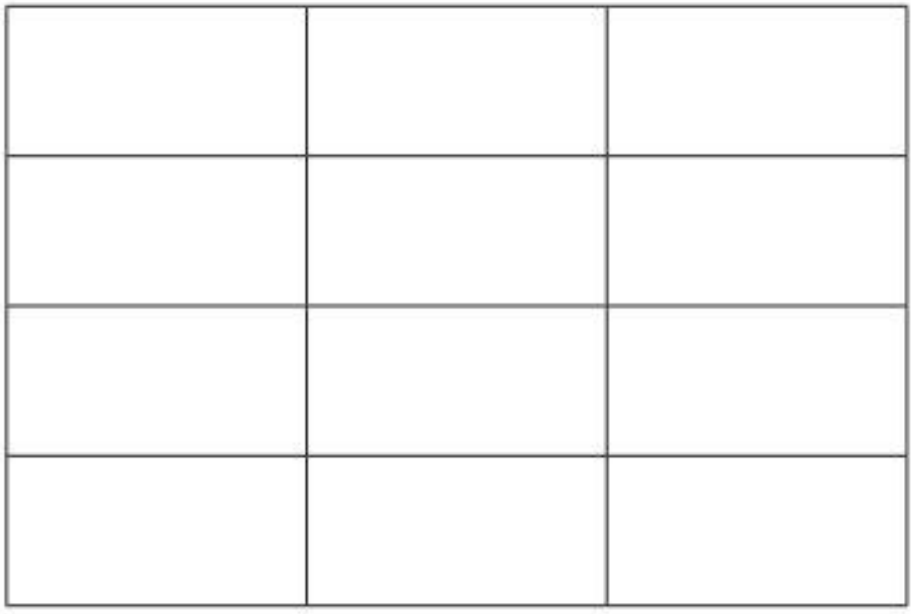
Would You Rather Have ... ?

Look at each pan. What do you notice?

Pan 1



Pan 2

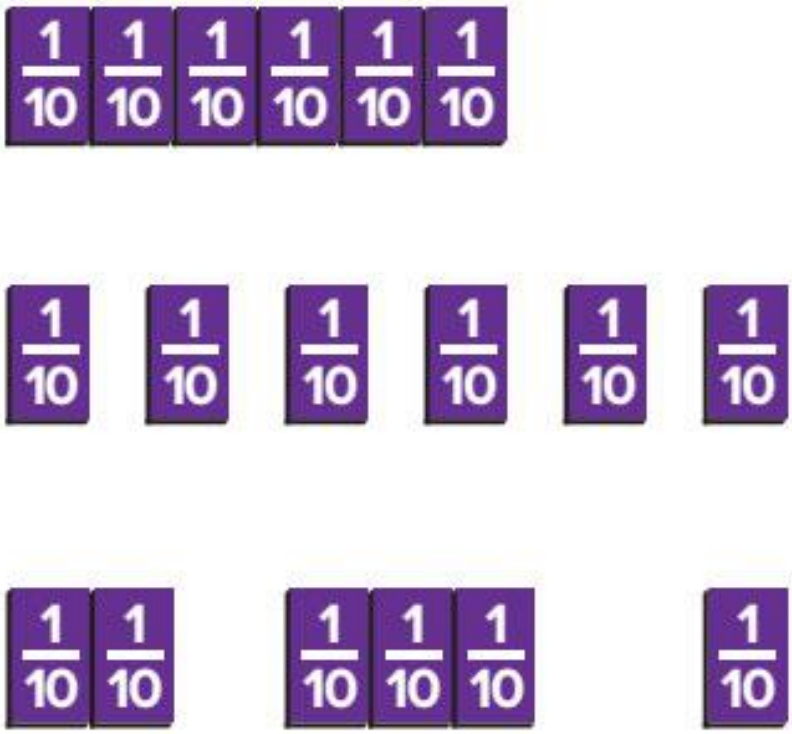


Lesson **9-1**

Understand Decomposing Fractions

Be Curious

How are they the same?
How are they different?



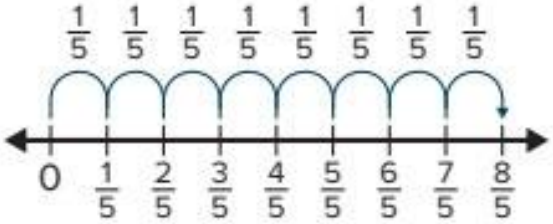
Math is... Mindset

Why is it important to have confidence in your work?

Learn

How can you decompose $\frac{8}{5}$ into the *greatest* number of parts?

You can decompose $\frac{8}{5}$ into unit fractions using a number line.



Write an addition equation to express $\frac{8}{5}$ as a sum of the unit fractions.

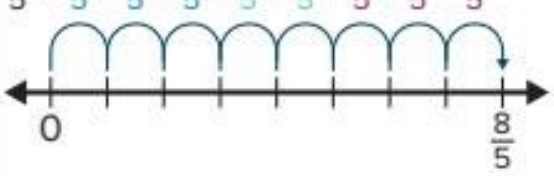
$$\frac{8}{5} = \frac{1}{5} + \frac{1}{5} + \frac{1}{5} + \frac{1}{5} + \frac{1}{5} + \frac{1}{5} + \frac{1}{5} + \frac{1}{5}$$

Math is... Modeling

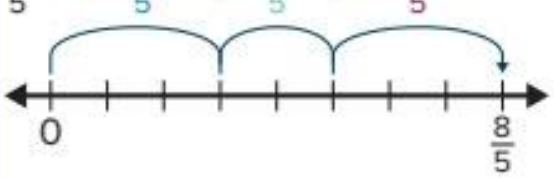
What other ways can you represent sums of fractions?

You can combine unit fractions in more than one way to make greater addends.

$$\frac{8}{5} = \frac{1}{5} + \frac{1}{5} + \frac{1}{5} + \frac{1}{5} + \frac{1}{5} + \frac{1}{5} + \frac{1}{5} + \frac{1}{5}$$



$$\frac{8}{5} = \frac{3}{5} + \frac{2}{5} + \frac{3}{5}$$



$$\frac{8}{5} = \frac{2}{5} + \frac{2}{5} + \frac{2}{5} + \frac{2}{5}$$

$$\frac{8}{5} = \frac{5}{5} + \frac{3}{5}$$

A fraction can be decomposed into a sum of fractions with the same denominator in more than one way.

Work Together

How can you decompose $\frac{5}{6}$ into a sum of three fractions two different ways? Write equations to show your work.

On My Own

Name _____

How can you decompose the fraction into unit fractions?

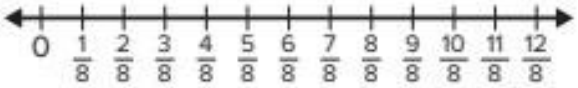
1. $\frac{5}{8} = \frac{\square}{\square} + \frac{\square}{\square} + \frac{\square}{\square} + \frac{\square}{\square} + \frac{\square}{\square}$

2. $\frac{4}{5} = \frac{\square}{\square} + \frac{\square}{\square} + \frac{\square}{\square} + \frac{\square}{\square}$

How can you decompose the fraction? Use the number line to justify your answer.

3. Decompose $\frac{12}{8}$ into a sum of 5 fractions.

$\frac{12}{8} = \frac{\square}{\square} + \frac{\square}{\square} + \frac{\square}{\square} + \frac{\square}{\square} + \frac{\square}{\square}$



4. Decompose $\frac{9}{6}$ into a sum of 3 fractions.

$\frac{9}{6} = \frac{\square}{\square} + \frac{\square}{\square} + \frac{\square}{\square}$

5. How can you decompose $\frac{7}{10}$ into a sum of 4 fractions? Write equations to show two differen ways.

6. Tricia has $\frac{9}{12}$ of a breakfast casserole left over. She puts the casserole into 3 containers. What fraction of the casserole could Tricia have put into each container? Show your work.

7. Amy decomposes a fraction into a sum of fractions. What fraction could Amy have decomposed? Draw fraction tiles to justify your answer.

$$\frac{\square}{\square} = \frac{2}{8} + \frac{1}{8} + \frac{2}{8}$$

8. A family of 4 ate $\frac{7}{12}$ of a lasagna. How much lasagna could each person have eaten? Explain your thinking.

9. **STEM Connection** Owen measures 3 ladybugs in his backyard with his ruler. The combined length of the ladybugs is $\frac{9}{10}$ inch. What length might each of the ladybugs be? Explain.

10. A team of 6 people participated in a relay race. Each person ran $\frac{1}{4}$ mile. A team of 4 people runs the same distance. How far might each of the 4 people run? Justify your answer.

11. **Extend Your Thinking** Jana says $\frac{2}{3} = \frac{1}{3} + \frac{1}{3}$ is the only way to decompose $\frac{2}{3}$. How do you respond to Jana?

Reflect

How can you find more than one way to decompose a fraction?

Math is... Mindset

How did having confidence help you in your work today?

Represent Adding Fractions

Be Curious

What could the question be?

Math is... Mindset

How do you show others you respect their ideas?

Learn

Loretta will make a peanut mix using salty and spicy peanuts. She will use $\frac{3}{8}$ pound of salty peanuts and $\frac{5}{8}$ pound of spicy peanuts.

How many pounds of peanut mix will she make?

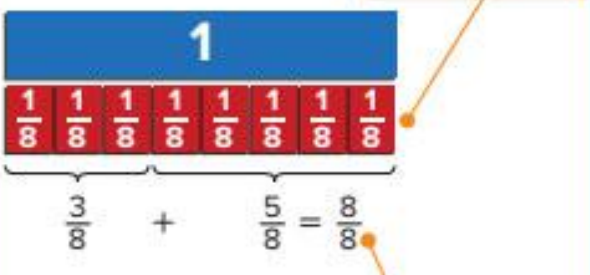
Fraction tiles can represent the problem.

The fraction tiles can represent the amount of each kind of peanut.

salty peanuts spicy peanuts

$\frac{3}{8} + \frac{5}{8} = ?$

Add the fraction tiles.



Loretta will make $\frac{8}{8}$ pound of peanut mix.

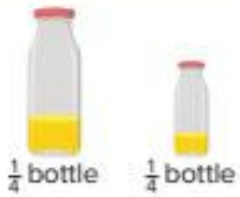
Adding fractions with like denominators means joining parts that refer to the same whole.

Math is... Quantities

How does the fraction model represent the quantities in the equation?

Work Together

Macie says if she combines the juice into one bottle, she will have a total of $\frac{1}{2}$ bottle of juice. How can you respond to Macie? Explain.



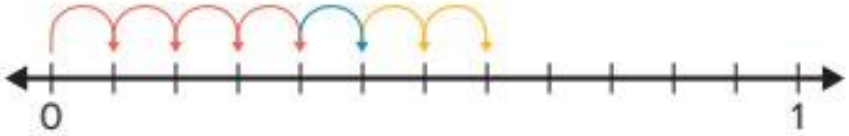
On My Own

Name _____

1. How can you find the su ? Draw a picture to show your thinking.

$$\frac{1}{5}+\frac{1}{5}+\frac{1}{5}+\frac{1}{5}=\frac{\square}{\square}$$

2. Aaron used a number line to find the sum of three fractions

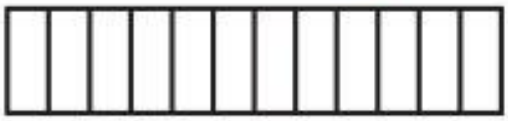


What fractions did Aaron add? What is the sum?

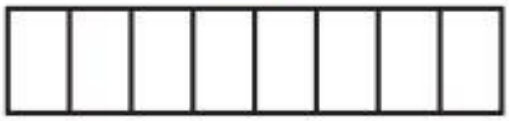
$$\frac{\square}{\square}+\frac{\square}{\square}+\frac{\square}{\square}=\frac{\square}{\square}$$

How can you find the sum? Use the fraction model to represent the equation.

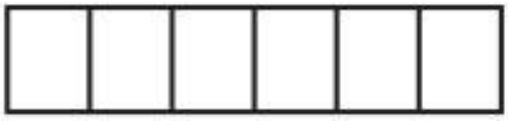
3. $\frac{5}{12}+\frac{2}{12}+\frac{3}{12}=\frac{\square}{\square}$



4. $\frac{2}{8}+\frac{5}{8}=\frac{\square}{\square}$



5. $\frac{1}{6}+\frac{1}{6}+\frac{1}{6}+\frac{1}{6}=\frac{\square}{\square}$



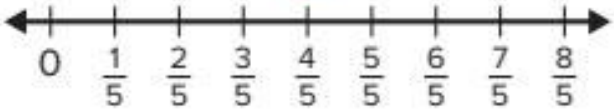
6. $\frac{1}{4}+\frac{2}{4}=\frac{\square}{\square}$

7. Hank combines $\frac{5}{12}$ gallon of red paint with $\frac{6}{12}$ gallon of white paint to make pink paint. How much pink paint does Hank have? Draw a picture to show your thinking.

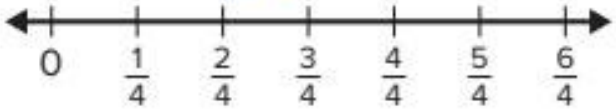
8. **Error Analysis** A student wrote $\frac{2}{6} + \frac{3}{6} = \frac{5}{12}$. How do you respond to the student?

What is the sum? Use the number line to represent the equation.

9. $\frac{2}{5} + \frac{2}{5} + \frac{2}{5} = \frac{\square}{\square}$



10. $\frac{3}{4} + \frac{2}{4} = \frac{\square}{\square}$



11. Before school, it snowed $\frac{3}{8}$ inch. During school, it snowed $\frac{2}{8}$ inch. After school, it snowed $\frac{5}{8}$ inch. How much did it snow?

12. **Extend Your Thinking** Jin wants to run or walk at least a kilometer each day. One day he jogged $\frac{3}{10}$ kilometer, walked $\frac{5}{10}$ kilometer, and then ran $\frac{2}{10}$ kilometer. Did he meet his goal? Use a representation to justify your response.

Reflect

How can you use representations to show adding fractions with like denominators?

Math is... Mindset

How have you shown others you respect their ideas?

Lesson 9-3

Add Fractions with Like Denominators

Be Curious

Is It Always True?

$$\frac{5}{8} + \frac{4}{8} = \frac{9}{8}$$

$$\frac{3}{12} + \frac{5}{12} = \frac{8}{12}$$

$$\frac{2}{6} + \frac{3}{6} = \frac{5}{6}$$

Math is... Mindset

What goal do you want to accomplish today?

Learn

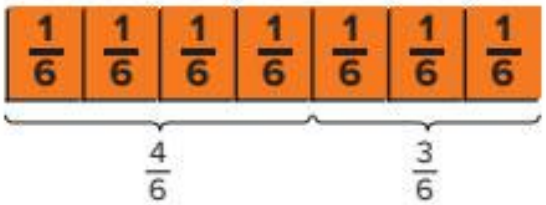
Mateo walked $\frac{4}{6}$ mile from his home to the bakery. He walked home by a shorter path that is $\frac{3}{6}$ mile long.

How many miles did Mateo walk in all?

You can add fractions to solve this problem.

One Way Use fraction tiles.

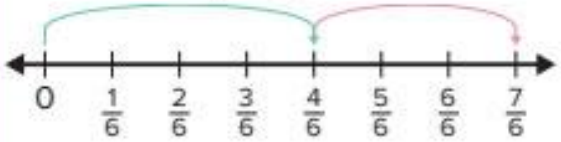
$\frac{4}{6} + \frac{3}{6} = ?$



$\frac{4}{6} + \frac{3}{6} = \frac{7}{6}$

Another Way Use a number line.

$\frac{4}{6} + \frac{3}{6} = ?$



$\frac{4}{6} + \frac{3}{6} = \frac{7}{6}$

Mateo walked $\frac{7}{6}$ miles in all.

When adding fractions that refer to the same whole, you add the numerators and the denominators stay the same.

Math is... Thinking

How do you know the addends refer to the same whole?

Work Together

What two fractions can you add to get a sum of $\frac{6}{10}$? Use representations to explain your answer.

On My Own

MATH REPLAY | GO ONLINE

Name _____

What is the sum? Create a representation to find the sum.

1. $\frac{3}{5} + \frac{3}{5} = \frac{\square}{\square}$

2. $\frac{1}{4} + \frac{2}{4} = \frac{\square}{\square}$

What is the missing value? Complete the equation.

3. $\frac{2}{3} + \frac{3}{3} = \frac{\square}{3}$

4. $\frac{2}{10} + \frac{6}{10} = \frac{8}{\square}$

5. $\frac{1}{8} + \frac{5}{8} = \frac{\square}{\square}$

6. $\frac{3}{2} + \frac{4}{2} = \frac{\square}{\square}$

7. $\frac{\square}{\square} + \frac{4}{6} = \frac{5}{6}$

8. $\frac{5}{12} + \frac{\square}{\square} = \frac{8}{12}$

9. Anu has $\frac{1}{6}$ meter of wire. She buys $\frac{3}{6}$ meter more. How much wire does Anu have now?

10. James swims part of a mile using the freestyle stroke. He uses the backstroke for $\frac{3}{5}$ mile. If he swims $\frac{4}{5}$ mile in all, how far did James swim using the freestyle stroke?

11. A class sets a goal to collect money for a local charity. They collect $\frac{2}{10}$ of their goal the first week. fter the second week, they had collected $\frac{6}{10}$ of the total goal. How much of their goal did the class collect in the second week?

12. Which expressions have a sum of $\frac{5}{6}$? Choose all that apply.

A. $\frac{2}{2} + \frac{3}{4}$

B. $\frac{2}{3} + \frac{3}{3}$

C. $\frac{5}{3} + \frac{5}{3}$

D. $\frac{2}{6} + \frac{3}{6}$

E. $\frac{1}{6} + \frac{4}{6}$

13. STEM Connection Owen is checking a population of butterflies for a unique marking on their wings. In one day, he studies $\frac{4}{5}$ of the population in the morning and $\frac{1}{5}$ of the population in the afternoon. How much of the population of butterfiles did he study in one day?

14. Extend Your Thinking Dionne uses $\frac{3}{10}$ roll of tape to seal some boxes and $\frac{4}{10}$ roll of tape for an art project. Did Dionne use more than or less than $\frac{1}{2}$ roll of tape in all? Explain your answer.

Reflect

How can you add fractions with like denominators?

Math is... Mindset

How were you able to accomplish your goal today?

Lesson 9-4

Represent Subtracting Fractions

Be Curious

Tell me everything you can.

Math is... Mindset

How do you work well with a classmate even when you might disagree?

Learn

Samantha has a ribbon that is $\frac{7}{8}$ yard long. She cuts it into two pieces. One piece is $\frac{4}{8}$ yard long.

How long is the other piece?

You can use representations to find the difference.

One Way Use fraction tiles.

$\frac{7}{8} - \frac{4}{8} = ?$

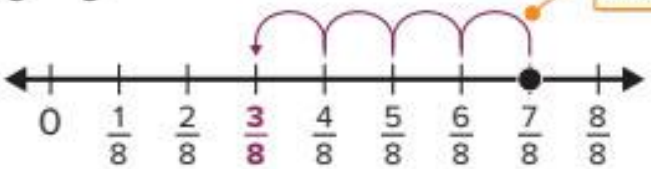
Subtract 4 tiles.

The denominator stays the same.

$\frac{7}{8} - \frac{4}{8} = \frac{3}{8}$

Another Way Use a number line.

$\frac{7}{8} - \frac{4}{8} = ?$



Each interval is the same size.

$\frac{7}{8} - \frac{4}{8} = \frac{3}{8}$

The other piece of ribbon is $\frac{3}{8}$ yard long.

You can subtract fractions that refer to the same whole.

Math is... Modeling

How do representations help you subtract fractions?

Work Together

Samantha has another ribbon that is $\frac{10}{12}$ yard long. She cuts off a piece that is $\frac{3}{12}$ yard long. How long is the other piece? Use a representation to show your work.

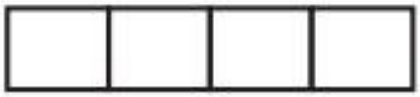
On My Own

Name _____

1. The park is $\frac{9}{10}$ mile from Ms. Rydal's house. She walks $\frac{3}{10}$ mile and rests on a bench. How much farther does Ms. Rydal have to walk to reach the park? Draw a picture to show your thinking.

How can you find the difference? Use the fraction model to represent the equation.

2. $\frac{3}{4} - \frac{1}{4} = \frac{\square}{\square}$



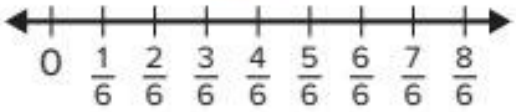
3. $\frac{4}{6} - \frac{2}{6} = \frac{\square}{\square}$

4. $\frac{5}{10} - \frac{3}{10} = \frac{\square}{\square}$

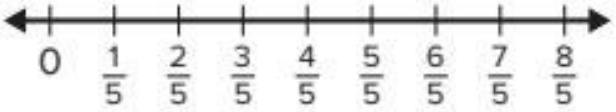
5. $\frac{6}{8} - \frac{3}{8} = \frac{\square}{\square}$

How can you find the difference? Use the number line to represent the equation.

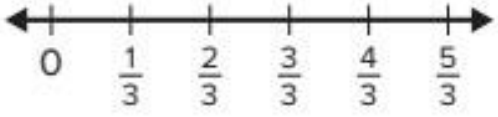
6. $\frac{7}{6} - \frac{1}{6} = \frac{\square}{\square}$



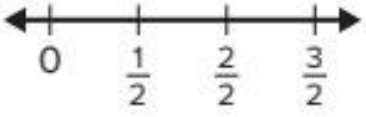
7. $\frac{8}{5} - \frac{4}{5} = \frac{\square}{\square}$



8. $\frac{5}{3} - \frac{2}{3} = \frac{\square}{\square}$



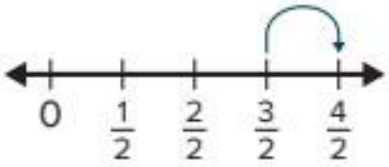
9. $\frac{3}{2} - \frac{1}{2} = \frac{\square}{\square}$



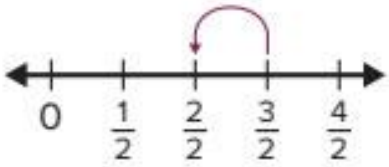
10. Error analysis Jackson has $\frac{3}{4}$ liter of water in his water bottle. He drinks some of the water during soccer practice. There is $\frac{1}{4}$ liter of water left in his water bottle. He thinks he drank more than half a liter. Do you think Jackson is correct? Draw a picture to show your thinking.

11. Which representation shows $\frac{3}{2} - \frac{1}{2}$?

A.



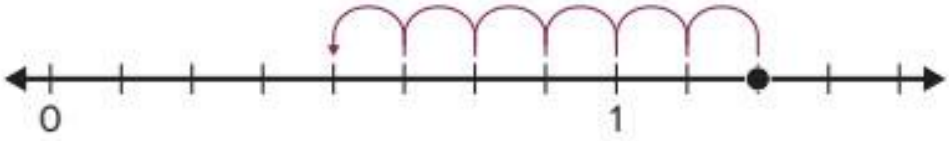
B.



C.

D.

12. Extend Your Thinking Carlos used a number line to find the difference of two fractions. What equation can you write to represent the differenc ?



Reflect

How can you use representations to subtract fractions with like denominators?

Math is... Mindset

How have you worked well with a classmate when you disagreed?

Lesson 9-5

Subtract Fractions with Like Denominators

Be Curious

What do you notice?
What do you wonder?

$$\frac{8}{12} - \frac{5}{12} \qquad \frac{11}{6} - \frac{4}{6}$$

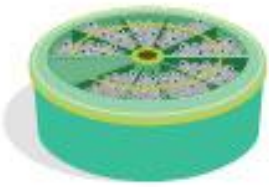
Math is... Mindset

What helps you understand your feelings?

Learn

Robert had nails in $\frac{9}{10}$ of the container.

He used the nails in $\frac{4}{10}$ of the container to build a bookshelf.



How much of the container still has nails in it?

You can subtract to solve this problem.

One Way Use fraction circles.

$\frac{9}{10} - \frac{4}{10} = ?$

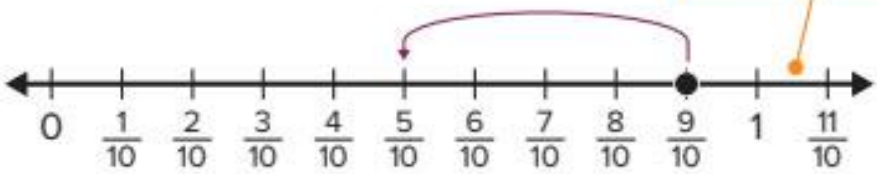
$\frac{9}{10} - \frac{4}{10} = \frac{5}{10}$

Subtract 4 parts.

Another Way Use a number line.

$\frac{9}{10} - \frac{4}{10} = ?$

Each interval is the same size.



$\frac{9}{10} - \frac{4}{10} = \frac{5}{10}$

The denominators stay the same.

There are nails in $\frac{5}{10}$ of the container.

Math is... Quantities

How do you know what fraction each part of a fraction circle represents?

You can subtract two like fractions that refer to the same whole by using models and subtracting the numerators and keeping the denominators the same.

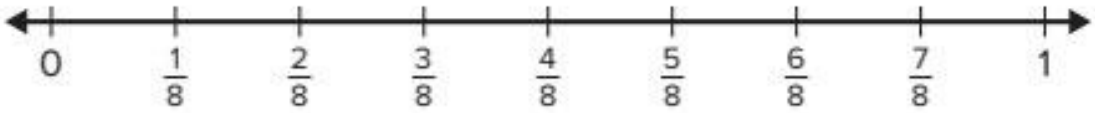
Work Together

Ryan has $\frac{6}{8}$ cup of rice. Rita has $\frac{4}{8}$ cup of rice. Who has more rice? How much more? Use representations to explain your answer.

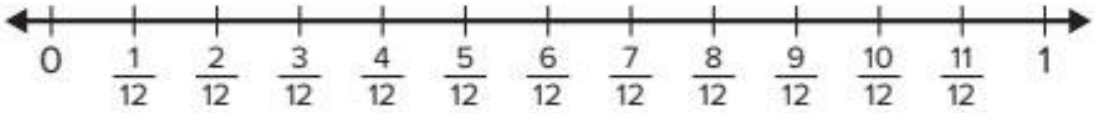
On My Own

Name _____

1. Henry's home is $\frac{7}{8}$ mile from school. He stops at the library on his way home. The library is $\frac{4}{8}$ mile from the school. How much farther does Henry need to travel to get home? Use the number line to find the differen .



2. A tank was $\frac{7}{12}$ full of water. Camryn drained $\frac{5}{12}$ of the tank. How much of the tank is still filled with water? Use the number line to find the differen .



What is the difference?

3. $\frac{6}{8} - \frac{2}{8} = \frac{\square}{\square}$

4. $\frac{15}{12} - \frac{11}{12} = \frac{\square}{\square}$

5. $\frac{9}{6} - \frac{4}{6} = \frac{\square}{\square}$

6. $\frac{7}{8} - \frac{2}{8} - \frac{2}{8} = \frac{\square}{\square}$

What fraction are you taking away?

7. $\frac{8}{10} - \frac{\square}{\square} = \frac{6}{10}$

8. $\frac{8}{12} - \frac{\square}{\square} = \frac{5}{12}$

9. $\frac{4}{5} - \frac{1}{5} - \frac{\square}{\square} = \frac{2}{5}$

10. $\frac{9}{12} - \frac{2}{12} - \frac{\square}{\square} = \frac{4}{12}$

11. Gianna has $\frac{5}{6}$ yard of string. She cuts off $\frac{3}{6}$ yard to make bracelets. Does Gianna have more than or less than $\frac{1}{2}$ yard of string left? Explain.

12. Roger eats $\frac{2}{4}$ of a large protein bar. Sammi eats $\frac{3}{4}$ of a small protein bar. Jenna says Sammi ate more? Do you agree? Explain.

13. Error Analysis Tamara says the difference of $\frac{12}{7}$ and $\frac{5}{7}$ is $\frac{7}{0}$. How can you help her find the correct differen ?

14. Extend Your Thinking Marnie has $\frac{7}{8}$ cup of nuts. She uses some of the nuts in a recipe and now she has $\frac{3}{8}$ cup of nuts. How much did she use? Explain.

Reflect

How are adding and subtracting fractions the same? How are they different?

Math is... Mindset

How have you worked to understand your feelings?

Unit 9

Fraction Sums and Differences

Name _____

For each problem, choose the best estimate for the sum.

1. $\frac{5}{12} + \frac{2}{12}$

Circle the best estimate.

A. more than 1

B. between $\frac{1}{2}$ and 1

C. between 0 and $\frac{1}{2}$

D. none of the above

Explain or show your thinking.

2. $\frac{1}{10} + \frac{2}{10}$

Circle the best estimate.

A. more than 1

B. between $\frac{1}{2}$ and 1

C. between 0 and $\frac{1}{2}$

D. none of the above

Explain or show your thinking.

For each problem, choose the best estimate for the difference.

3. $\frac{11}{6} - \frac{7}{6}$

Circle the best estimate.

A. more than 1

B. between $\frac{1}{2}$ and 1

C. between 0 and $\frac{1}{2}$

D. none of the above

Explain or show your thinking.

4. $\frac{11}{8} - \frac{2}{8}$

Circle the best estimate.

A. more than 1

B. between $\frac{1}{2}$ and 1

C. between 0 and $\frac{1}{2}$

D. none of the above

Explain or show your thinking.

Reflect On Your Learning

I'm confused. | I'm still learning. | I understand. | I can teach someone else.

Lesson 9-6

Solve Problems Involving Fractions

Be Curious

What math do you see?

Math is... Mindset

What is your responsibility in building a safe classroom culture?

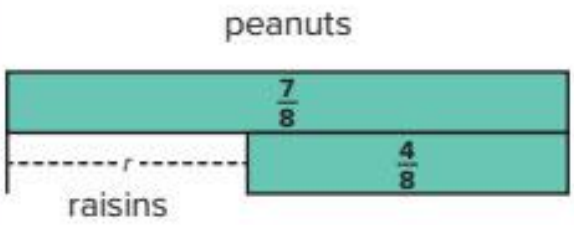
Learn

Graham makes his own trail mix. Graham uses $\frac{7}{8}$ pound peanuts in the trail mix. He uses $\frac{4}{8}$ pound less raisins than peanuts.

What is the total weight of the trail mix?

Some problems have more than one question to answer.

Step 1: What is the weight of the raisins that Graham uses?

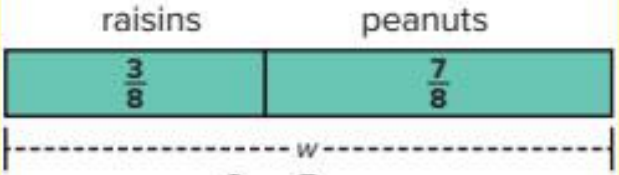


$$\frac{7}{8} - \frac{4}{8} = r$$

$$\frac{3}{8} = r$$

Graham uses $\frac{3}{8}$ pound of raisins.

Step 2: What is the total weight of the trail mix?



$$\frac{3}{8} + \frac{7}{8} = w$$

$$\frac{10}{8} = w$$

The total weight of the trail mix is $\frac{10}{8}$ pounds.

You can use strategies you know to solve problems involving addition and subtraction of fractions.

Math is... Connections

How is addition with fractions like addition with whole numbers?

Work Together

Heidi and her brother are painting a wall. Heidi painted $\frac{4}{10}$ of the wall. Her brother painted $\frac{3}{10}$ of the wall. How much of the wall still needs to be painted? Use equations and representations to show your work.

On My Own

Name _____

What is the solution? Use representations and equations to solve.

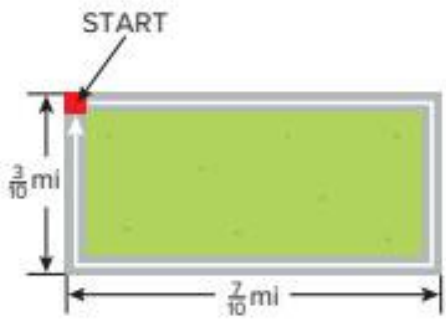
1. To make a recipe, Clarice uses $\frac{1}{4}$ cup of oil and $\frac{2}{4}$ cup of water. How much liquid does she use?

2. Jen ran $\frac{9}{10}$ mile. Her sister ran $\frac{12}{10}$ miles. How much farther did Jen's sister run?

3. There was some water in a tank. Camryn drained $\frac{5}{12}$ of the tank. Now there is $\frac{2}{12}$ of the tank remaining. How much of the tank was filled with water before Camryn drained it?

4. To make a fruit salad, Sully uses $\frac{5}{6}$ pound of oranges. He uses $\frac{3}{6}$ pound less berries than oranges. What is the total weight of the oranges and berries?

5. Marcie planned to walk around the entire park, but her mother gave her a ride in the car for the last $\frac{4}{10}$ mile. How far did she walk?



6. Julia rode her bike $\frac{8}{10}$ mile to the library. She rode another $\frac{1}{10}$ mile to the post offi . Then, she rode $\frac{2}{10}$ mile to school. How many miles did Julia ride?

7. A bottle contained $\frac{7}{8}$ gallon of juice. Then $\frac{5}{8}$ gallon was poured out. After some juice was added, the bottle contained $\frac{3}{8}$ gallon of juice. How much juice was added?

8. Santosh walked $\frac{9}{10}$ mile. He realized he dropped his scarf, so he walked back $\frac{3}{10}$ mile. Then he walked another $\frac{5}{10}$ mile. How far is Santosh from where he started?

9. **Extend Your Thinking** Write a word problem that can be represented by the equations below. Then solve.

$b = \frac{5}{8} + \frac{4}{8}, c = b - \frac{2}{8}$

Reflect

How can you determine which operations to use to solve problems with fractions?

Math is... Mindset

How did you help to create a safe classroom culture?

Unit Review

Name _____

Vocabulary Review

Choose the correct word(s) to complete the sentence.

addend	decompose	denominator
difference	like denominators	numerator
sum	unit fraction	

1. To _____ is to break apart a number into parts. (Lesson 9-1)

2. A(n) _____ is a fraction with a numerator of 1. (Lessons 9-1, 9-2)

3. The top number in a fraction is called the _____. (Lessons 9-3, 9-4)

4. The bottom number in a fraction is called the _____. (Lessons 9-3, 9-4)

5. When two or more fractions have the same denominators they have _____. (Lessons 9-1, 9-2)

6. The numbers you add together in an addition equation are called _____. (Lessons 9-1, 9-2)

7. The answer in a subtraction equation is called the _____. (Lessons 9-4, 9-5)

8. The answer in an addition equation is called the _____. (Lessons 9-1, 9-2)

Review

9. Which addition expressions show a decomposition of $\frac{5}{8}$? Choose all that apply. (Lesson 9-1)

A. $\frac{2}{8}+\frac{3}{8}$

B. $\frac{1}{8}+\frac{1}{8}+\frac{1}{8}+\frac{1}{8}$

C. $\frac{1}{8}+\frac{1}{8}+\frac{2}{8}$

D. $\frac{1}{8}+\frac{1}{8}+\frac{1}{8}+\frac{1}{8}+\frac{1}{8}$

E. $\frac{1}{8}+\frac{2}{8}+\frac{2}{8}$

10. What fraction decomposes into the addition expression $\frac{1}{5}+\frac{1}{5}+\frac{2}{5}$? (Lesson 9-3)

A. $\frac{1}{5}$

B. $\frac{2}{5}$

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

D. $\frac{4}{5}$

11. Timothy mowed $\frac{1}{6}$ of the lawn. His sister Eliana mowed $\frac{4}{6}$ of the lawn. How much of the lawn did Timothy and Eliana mow in all? Create a representation to solve.

(Lessons 9-2, 9-3)

12. Marina used $\frac{3}{12}$ pound of butter for her cookies and $\frac{4}{12}$ pound of butter for carrot cake. How much butter did Marina use?

(Lessons 9-4, 9-5)

13. What is the sum? Use a fraction model to solve the equation.

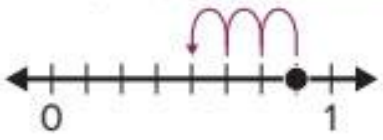
(Lessons 9-4, 9-5)

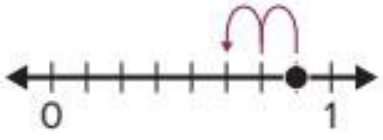
$$\frac{3}{7}+\frac{2}{7}+\frac{1}{7}=\frac{\square}{\square}$$

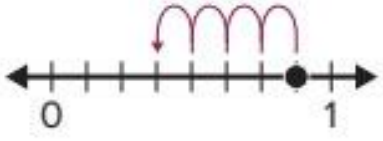
14. Is the equation correct? Use a checkmark to choose *Correct* or *Not Correct* for each equation.
(Lessons 9-3, 9-5)

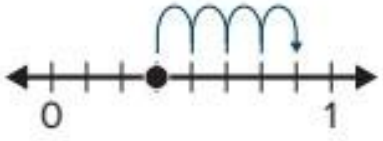
	Correct	Not Correct
$\frac{7}{10} + \frac{4}{10} = \frac{11}{10}$		
$\frac{4}{8} - \frac{3}{8} = \frac{1}{16}$		
$\frac{1}{2} + \frac{1}{2} = \frac{2}{4}$		
$\frac{3}{4} - \frac{1}{4} = \frac{2}{4}$		
$\frac{5}{12} + \frac{2}{12} = \frac{7}{12}$		

15. Which number line illustrates the difference $\frac{7}{8} - \frac{3}{8}$? (Lessons 9-4, 9-5)

A.


B.


C.


D.


16. What is the difference $\frac{9}{12} - \frac{4}{12}$? Create a representation to solve.
(Lessons 9-4, 9-5)

17. Monica has $\frac{2}{5}$ of a glass filled with milk. She adds milk to the glass until $\frac{4}{5}$ of the glass is filled with milk. How much milk does Monica add to the glass? Create a representation to solve.
(Lessons 9-4, 9-5)

18. A water cooler at Mr. Kane's office wa $\frac{8}{10}$ full. The offic workers drained $\frac{6}{10}$ of the cooler during the day. At the end of the day more water was added and the cooler is now $\frac{9}{10}$ full. How much water was added at the end of the day? (Lesson 9-6)

Performance Task

You have a container that has a capacity of $\frac{3}{4}$ cup and another container that has a capacity of $\frac{5}{4}$ cup. You want to measure out exactly 1 cup into a bowl. Explain how you can measure your water.

Reflect

Describe how you can add and subtract fractions with like denominators.

Unit 9

Fluency Practice

Name _____

Fluency Strategy

You can use an **algorithm** to add whole numbers. Add the digits in the same place value.

Add the ones, tens, hundreds, then thousands.

Sometimes it is necessary to regroup when using the algorithm.

$$\begin{array}{r} {\scriptstyle 1\ 1\ 1} \\ 2{,}478 \\ +\ 3{,}756 \\ \hline 6{,}234 \end{array}$$

Fluency Flash

Write the sum in the place value chart.

1.

	thousands	hundreds	tens	ones
	3	5	2	2
+	4	1	9	6

2.

	thousands	hundreds	tens	ones
	6	7	4	8
+	1	6	5	9

Fluency Check

Find each sum or difference.

3. 2,497 + 248 = _____
4. 697 − 262 = _____
5. 1,799 − 354 = _____
6. 15,947 + 2,021 = _____
7. 53,610 + 21,468 = _____
8. 9,857 − 6,724 = _____
9. 359 + 446 = _____
10. 3,345 + 4,413 = _____
11. 319 + 784 = _____
12. 3,468 − 2,314 = _____
13. 192 + 354 = _____
14. 4,567 + 321 = _____

Fluency Talk

Explain to a friend how you know if you have to regroup when adding using an algorithm.

How does adding with regrouping compare to adding without regrouping?

Addition and Subtraction Strategies with Mixed Numbers

Focus Question

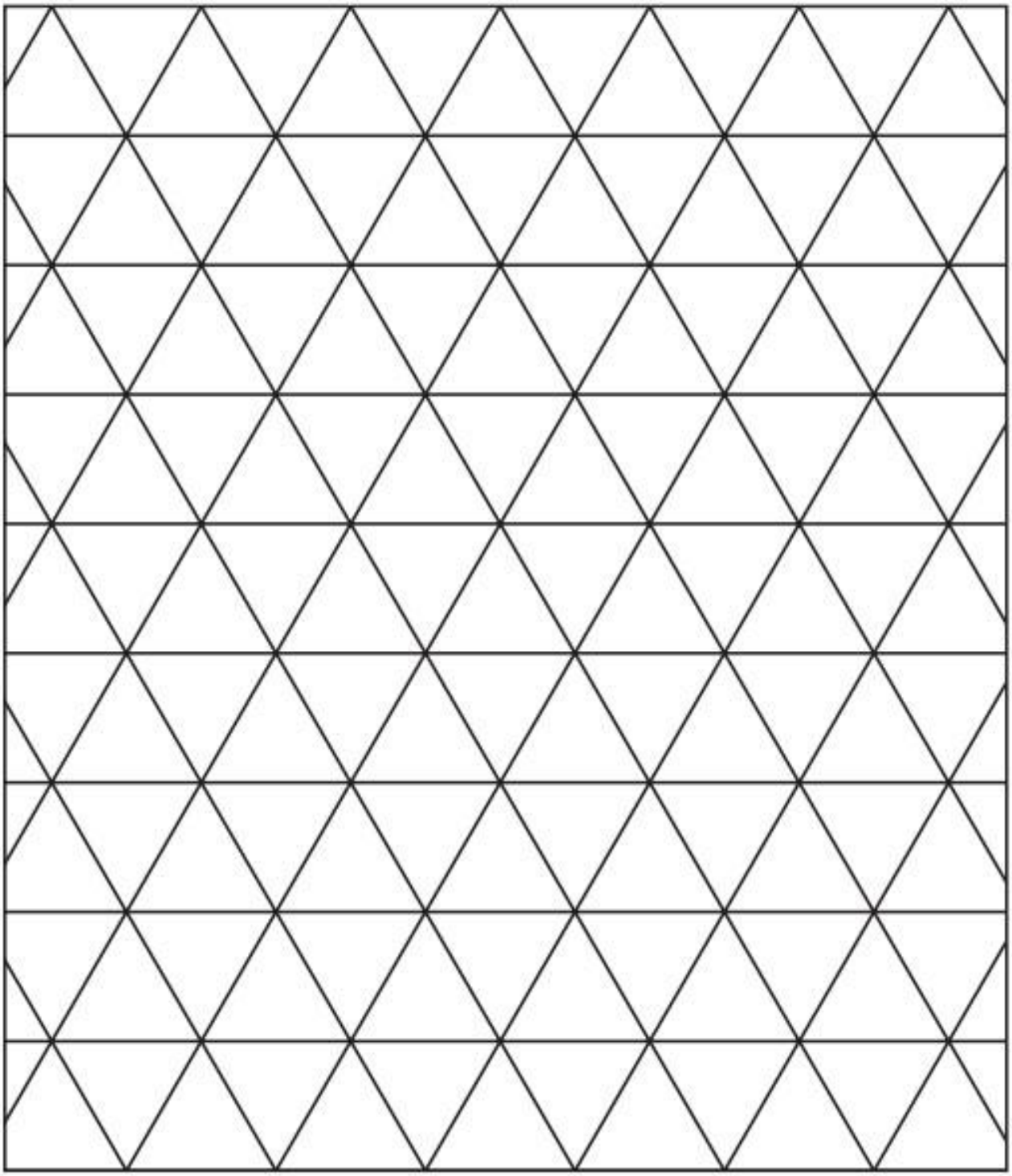
How can I add and subtract mixed numbers with like denominators?

IGNITE!

Name _____

Pattern Block Designs

Use pattern blocks to create a design.

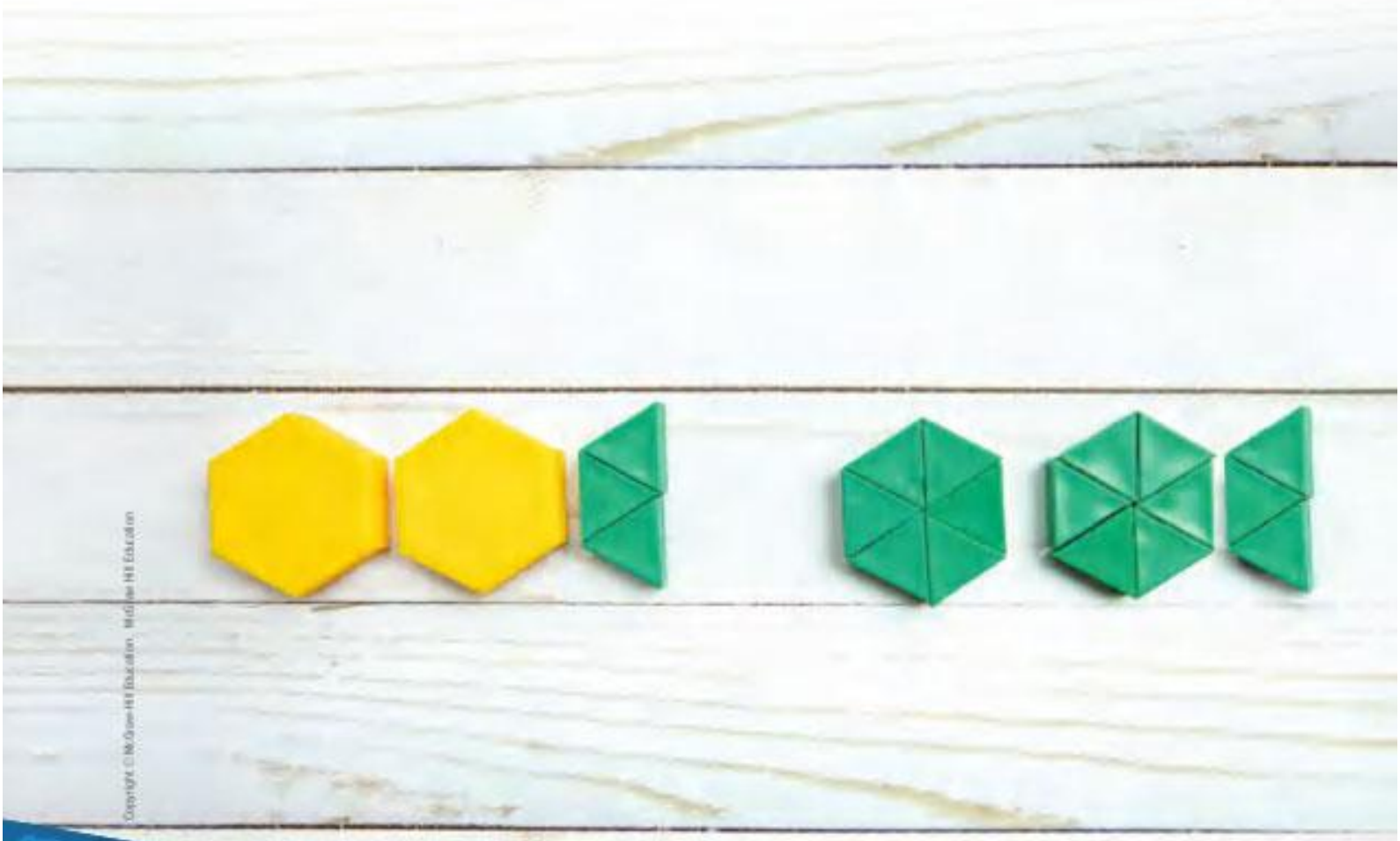


Lesson **10-1**

Understand Decomposing Mixed Numbers

Be Curious

How are they the same?
How are they different?



Math is... Mindset

What helps you make sense of a situation?

Learn

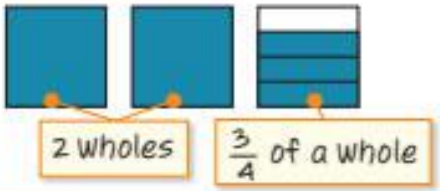
Ciana needs to measure $2\frac{3}{4}$ cups of flour to make muffins. She has only the measuring cup shown.

$\frac{1}{4}$ cup

How many times will Ciana need to fill the measuring cup?

$2\frac{3}{4}$ is a **mixed number**.

It has a whole-number part and a fraction part.



One Way Decompose into a sum of whole-number parts and fraction parts.

$2\frac{3}{4} = 1 + 1 + \frac{3}{4}$

$2\frac{3}{4} = \frac{4}{4} + \frac{4}{4} + \frac{3}{4}$

$2\frac{3}{4} = \frac{11}{4}$

Another Way Decompose into a sum of unit fractions.

$2\frac{3}{4} = \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4}$

$2\frac{3}{4} = \frac{11}{4}$

Ciana can use eleven $\frac{1}{4}$ cup measuring cups.

Math is... Structure

What is another way to decompose a mixed number?

Mixed numbers are another way to write a fraction that is greater than 1.

Work Together

How can you decompose $2\frac{1}{3}$? Write an equation to show the decomposition.

On My Own

Name _____

How can you decompose the mixed number?
Write equations to represent the decomposition.

1. $2\frac{3}{5}$

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

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

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

5. What fraction is equivalent to $5\frac{2}{3}$? Use a representation or equation to justify your answer.

6. Linda decomposed a mixed number as $\frac{2}{2}+\frac{2}{2}+\frac{2}{2}+\frac{2}{2}+\frac{2}{2}+\frac{1}{2}$.

a. What mixed number did Linda decompose?

b. What is another way Linda could decompose the mixed number?

7. What mixed number is equivalent to $\frac{17}{6}$? Use a representation or equation to justify your answer.

8. Trey took 36 orange slices to a class picnic. Each slice was $\frac{1}{8}$ of an orange. How many oranges did Trey take to the picnic?

9. Kaycee uses $2\frac{7}{8}$ yards of fabric for 3 different projects. How much fabric could she have used for each project? Draw a representation to justify your answer.

10. **STEM Connection** A veterinarian prescribed $\frac{1}{2}$ pill each day for Paul's dog. She gave him a bottle with $7\frac{1}{2}$ pills. How many days does Paul have to give his dog medication? Explain your answer.

11. **Extend Your Thinking** What number makes the comparison true? Explain.

$$3\frac{5}{8} > 1 + \_\_\_\_ + \frac{5}{8}$$

Reflect

How is the way you think about decomposing mixed numbers different from the way you think about decomposing fractions?

Math is... Mindset

How have you made sense of a situation?

Lesson **10-2**

Represent Adding Mixed Numbers

Be Curious

What do you notice?
What do you wonder?

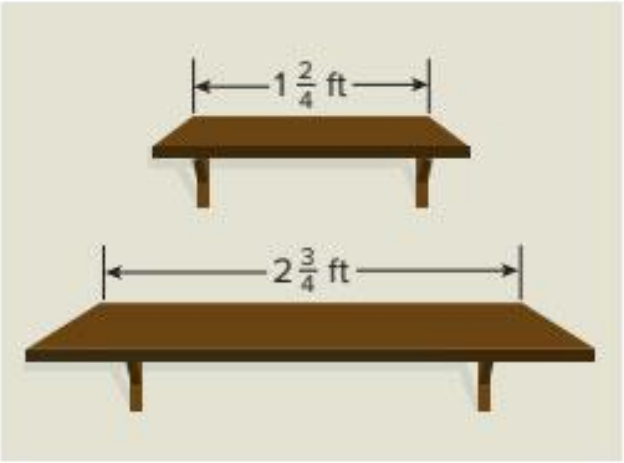
Math is... Mindset

What helps you stay focused?

Learn

Tara buys a 5-foot-long board to make two shelves.

How much of the board will she use?

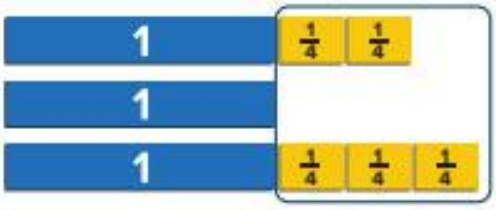


You can use fraction models to represent the addition.

You can use fraction models to represent the problem.

$1\frac{2}{4} + 2\frac{3}{4} = b$

Add the whole number parts and the fraction parts. You can make another whole.



3 $\frac{5}{4} = 1\frac{1}{4}$

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

Tara will use $4\frac{1}{4}$ feet of the board.

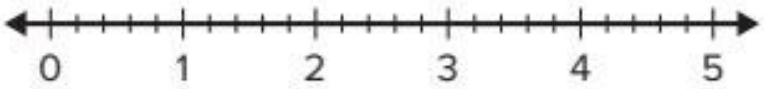
Math is... Modeling

How do representations help you understand how to add mixed numbers?

The representations you use to add fractions can also be used to add mixed numbers.

Work Together

Kyle rode his bike $2\frac{3}{5}$ miles in the morning and $1\frac{4}{5}$ miles in the afternoon. How far did Kyle ride during the day? Use a number line to represent and solve the problem.



On My Own

Name _____

What is the sum? Use a representation to show your work.

1. $1\frac{2}{5} + 2\frac{2}{5} = \square\ \frac{\square}{\square}$

2. $2\frac{3}{4} + 1\frac{2}{4} = \square\ \frac{\square}{\square}$

3. $1\frac{6}{12} + 1\frac{4}{12} = \square\ \frac{\square}{\square}$

4. $2\frac{5}{8} + 1\frac{7}{8} = \square\ \frac{\square}{\square}$

5. $1\frac{7}{10} + 1\frac{9}{10} = \square\ \frac{\square}{\square}$

6. $2\frac{2}{6} + 1\frac{3}{6} = \square\ \frac{\square}{\square}$

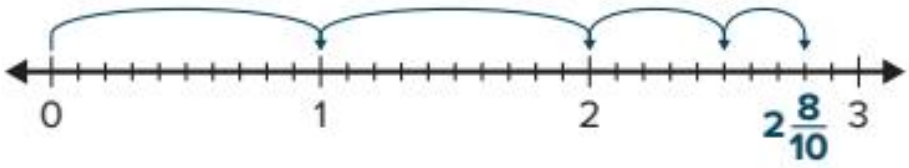
7. Greg has $1\frac{3}{4}$ pounds of peaches. He buys another $3\frac{3}{4}$ pounds of peaches at the store. How many pounds of peaches does Greg have now?

8. How can you use the fraction circles to find the sum of $1\frac{4}{6} + 1\frac{3}{6}$?

9. Lynelle has a goal of walking 4 miles each day. Yesterday she walked $2\frac{5}{8}$ miles in the morning and $1\frac{5}{8}$ miles in the evening. Did Lynelle meet her goal yesterday? Use a representation to justify your answer.

10. Tomika spent $1\frac{2}{3}$ hours working on her science project this week. She spent $1\frac{1}{3}$ more hours reading than she did on her science project. How many hours did she spend reading this week?

11. Nate used a number line to find the sum of $1\frac{5}{10} + 1\frac{3}{10}$. How can you explain Nate's strategy?



12. Extend Your Thinking Jason drove $3\frac{5}{6}$ hours to visit his family. He stopped to eat after driving part of the time. How long could Jason have driven before and after stopping to eat? Use a representation to justify your answer.

Reflect

How does the way you think about the mixed numbers in a problem help you represent the addition?

Math is... Mindset

What helped you stay focused?

Lesson **10-3**

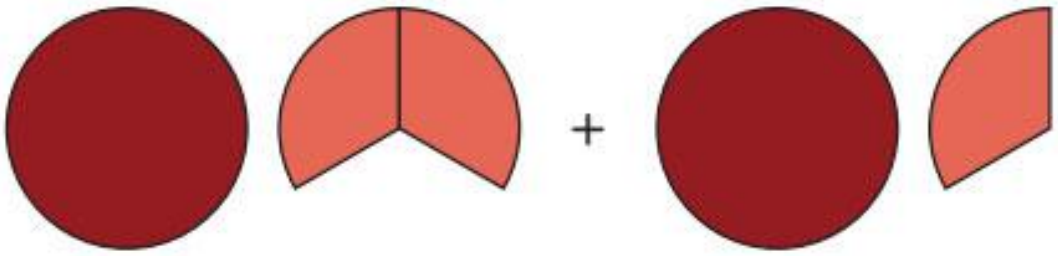
Add Mixed Numbers

Be Curious

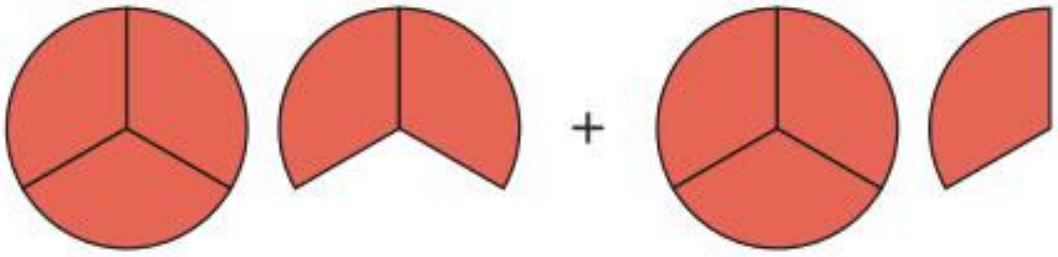
How are they the same? How are they different?

Harold and Rita are working on the same problem.

Harold's Work:



Rita's Work:



Math is... Mindset

What are some ways you can contribute to your group today?

Learn

A kitten weighed $1\frac{4}{5}$ pounds at his last appointment at the veterinarian. The kitten gained $1\frac{3}{5}$ pounds over the next two weeks.

How much does the kitten weigh now?

You can add the mixed numbers to find the kitten's weight now.

One Way Decompose the mixed numbers into whole numbers and fractions and add like units.

$$1\frac{4}{5}+1\frac{3}{5}=1+\frac{4}{5}+1+\frac{3}{5}$$
$$=1+1+\frac{4}{5}+\frac{3}{5}$$
$$=2+\frac{7}{5}$$
$$=2+1+\frac{2}{5}$$
$$=3\frac{2}{5}$$

Regroup $\frac{7}{5}$ as 1 and $\frac{2}{5}$.

Another Way Write each mixed number as an equivalent fraction and add the numerators.

$$1\frac{4}{5}+1\frac{3}{5}=\frac{9}{5}+\frac{8}{5}$$
$$=\frac{17}{5}$$
$$=3\frac{2}{5}$$

The sum is a fraction greater than 1.

The kitten weighs $3\frac{2}{5}$ pounds.

Math is... Generalizations

How do you know your solution is reasonable?

A sum of mixed numbers can be found by using different strategies, such as decomposing the mixed numbers or using equivalent fractions.

Work Together

Kim picked blueberries and strawberries at a fruit farm. How many pounds of fruit did Kim pick? Explain your strategy.

$1\frac{6}{8}$ lb $2\frac{7}{8}$ lb

On My Own

MATH REPLAY | GO ONLINE

Name _____

What is the sum?

1. $3\frac{5}{12} + 4\frac{3}{12} = \square\frac{\square}{\square}$

2. $2\frac{7}{10} + 2\frac{5}{10} = \square\frac{\square}{\square}$

3. $1\frac{3}{6} + 1\frac{4}{6} = \square\frac{\square}{\square}$

4. $4\frac{3}{5} + 3\frac{2}{5} =$ _____

5. $5\frac{3}{8} + 4\frac{4}{8} = \square\frac{\square}{\square}$

6. $2\frac{2}{3} + 3\frac{2}{3} = \square\frac{\square}{\square}$

7. Emily ate $2\frac{1}{4}$ cups of soup for lunch. Emily's father ate $1\frac{1}{4}$ cups of soup more than Emily. How many cups of soup did Emily's father eat? Explain how you found your answer.

8. **Error Analysis** Diane added two mixed numbers by writing them as fractions. Her work is shown. What would you tell Diane about her work?

$$1\frac{4}{5} + 2\frac{3}{5} = \frac{9}{5} + \frac{13}{5}$$
$$= \frac{22}{10}$$

9. Jane jogs $2\frac{1}{3}$ miles to the park. She jogs another $1\frac{2}{3}$ miles to meet a friend. How many miles did Jane jog? Explain how you found your answer.

10. Andy writes these steps to find the sum of $2\frac{5}{12} + 1\frac{2}{12}$. How can you explain the strategy Andy used?

$$2 + 1 = 3$$
$$\frac{5}{12} + \frac{2}{12} = \frac{7}{12}$$
$$3 + \frac{7}{12} = 3\frac{7}{12}$$

11. Lauren plants $2\frac{3}{8}$ rows of tulips and $3\frac{7}{8}$ rows of daffodils. How many rows of flowers does auren plant? Explain how you found your answer.

12. Extend Your Thinking What are possible missing numbers? Justify your answer.

$$1\frac{\square}{5} + 2\frac{\square}{5} = \square\frac{1}{5}$$

Reflect

How did you decide what strategy to use when adding mixed numbers?

Math is... Mindset

What are some ways you contributed to your group today?

Lesson **10-4**

Represent Subtracting Mixed Numbers

Be Curious

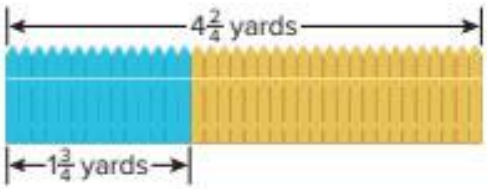
Tell me everything you can.

Math is... Mindset

How do you show you understand how others are feeling?

Learn

Ramsey paints part of a fence blue in the morning. He plans to paint the rest of the fence in the afternoon.

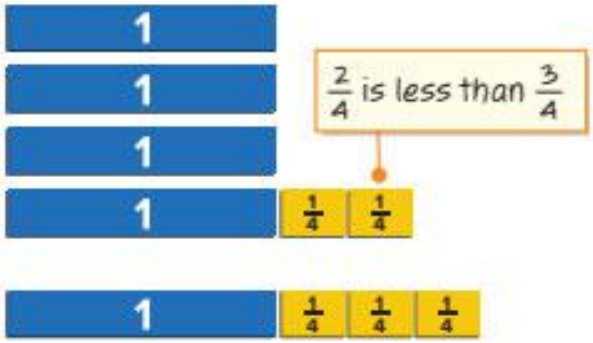


How many yards of the fence will Ramsey paint in the afternoon?

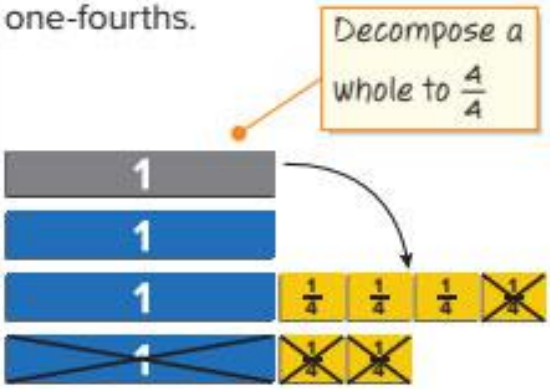
You can use fraction tiles to subtract $4\frac{2}{4} - 1\frac{3}{4}$.

Represent the mixed numbers with fraction tiles.

$4\frac{2}{4} - 1\frac{3}{4} = y$



Subtract one whole and three one-fourths.



$4\frac{2}{4} - 1\frac{3}{4} = 2\frac{3}{4}$

Ramsey will paint $2\frac{3}{4}$ yards of fence in the afternoon.

The representations you use to subtract fractions can also be used to subtract mixed numbers.

Math is... Modeling

How do representations help you understand how to subtract mixed numbers?

Work Together

Eli ran $3\frac{1}{8}$ miles last week. This week, he ran $1\frac{3}{8}$ fewer miles than last week. How far did Eli run this week? Use a number line to represent and solve the problem.

On My Own

MATH REPLAY | GO ONLINE

Name _____

What is the difference? Use a representation to show your work.

1. $4\frac{2}{4} - 3\frac{3}{4} = \frac{\square}{\square}$

2. $3\frac{2}{3} - 2\frac{1}{3} = \square\frac{\square}{\square}$

3. $2\frac{7}{8} - 1\frac{3}{8} = \square\frac{\square}{\square}$

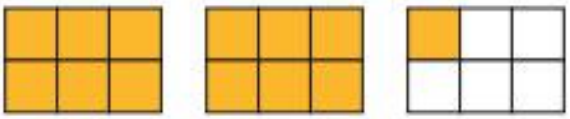
4. $3 - \frac{4}{5} = \square\frac{\square}{\square}$

5. $3\frac{4}{6} - 1\frac{3}{6} = \square\frac{\square}{\square}$

6. $3\frac{4}{6} - 1\frac{5}{6} = \square\frac{\square}{\square}$

7. Stella and Darius go to the same school. Stella's house is 5 miles from the school. Darius's house is $3\frac{9}{10}$ miles from the school. How much farther is Stella's house from the school than Darius's house? Use a representation to justify your answer.

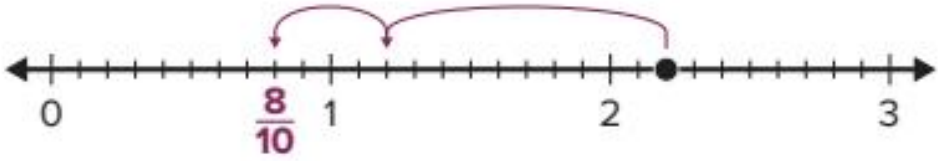
8. How can you use the fraction model to solve $2\frac{1}{6} - 1\frac{3}{6}$?



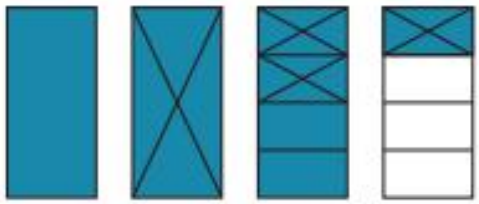
9. Norman has a goal to read $2\frac{1}{3}$ hours this week. He has to read another $1\frac{2}{3}$ hours to reach his goal. How much time has Norman read so far?

10. Rosie has $3\frac{1}{4}$ cups of shredded cheese. She uses $1\frac{3}{4}$ cups of the cheese to make a pizza. Will there be enough left to make another pizza with the same amount of cheese? Use a representation to justify your answer.

11. Issac used a number line to find the difference $\frac{2}{10} - 1\frac{4}{10}$. How can you explain Issac's strategy?



12. Extend Your Thinking Write a word problem that can be represented by the fraction model shown.



Reflect

How does the way you represent the subtraction of mixed numbers compare to the way you represent the subtraction of fractions?

Math is... Mindset

What helped you understand how others are feeling?

Lesson **10-5**

Subtract Mixed Numbers

Be Curious

What could the question be?

Math is... Mindset

What are your strengths in math?

Learn

Jennifer used orange juice and pineapple juice in a punch recipe.

How many more quarts of orange juice did Jennifer use than pineapple juice?

One Way Write each mixed number as an equivalent fraction and then subtract the fractions.

$$2\frac{1}{8} - 1\frac{4}{8} = \frac{17}{8} - \frac{12}{8}$$
$$= \frac{5}{8}$$

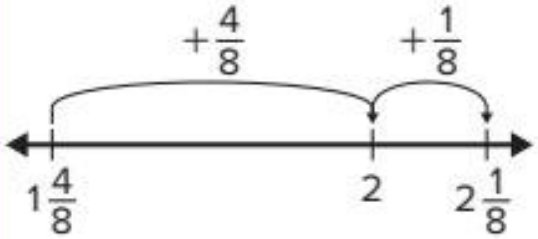
Math is... Structure

Why can you use equivalent fractions to subtract mixed numbers?

Another Way Write and solve a related addition equation.

$$2\frac{1}{8} - 1\frac{4}{8} = q$$
$$1\frac{4}{8} + q = 2\frac{1}{8}$$

A numberline can help you solve.



Jennifer used $\frac{5}{8}$ more quarts of orange juice than pineapple juice.

The difference between two mixed numbers can be found by using different strategies, such as using the relationship between addition and subtraction or using equivalent fractions.

Work Together

Joseph has a piece of plywood that is $4\frac{1}{4}$ feet long. He cuts off a piece that is $2\frac{3}{4}$ feet long. How long is the remaining piece of plywood? Explain your strategy.

On My Own

MATH REPLAY | GO ONLINE

Name _____

What is the difference?

1. $4\frac{10}{12} - 2\frac{3}{12} = \square \frac{\square}{\square}$

2. $3\frac{1}{8} - 1\frac{5}{8} = \square \frac{\square}{\square}$

3. $1\frac{1}{3} - \frac{2}{3} = \frac{\square}{\square}$

4. $4 - \frac{8}{10} = \square \frac{\square}{\square}$

5. $3\frac{1}{4} - \frac{2}{4} = \square \frac{\square}{\square}$

6. $4\frac{2}{6} - \frac{3}{6} = \square \frac{\square}{\square}$

7. A rug is $9\frac{5}{12}$ feet long and $6\frac{1}{12}$ feet wide. How many feet longer is the length than the width? Explain how you found your answer.

8. **Error Analysis** Christy solved $3\frac{2}{8} - 2\frac{7}{8} = ?$ and got a solution of $1\frac{5}{8}$. How can you help Christy understand her solution is not reasonable?

9. Jon mixes $1\frac{3}{4}$ cups of strawberries with some blueberries in a bowl. There are $3\frac{1}{4}$ cups of fruit in the bowl. How many cups of blueberries are in the bowl? Explain how you found your answer.

10. Cooper writes the following steps to solve $8\frac{9}{12} - 4\frac{4}{12} = ?$. How can you explain the strategy Cooper used?

$$8\frac{9}{12} - 4 = 4\frac{9}{12}$$
$$4\frac{9}{12} - \frac{4}{12} = 4\frac{5}{12}$$

11. Tammy has $3\frac{2}{3}$ more feet of fabric than Megan. Tammy has $4\frac{1}{3}$ feet of fabric. How many feet of fabric does Megan have? Explain how you found your answer.

12. Extend Your Thinking What are possible missing numbers? Justify your answer.

$$3\frac{\square}{8} - 2\frac{\square}{8} = \square\frac{6}{8}$$

Reflect

How did you decide what strategy to use when subtracting mixed numbers?

Math is... Mindset

How have you used your strengths today?

Lesson **10-6**

Solve Problems Involving Mixed Numbers

Be Curious

What math do you see in this problem?

Paul spent some time practicing soccer this week. He practiced some on Monday and some on Wednesday.

Math is... Mindset

What do you do to stay focused on your work?

Learn

Paul spent 3 hours practicing soccer this week. He practiced for $\frac{5}{6}$ hour on Monday and $1\frac{2}{6}$ hours on Wednesday.

How much time did he spend practicing the rest of the week?

Some problems have more than one problem to solve.

Math is... Precision

How can you check that your solution is accurate?

How much time did Paul practice on Monday and Wednesday?

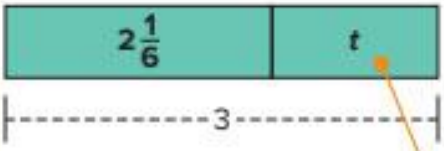
the time Paul spent practicing Monday and Wednesday

Add to solve for the unknown.

$\frac{5}{6} + 1\frac{2}{6} = h$

$2\frac{1}{6} = h$

How much time did Paul practice the rest of the week?



the time Paul spent practicing the rest of the week

Subtract to solve for the unknown.

$3 - 2\frac{1}{6} = t$

$\frac{5}{6} = t$

Paul spent $\frac{5}{6}$ hour practicing the rest of the week.

You can solve word problems involving addition and subtraction of mixed numbers using representations and equations.

Work Together

Bianca's dog eats $1\frac{3}{4}$ cups of food in the morning. This is $\frac{2}{4}$ cup more than the amount her dog eats in the afternoon. How much food does Bianca's dog eat in a day? Use representations and equations to show your work.

On My Own

Name _____

What is the solution? Use representations and equations to solve.

1. Bella has $3\frac{4}{5}$ bags of soil. She used some of the soil. She has $1\frac{3}{5}$ bags left. How much soil did Bella use?

2. Lori had $2\frac{3}{4}$ yards of ribbon. She bought more ribbon and now has $4\frac{1}{4}$ yards. How much ribbon did she buy?

3. Arthur uses $5\frac{2}{8}$ pounds of berries and pineapple in a fruit salad. He uses $2\frac{4}{8}$ pounds of berries. How many more pounds of pineapple are in the fruit salad than berries?

4. Cal ran $3\frac{1}{4}$ miles. Marnie ran $\frac{2}{4}$ mile more than Cal. Roger ran $\frac{3}{4}$ mile less than Marnie. How far did Roger run?

5. Abram had some lemonade in a pitcher. He drank $3\frac{1}{3}$ cups of the lemonade. He has $6\frac{2}{3}$ cups of lemonade left. How many cups of lemonade were in the pitcher?

6. A bakery made 6 batches of muffins. They sold $\frac{7}{8}$ batches in the morning and have $1\frac{5}{8}$ batches left at the end of the day. How many batches did they sell in the afternoon?

7. Gwyn wants to build a rectangular playpen for her puppy. The playpen will have a length of $2\frac{4}{6}$ feet and a width of $2\frac{1}{6}$ feet. Will 10 feet of fencing be enough to build the playpen? Explain your reasoning.

8. **STEM Connection** Finn has 16 feet of plywood. He uses $10\frac{6}{12}$ feet of plywood for a project. He needs to use $8\frac{9}{12}$ feet of plywood for his next project. How many feet of plywood does Finn need to buy? Explain your reasoning.

9. Vinny had $5\frac{1}{4}$ cups of flou . He used some flour to ma e muffins. He has $\frac{2}{4}$ cups of flour left. What equation can you write to show the relationship between the quantities? Use a variable to represent the unknown. Explain your equation.

10. **Extend Your Thinking** Write a word problem that can be represented by the equation $b + 2\frac{5}{8} = 4\frac{4}{8}$. Then solve your problem.

Reflect

How can you determine whether you need to add or subtract to solve word problems with mixed numbers?

Math is... Mindset

What helped you stay focused on your work?

Unit 10

Word Problems with Mixed Numbers

Name _____

Determine which expression can be used to solve the problem.

Do not actually solve the problem.

1. Paula biked $2\frac{3}{8}$ miles yesterday, and she biked again today. Paula biked a total of $5\frac{7}{8}$ miles during the two days. How many miles did she bike today?

Circle A or B.

A. $2\frac{3}{8} + 5\frac{7}{8}$

B. $5\frac{7}{8} - 2\frac{3}{8}$

Explain your choice.

2. Kevin has $2\frac{7}{12}$ cups of trail mix. He has $\frac{5}{12}$ cup less than Pat. How many cups of trail mix does Pat have?

Circle A or B.

A. $2\frac{7}{12} + \frac{5}{12}$

B. $2\frac{7}{12} - \frac{5}{12}$

Explain your choice.

Determine which expression can be used to solve the problem.

Do not actually solve the problem.

3. Yaun has two dogs named Spot and Rufus. Rufus weighs $25\frac{7}{10}$ pounds. This is $1\frac{3}{10}$ pounds more than Spot weighs. How many pounds does Spot weigh?

Circle A or B.

A. $25\frac{7}{10} + 1\frac{3}{10}$

B. $25\frac{7}{10} - 1\frac{3}{10}$

Explain your choice.

Reflect On Your Learning

I'm confused. | I'm still learning. | I understand. | I can teach someone else.

Unit Review

Name _____

Vocabulary Review

Choose the correct word(s) to complete the sentence.

bar diagram	decompose	equivalent fractions
mixed number	variable	

1. You can use a(n) _____ to represent an unknown quantity. (Lesson 10-6)

2. A(n) _____ is a number with a whole-number part and a fraction part. (Lesson 10-1)

3. Fractions that represent the same amount are known as _____. (Lesson 10-3)

4. A(n) _____ can be used to represent a problem and help you solve it. (Lesson 10-6)

5. When you _____ a number, you break it down into parts. (Lesson 10-1)

Review

6. Rolando ran $3\frac{2}{4}$ miles yesterday. Today he ran $2\frac{3}{4}$ miles. How many miles did Rolando run? Show your work. (Lessons 10-2, 10-3, 10-6)

7. How can you decompose $3\frac{3}{4}$? Choose all that apply. (Lesson 10-1)

A. $2+\frac{7}{4}$

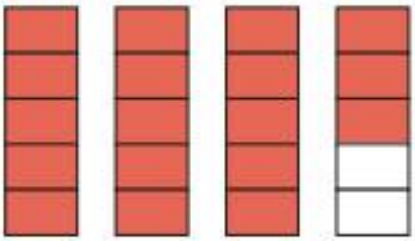
B. $2+1+\frac{2}{4}$

C. $3+\frac{3}{4}$

D. $\frac{4}{4}+\frac{4}{4}+\frac{4}{4}+\frac{3}{4}$

E. $\frac{3}{4}+\frac{3}{4}$

8. How can you use the fraction model to solve the equation shown? $3\frac{3}{5}-1\frac{4}{5}=?$ (Lesson 10-4)



9. How can you write the mixed number as a fraction? (Lesson 10-1)

$5\frac{3}{4}=$ ____

10. Gina solved $3\frac{3}{4}+2\frac{2}{4}=?$. Her work is shown.

$$3\frac{3}{4}+2\frac{2}{4}=3+\frac{3}{4}+2+\frac{2}{4}$$
$$=5\frac{5}{4}$$

How would you respond to Gina? (Lesson 10-3)

11. Paul's pet weighs $8\frac{1}{8}$ pounds. Fran's pet weighs $4\frac{5}{8}$ pounds. How much more does Paul's pet weigh than Fran's? Show your work. (Lessons 10-4, 10-5, 10-6)

MATH REPLAY | GO ONLINE

12. What mixed number is equivalent to $\frac{5}{5} + \frac{3}{5} + \frac{1}{5} + \frac{2}{5}$? Choose the correct answer. (Lesson 10-1)

A. $1\frac{1}{5}$

B. $1\frac{4}{5}$

C. $2\frac{1}{5}$

D. $2\frac{4}{5}$

13. The female lizard at the zoo is $1\frac{5}{12}$ feet long. This is $\frac{8}{12}$ feet shorter than the male lizard. What is the length of the male lizard? (Lessons 10-4, 10-5, 10-6)

14. How can you decompose $3\frac{1}{3}$? (Lesson 10-1)

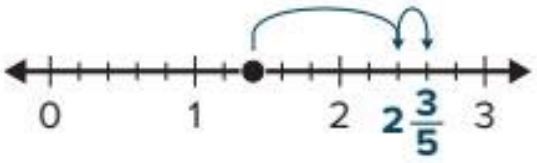
a. Show two ways you can decompose the number.

b. Draw a representation to justify each decomposition.

15. Karen has $3\frac{1}{3}$ hours to run errands. She spends $1\frac{2}{3}$ hours at the grocery store and the rest of the time at the library. How much time does Karen spend at the library? (Lessons 10-4, 10-5, 10-6)

16. Jeremiah made $2\frac{3}{6}$ quarts of fruit juice. His family drank $1\frac{1}{6}$ quarts of juice, and he drank $\frac{4}{6}$ quart. How many quarts of juice are left? Explain how you found your answer. (Lesson 10-6)

17. The number line shows how April solved an addition problem involving mixed numbers.



a. What is the addition problem April solved? (Lesson 10-2)

b. Explain the strategy April used to add the mixed numbers. (Lesson 10-2)

Performance Task

A veterinarian clinic has 8 dogs. The clinic buys bags of small breed food and bags of large breed food. Three of the dogs are small breed and the others are large breed.

Part A: They need to feed the small breed dogs more than a cup but less than $1\frac{1}{2}$ cups of food each day. How many cups of food do they feed the small dogs each day?

Part B: The clinic feeds the large breed dogs between 3 and $3\frac{1}{2}$ cups of food each day. They feed the dogs two times each day. How many cups of dog food do they feed the large breed dogs each day?

Reflect

Describe one strategy for adding mixed numbers. Describe one strategy for subtracting mixed numbers. How are these strategies similar? How are they different?

Unit 10

Fluency Practice

Name _____

Fluency Strategy

You can use an **algorithm** to subtract.

Subtract the digits by place value starting with the ones places and moving to the left.

Sometimes it is necessary to regroup when subtracting.

$$\begin{array}{r} 5,9\overset{8}{\cancel{8}}\overset{16}{\cancel{6}} \\ -\ 1,367 \\ \hline 4,629 \end{array}$$

Fluency Flash

Write the difference in the place-value chart.

1.

	thousands	hundreds	tens	ones
	6	5	4	1
−	4	1	5	6

2.

	thousands	hundreds	tens	ones
	4	9	1	7
−	2	3	4	1

Fluency Check

Find the sum or difference.

3. 7,825 − 2,604 = _____
4. 623 − 208 = _____
5. 928 − 416 = _____
6. 40,178 − 32,605 = _____
7. 38,629 + 7,547 = _____
8. 1,398 + 4,061 = _____
9. 12,654 − 7,148 = _____
10. 5,009 − 2,186 = _____
11. 94,153 − 76,429 = _____
12. 354 − 287 = _____

Fluency Talk

Explain to a friend how you know if you have to regroup when subtracting.

How is subtracting without regrouping similar to subtracting with regrouping?

Unit 11

Multiply Fractions by Whole Numbers

Focus Question

How can I multiply a fraction by a whole number?

IGNITE!

Name _____

Fraction Patterns

Part 1: Count quarters.

How many are in the first row? 3 quarters

How many are in the first two rows? 6 quarters

How many are in the first three rows? ____ quarters

How many are in the first four rows? ____ quarters

How many are there in all? ____ quarters

Part 2: Count fourths.

A B C D E

How many fourths are shaded in all in ...

Circle A?	Circles A and B?	Circles A, B, and C?	Circles A, B, C, and D?	Circles A, B, C, D, and E?
3 fourths	6 fourths	____ fourths	____ fourths	____ fourths

Part 3: Write the fraction that is named directly above.

$\frac{3}{4}$ $\frac{6}{4}$ $\frac{\square}{\square}$ $\frac{\square}{\square}$ $\frac{\square}{\square}$

Lesson **11-1**

Represent Multiplication of a Unit Fraction by a Whole Number

Be Curious

What could the question be?

Math is... Mindset

What are some ways to build a positive relationship with classmates?

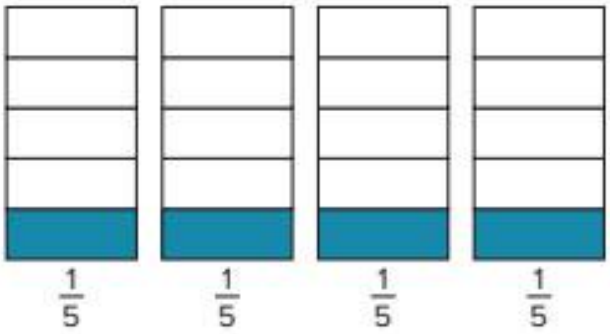
Learn

Tyler makes 4 bowls of fruit salad. He uses $\frac{1}{5}$ pound of strawberries in each bowl.

How many pounds of strawberries does Tyler use?

You can use fraction models to represent the problem.

There are 4 groups with $\frac{1}{5}$ pound strawberries in each group.



Math is... Connections

How do the two equations represent the same quantity?

Use repeated addition: $\frac{1}{5} + \frac{1}{5} + \frac{1}{5} + \frac{1}{5} = \frac{4}{5}$

Use multiplication: $4 \times \frac{1}{5} = \frac{4}{5}$

Tyler uses $\frac{4}{5}$ pound of strawberries.

A multiple of a number is a product of that number and another number.

$\frac{4}{5}$ is a multiple of $\frac{1}{5}$, becuase $4 \times \frac{1}{5} = \frac{4}{5}$.

Multiplying a unit fraction by a whole number is the same as adding unit fractions repeatedly.

Work Together

Tanya made 2 fruit pizzas. She uses $\frac{1}{8}$ pound of pineapple slices on each pizza. What is the total weight of the pineapple slices on both pizzas?

On My Own

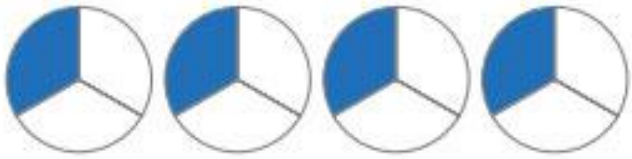
Name _____

What is the product?

1.

$$3 \times \frac{1}{6} = \frac{\square}{6}$$

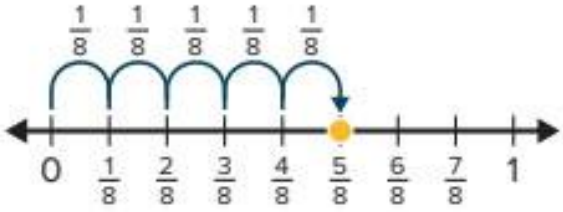
2.



$$4 \times \frac{1}{3} = \frac{\square}{3}$$

What is the missing factor?

3.



$$\square \times \frac{1}{8} = \frac{5}{8}$$

4.

$$7 \times \frac{\square}{\square} = \frac{7}{10}$$

How can you express the fraction as a multiple of a unit fraction?

5. $\frac{7}{3} = \square \times \frac{\square}{\square}$

6. $\frac{5}{2} = \square \times \frac{\square}{\square}$

What is the product?

7. $8 \times \frac{1}{4} = \frac{\square}{\square}$

8. $9 \times \frac{1}{7} = \frac{\square}{\square}$

Explain how you found the product.

9. $5 \times \frac{1}{3} = \frac{\square}{\square}$

10. $6 \times \frac{1}{5} = \frac{\square}{\square}$

11. STEM Connection Saffron needs $\frac{1}{8}$ cup of raisins to make one batch of bread pudding. She wants to make 4 batches. How many cups of raisins will she need? Use drawings and equations to show your work.

12. The hallway at Jackson's school is $\frac{1}{10}$ mile long. On Tuesday, Jackson walked from one end of the hallway to the other several times for a total of $\frac{6}{10}$ mile. How many times did he walk from one end of the hallway to the other on Tuesday? Explain.

13. Extend Your Thinking The weight of Layla's puppy has increased $\frac{1}{2}$ pound each month for the past 4 months. If the puppy weighs 12 pounds now, how much did it weigh 4 months ago? Explain.

Reflect

How is multiplying unit fractions by whole numbers similar to multiplying whole numbers?

Math is... Mindset

What ways have you tried to build a positive relationship with classmates?

Lesson **11-2**

Understand Multiplying a Fraction by a Whole Number

Be Curious

What do you see?

Math is... Mindset

How can you help identify a problem in your class or community?

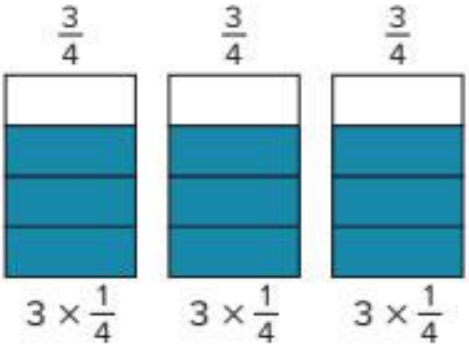
Learn

Erika will make 3 smoothies. Each smoothie needs $\frac{3}{4}$ cup of yogurt.

How much yogurt does Erika need?

You can use a fraction model to represent the problem.

There are 3 groups of $\frac{3}{4}$, or $3 \times \frac{3}{4} = ?$



Math is... Thinking

How do the equation and the fraction model show the relationship between the quantities?

There are 3 $\frac{1}{4}$s in $\frac{3}{4}$. So $3 \times \frac{3}{4}$ can also be represented as $3 \times \frac{1}{4} + 3 \times \frac{1}{4} + 3 \times \frac{1}{4}$.

$\frac{3}{4}$ written as multiple of a unit fraction

There are $\frac{9}{4}$ parts shaded. So $3 \times \frac{3}{4} = \frac{9}{4}$. So, Erika needs $\frac{9}{4}$ cups of yogurt.

A multiple of a fraction can be written as a multiple of a unit fraction.

$3 \times \frac{3}{4} = 3 \times \left(3 \times \frac{1}{4}\right)$ $\qquad$ $3 \times \frac{3}{4} = 9 \times \frac{1}{4}$

$\frac{9}{4}$ is also a multiple of a unit fraction

$3 \times \frac{3}{4} = \frac{9}{4}$

$\frac{9}{4}$ iis a multiple of $\frac{3}{4}$

A fraction model can be used to represent multiplying a fraction by a whole number.

Work Together

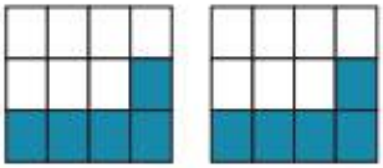
Shawn walks $\frac{3}{8}$ mile going to and from school each day. How far does Shawn walk in a 5-day school week? Explain how you know.

On My Own

Name _____

What is the product? Use the fraction model to help solve.

1.

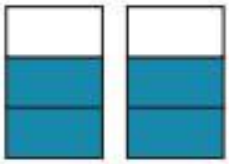


$2 \times \square \times \frac{1}{12} = \frac{\square}{\square}$

2.

$4 \times \square \times \frac{1}{8} = \frac{\square}{\square}$

3.



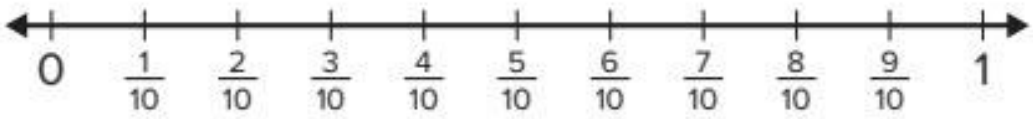
$2 \times \frac{2}{3} = \frac{\square}{\square}$

4.

$3 \times \frac{2}{5} = \frac{\square}{\square}$

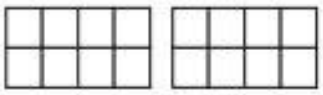
What is the product? Complete the fraction model to help solve.

5.



$3 \times \frac{3}{10} = \frac{\square}{\square}$

6.



$2 \times \frac{5}{8} = \frac{\square}{\square}$

7.

$3 \times \frac{4}{6} = \frac{\square}{\square}$

8. Krystol uses 3 bags of nuts to make a trail mix. Each bag contains $\frac{4}{5}$ cup of nuts. How many cups of nuts will be in her trail mix? Draw a fraction model to show your work.

9. Write a real-world problem that can be represented with the equation $m \times \frac{7}{12} = \frac{14}{12}$. Then solve.

10. Each leg of a relay race is $\frac{3}{4}$ mile. There are 4 legs. How many miles is the relay race? Justify your answer.

11. **Error Analysis** Michael ran $\frac{7}{10}$ mile each day for 10 days. He says he ran $\frac{70}{100}$ mile in all. Do you agree with Michael? Explain why or why not.

12. **Extend Your Thinking** There are $\frac{12}{4}$ cups of juice in a pitcher. How many $\frac{3}{4}$ cup servings are there? Write a multiplication equation to represent the problem. Then solve.

Reflect

How does a fraction model help you find the product of a whole number and a fraction?

Math is... Mindset

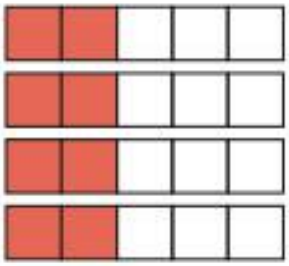
How did you help to identify a problem in your class or community?

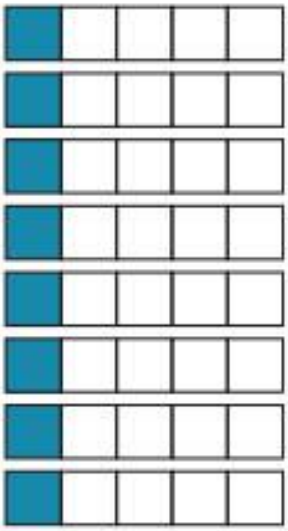
Lesson **11-3**

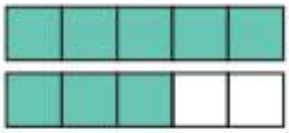
Multiply a Fraction by a Whole Number

Be Curious

How are they the same?
How are they different?







Math is... Mindset

How does a different perspective help you with your work?

Learn

Molly is making 5 bracelets. She uses $\frac{5}{8}$ foot of leather for each bracelet.

How many feet of leather does Molly need?

A multiplication equation can represent the problem.

You can rewrite $\frac{5}{8}$ as a multiple of a unit fraction.

$5 \times \frac{5}{8} = ?$ Think: $\frac{5}{8}$ is $5 \frac{1}{8}$s.

$= 5 \times 5 \times \frac{1}{8}$

$= 25 \times \frac{1}{8}$

$= \frac{25}{8}$

$= 3\frac{1}{8}$ Write as a mixed number.

Molly needs $3\frac{1}{8}$ feet of leather.

Math is... Generalizations

How can you describe how to multiply a whole number by a fraction?

A fraction can be multiplied by a whole number by representing the fraction as a multiple of a unit fraction.

Work Together

Sonia made 3 pans of lasagna for the book club. Three-fourths of each pan was eaten. How many pans of lasagna were eaten? Show your work.

On My Own

Name _____

What is the product? Complete the equation.

1. $3 \times \frac{2}{8} = 3 \times 2 \times \frac{1}{8}$

$= 6 \times \frac{1}{8}$

$= \frac{\square}{8}$

2. $4 \times \frac{2}{5} = 4 \times 2 \times \frac{1}{5}$

$= 8 \times \frac{1}{5}$

$= \frac{\square}{5}$

What is the product? Complete the equation.

3. $2 \times \frac{2}{3} = \square \times 2 \times \frac{\square}{\square}$

$= \frac{\square}{\square}$

4. $3 \times \frac{3}{6} = \square \times 3 \times \frac{\square}{\square}$

$= \frac{\square}{\square}$

5. $5 \times \frac{2}{12} = \frac{\square}{\square}$

6. $2 \times \frac{3}{10} = \frac{\square}{\square}$

7. Helen combines 5 bags of seeds to make bird food. Each bag contains $\frac{3}{4}$ pound. How many pounds of bird food will she have?

8. Stella walked $\frac{9}{10}$ mile each day. How many miles did she walk in 5 days? Explain your solution.

9. Brady needs 6 pieces of wood, each measuring $\frac{7}{8}$ foot, to build a birdhouse. How many feet of wood does he need? Explain how you know your answer is reasonable.

10. **Error Analysis** Desmond is multiplying $4 \times \frac{3}{5}$. He rewrites the expression as $4 \times 3 \times \frac{3}{5}$. How can you explain and correct his error?

11. **Extend Your Thinking** Judie has $5\frac{5}{8}$ yards of fabric to make a quilt. She cuts the fabric into pieces that are $\frac{1}{8}$ yard each. Judie uses 5 pieces to create one strip. How many strips can Judie make? Show your work.

Reflect

How can you explain the strategies used to find the product of a whole number and a fraction?

Math is... Mindset

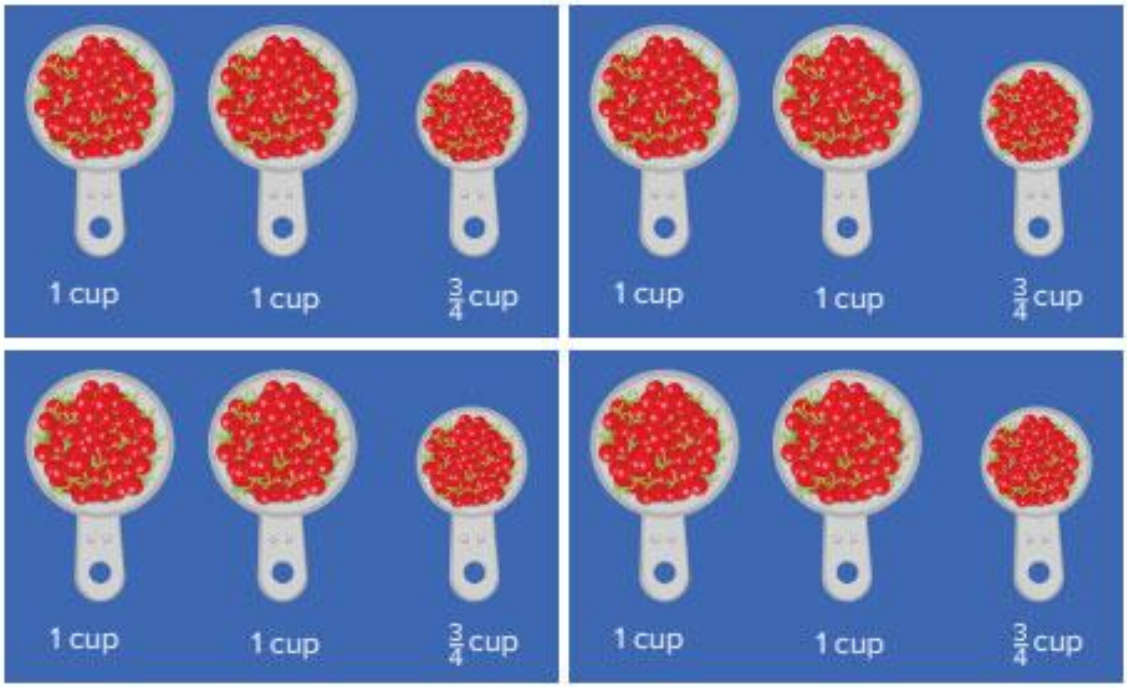
How did a different perspective help you with your work today?

Lesson **11-4**

Multiply a Mixed Number by a Whole Number

Be Curious

What do you notice?
What do you wonder?



Math is... Mindset

What do you want your classmates to know about your superpowers?

Learn

Helen volunteers 5 days each month for $2\frac{3}{4}$ hours each day.

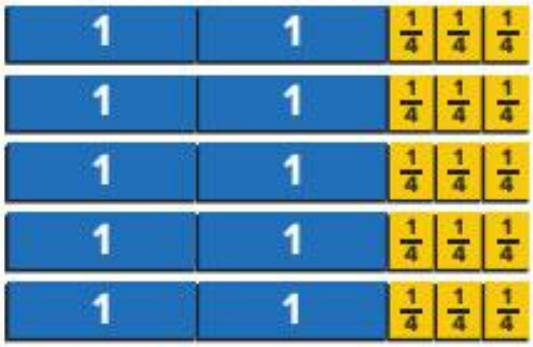
How many hours does she volunteer each month?

You can multiply to solve.

One Way Decompose the mixed number and add partial products.

$$5 \times 2\frac{3}{4} = 5 \times \left(2 + \frac{3}{4}\right)$$
$$= (5 \times 2) + \left(5 \times \frac{3}{4}\right)$$
$$= 10 + \frac{15}{4}$$
$$= 10\frac{15}{4}$$
$$= 13\frac{3}{4}$$

Distributive Property



Another Way Use an equivalent fraction and multiply.

$$5 \times 2\frac{3}{4} = 5 \times \frac{11}{4}$$
$$= \frac{55}{4}$$
$$= 13\frac{3}{4}$$

Helen volunteers $13\frac{3}{4}$ hours each month.

Math is... Quantities

What other ways can you write fractions greater than 1?

You can multiply a mixed number by a whole number by using the Distributive Property or by using equivalent fractions.

Work Together

Koren walked $4\frac{2}{3}$ miles each week for 7 weeks. How many miles did he walk? Show your work.

On My Own

Name _____

What is the product? Complete the equation.

1. $3 \times 2\frac{1}{2} = 3 \times \left(2 + \frac{\square}{\square}\right)$

$= (3 \times 2) + \left(3 \times \frac{\square}{\square}\right)$

$= 6 + \frac{\square}{\square}$

$= 7\frac{\square}{\square}$

2. $4 \times 3\frac{2}{3} = 4 \times \left(3 + \frac{\square}{\square}\right)$

$= (4 \times 3) + \left(4 \times \frac{\square}{\square}\right)$

$= 12 + \frac{\square}{\square}$

$= 14\frac{\square}{\square}$

3. $2 \times 1\frac{2}{5} = \square \times \frac{\square}{5}$

$= \frac{\square}{5}$

$= 2\frac{\square}{5}$

4. $2 \times 2\frac{3}{8} = \square \times \frac{\square}{8}$

$= \frac{\square}{8}$

$= 4\frac{\square}{8}$

5. $3 \times 1\frac{2}{12} = \square\frac{\square}{\square}$

6. $2 \times 4\frac{3}{10} = \square\frac{\square}{\square}$

7. STEM Connection Saffron uses $3\frac{3}{8}$ cups of flou to bake a loaf of bread. How much flour does sh need to bake 5 loaves?

8. Parker spends $2\frac{1}{4}$ hours on homework each day, 4 days a week. How many hours does he spend on homework each week?

9. Eleanor's goal is to walk $3\frac{6}{10}$ miles each day of the week. Will she meet her goal if she walks $24\frac{2}{10}$ miles in a week? Explain.

10. If Sandra volunteers at the senior center for $2\frac{3}{4}$ hours three times per week, how many hours does she volunteer in 4 weeks?

11. **Error Analysis** Marlow is multiplying $3 \times 1\frac{4}{5}$. He multiplies 3×1 and then $3 \times \frac{1}{5}$. How can you explain his error?

12. **Extend Your Thinking** Paige is multiplying $2 \times 1\frac{7}{8}$. She says she can rewrite the product as $2 \times 15 \times \frac{1}{8}$. Do you agree? Explain.

Reflect

How can you explain the strategies you used to find the product of a whole number and a mixed number?

Math is... Mindset

What did your classmates learn about your superpowers?

Unit 11

Which Is Greater?

Name _____

For each problem, circle the quantity that has the greater value.

1. Circle **A** or **B** to show which is greater.

A. $5 \times \frac{2}{6}$

B. $\frac{13}{6}$

Explain or show why it is greater.

2. Circle **A** or **B** to show which is greater.

A. $\frac{11}{15}$

B. $7 \times \frac{1}{4}$

Explain or show why it is greater.

3. Circle **A** or **B** to show which is greater.

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

B. $10 \times \frac{5}{12}$

Explain or show why it is greater.

4. Circle **A** or **B** to show which is greater.

A. $\frac{4}{30}$

B. $6 \times \frac{3}{5}$

Explain or show why it is greater.

Reflect On Your Learning

I'm confused. | I'm still learning. | I understand. | I can teach someone else.

Lesson **11-5**

Solve Problems Involving Fractions and Mixed Numbers

Be Curious

What's the question?

Harlow and her friends each have some orange juice.
They need some cups of orange juice for a recipe.

Math is... Mindset

What helps you want to do your best work?

Learn

Harlow and her 3 friends each have $\frac{2}{3}$ cup of orange juice. They need 4 cups of orange juice for a recipe.

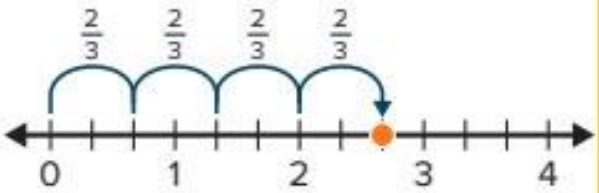
How much more orange juice do they need for their recipe?

Some problems have more than one problem to solve.

How much orange juice do Harlow and her friends have?

You can use multiplication to solve.

$4 \times \frac{2}{3} = c$



$4 \times 2 \times \frac{1}{3} = c$

$8 \times \frac{1}{3} = c$

$\frac{8}{3} = c$

Harlow and her friends have $\frac{8}{3}$, or $2\frac{2}{3}$, cups of orange juice.

How much more orange juice do they need?

You can use addition to solve.

$4 = 2\frac{2}{3} + j$

Harlow and her friends need $\frac{4}{3}$, or $1\frac{1}{3}$, more cups of orange juice for the recipe.

Math is... Structure

How does decomposition allow you to write numbers in equivalent forms?

To solve problems that involve multiplying fractions and mixed numbers by whole numbers, you can use equations and representations.

Work Together

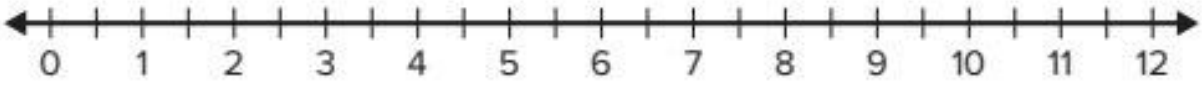
On Wednesday, Jill collects enough apples to fill $1\frac{2}{3}$ baskets. On the weekend, she collects 6 times the amount she did on Wednesday. How many baskets of apples does Jill collect on the weekend? Write an equation to show your work.

On My Own

Name _____

How can you solve the problem? Use the number line to help you.

1. Drew has 3 brothers and each drinks $3\frac{1}{2}$ cups of milk each day. How many cups of milk do Drew's brothers drink each day?



2. Singh watches video clips for $9\frac{2}{5}$ minutes. The first 3 clips are $1\frac{4}{5}$ minutes long each. How long is the last video clip?

3. Eloise puts $\frac{3}{5}$ cup of bananas in her oatmeal each morning. Her sister only uses $\frac{1}{5}$ cup of bananas. After 7 days, how many more cups of bananas does Eloise eat than her sister?

4. Gilbert uses $\frac{7}{10}$ meter of wood to make a small birdhouse and $1\frac{2}{10}$ to make a large birdhouse. How many meters of wood does he need to make 4 small birdhouses and 2 large birdhouses?

5. Kyle made 6 pillows using $1\frac{3}{8}$ yards of fabric each. How many yards of fabric did he use?

6. Priya had a goal of swimming 10 miles this week. She swam $2\frac{3}{4}$ miles each day for 4 days. Did she reach her goal? Explain.

7. **STEM Connection** Saffron uses $\frac{3}{4}$ teaspoon of nutmeg each day for a pastry recipe she makes 5 days a week.

   a. How much nutmeg does she need for the pastry recipe for 4 weeks?

   b. Saffron receives an order for additional batches of the recipe for each week. She now uses $5\frac{1}{4}$ teaspoons each week for the pastry recipe. How many more teaspoons of nutmeg does she use each week?

8. Jared uses $3\frac{2}{5}$ pounds of lemons for each batch of lemonade. He has 12 pounds of lemons. Does he have enough lemons for 3 batches of lemonade? If so, how many pounds of lemons would he have left?

9. **Extend Your Thinking** Jonah runs $2\frac{1}{3}$ miles and bikes $4\frac{1}{3}$ miles each day while training for a triathlon. How many miles does he travel in 7 days?

Reflect

How can you solve multiplication problems with fractions and mixed numbers?

Math is... Mindset

What helped you do your best work?

Unit Review

Name _____

Vocabulary Review

Choose the correct word(s) to complete the sentence.

Associative Property of Multiplication	denominator	Distributive Property
equal groups	fraction	mixed number
multiple	numerator	unit fraction

1. In the fraction $\frac{2}{3}$, 2 is the _____. (Lesson 11-1)

2. A(n) _____ is a number with whole-number and fraction parts. (Lesson 11-4)

3. The _____ allows you to write $3 \times \left(2 + \frac{1}{5}\right)$ as $(3 \times 2) + \left(3 \times \frac{1}{5}\right)$. (Lesson 11-4)

4. A(n) _____ of a number is a product of that number and a whole number. (Lesson 11-1)

5. A(n) _____ is a fraction with a numerator of 1. (Lesson 11-3)

6. In the fraction $\frac{2}{3}$, 3 is the _____. (Lesson 11-1)

7. A(n) _____ compares a certain number of parts to the total number of parts in a whole. (Lesson 11-5)

8. The _____ allows you to rewrite $2 \times 3 \times \frac{1}{5}$ as $6 \times \frac{1}{5}$. (Lesson 11-3)

9. Groups of the same size are called _____. (Lesson 11-2)

Review

10. $4 \times \frac{1}{5} = \frac{\square}{\square}$ (Lesson 11-1)

11. $\square \times \frac{1}{8} = \frac{3}{8}$ (Lesson 11-1)

12. Students used $\frac{7}{10}$ of a bottle of glitter for art projects. Each art project required $\frac{1}{10}$ of a bottle of glitter. How many art projects did the class create? Explain your thinking. (Lesson 11-1)

13. $3 \times \frac{5}{6} = \frac{\square}{6}$ (Lesson 11-2)

14. $4 \times \frac{2}{5} = \frac{\square}{\square}$ (Lesson 11-2)

15. Fred has 3 bags of marshmallows. Each bag contains $\frac{3}{4}$ cup. How many cups of marshmallows does Fred have? Explain your thinking. (Lesson 11-2)

16. $6 \times \frac{3}{5} = \square \times 3 \times \frac{1}{5}$

$= \square \times \frac{1}{5}$

$= \frac{\square}{\square}$ (Lesson 11-3)

17. $5 \times \frac{3}{4} = \square \times 3 \times \frac{1}{4}$

$= \square \times \frac{1}{4}$

$= \frac{\square}{4}$

$= 3\frac{\square}{4}$ (Lesson 11-3)

18. Jaimie walks $\frac{5}{6}$ of a mile to and from school each day. How many miles does she walk to and from school in 5 days? Explain your thinking. (Lesson 11–3)

19. $5 \times 2\frac{1}{4} = 5 \times \left(\square + \frac{1}{4}\right)$

$= (5 \times \square) + \left(5 \times \frac{1}{\square}\right)$

$= 10 + \frac{\square}{\square}$

$= 10\frac{\square}{\square}$

$= 11\frac{\square}{\square}$ (Lesson 11-4)

20. $3 \times 3\frac{1}{6} = 3 \times \left(\square + \frac{1}{6}\right)$

$= (3 \times \square) + \left(3 \times \frac{1}{\square}\right)$

$= \square + \frac{3}{6}$

$= \square \frac{3}{6}$ (Lesson 11-4)

21. Brenda uses $2\frac{3}{8}$ gallons of gas each week. How many gallons of gas does she use in 4 weeks? Show your work. (Lesson 11-4)

22. Tara ran $3\frac{1}{8}$ miles three times last week. How many miles did she run? Choose all that apply. (Lesson 11-4)

A. $9\frac{1}{8}$ miles

B. $9\frac{3}{8}$ miles

C. $\frac{75}{8}$ miles

D. $\frac{75}{24}$ miles

23. Rachel needs $2\frac{1}{4}$ cups of flour for each muffin batch. How man cups of flour will she need fo 6 batches? Write and solve an equation to show your work. (Lesson 11-5)

24. Damian plants $3\frac{1}{5}$ bags of seeds every hour. How many bags of seeds does he plant in 5 hours? Write and solve an equation to show your work. (Lesson 11-5)

Performance Task

During the summer, Saffron helps out at a local restaurant. She needs to take a $\frac{1}{4}$ hour break every hour.

Part A: How many hours could Saffron work at the restaurant so she could get a total of between an hour and half and two hours of break in a day? Explain your answer.

Part B: Saffron works 6 hours a day, but only works a half day on Friday. How many total hours of break does she get on Friday? Explain your answer.

Reflect

What strategies can be used to multiply fractions by whole numbers?

Unit 11

Fluency Practice

Name _____

Fluency Strategy

You can use addition strategies, such as adjusting numbers and partial sums, or use an algorithm, to find the sum.

Adjust by taking 2 from one addend and giving 2 to the other to make compatible numbers.

1,642 + 3,198

−2 +2

1,640 + 3,200 = 4,840

1. How can you adjust the numbers to find the su ?
Show your work.

2,451 + 1,299

− +

_____ + _____ = _____

Fluency Flash

What is the sum?

2. Use partial sums to find 2,038 + 1,452.

2,000 + 1,000 = _____

0 + 400 = _____

30 + 50 = _____

8 + 2 = _____

2,038 + 1,452 = _____

3.

	thousands	hundreds	tens	ones
	5	1	8	7
+	3	5	4	6

Fluency Check

What is the sum or difference?

4. 3,247 + 313 = _____
5. 4,789 − 3,567 = _____
6. 2,654 − 547 = _____
7. 132 + 328 = _____
8. 293 + 357 = _____
9. 479 + 371 = _____
10. 124 + 576 = _____
11. 985 − 241 = _____
12. 348 + 72 = _____
13. 7,481 − 4,255 = _____

Fluency Talk

How do you determine which strategy you want to use to add?

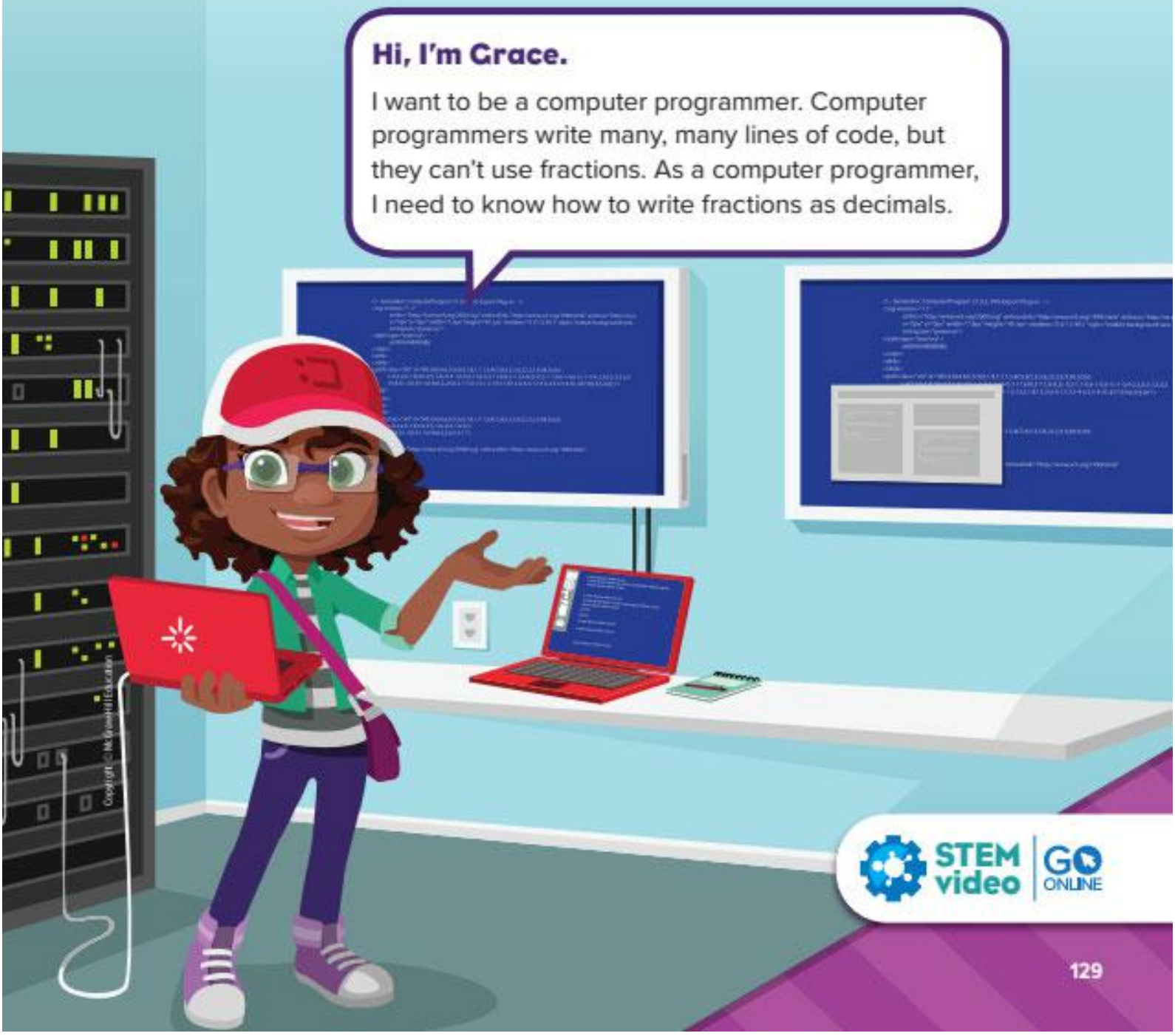
How is using the partial-sums strategy similar to using an algorithm to add? How is it different?

Unit 12

Decimal Fractions

Focus Question

How can I represent and compare decimal fractions?

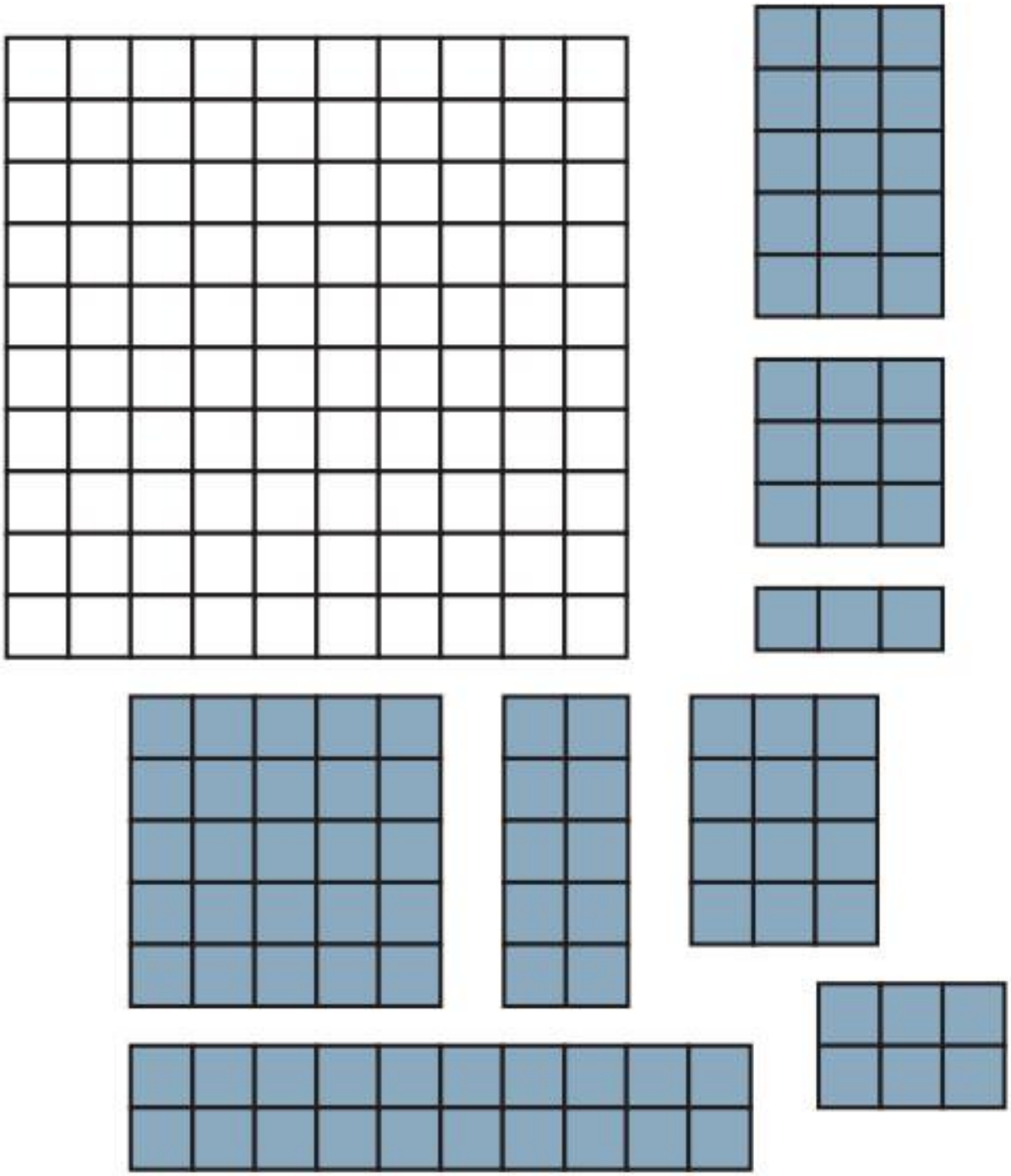


IGNITE!

Name _____

Hundred Cover Up

Listen for directions. What do you notice about the large grid and smaller rectangles?

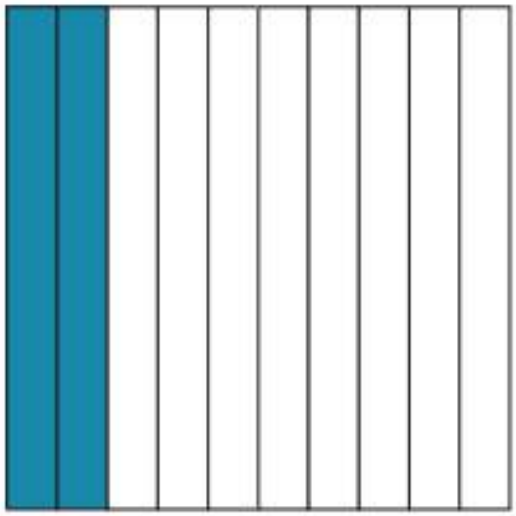


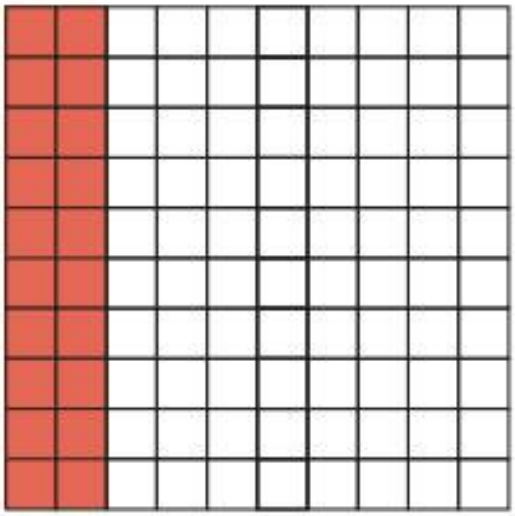
Lesson **12-1**

Understand Tenths and Hundredths

Be Curious

How are they the same?
How are they different?





Math is... Mindset

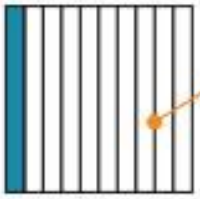
How do different ideas and viewpoints help you learn better?

Learn

Keisha has 3 dimes and 30 pennies in her money jar.

How does the value of the dimes compare to the value of the pennies?

One dime equals $\frac{1}{10}$ of a dollar.

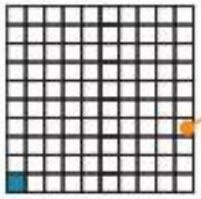


This grid shows tenths.

$\frac{1}{10}$ of a whole is called a **tenth.**

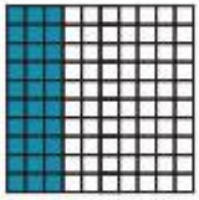
3 dimes equal $\frac{3}{10}$ of a dollar.

One penny equals $\frac{1}{100}$ of a dollar.



This grid shows hundredths.

$\frac{1}{100}$ of a whole is called a **hundredth.**



30 pennies equal $\frac{30}{100}$ of a dollar.

$\frac{3}{10} = \frac{30}{100}$, because $\frac{3 \times 10}{10 \times 100} = \frac{30}{100}$.
The value of the 3 dimes is equal to the value of 30 pennies.

Math is... Structure

How is the number of pennies or dimes in a dollar similar to the relationship between place-value positions?

You can express a fraction with a denominator of 10 as an equivalent fraction with a denominator of 100.

Work Together

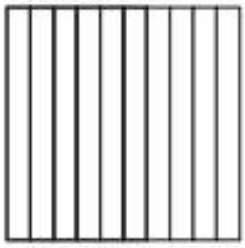
Carlos drank $\frac{70}{100}$ liter of water during his tennis match. How many tenths of a liter did Carlos drink?

On My Own

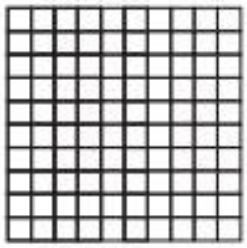
Name _____

How can you shade the grid to represent the fraction?

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

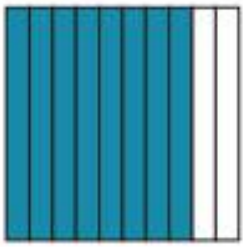


2. $\frac{40}{100}$

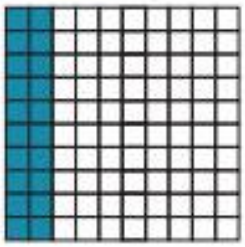


What fraction does the grid represent?

3. $\frac{\square}{\square}$



4. $\frac{\square}{\square}$



How can you express the fraction as an equivalent fraction with a denominator of 10 or 100? Complete the equation.

5. $\frac{70}{100} = \frac{7}{\square}$

6. $\frac{\square}{100} = \frac{5}{10}$

7. $\frac{2}{10} = \frac{\square}{\square}$

8. $\frac{\square}{\square} = \frac{60}{100}$

9. Which of these are equivalent to a fraction with a denominator of 10? Choose all that apply.

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

   B. $\frac{10}{100}$

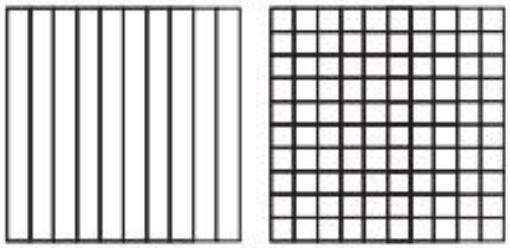
   C. $\frac{25}{100}$

   D. $1\frac{40}{100}$

10. Error Analysis Marta found an equivalent fraction for $\frac{90}{100}$. Her work is shown. How would you respond to Marta?

$$\frac{90}{100} = \frac{90}{100 \div 10} = \frac{90}{10}$$

11. How can you represent 8 dimes on each of the fraction models?



12. Extend Your Thinking What are two different ways you can express the fraction $\frac{13}{10}$? Justify your answer.

Reflect

How did you use your understanding of equivalent fractions during this lesson?

Math is... Mindset

How did different ideas and viewpoints help you learn better?

Lesson 12-2

Understand Decimal Notation

Be Curious

What do you notice?
What do you wonder?

Math is... Mindset

What do you do to avoid getting distracted?

Learn

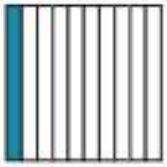
Kayla won the first swimming event by $\frac{2}{10}$ second.

Jensen won the second swimming event by $\frac{37}{100}$ second.

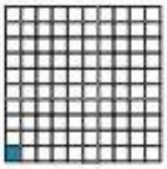
What are other ways that you can represent these times?

You can write a fraction with a denominator of 10 or 100 as a **decimal**.

1



$\frac{1}{10}$ or 0.1



$\frac{1}{100}$ or 0.01

ones	tenths
1	0

ones	tenths
0	1

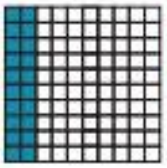
ones	tenths	hundredths
0	0	1

Decimal point

A decimal has a **decimal point**.

It separates the whole-number part from the decimal part.

$\frac{2}{10}$ can be written as 0.2 or 0.20.



ones	tenths	hundredths
0	2	0

$\frac{37}{100}$ can be written as 0.37.

ones	tenths	hundredths
0	3	7

Fractions with denominators of 10 or 100 can be written as decimals.

Math is... Structure

How are tenths and hundredths different from other place-value positions?

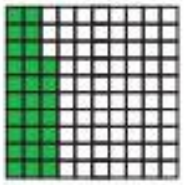
Work Together

Alan uses a board that is $1\frac{7}{10}$ meters long. Hannah uses a board that is $1\frac{56}{100}$ meters long. How can you express each length as a decimal?

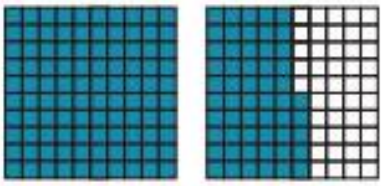
On My Own

Name _____

What number does the model represent? Write it as a fraction or mixed number and as a decimal.

1. 

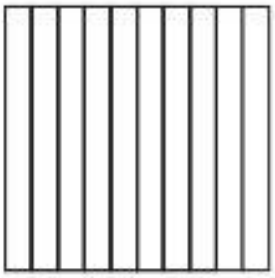
2. 

3. 

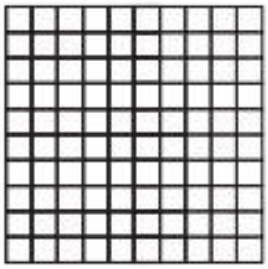
4. 

How can you shade the grid to represent the decimal?

5. 0.8



6. 0.67



Complete the equation by writing an equivalent decimal, fraction, or mixed number.

7. $\frac{9}{100} =$ _____

8. _____ $= 0.9$

9. _____ $= 0.6$

10. _____ $= 1.04$

11. A newborn puppy weighs $\frac{3}{10}$ kilogram. What is the weight of the puppy written as a decimal?

12. **STEM Connection** A computer programmer is writing code for a game. A balloon appears in the game for $1\frac{2}{100}$ seconds. What decimal represents this time?

13. Which of the following is a pair of equivalent numbers? Choose the correct answer.

    A. $\frac{2}{10}$ and 2.10

    B. 0.9 and $\frac{9}{10}$

    C. 1.6 and $\frac{1}{6}$

    D. $1\frac{3}{10}$ and 0.3

14. **Extend Your Thinking** Antony has $\frac{5}{10}$ liter of juice. Jan has 0.50 liter of juice. What statement can you make about the amounts of juice each has? Justify your statement.

Reflect

What is the relationship between decimals and fractions with denominators 10 and 100?

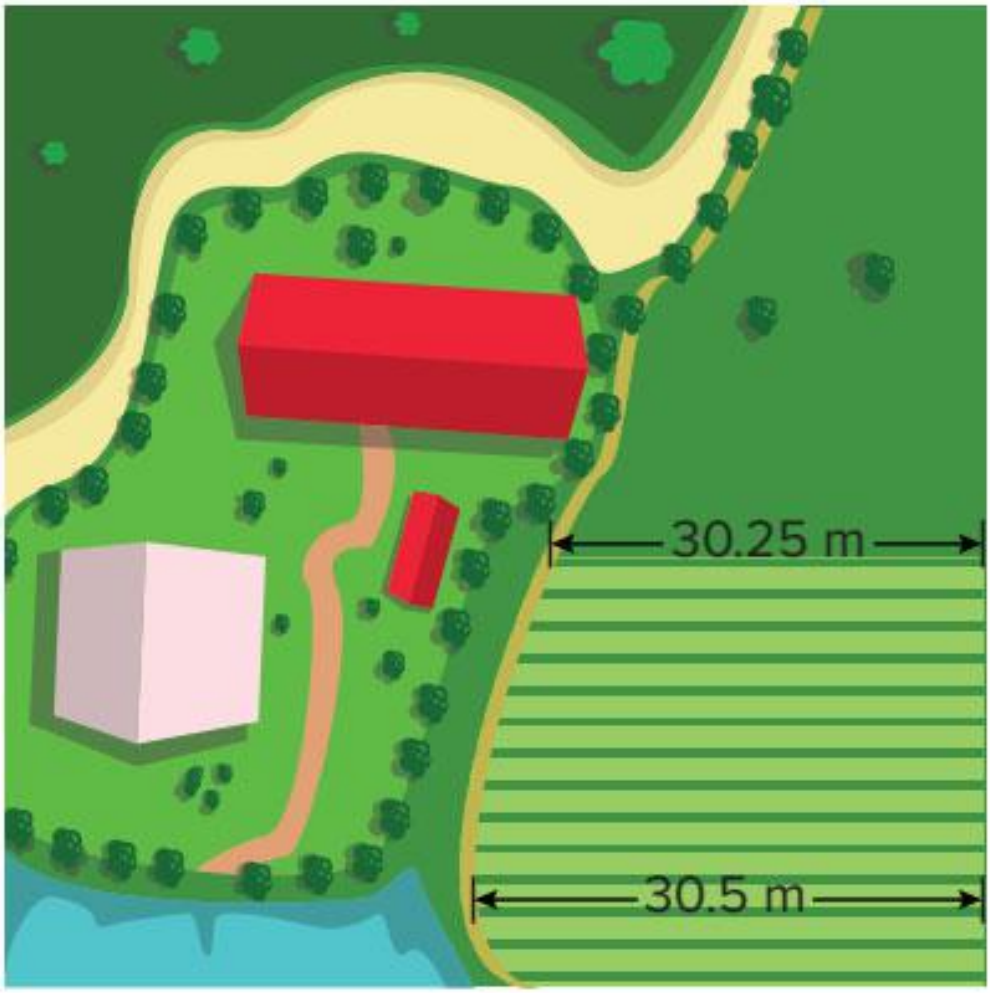
Math is... Mindset

What did you do to avoid getting distracted?

Compare Decimals

Be Curious

What do you notice?
What do you wonder?



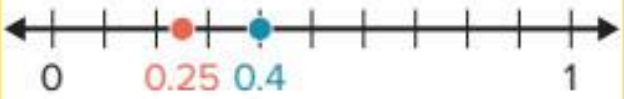
Math is... Mindset

What are some ways you can connect with your classmates?

Learn

Which distance is greater, to Union Falls or to Rock Bridge?

One Way Use a number line.



0.4 is to the right of 0.25 on the number line.

$0.4 > 0.25$

Math is... Thinking

What other representations can help you reason about the size of decimals?

Another Way Express decimals as fractions.

$$0.4 = \frac{40}{100} \qquad 0.25 = \frac{25}{100}$$

$\frac{40}{100} > \frac{25}{100}$

40 hundredths > 25 hundredths

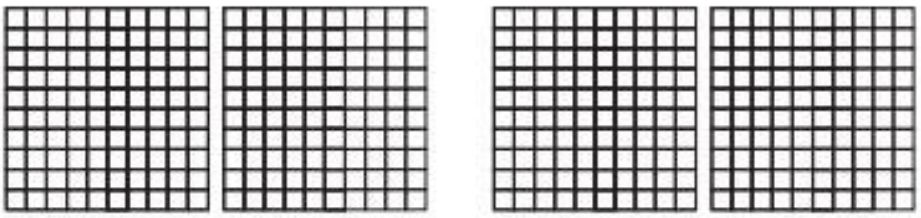
$0.4 > 0.25$

The distance to Union Falls is greater than the distance to Rock Bridge.

You can use strategies you know to compare decimals. You can also express the decimals as fractions to compare them.

Work Together

How does 1.6 compare to 1.73? Shade the representations to compare.

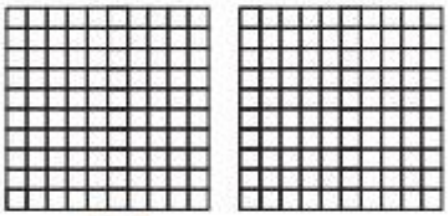


On My Own

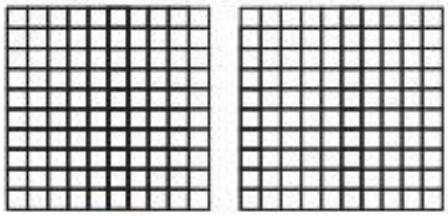
Name _____

How can you use the representations to compare the decimals? Complete with >, <, or =.

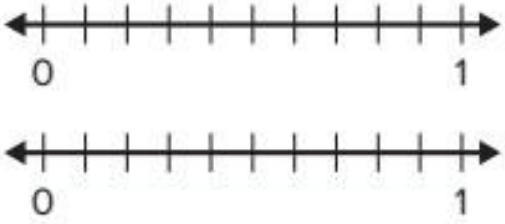
1. 0.01 ◯ 0.11



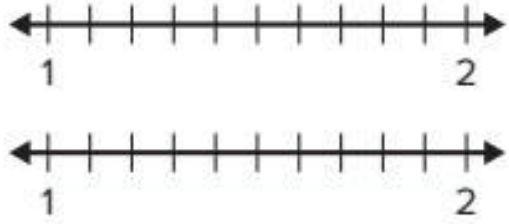
2. 0.9 ◯ 0.09



3. 0.39 ◯ 0.6



4. 1.50 ◯ 1.5



How can you express the decimals as fractions to compare? Write the fractions, and complete with >, <, or =.

5. 0.62 ◯ 0.26

6. 0.57 ◯ 0.7

What comparison statement can you write for the decimals? Explain your thinking.

7. 0.27 and 0.4

8. 1.4 and 0.63

9. Which comparisons are true? Choose all that apply.

   A. $0.4 = 0.04$

   B. $0.78 < 0.9$

   C. $0.27 > 0.3$

   D. $2.51 > 2.3$

10. **Error Analysis** Mandy writes $2.30 > 2.3$ because 30 is greater than 3. How would you respond to Mandy?

11. Carter bought 0.72 pound of apples and 0.58 pound of bananas. Which weighed more, the apples or the bananas? Explain your thinking.

12. **Extend Your Thinking** James compares two decimals that have the same digits. Part of his comparison is shown. What could be the other number in James's comparison? Justify your answer.

    $1.82 >$ _____. _____ _____

Reflect

How is comparing decimals similar to comparing whole numbers?

Math is... Mindset

How did you connect with your classmates?

Unit 12

Decimal and Fraction Comparison

Name _____

For each problem, determine the best answer by using what you know about the value of the fractions and decimals in the problem.

1. Which fraction is closest in value to 0.53? Circle your choice.

A. $\frac{1}{53}$

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

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

D. $\frac{1}{5}$

Explain why you chose the fraction.

2. Which fraction is closest in value to 0.24? Circle your choice.

A. $\frac{1}{24}$

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

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

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

Explain why you chose the fraction.

3. Which fraction is closest in value to 1.74? Circle your choice.

A. $1\frac{7}{4}$

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

C. $\frac{1}{74}$

D. $1\frac{1}{74}$

Explain why you chose the fraction or mixed number.

4. Which fraction is closest in value to 1.41? Circle your choice.

A. $1\frac{4}{10}$

B. $1\frac{4}{100}$

C. $\frac{1}{41}$

D. $1\frac{1}{41}$

Explain why you chose the fraction or mixed number.

Reflect On Your Learning

I'm confused. | I'm still learning. | I understand. | I can teach someone else.

Lesson **12-4**

Adding Decimals Using Fractions

Be Curious

What do you notice?
What do you wonder?

Math is... Mindset

What makes you confident that you will achieve success today?

Learn

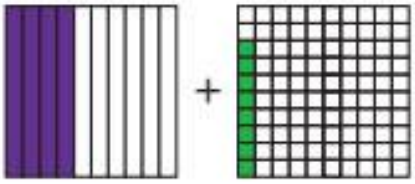
Lauren completed $\frac{4}{10}$ of a puzzle. The next day she completed another $\frac{8}{100}$ of the puzzle.

What fraction of the puzzle has Lauren completed?

An addition equation can represent the problem.

Represent each fraction on a decimal grid.

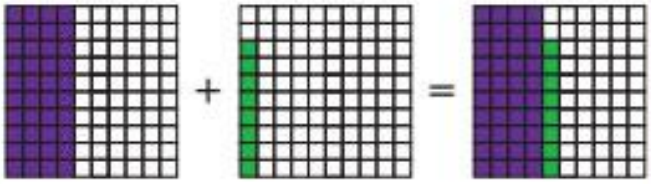
$\frac{4}{10} + \frac{8}{100}$



The size of the parts is different.

Represent $\frac{4}{10}$ as $\frac{40}{100}$ to make the parts the same size.

$\frac{40}{100} + \frac{8}{100} = \frac{48}{100}$



Lauren has completed $\frac{48}{100}$ of the puzzle.

You can use equivalent fractions to add fractions with denominators of 10 and 100.

Math is... Precision

How do you know your solution is reasonable?

Work Together

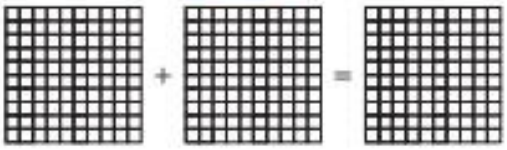
Carly hikes $\frac{24}{100}$ kilometer for a photo shoot. Then she hikes $\frac{5}{10}$ kilometer to the waterfall. How far does she hike in all?

On My Own

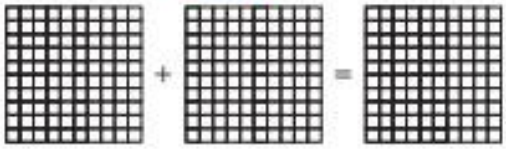
Name _____

How can you use the representation to find the sum?

1. $\frac{2}{10} + \frac{11}{100} = \frac{\square}{\square}$



2. $\frac{42}{100} + \frac{1}{10} = \frac{\square}{\square}$



What is the sum? Explain your work.

3. $\frac{4}{10} + \frac{9}{100} = \frac{\square}{\square}$

4. $\frac{53}{100} + \frac{3}{10} = \frac{\square}{\square}$

5. $\frac{2}{10} + \frac{13}{100} = \frac{\square}{\square}$

6. $\frac{21}{100} + \frac{7}{10} = \frac{\square}{\square}$

7. Keegan walks $\frac{5}{10}$ mile to meet his friend. Then Keegan and his friend walk $\frac{35}{100}$ mile to the park. How far did Keegan walk in all?

8. Which addition problems have a sum of $\frac{62}{100}$? Choose all that apply.

   A. $\frac{6}{10} + \frac{2}{100}$

   B. $\frac{6}{100} + \frac{2}{10}$

   C. $\frac{4}{10} + \frac{22}{100}$

   D. $\frac{4}{10} + \frac{58}{100}$

9. **STEM Connection** Grace notes that $\frac{7}{10}$ of her computer's memory is filled. She opens a new program that takes $\frac{23}{100}$ of the computer's memory. What fraction of her computer's memory is full?

10. Complete the following addition problem. Justify your answer.

$$\frac{\square}{10} + \frac{\square}{100} = \frac{54}{100}$$

11. Ling paints $\frac{6}{10}$ of a mural on Saturday. She paints $\frac{25}{100}$ of the mural on Sunday. What fraction of the mural did she complete?

12. **Extend Your Thinking** Two liquids were combined into an empty beaker. The beaker now has more than $\frac{1}{2}$ liter of liquid in it. Which two liquids were combined? Explain.

Reflect

How can you add a fraction with a denominator of 10 and a fraction with a denominator of 100?

Math is... Mindset

How did being confident help you achieve success today?

Solve Problems Involving Money

Be Curious

What could the question be?

Math is... Mindset

What helps you make sense of a situation?

Learn

Hannah buys a sandwich and a yogurt from the deli.

How much money did Hannah spend?

Use bills and coins to represent the amount of money Hannah spent.

$5.60

$1.25

Determine the total value of the bills and the total value of each type of coin.

$6.00

$0.80

$0.05

Use a place-value chart to help you write the total value as a decimal.

ones	tenths	hundredths
6	8	5

Represents whole dollars

Represents the value of the dimes

Represents the value of the pennies

Hannah spent $6.85.

Math is... In My World

What is another way to represent the same cost?

You can solve problems involving money using the relationship between tenths and hundredths.

Work Together

Tony has $4.82. He uses some of the money to buy a notebook that costs $2.50. How much money does he have left? Use a bar diagram to represent the information. Then solve using bills and coins.

On My Own

MATH REPLAY | GO ONLINE

Name _____

What decimal represents the total amount of money?

1.

$ _____

2.

$ _____

3.

$ _____

4.

$ _____

5. Marnie has the amount shown. Her mom gives her a one-dollar bill and 2 dimes. How much money does Marnie have now?

6. John has the amount shown. He spends $1.25. How much money does John have now?

7. Sergio wants to buy a snack for $1.75. He has a one-dollar bill, 6 dimes, and 7 pennies. Does he have enough money to buy the snack? Explain.

8. Roger buys 2 pieces of pizza. He hands the cashier $2.00. What coins could Roger receive back in change?

$0.80 for 1

9. Sally has 9 one-dollar bills, 12 dimes, and 5 pennies. Earl has a ten-dollar bill, 1 dime, and 5 pennies. Who has more money? Justify your answer.

10. Sarah spent exactly $8.00 on school supplies. What supplies could Sarah have bought?

Supply	Price
pencil	$0.50
notebook	$1.00
folder	$0.75
calculator	$5.00

11. Mia has 4 quarters and some dimes. She has $1.80. How many dimes does Mia have? Justify your answer.

12. **Extend Your Thinking** What are two ways to represent $7.75 using dollars, dimes, and pennies?

Reflect

How did you use your understanding of tenths and hundredths to solve problems in this lesson?

Math is... Mindset

What has helped you make sense of a situation?

Unit Review

Name _____

Vocabulary Review

Choose the correct word(s) to complete the sentence.

cents	hundredths
decimal	one hundredth
decimal point	one tenth
dollars	tenths
equivalent fraction	

1. A dime is _____ of a dollar. (Lesson 12-1)

2. In $3.42, the digits 4 and 2 represent the number of _____. (Lesson 12-5)

3. In 45.68, the digit 6 is in the _____ place. (Lesson 12-1)

4. A(n) _____ is a number with a fractional part that has a denominator of 10 or 100. (Lesson 12-2)

5. A penny is _____ of a dollar. (Lesson 12-1)

6. The fractions $\frac{2}{10}$ and $\frac{20}{100}$ are _____. (Lesson 12-1)

7. In 45.68, the number 8 is in the _____ place. (Lesson 12-1)

8. In $3.42, the digit 3 represents the number of _____. (Lesson 12-5)

9. A(n) _____ separates the whole-number part of a decimal from the fractional part. (Lesson 12-2)

Review

10. What number makes the equation true? (Lesson 12-1)

$$\frac{50}{100} = \frac{\square}{10}$$

11. Anna used 3 one-dollar bills, 2 dimes, and 5 pennies on post cards. She has $1.60 left. How much money did she have before buying post cards? Explain. (Lesson 12-5)

12. Jennifer walked 0.83 miles on the treadmill. What fraction represents the distance she walked? (Lesson 12-2)

$$\frac{\square}{\square}$$

13. What is the sum? (Lesson 12-4)

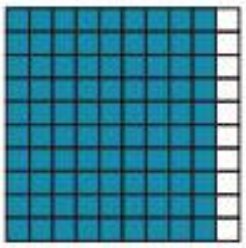
$$\frac{13}{100} + \frac{4}{10} = \frac{\square}{\square}$$

14. How can you compare the decimals? Complete with >, <, or =. (Lesson 12-3)

0.6 ◯ 0.54

15. Christine drank 0.82 liter of water. Megan drank 0.9 liter of water. Who drank more water? Justify your answer. (Lesson 12-3)

16. What are two fractions and two decimals that can be represented by the following decimal grid? (Lesson 12-2)



17. Which numbers are equivalent to the fraction $\frac{80}{100}$? Choose all that apply. (Lesson 12-2)

A. $\frac{8}{100}$ **B.** $\frac{8}{10}$

C. 0.8 **D.** 0.08

E. 0.80

18. What fraction is equivalent to the decimal 0.41? (Lesson 12-2)

$$\frac{\square}{\square}$$

MATH REPLAY | GO ONLINE

19. Macy says the sum of $\frac{3}{10} + \frac{4}{100}$ is the same as the sum of $\frac{1}{10} + \frac{24}{100}$. How can Macy justify her statement? (Lesson 12-4)

20. How can you compare the decimals? Complete with >, <, or =. (Lesson 12-3)

0.21 ◯ 0.3

21. Ashton ran $\frac{3}{10}$ of a mile. How many hundredths of a mile did he run? Explain how you found your answer. (Lesson 12-1)

22. What is the sum? (Lesson 12-4)

$$\frac{7}{10} + \frac{26}{100} = \frac{\square}{\square}$$

23. Thomas had $7.56. He spent some of the money on game tokens. Now, he has $3.31. How much money did he spend on game tokens?

24. How many hundredths are equivalent to the fraction? Complete the equation. (Lesson 12-1)

$$\frac{4}{10} = \frac{\square}{100}$$

25. What fraction is equivalent to the decimal 0.6? (Lesson 12-2)

$$\frac{\square}{\square}$$

26. Corey has 1 five-dollar bill, 6 dimes, and 12 pennies. Does Corey have enough money to buy a sandwich for $5.75? Explain. (Lesson 12-5)

27. Which equations are true? Choose all that apply. (Lessons 12-1, 12-2, 12-3, and 12-4)

A. $\frac{5}{10} + \frac{19}{100} = \frac{69}{100}$

B. $0.5 = 0.05$

C. $\frac{70}{100} = \frac{7}{10}$

D. $\frac{4}{100} + \frac{2}{10} = \frac{42}{100}$

E. $4.20 = 4.2$

Performance Task

A computer programmer is copying files to a new system. The table shows the times (in seconds) it takes to copy each file.

Name	File A	File B	File C	File D	File E
Size, GB	9.10	9.3	9.25	9.1	9.03

A computer programmer is converting files. It costs $1 to convert each gigabyte (GB). The table shows the size in gigabytes of each file.

Part A: How much does it cost to convert 0.01 GB? Explain your thinking.

Part B: Which files cost the same amount to convert? Show how much they will each cost using a drawing of one-dollar bills, dimes, and pennies.

Part C: The programmer has only 10 one-dollar bills, no dimes, and less than 4 pennies. Which conversion can she pay for exactly? Justify your answer.

Reflect

What must you consider when comparing and representing decimal fractions?

Unit 12

Fluency Practice

Name _____

Fluency Strategy

You can use subtraction strategies such as adjusting numbers, decomposing the number being subtracted, or an algorithm to find the difference.

Adjust by adding the same number to both numbers to make compatible numbers.

8,457 − 3,298
+2 +2
8,459 − 3,300 = 5,159

1. Adjust the numbers to find the differen .

2,975 − 403

_____ − _____ = _____

Fluency Flash

What is the difference?

2. Use decomposition to find 5,275 − 2,063.

2,063 = _____ + _____ + _____

5,275 − 2,000 = _____

_____ − 60 = _____

_____ − 3 = _____

3.

	thousands	hundreds	tens	ones
	2	5	2	4
−	1	9	6	8

Fluency Check

What is the sum or difference?

4. 1,768 − 254 = _____
5. 5,438 − 1,219 = _____
6. 7,996 + 38 = _____
7. 6,784 − 2,532 = _____
8. 6,842 + 2,531 = _____
9. 2,826 − 2,735 = _____
10. 3,427 + 2,249 = _____
11. 3,896 − 1,172 = _____
12. 3,654 + 478 = _____
13. 4,587 − 2,418 = _____

Fluency Talk

How do you decide when to use adjusting or an algorithm to subtract?

Explain to a friend why you might choose to adjust numbers to add.

Unit 13

Units of Measurement and Data

Focus Question

How can I use and compare units of measurement?

STEM video | GO ONLINE

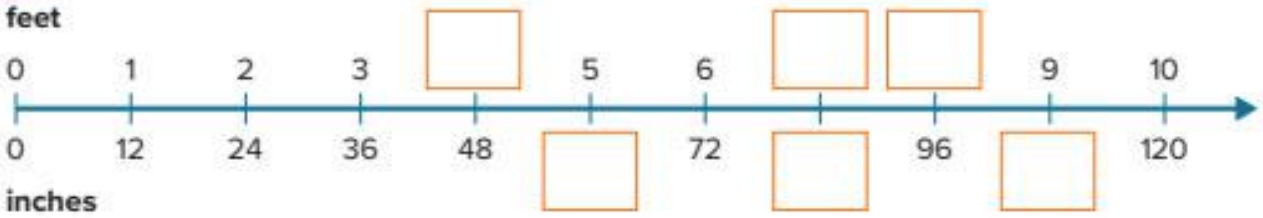
IGNITE!

Name _____

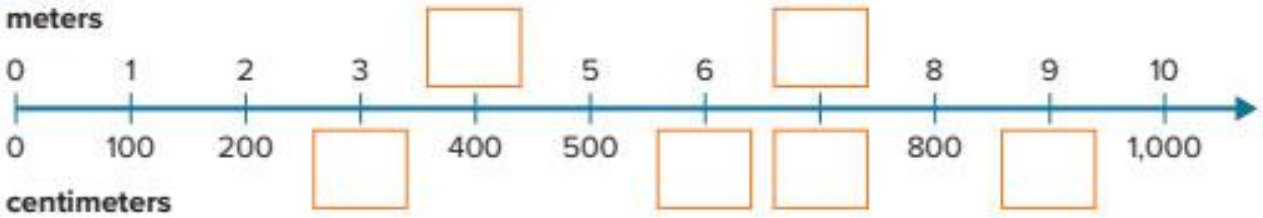
Measurement Number Lines

The number lines show one unit of measurement on top and an equivalent smaller unit on the bottom. Look for a pattern. Then complete the missing values.

A.



B.



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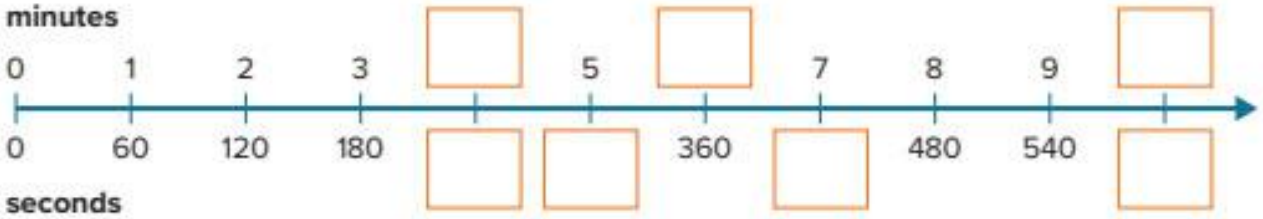
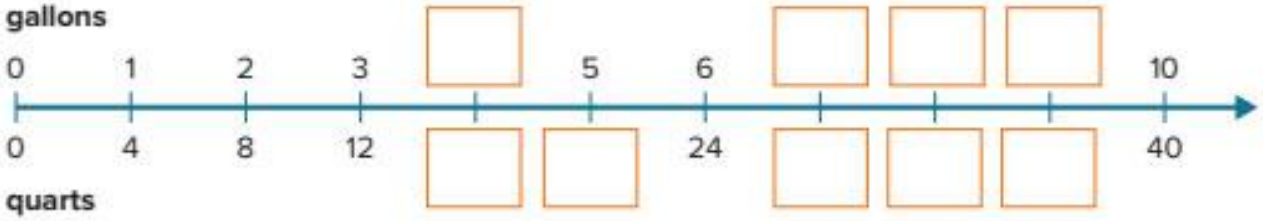


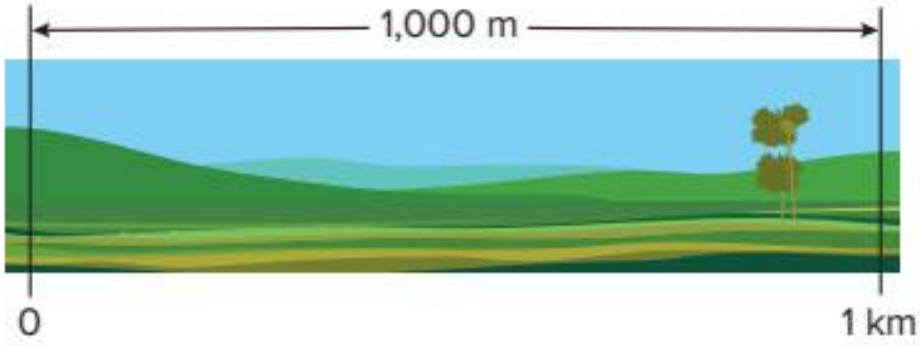
D.



Relate Metric Units

Be Curious

How are they the same?
How are they different?



Math is... Mindset

What behaviors have helped you be successful in the past?

Learn

A local artist painted two murals. The Broad Street mural is 5 meters long. The Central Avenue mural is 485 centimeters long.

Which mural is longer?

Metric units of length include kilometers, meters, centimeters, and millimeters.

1 kilometer (km) = 1,000 meters (m)
1 meter (m) = 100 centimeters (cm)
1 centimeter (cm) = 10 millimeters (mm)

How long is the Broad Street mural in centimeters?

5 meters = **?** centimeters

5 × 100 = 500

Multiply to convert from meters to centimeters

5 meters = **500** centimeters

The Broad Street mural: 500 centimeters

The Central Avenue mural: 485 centimeters

The Broad Street mural is longer.

You can use multiplication to convert larger metric units to smaller metric units.

Math is... Structure

What patterns help you convert units in the metric system?

Work Together

Mr. Decker needs 7 liters of paint for his classroom art project. How many milliliters of paint does he need?

On My Own

MATH REPLAY | GO ONLINE

Name _____

How can you convert the metric units? Complete the equation.

1. 12 meters = ? centimeters

12 × _____ = 1,200

12 meters = _____ centimeters

2. 8 kilograms = ? grams

8 × _____ = 8,000

8 kilograms = _____ grams

3. 14 centimeters = _____ millimeters

4. 25 liters = _____ milliliters

5. 4 centimeters = _____ millimeters

6. 6 meters = _____ millimeters

7. 10 liters = 10,000 _____

8. 200 meters = 20,000 _____

9. How many milliliters of water will fill the tea ettle? Explain.

10. An inchworm crawls 3 meters. What are two other ways to represent the same distance using smaller units?

11. A box of printer paper weighs 9 kilograms. Does the box weigh more than 9,000 grams?

12. In 6 kilometers, there are 6,000 meters. Why does the number with the measurement units increase from 6 to 6,000?

13. Would it be easier to lift the weight shown or one that weighs 5,000 grams? Explain.

14. STEM Connection Noah measures 2 liters of fluids What is the equivalent amount of fluids in milliliter ?

15. Extend Your Thinking Asher runs a 1,000-meter race and his mother runs a 5-kilometer race. How far do they run in all?

Reflect

Why do you use multiplication to convert larger metric units to smaller units?

Math is... Mindset

What behaviors helped you be successful today?

Lesson **13-2**

Relate Customary Units of Weight

Be Curious

How are they the same?
How are they different?

Math is... Mindset

What consequences might there be for your decisions?

Learn

Teri bought 3 pounds of flour to make rolls. She uses 4 ounces of flour to make each roll.

How many rolls can Teri make?

You can use a table to help you convert pounds to ounces.

1 pound (lb) = 16 ounces (oz)
1 ton = 2,000 pounds (lb)

Pounds	Ounces
1	16
2	32
3	48
4	64

1 pound = 16 ounces

Teri has 48 ounces of flour.

Determine how many rolls Teri can make with 48 ounces of flour.

$4 \times r = 48$

Divide to find the missing factor.

$48 \div 4 = 12$

Teri can make 12 rolls with 48 ounces of flour.

Math is... Precision

Why is it important to include the units in the answer?

You can use multiplication and conversion tables to convert larger customary units of weight to smaller customary units of weight.

Work Together

How can you convert pounds to ounces? Complete the equivalence table to show the conversions.

Pounds (lb)	Ounces (oz)
1	16
2	
3	
4	
5	

On My Own

Name _____

What number makes the equation true?

1. 5 pounds = ? ounces

   5 × _____ = 80

   5 pounds = _____ ounces

2. 8 tons = ? pounds

   8 × _____ = 16,000

   8 tons = _____ pounds

3. 4 pounds = _____ ounces

4. 5 tons = _____ pounds

5. _____ ounces = 6 pounds

6. _____ pounds = 7 tons

7. 10 pounds = 160 _____

8. 20 tons = 40,000 _____

9. Mike bought 7 pounds of tomatoes to make a batch of pizza sauce. What is the weight of the tomatoes in ounces?

10. There are 160 ounces of potatoes in a 10-pound bag. Why is the number of ounces greater than the number of pounds?

11. A minivan weighs 3 tons. A truck weighs 8,000 pounds. Which vehicle weighs more? Explain.

12. Jack bought $1\frac{1}{2}$ pounds of bananas. What is the weight of the bananas in ounces?

13. A truck weighs $2\frac{3}{4}$ tons. What is the weight of the truck in pounds?

14. Mark delivered 1 ton of fertilizer to the botanical garden. Each day they spread 50 pounds of fertilizer on the plants. How many days will it take to spread all the fertilizer? Explain.

15. **Extend Your Thinking** Reeb's Market offers a 10-pound watermelon for $5. Sally's Produce Stand offers a 165-ounce watermelon for $5 also. Which is the better buy? Explain.

Reflect

Why is understanding how to use multiplication to convert larger customary units of weight to smaller units important in the real world?

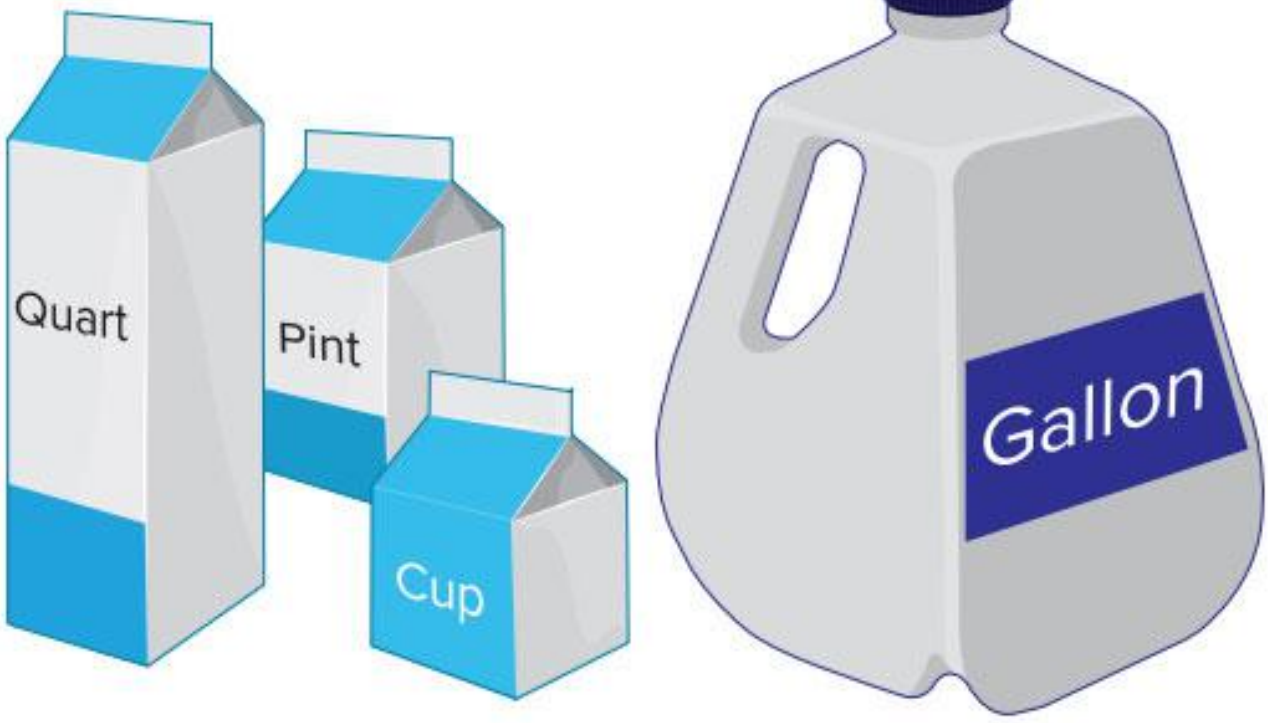
Math is... Mindset

What consequences have there been for your decisions?

Relate Customary Units of Capacity

Be Curious

What do you notice?
What do you wonder?



Math is... Mindset

What behaviors show respect towards someone?

Learn

Leah made 5 quarts of sauce. She will store all the sauce in either 1-pint containers or 1-cup containers.

How many 1-pint containers could she fill?
How many 1-cup containers could she fill?

You can use a table to help you convert quarts to pints.

1 pint (pt) = 2 cups (c)
1 quart (qt) = 2 pints (pt)
1 gallon (gal) = 4 quarts (qt)

Quarts	Pints
1	2
2	4
3	6
4	8
5	10

Leah can fill 10 1-pint containers.

You can use a table to help you convert quarts to cups.

Quarts	Cups
1	4
2	8
3	12
4	16
5	20

Leah can fill 20 1-cup containers.

Math is... Structure

How can you describe the relationship between pints and cups?

You can use multiplication and conversion tables to convert larger customary units of capacity to smaller units of capacity.

Work Together

Complete the equivalence table.

Gallons (gal)	Quarts (qt)
1	4
2	
3	
4	
5	

Pints (pt)	Cups (c)
1	2
2	
3	
4	
5	

On My Own

Name _____

Complete the table.

1.

Cups (c)	Fluid Ounces (fl oz)
1	8
2	
3	
4	
5	

2.

Quarts (qt)	Pints (pt)
1	2
2	
3	
4	
5	

What number makes the equation true?

3. 6 cups = _____ fluid ounce

4. 8 quarts = _____ pints

5. _____ quarts = 4 gallons

6. _____ cups = 7 pints

7. Jerry's coffee pot holds 4 cups of coffe . How many fluid ounces does the pot hold?

8. The baseball teams drink 10 gallons of water at a tournament. How many quarts of water do they drink?

9. Kelly's juice recipe uses 16 quarts of water. How many gallons does her recipe use?

10. Ben used 40 pints of water to fill hi new aquarium. How many quarts does the aquarium hold?

11. Kayla has a pitcher that holds 18 pints and a punch bowl that holds 3 gallons. Which holds more? Explain your answer.

12. Jack used $2\frac{1}{2}$ quarts of oil for the lawnmower. How many pints of oil did he use? Explain how you found the solution.

13. Celia made 12 quarts of lemonade. She is filling bottles that can hold 2 cups. How many bottles can she fill? Explain

14. **Extend Your Thinking** Geraldo can fill 7 cups every 30 seconds from his indoor faucet. He can fill 2 quarts every 30 seconds from his outdoor faucet. Which faucet would fill a bucket faster? Explain.

Reflect

How is converting larger units of capacity to smaller units of capacity similar to converting larger units of length to smaller units of length?

Math is... Mindset

What behaviors showed respect towards someone?

Lesson **13-4**

Convert Units of Time

Be Curious

Which doesn't belong?

Math is... Mindset

What can you do today to build a relationship with a classmate?

Learn

Dora's family drove $3\frac{1}{2}$ hours to get to the beach.

How many minutes did Dora's family spend driving?

You can use multiplication to convert hours to minutes to find the family's driving time.

Use the Distributive Property to convert $3\frac{1}{2}$ hours to minutes.

Number of hours driven

Number of minutes in 1 hour

$$3\tfrac{1}{2} \times 60 = \left(3 + \tfrac{1}{2}\right) \times 60$$
$$= (3 \times 60) + \left(\tfrac{1}{2} \times 60\right)$$
$$= 180 + 30$$
$$= 210$$

There are 210 minutes in $3\frac{1}{2}$ hours. Dora's family drove 210 minutes.

Dora's family took 7 minutes to set up their picnic lunch at the beach.

You can multiply to find the number of seconds it took.

$$7 \times 60 = 420$$

There are 420 seconds in 7 minutes. Dora's family took 420 seconds to set up lunch.

You can use multiplication and equivalence tables to convert larger units of time to smaller units.

Math is... Quantities

Why does the number of units increase when converting to smaller units?

Work Together

Complete the equivalence table.

Hours (hr)	Minutes (min)
1	60
2	
3	
4	
5	

Minutes (min)	Seconds (s)
1	60
2	
3	
4	
5	

On My Own

MATH REPLAY | GO ONLINE

Name _____

What number makes the equation true?

1. 5 hours = ? minutes

5 × _____ = 300

5 hours = _____ minutes

2. 10 minutes = ? seconds

10 × _____ = 600

10 minutes = _____ seconds

3. 7 hours = _____ minutes

4. 6 minutes = _____ seconds

5. _____ hours = 360 minutes

6. _____ hours = 900 minutes

7. Salma volunteered for 4 hours last weekend. How many minutes did Salma volunteer?

8. When a timer reads 8 minutes, that is 480 seconds. Why is the number of seconds greater than the number of minutes?

9. Lola sang a song that was 4 minutes long. Selina sang a song that was 220 seconds long. Who sang longer? Explain.

10. Nathan and Chad are running in a $\frac{1}{2}$-mile relay race. Chad runs the first part in 3 minutes. Nathan runs the second part i 150 seconds. Who took longer? How much longer?

11. **Error Analysis** Kyle converted $4\frac{1}{4}$ hours to 244 minutes. Do you agree with Kyle? Explain.

12. Leann spent 3 hours online last week. If she spent the same amount of time online each of 5 days, how many minutes would she spend online in a day?

13. Diane boiled an egg for $9\frac{1}{2}$ minutes. For how many seconds did she boil the egg?

14. Stacy reads a page in 3 minutes. How many seconds does it take?

15. **Extend Your Thinking** There are 24 hours in one day. Explain how many minutes there are in one week.

Reflect

How do you convert larger units of time to smaller units?

Math is... Mindset

What did you do today to build a relationship with a classmate?

Lesson **13-5**

Solve Problems That Involve Units of Measure

Be Curious

What math do you see in this problem?

The top shelf on Chuck's bookcase can hold a maximum of some grams. The picture frame and the plants have a total mass of some kilograms and some grams.

Math is... Mindset

What helps you recognize and understand how others are feeling?

Learn

The top shelf on Chuck's bookcase can hold a maximum of 5,000 grams. The picture frame and the plants have a total mass of 3 kilograms and 245 grams.

Chuck wants to add two vases to the shelf. What is the greatest possible mass of the two vases in grams?

You can solve the problem in steps.

Step 1 Determine the combined mass of the picture frame and the plants in grams.

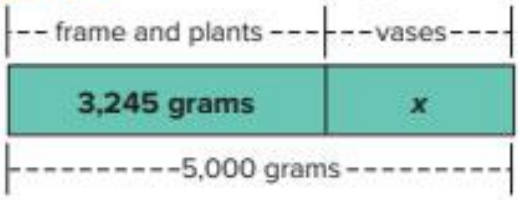
$3 \times 1{,}000 = 3{,}000$

3 kilograms = 3,000 grams — 1 kg = 1,000 g

$3{,}000 + 245 = 3{,}245$

The picture frame and plants have a mass of 3,245 grams.

Step 2 Determine the greatest possible mass of two vases.



$x = 5{,}000 - 3{,}245$

$x = 1{,}755$

The greatest possible mass of the vases is 1,755 grams.

Math is... Modeling

What is another way to represent the problem?

Solving problems involving metric units may require converting larger units to smaller units.

Work Together

Jonah mixes 500 milliliters of honey with 4 liters of tea. He distributes the sweetened tea equally into 5 containers. How many milliliters of sweetened tea is in each container?

On My Own

Name _____

Solve the problem.

1. Lacey walks $1\frac{1}{2}$ kilometers to school. Hsu walks 2 kilometers to school. How many meters do Lacey and Hsu walk in all?

2. Jeanette made 6 liters of soup. She serves 5,500 milliliters of the soup. How many milliliters of the soup remain?

3. A restaurant owner buys 8 sacks of potatoes. Each sack of potatoes has a mass of 5 kilograms. How many grams of potatoes does he buy?

4. Niamh has 320 centimeters of red ribbon and 6,300 millimeters of blue ribbon. How many more millimeters of blue ribbon than red ribbon does she have?

5. **STEM Connection** Saffron ma es a recipe that calls for 100 milliliters of olive oil. How many times can she make the recipe with 1 liter of olive oil? Justify your answer.

6. Sylvia has 30 milliliters of red dye and 40 milliliters of yellow dye. If she mixes them, how many milliliters of orange dye will she have?

7. Terrance wants to buy a melon that weighs 3,950 grams. His bag can hold 4 kilograms without tearing. Can he carry the melon in his bag? Explain.

8. A boy is 2 meters tall. His sister is one-half of his height. How many centimeters tall is his sister?

9. A jug can hold 1 liter of water. There are 820 milliliters of water in the jug. How many more milliliters of water is needed to fill the jug?

10. **Extend Your Thinking** Olivia can buy 1 kilogram of berries at the store for $10 or she can buy 100 grams for $0.50 at the farmer's market. Which is a better buy?

Reflect

How do you know when it is necessary to convert units before solving a problem?

Math is... Mindset

How did you recognize and understand how others are feeling?

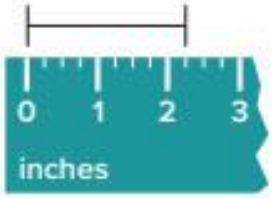
Unit 13

Measuring Length in Inches

Name _____

Use the inch ruler to answer the question about the length of the line segment.

1. Is the distance about $2\frac{1}{8}$ inches long?

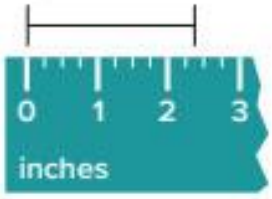


Circle Yes or No.

Yes No

Explain your thinking.

2. Is the distance about $2\frac{3}{8}$ inches long?



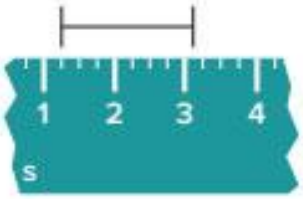
Circle Yes or No.

Yes No

Explain your thinking.

Use the inch ruler to answer the question about the length of the line segment.

3. Is the distance about $2\frac{1}{2}$ inches long?

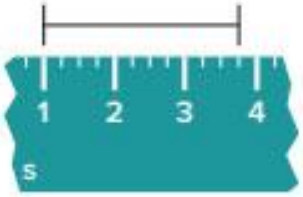


Circle Yes or No.

Yes No

Explain your thinking.

4. Is the distance about $2\frac{3}{4}$ inches long?



Circle Yes or No.

Yes No

Explain your thinking.

Reflect On Your Learning

I'm confused. I'm still learning. I understand. I can teach someone else.

Lesson **13-6**

Solve More Problems That Involve Units of Measure

Be Curious

What could the question be?

Math is... Mindset

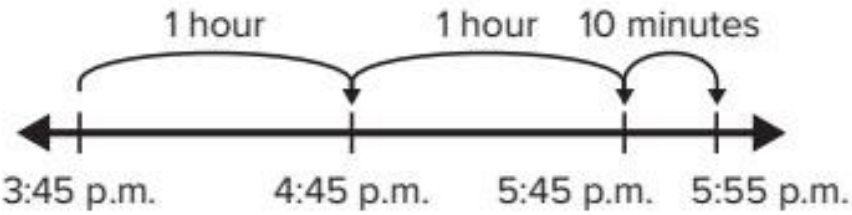
What makes you feel excited when doing math?

Learn

Lola started watching the movie at 3:45 p.m. and stopped watching at 5:55 p.m.

How long did she watch the movie?

Use an open number line to find the elapsed time.



The elapsed time from 3:45 p.m. to 5:55 p.m. is 2 hours and 10 minutes.

Math is... Choosing Tools

How does the number line help find elapsed time?

Representations can be used to solve problems involving units of time.

Work Together

Julian reads 2 hours each week. He keeps track of how long he reads each day in a reading log. How many more minutes does Julian need to read this week?

My Reading Log	
Day of the Week	**Number of Minutes**
Monday	32
Tuesday	18
Wednesday	26

On My Own

Name _____

Solve the problem.

1. Derinda's dog weighs 4 pounds. Elizabeth's dog weighs $5\frac{1}{4}$ pounds. What is the combined weight of the two dogs in ounces?

2. Fasil makes 3 gallons of soup. He puts the soup in 1-quart containers. How many containers can he fill

3. Jasmine has $3\frac{2}{3}$ yards of lace for 5 pillows. She uses 20 inches of lace for each pillow. How much lace does she have left?

4. Helen worked in the garden from 2:20 p.m. to 6:15 p.m. How many minutes did she work in the garden?

5. A vine grows $\frac{1}{2}$ foot each week. How many inches does it grow in 6 weeks?

6. Hannah has 3 quarts of blueberries and 7 pints of raspberries. How many pints of berries does she have?

7. How much more does a $6\frac{1}{2}$-ton elephant weigh than an 8,000-pound hippopotamus?

8. One soccer game ends at 10:15 a.m. and the next soccer game starts at 1:20 p.m. How many minutes are there between the games?

9. Jess swam 400 yards in 14 minutes. Christina swam 960 feet in the same amount of time. Who swam faster? Explain.

10. **Extend Your Thinking** A concert is from 12:15 p.m. to 2:45 p.m. A movie lasts 2 hours and 8 minutes. The movie ends at 2:24 p.m. What time did the movie start? How much longer was the concert? Explain your thinking.

Reflect

How does finding elapsed time on a number line compare to using a number line for other units of measure?

Math is... Mindset

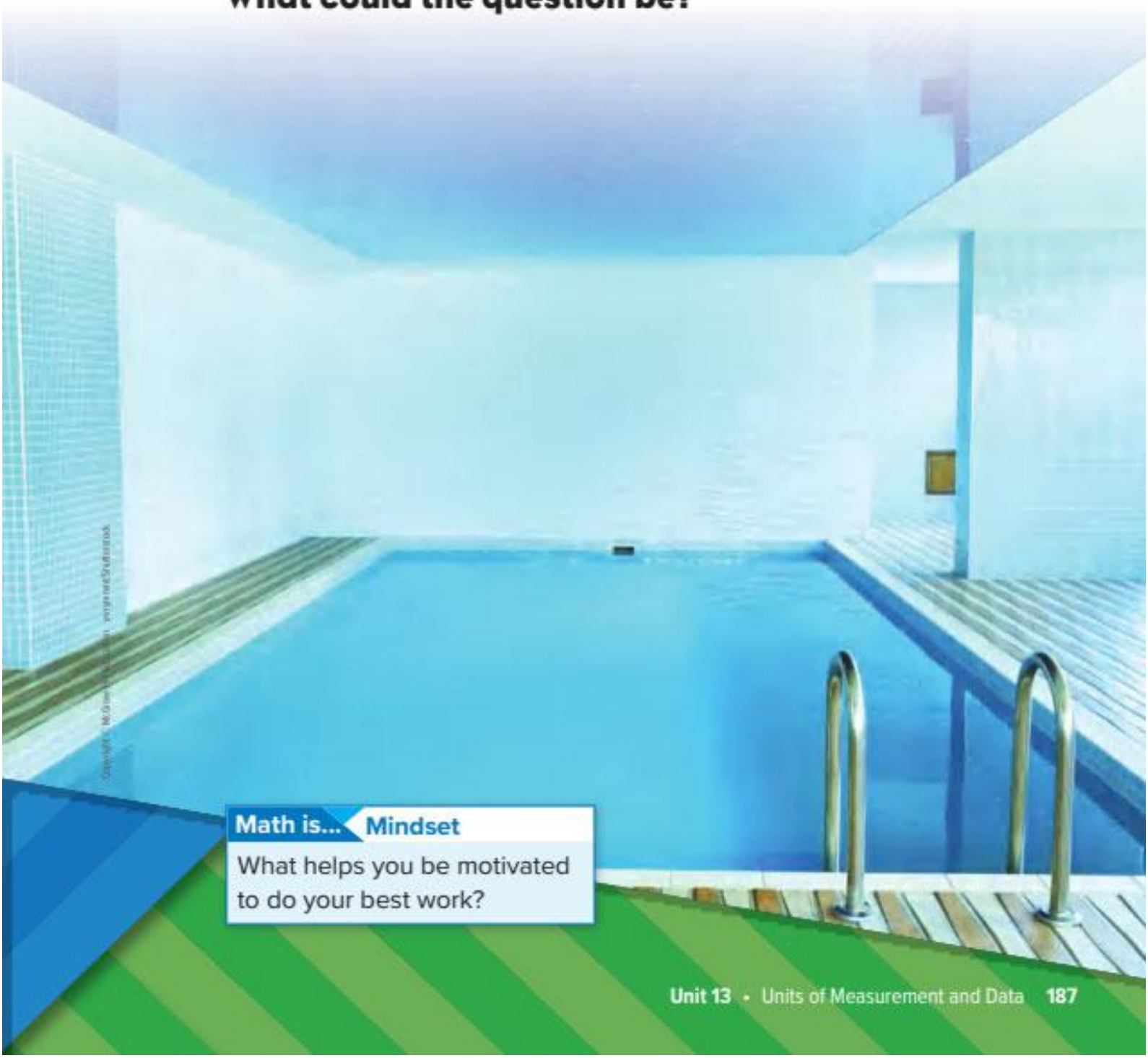
What made you feel excited about doing math?

Lesson **13-7**

Solve Problems Using a Perimeter Formula

Be Curious

What could the question be?



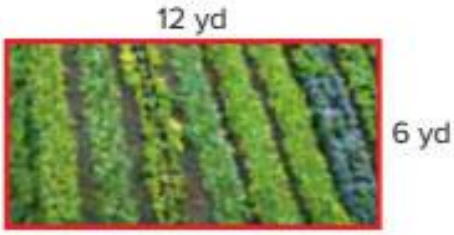
Math is... Mindset

What helps you be motivated to do your best work?

Learn

Keira and her mother will build a fence for a rectangular vegetable garden.

How many yards of fencing do they need?



You can find the perimeter of the rectangular garden.

One Way Add all the side lengths.

$P = 12 + 6 + 12 + 6$

$P = 36$

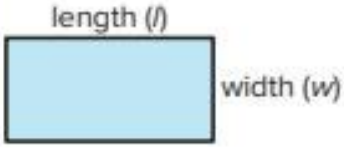
Two side lengths are 12 yards and two side lengths are 6 yards.

Kiera needs 36 yards of fencing.

Another Way Use a **formula**.

A formula is an equation that uses symbols to relate quantities.

$P = (2 \times l) + (2 \times w)$



$P = (2 \times 12) + (2 \times 6)$

$P = 24 + 12$

$P = 36$

Replace l and w with values.

You can use a formula to find the perimeter of a rectangle. You can use the formula to solve problems involving perimeters of rectangles.

Math is... Generalizations

How is the formula like adding the sides?

Work Together

Kiera uses 48 yards of fencing to enclose a rectangular flower garden that has a length of 12 yards. What is the width of the flower garden?

On My Own

Name _____

What is the missing value?

1. 6 ft, 5 ft

$P =$ _____ ft

2. 14 yd, 7 yd

$P =$ _____ yd

3. $l = 10$ miles, $w = 4$ miles

$P = 2 \times (10 +$ _____ $)$

$P =$ _____ miles

4. $l = 5$ km, $w = 2$ km

$P = (2 \times 5) + (2 \times$ _____ $)$

$P =$ _____ km

5. $l = 8$ m, $w = 5$ m

$P =$ _____ m

6. $l = 5$ units, $w = 5$ units

$P =$ _____ units

7. 8 inches

$P = 24$ inches

$w =$ _____ inches

8. 10 yd

$P = 36$ yd

$w =$ _____ yd

9. A rectangular playground has a length of 72 feet and a width of 36 feet. What is the perimeter?

10. A rectangular piece of paper has a length of 8 inches. Its perimeter is 32 inches. What is the width of the paper?

11. A rectangular tablecloth has a width of 60 inches. The length is $1\frac{1}{2}$ times the width. What is the perimeter? Justify your solution.

12. **STEM Connection** Sam designs a rectangular building with one side measuring 1,000 meters and a perimeter of 2,800 meters. What is the length of the other side? Explain.

13. **Extend Your Thinking** If the length is double the width, what are three possible perimeters of a rectangle?

Reflect

How did you use a formula to find the perimeter of a rectangle?

Math is... Mindset

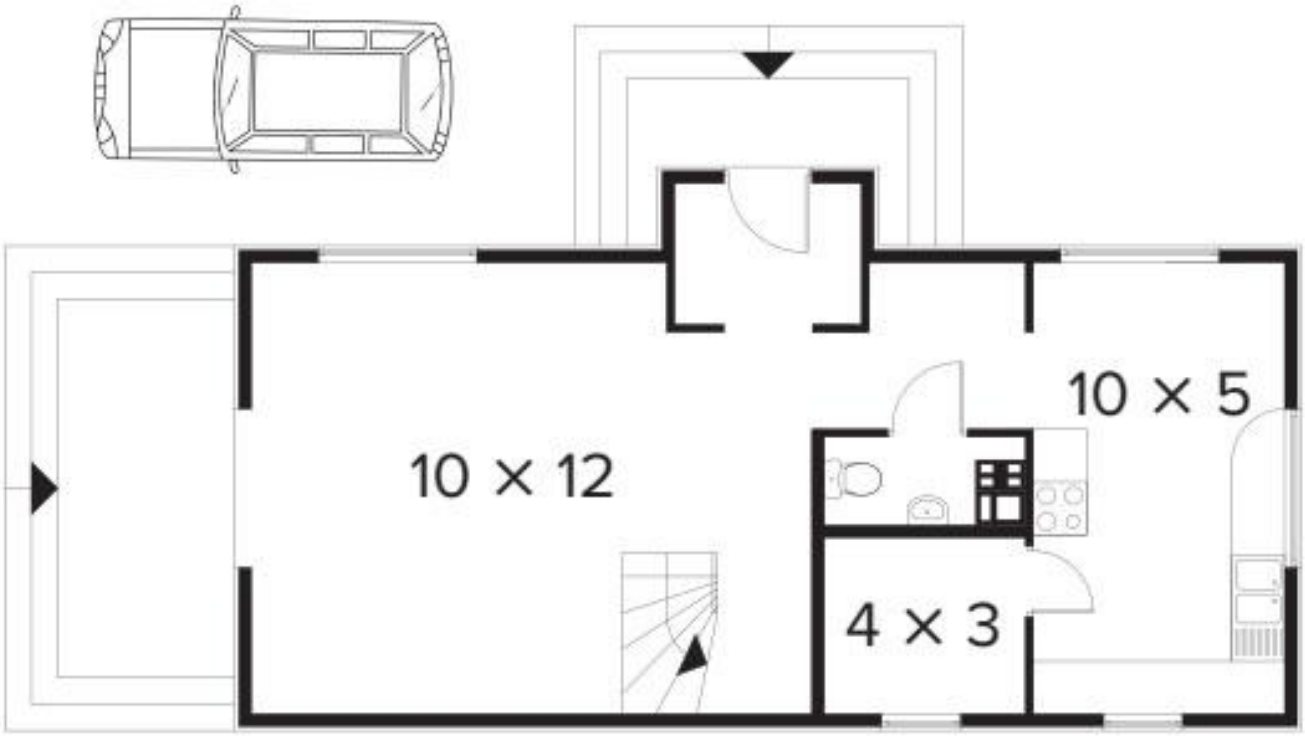
What helped you be motivated to do your best work?

Lesson **13-8**

Solve Problems Using an Area Formula

Be Curious

What do you see?



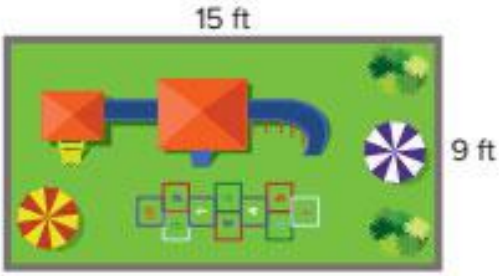
Math is... Mindset

How do you and your classmates build a safe classroom culture?

Learn

The school principal is purchasing artificial grass for a play area.

How many square feet of grass does she need to buy?



One Way Use multiplication.

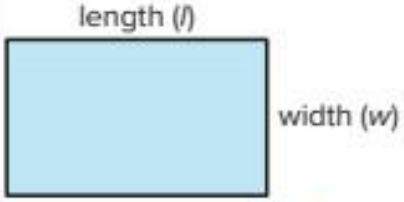
$A = 15 \times 9$

$A = 135$

The principal will need 135 square feet of grass.

Another Way Use a **formula**.

$A = l \times w$



$A = 15 \times 9$ — Replace *l* and *w* with values.

$A = 135$

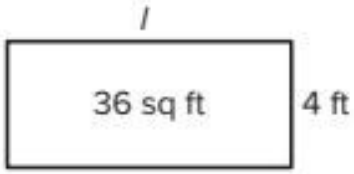
You can use a formula to find the area of a rectangle.

Math is... in My World

How does a representation help you determine the area of a rectangle?

Work Together

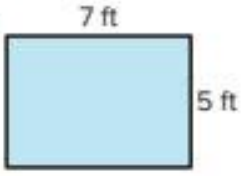
What is the length of the rectangle?



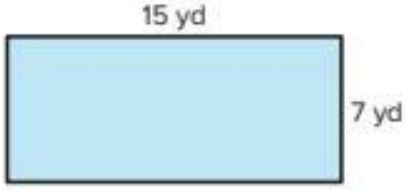
On My Own

Name _____

What is the area?

1. 

$A =$ _____ square ft

2. 

$A =$ _____ square yd

3. $l = 12$ meters, $w = 6$ meters

$A =$ _____ square meters

4. $l = 25$ km, $w = 4$ km

$A =$ _____ square km

5. $l = 8$ cm, $w = 5$ cm

$A =$ _____ square cm

6. $l = 22$ miles, $w = 5$ miles

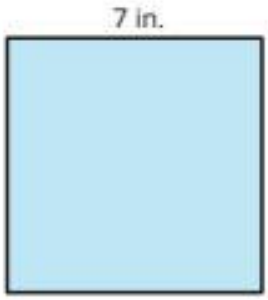
$A =$ _____ square miles

What is the missing value?

7. 

$A = 44$ square miles

$l =$ _____ miles

8. 

$A = 49$ square inches

$w =$ _____ inches

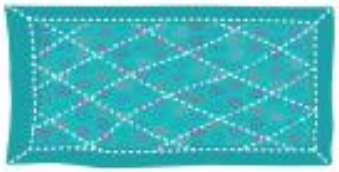
Solve the problem.

9. A rectangular garden has a width of 9 feet and an area of 144 square feet. What is the length of the garden?

10. A square piece of cardboard has a side length of 18 inches. What is the area of the piece of cardboard? Show your work.

11. A rectangular park has an area of 60 square miles. What are 3 possible length and width combinations? How did you find your answer?

12. If the width of the blanket is half the length, what is the area of the blanket?



60 in.

13. Error Analysis The side lengths of a square are 6 units each. Marcus says the area of the rectangle is 24 square units. How can you explain his error?

14. The area of a rectangular parking lot is 2,500 square feet. If the length of the parking lot is 100 feet, what is the width?

15. Extend Your Thinking The perimeter of a rectangle is 24 feet. What could be the area? Find 3 possible answers.

Reflect

How is finding the perimeter different from finding the area?

Math is... Mindset

How did you and your classmates build a safe classroom culture?

Lesson **13-9**

Solve Problems Involving Perimeter and Area

Be Curious

What do you notice?
What do you wonder?

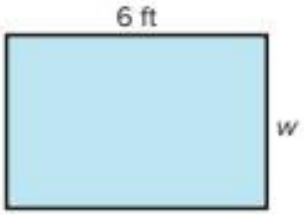
Math is... Mindset

What helps you want to do your best work?

Learn

Danesh and Phillipe will build a sandbox. The area of the sandbox will be 24 square feet.

What will be the perimeter of the sandbox?



You can use area and perimeter formulas to solve the problem.

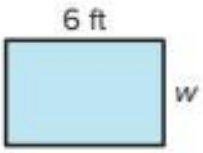
Use the area formula to find the unknown width of the sandbox.

$A = l \times w$

$24 = 6 \times w$

$24 = 6 \times 4$

$w = 4$ ft



The width of the sandbox is 4 feet.

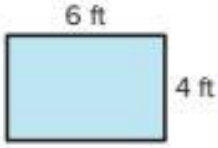
Use the perimeter formula to find the perimeter of the sandbox.

$P = 2 \times (l + w)$

$P = 2 \times (6 + 4)$

$P = 2 \times 10$

$P = 20$ ft



The perimeter of the sandbox is 20 feet.

You can use area and perimeter formulas to solve real-world problems involving area and perimeter.

Math is... Modeling

How does the representation help you understand the relationship between the quantities?

Work Together

Danesh and Phillipe have 36 feet of fencing to make a rectangular dog pen. They want to give their dog as much area in the pen as they can. What dimensions should Danesh and Phillipe use to give their dog the most area in the pen?

On My Own

MATH REPLAY | GO ONLINE

Name _____

What is the unknown measurement?

1. A billboard has the following measurements.

a. What is the length of the billboard?

$48 = l \times 4$

$l =$ _____ yd

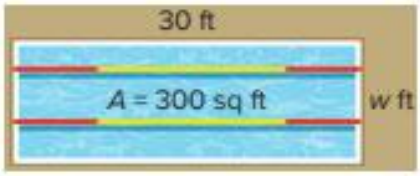
b. What is the perimeter?

$P = 2 \times (\_\_\_\_\_ + 4)$

$P = 2 \times$ _____

$P =$ _____ yd

2. A lap pool has the following measurements.



a. What is the width of the lap pool?

$300 = 30 \times w$

$w =$ _____ ft

b. What is the perimeter?

$P = 2 \times (30 + \_\_\_\_\_)$

$P = 2 \times$ _____

$P =$ _____ ft

3. A rectangular koi pond has an area of 12 square feet and a width of 2 feet. What is the length and perimeter?

$l =$ _____ ft $P =$ _____ ft

4. A rectangular rug has an area of 15 square feet and a width of 3 feet. What is the length and perimeter?

$l =$ _____ ft $P =$ _____ ft

5. A rectangular greenhouse has a perimeter of 40 feet and length of 10 feet. What is the area?

$A =$ _____ sq ft

6. A square frame has an area of 400 square inches. What are the side lengths?

$l =$ _____ in.

7. A rectangular park has an area of 12 square miles. What are 3 possible perimeters in miles? Justify your solutions.

8. A gardener has 60 inches of edging material to surround a rectangular flowerbed. What is the greatest possible area of the flowerbed? Justify your solution

9. **STEM Connection** Sam designs a rectangular building. The area is 360,000 square feet. The length of the building is 900 feet. What are 3 possible widths? Explain.

10. **Extend Your Thinking** If the length and width of a rectangle are doubled and then doubled again, how does the area and perimeter change each time?

Reflect

What is a real-world problem you can solve using the formulas for area and perimeter of a rectangle?

Math is... Mindset

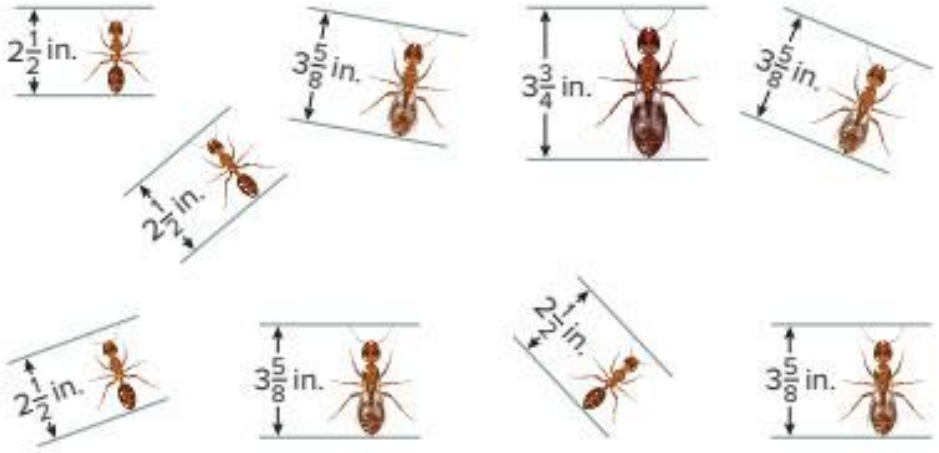
What helped you want to do your best work?

Lesson **13-10**

Display and Interpret Data on a Line Plot

Be Curious

What do you notice?
What do you wonder?



Math is... Mindset

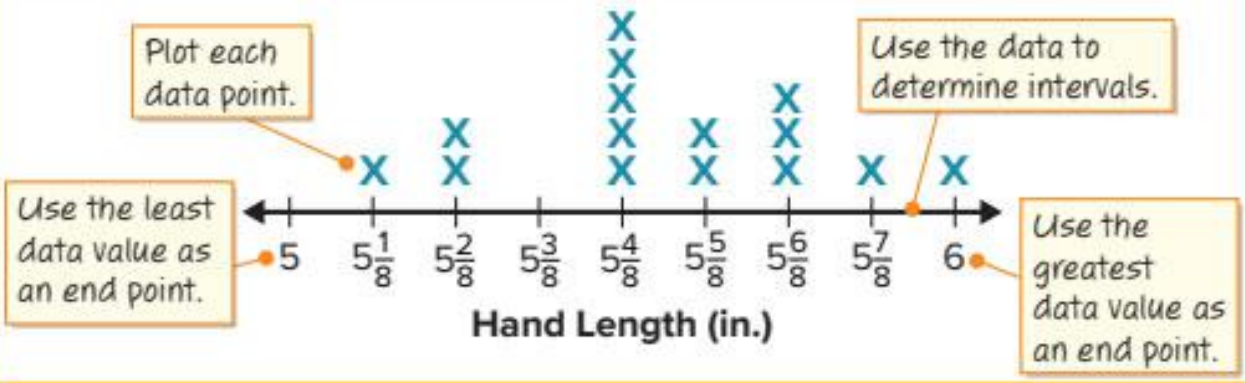
Why is it important to speak clearly and concisely?

Learn

Kade measured the hand lengths of her class to the nearest eighth inch.

Length (in.)	$5\frac{6}{8}$	$5\frac{1}{8}$	$5\frac{2}{8}$	$5\frac{4}{8}$	5	$5\frac{5}{8}$	$5\frac{7}{8}$	$5\frac{3}{8}$	6
Count	3	1	2	5	0	2	1	0	1

How can Kade display the hand lengths in a line plot?



You can interpret data displayed on the line plot and draw conclusions.

- The difference between the longest and shortest hand length is $\frac{7}{8}$ inch: $6 - 5\frac{1}{8} = \frac{7}{8}$.
- The most common hand length was $5\frac{4}{8}$ inches.
- No one had a hand length of 5 inches or $5\frac{3}{8}$ inches.

Math is... Thinking

How does a line plot help you analyze data?

You can use a line plot to display measurement data. You can interpret measurement data displayed on the line plot to answer questions.

Work Together

The table shows the lengths of a set of pencils.
How can you display the data in a line plot?

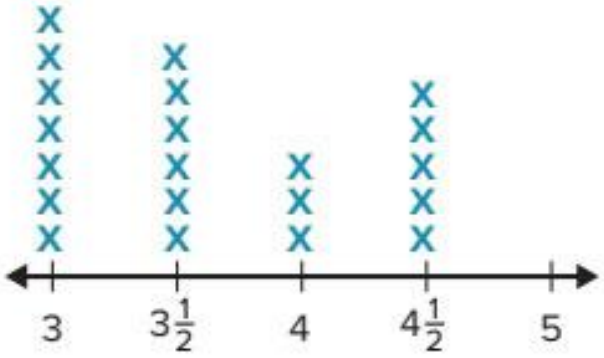
Length (in.)	$4\frac{3}{4}$	5	$4\frac{1}{4}$	$4\frac{2}{4}$
Count	4	2	3	1

On My Own

MATH REPLAY | GO ONLINE

Name _____

Use the line plot for exercises 1–4.



Mr. Cobey's Class
Long Jump Distances (ft)

1. What was the greatest distance jumped?

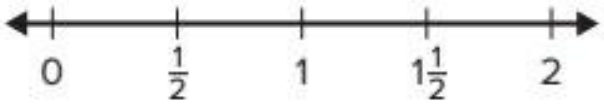
2. How many students jumped 4 feet or greater?

3. How many students jumped $4\frac{1}{2}$ feet?

4. How many students jumped $3\frac{1}{2}$ feet?

Use the data for exercises 5 and 6.

5. The table shows the time Jackson spent practicing the saxophone each day. Display the data on a line plot.



Saxophone Practice (hours)	
Monday	$1\frac{1}{2}$
Tuesday	0
Wednesday	$\frac{1}{2}$
Thursday	1
Friday	1
Saturday	0
Sunday	$1\frac{1}{2}$

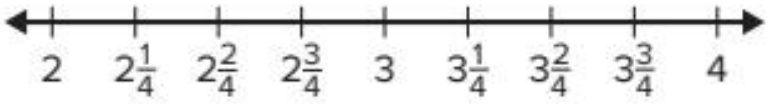
6. How many hours did Jackson practice in all?

_____ hours

The table shows the distances Kireka's family hiked each day during a family vacation. Use the data in the table for exercises 7–10.

Distance Hiked (miles)	
Monday	$3\frac{1}{4}$
Tuesday	2
Wednesday	$3\frac{2}{4}$
Thursday	$2\frac{1}{4}$
Friday	4
Saturday	$2\frac{3}{4}$
Sunday	$3\frac{1}{4}$

7. Draw a line plot to display the data.



8. Which distance was most frequently hiked?

_____ miles

9. What is the difference between the longest and shortest distance Kireka's family hiked?

_____ miles

10. Extend Your Thinking Kireka's family had a goal to hike more than 20 miles during the family vacation. Did her family meet their goal? Explain your answer.

Reflect

How can you use data on a line plot to solve problems involving fractions?

Math is... Mindset

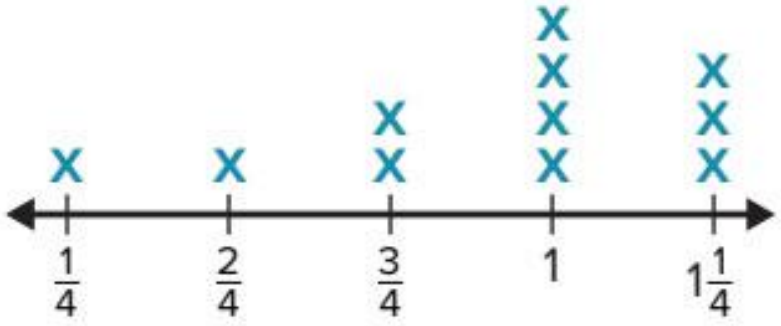
Why was it important to speak clearly and concisely?

Lesson **13-11**

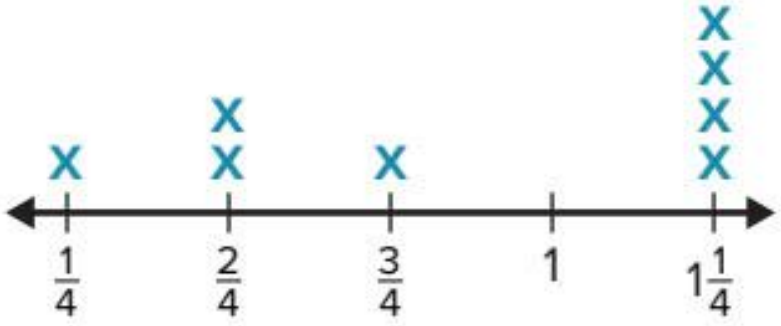
Solve Problems Involving Data on a Line Plot

Be Curious

What do you see?



Length of Male Inchworm (in.)



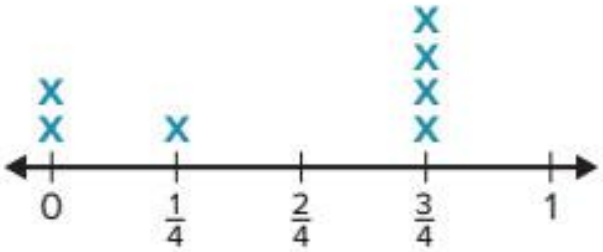
Length of Female Inchworm (in.)

Math is... Mindset

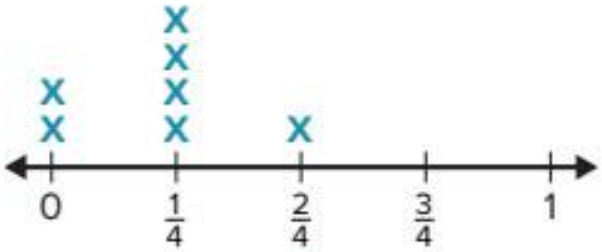
What strategies help you work more efficiently?

Learn

The line plots show the amount of rainfall in two cities in one week.



Rainfall (in.) in Chicago, IL
February 1–7



Rainfall (in.) in New York City, NY
February 1–7

What is the difference between the greatest amount of rainfall in New York City and the greatest amount of rainfall in Chicago?

Find the greatest amount of rainfall represented in each line plot and subtract to find the difference.

$\frac{3}{4} - \frac{2}{4} = \frac{1}{4}$

The difference in rainfall is $\frac{1}{4}$ inch.

Math is... Precision

Why are there 7 Xs in each of the line plots?

You can also find the total rainfall in New York City for the week by adding the data values in the New York City line plot.

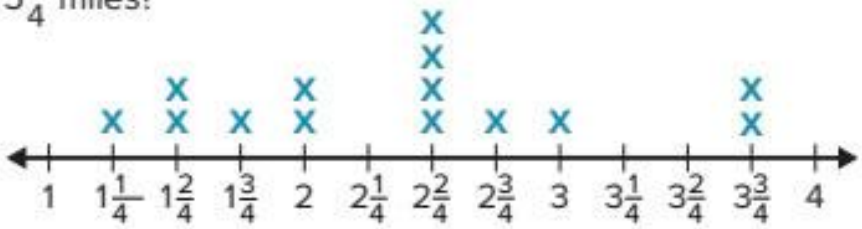
$0 + 0 + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{2}{4} = \frac{6}{4}$

New York City's total rainfall for the week was $1\frac{2}{4}$ inches.

You can analyze and interpret measurement data displayed in line plots to solve problems involving addition and subtraction of fractions.

Work Together

The line plot shows distances of Caleb's running routes and the number of times he ran each route. Which two routes could he combine to run $5\frac{1}{4}$ miles?

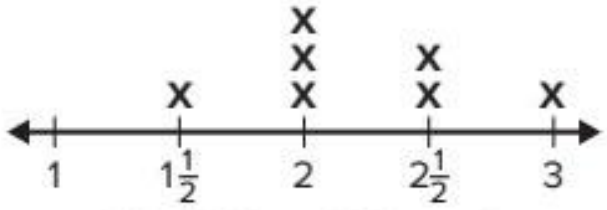


Distance Caleb Runs (mi)

On My Own

Name _____

Use the line plot for exercises 1–4.



Movie Length (hours)

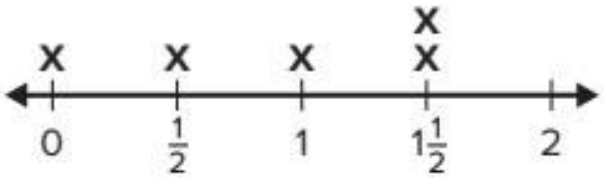
1. What is the difference between the lengths of the longest movie and the shortest movie?

2. What is the combined length of the shortest movie and the longest movie?

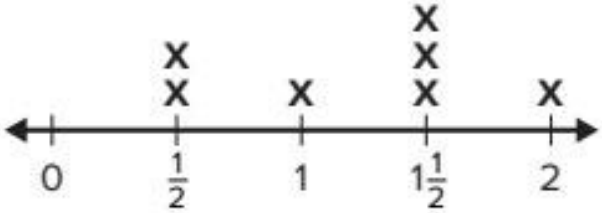
3. How long would you need to watch all the movies?

4. If the two longest movies were playing one right after the other, would you be able to watch both movies in 5 hours? Explain.

Use the line plots to answer exercises 5–8.



Daily Band Practice (hr)



Daily Basketball Practice (hr)

5. How many hours were spent practicing band?

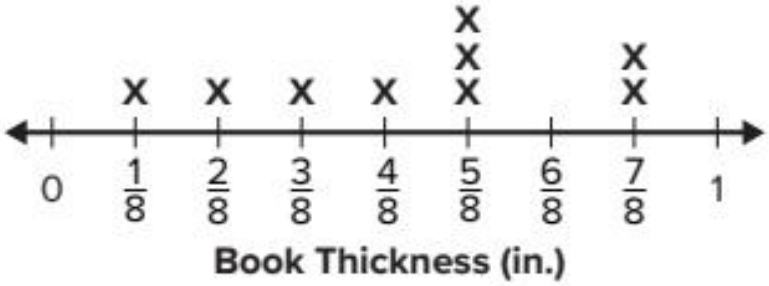
6. How many hours were spent practicing basketball?

7. If you wanted to practice both activities for the same amount of time each week, which activity would you need to practice more? By how much?

8. How much time was spent practicing both activities throughout the week?

Use the line plot to answer exercises 9–11.

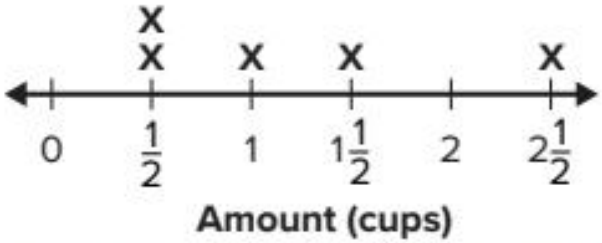
9. What is the difference in thickness between the thickest book and the thinnest book?



10. What is the combined thickness of the $\frac{5}{8}$-inch books?

11. Error Analysis Caleb says the combined thickness of all the books is $2\frac{6}{8}$ inches. How would you respond to Caleb?

12. Extend Your Thinking Ella tried new smoothie recipes last week. She plotted the amounts of one of the ingredients. Which ingredient did Ella plot?



Veggie	Banana	Tropical	Berry	Blueberry
almond milk $\frac{1}{2}$ cup	banana 1 cup	yogurt $\frac{3}{4}$ cup	yogurt $\frac{3}{4}$ cup	almond milk $2\frac{1}{2}$ cups
yogurt 3 cups	almond milk $1\frac{1}{2}$ cups	mango $\frac{3}{4}$ cup	raspberries $\frac{1}{2}$ cup	blueberries $\frac{1}{2}$ cup
baby spinach 3 cups	yogurt $\frac{1}{2}$ cup	almond milk 1 cup	almond milk $\frac{1}{2}$ cup	yogurt 1 cup

Reflect

How can you use data on a line plot to solve problems involving fractions?

Math is... Mindset

What strategies helped you work more efficiently?

Unit Review

Name _____

Vocabulary Review

Choose the correct word(s) to complete the sentence.

area	capacity	convert
customary unit	equivalence table	line plot
metric units	perimeter	weight

1. A pound is a unit that measures _____. (Lesson 13-2)

2. The distance around a shape is its _____. (Lesson 13-7)

3. Measurement units that have the prefi es kilo-, centi-, and milli- are _____. (Lesson 13-1)

4. You multiply to _____ larger units to smaller units. (Lesson 13-1)

5. A quart is a unit that measures _____. (Lesson 13-3)

6. _____ is the number of square units needed to cover a shape without overlap. (Lesson 13-8)

7. A(n) _____ is a graph that shows how many times each data value occurs. (Lesson 13-10)

8. An ounce is an example of a(n) _____. (Lesson 13-2)

Review

9. How are the metric units for length, capacity, and weight similar? (Lesson 13-1)

What number makes the equation true?

10. 46 centimeters = _____ millimeters (Lesson 13-1)

11. 24 kilograms = _____ grams (Lesson 13-1)

12. 87 meters = _____ centimeters (Lesson 13-1)

13. 9 pounds = _____ ounces (Lesson 13-2)

14. 9 quarts = _____ cups (Lesson 13-3)

15. 4 gallons = _____ pints (Lesson 13-3)

16. Randy purchased $2\frac{1}{2}$ pounds of bananas. What is the weight of the bananas in ounces? (Lesson 13-2)

17. Carla drank 5 gallons of strawberry lemonade this year. How many cups of strawberry lemonade did she drink? (Lesson 13-3)

A. 20 **B.** 40

C. 80 **D.** 160

18. Complete the table. (Lesson 13-4)

Hours (hr)	Minutes (min)
10	600
20	
30	
40	
50	

19. Kenny made $3\frac{1}{2}$ liters of lemon tea and 2 liters of strawberry tea. How many more milliliters of lemon tea than strawberry tea did he make? (Lesson 13-5)

20. Each juice box contains about 200 milliliters of juice. If Emily has 8 juice boxes, about how many liters of juice does she have? (Lesson 13-5)

21. Heather stayed at the public library from 3:55 p.m. to 6:15 p.m. How many minutes did she stay at the public library? Show your work. (Lesson 13-6)

22. Find the perimeter of a rectangle with a width of 4 yards and a length of 12 yards. (Lesson 13-7)

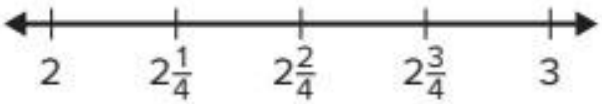
_____ yards

23. A rectangular table top has an area of 90 square feet and a width of 6 feet. What is the length? (Lesson 13-8)

24. A rectangular mat has an area of 12 square feet and a width of 3 feet. What is the length of the door mat? What is the perimeter? (Lesson 13-9)

25. The table shows the distances that Cody jogged over the past week. Represent this data using a line plot. (Lesson 13-10)

Monday	$2\frac{3}{4}$ miles
Tuesday	$2\frac{2}{4}$ miles
Wednesday	3 miles
Thursday	$2\frac{3}{4}$ miles
Friday	$2\frac{1}{4}$ miles
Saturday	$2\frac{2}{4}$ miles
Sunday	$2\frac{3}{4}$ miles



Distance Jogged (miles)

Use the line plot you created for exercises 26–27.

26. What is the most frequent distance Cody jogged? (Lesson 13-11)

_____ miles

27. What is the total distance Cody jogged? (Lesson 13-11)

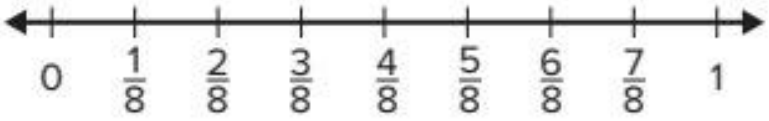
_____ miles

Performance Task

An architect designed 9 shelves for a house. The lengths of the shelves are recorded in the table below.

Shelf	1	2	3	4	5	6	7	8	9
Length (yards)	$\frac{7}{8}$	$\frac{4}{8}$	$\frac{4}{8}$	$\frac{2}{8}$	$\frac{7}{8}$	$\frac{3}{8}$	$\frac{2}{8}$	$\frac{4}{8}$	$\frac{1}{8}$

Part A: Create a line plot to display the lengths of the shelves.



Lengths of Shelves (yards)

Part B: What is the most frequent shelf length? How many shelves have this length? Explain your answer.

Part C: Which 3 shelves have a combined length of 1 yard? Show your work.

Reflect

What must you consider when creating and interpreting a line plot?

Unit 13

Fluency Practice

Name _____

Fluency Strategy

You can use an algorithm to efficiently add or subtract whole numbers.

Add or subtract the digits in the same place value.

$$\begin{array}{r} 213{,}458 \\ +\,456{,}021 \\ \hline 669{,}479 \end{array} \qquad \begin{array}{r} 793{,}865 \\ -\,351{,}704 \\ \hline 442{,}161 \end{array}$$

Fluency Flash

What is the sum or difference?

1.

	hundred thousands	ten thousands	thousands	hundreds	tens	ones
	7	9	5	8	3	9
−	5	4	1	4	2	7

2.

	hundred thousands	ten thousands	thousands	hundreds	tens	ones
	3	5	3	8	2	8
+	6	4	3	1	3	0

Fluency Check

What is the sum or difference?

3. 74,976 − 63,205 = _____

4. 12,529 + 671,350 = _____

5. 845,788 − 312,204 = _____

6. 20,842 + 56,387 = _____

7. 42,379 + 6,248 = _____

8. 233,455 + 453,042 = _____

9. 13,457 − 6,249 = _____

10. 6,008 − 3,985 = _____

11. 398,576 − 62,164 = _____

12. 685 − 596 = _____

Fluency Talk

How do you choose a strategy to add?

How is subtracting 5- and 6-digit numbers like subtracting 4-digit numbers?

Unit 14

Geometric Figures

Focus Question

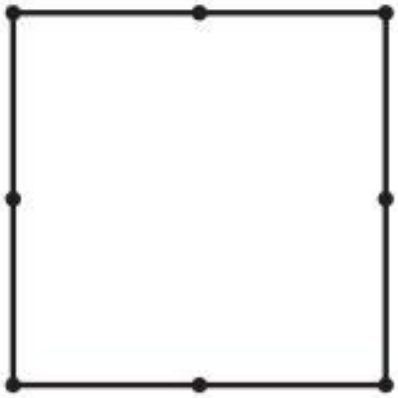
How can I solve problems involving geometric figures?

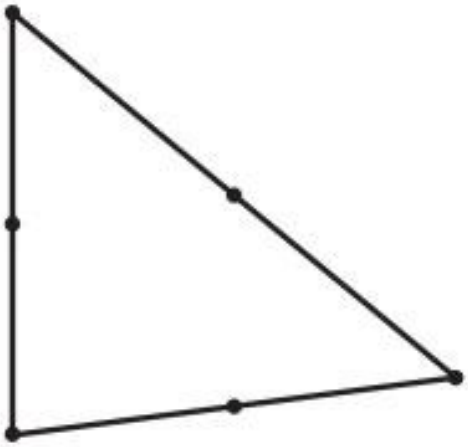
IGNITE!

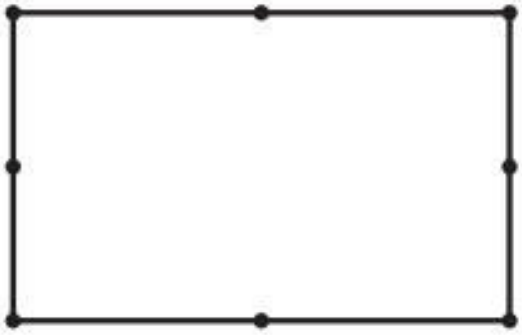
Name _____

Repeating Shapes

Look at each shape. What do you notice?







Lesson **14-1**

Understand Lines, Line Segments, and Rays

Be Curious

Which doesn't belong?

Figure 1

Figure 2

Figure 3

Figure 4

Math is... Mindset

How do you show that you understand your partner's point of view?

Learn

Stacey drew the following figures in math class.

Figure 1

Figure 2

What are the properties of the figures Stacey drew?

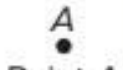
Figure 3

Figure 4

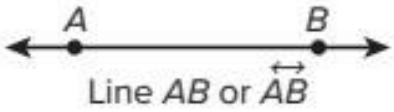
You can analyze geometric shapes to learn about their properties.

A **point** is a location in space.

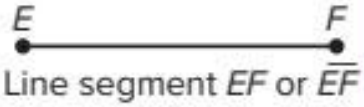
Points are named using letters.



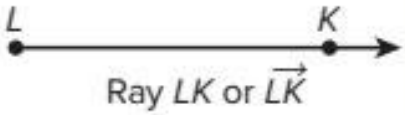
A **line** continues forever in both directions.



A **line segment** is one section of a line. It has two endpoints.



A **ray** has one **endpoint** and extends forever in one direction.



Lines, line segments, and rays are labeled and named using points.

You can describe geometric figures based on their properties.

Math is... Precision

Why do you use precise wording to describe geometric figures?

Work Together

Perform a scavenger hunt in the classroom or outside to find real-world examples of points, lines, line segments, and rays. Then organize your findings using a table.

On My Own

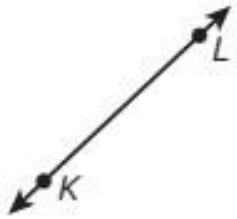
Name _____

How can you name the figure? Write the name that best describes it.

1.

_____

2.



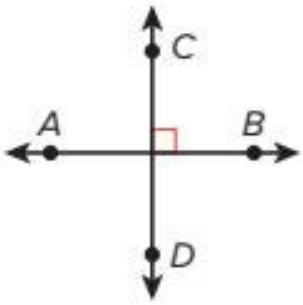
_____

3.

_____

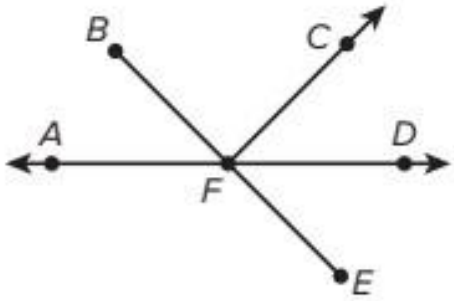
What name best describes the part of the figure containing the given points? Write the name of the figure.

4. Contains points *A* and *B*



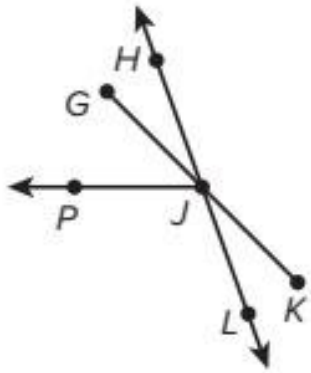
_____

5. Contains points *C* and *F*



_____

6. Contains points *G* and *J*



_____

Draw the figure.

7. Line segment *UV* ($\overline{UV}$)

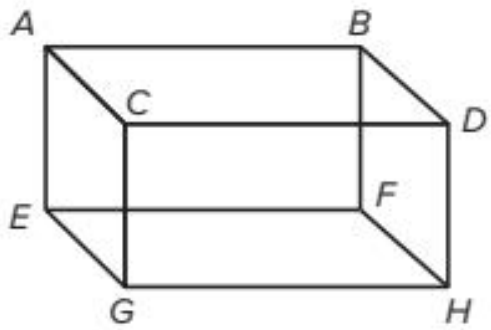
8. Ray *TS* ($\overrightarrow{TS}$)

9. Line *JK* ($\overleftrightarrow{JK}$)

10. **Error Analysis** Marsha states that the edge of a desk is an example of a line. How do you respond to Marsha?

11. Draw a figure that contains points, lines, line segments, and rays. Label and identify each.

12. **Extend Your Thinking** What are all the line segments that are part of the 3-dimensional shape shown?



Reflect

How did you think like a mathematician when analyzing properties of points, lines, line segments, and rays?

Math is... Mindset

How did you show that you understand your partner's point of view?

Lesson **14-2**

Classify Angles

Be Curious

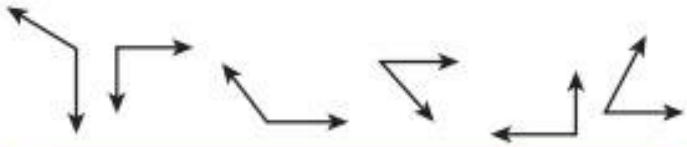
What do you notice?
What do you wonder?

Math is... Mindset

What can you do to avoid stress today?

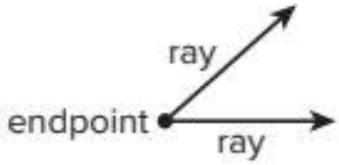
Learn

Ling is sorting some shapes.

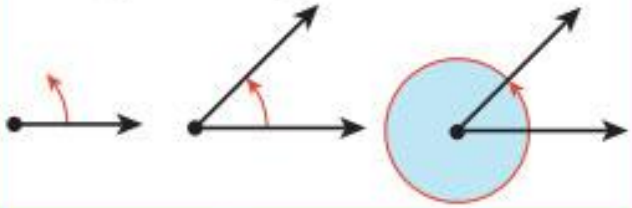


How can Ling sort the shapes?

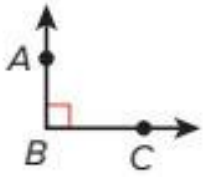
An **angle** is formed when two rays have the same endpoint.



Angles are measured by the amount of rotation, or turning, along a circle from one ray of the angle to the other.

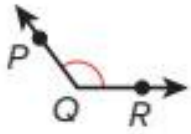


$\angle ABC$ is a right angle.



In a **right angle**, the amount of rotation is $\frac{1}{4}$ of a whole circle.

$\angle PQR$ is an obtuse angle.



An **obtuse angle** has a measure that is greater than the measure of a right angle.

$\angle LMN$ is an acute angle.

An **acute angle** has a measure that is less than the measure of a right angle.

Ling can group the angles by their properties.

An angle is formed when two rays share a common endpoint.

Math is... Choosing Tools

How do the drawings help you understand the concept of an angle?

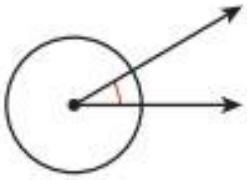
Work Together

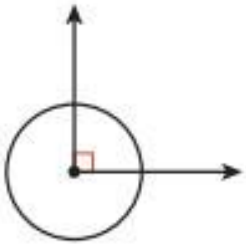
Perform a scavenger hunt looking for real-world examples of angles. Create a table to record your findings. Be sure to classify the angles as right, acute, or obtuse.

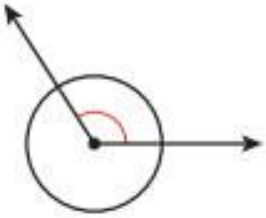
On My Own

Name _____

How can you describe the amount of rotation?

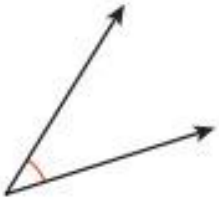
1. 

2. 

3. 

How can you classify the angle? Explain your thinking.

4. 

5. 

6. 

Draw the angle.

7. Right

8. Acute

9. Obtuse

10. **STEM Connection** Antonio draws the angle below to show a turn made by a robot. What type of angle describes the turn made by the robot? Explain how you know.

11. Does the angle shown have a measure that is greater than, less than, or equal to $\frac{1}{2}$ turn? Explain your thinking.

12. **Extend Your Thinking** Draw a diagram that includes right, obtuse, and acute angles. Label each type of angle shown on your diagram.

Reflect

How did you think like a mathematician when classifying angles?

Math is... Mindset

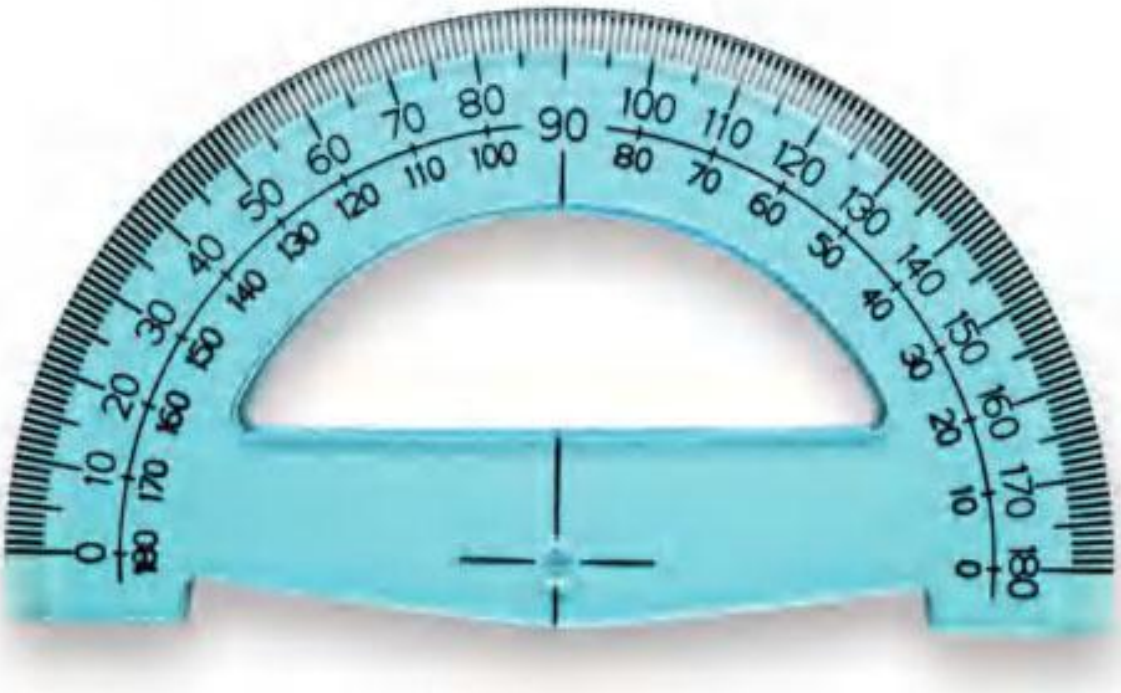
How have you avoided stress today?

Lesson **14-3**

Draw and Measure Angles

Be Curious

What do you notice?
What do you wonder?



Math is... Mindset

What helps you work well in a team?

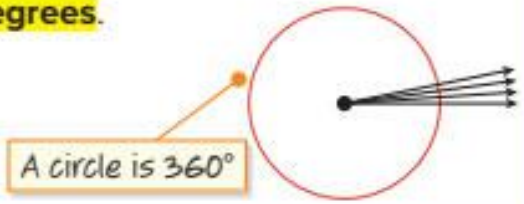
Learn

Keisha wants to measure an angle.

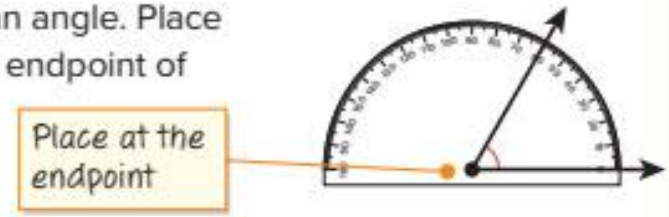
What tool can she use for measuring the angle?

The unit of measurement for an angle is **degrees**.

A unit angle measures 1° and represents $\frac{1}{360}$ of the degrees of a circle.



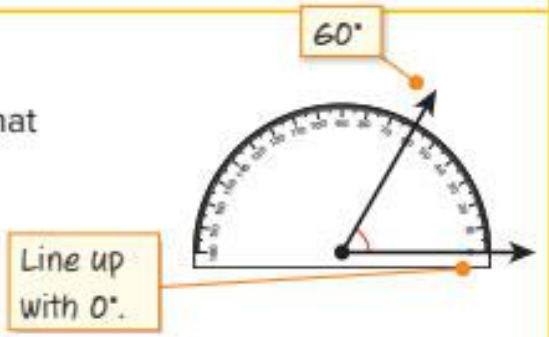
You use a **protractor** to measure an angle. Place the center of the protractor on the endpoint of the rays that form the angle.



Line up one ray with 0° on the protractor.

Then find the tick mark on the protractor that aligns with the second ray of the angle.

This angle measures 60°.



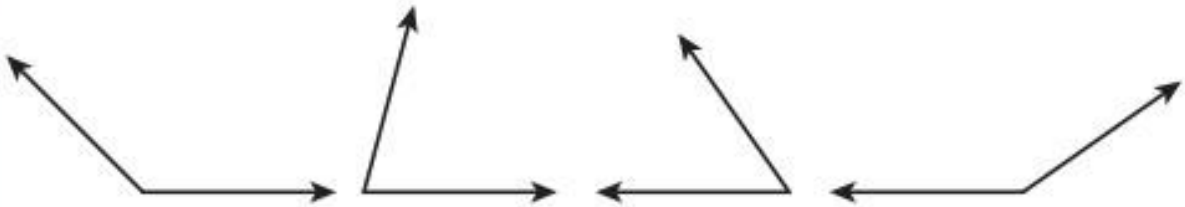
You can use a protractor to measure and draw angles. Use a protractor to measure.

Math is... Choosing Tools

How does a protractor help you measure an angle?

Work Together

What is the measure of the angle? Use a protractor to measure.



_____ _____ _____ _____

On My Own

Name _____

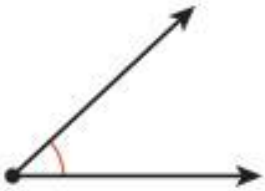
What is the measure of the angle? Use a protractor.

1. 

_____

2. 

_____

3. 

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4. 

_____

Use a protractor to draw the angle.

5. 58°

6. 30°

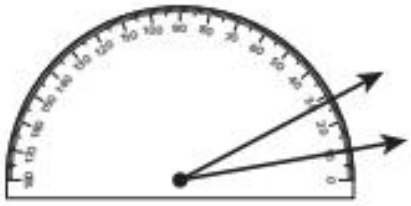
7. 95°

8. 104°

9. Alex drew an obtuse angle. Which of the following could be its measure?

A. 127° **B.** 34° **C.** 90° **D.** 78°

10. **Error Analysis** Erica states that the angle shown has a measure of 28°. How do you respond to Erica?



11. **Extend Your Thinking** Draw an obtuse, right, and acute angle. Use a protractor to measure the angles, and label as obtuse, right, or acute.

Reflect

How would you explain to a friend how to measure an angle?

Math is... Mindset

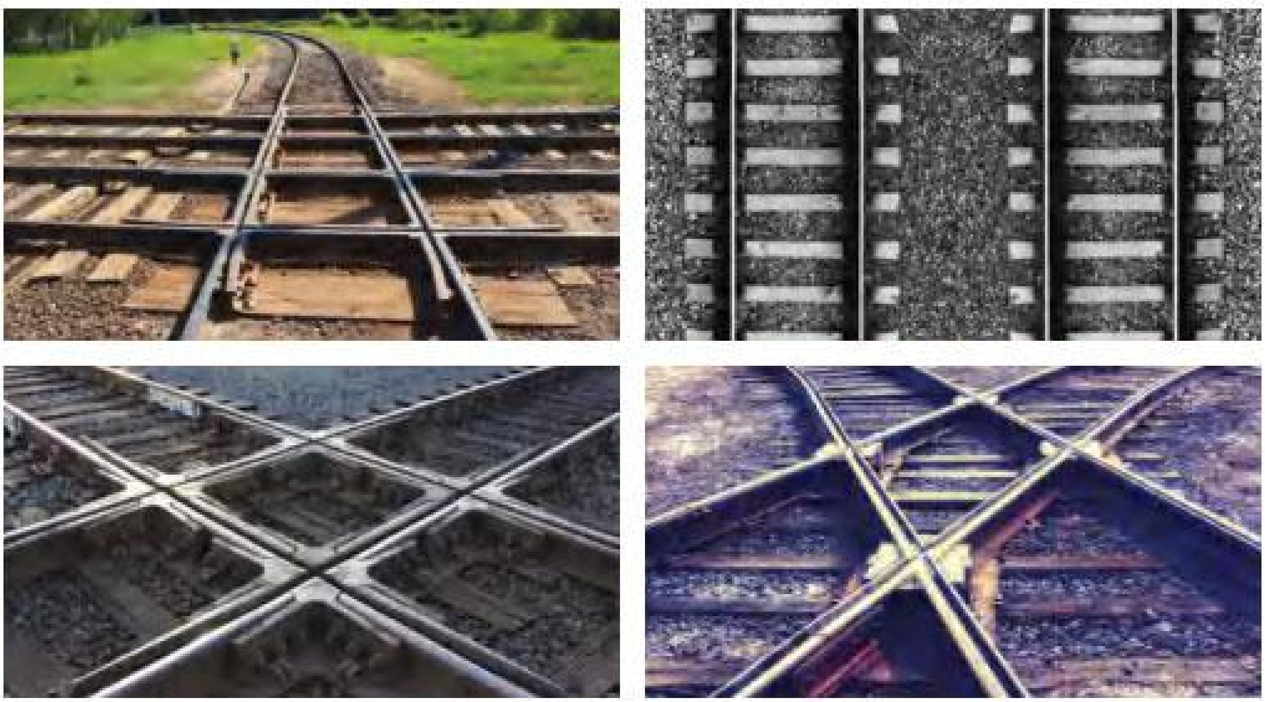
What helped you work well in a team?

Lesson **14-4**

Understand Parallel and Perpendicular Lines

Be Curious

Which doesn't belong?



Math is... Mindset

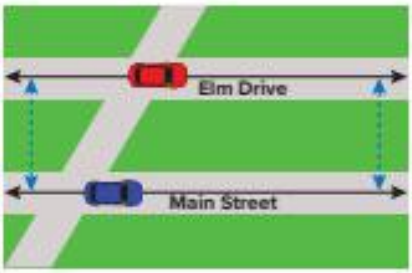
How can your strengths in other areas help you in math?

Learn

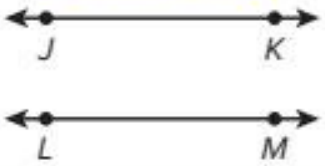
A blue car is driving on Main Street. A red car is driving on Elm Drive. A black car is driving on Pine Road.

How can you describe the relationships among the paths of the cars?

Main Street and Elm Drive are always the same distance apart. They do not cross, or intersect.



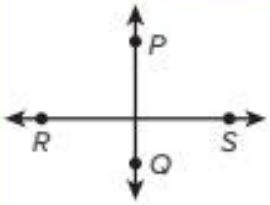
Lines that are always the same distance apart and never intersect are **parallel lines**.



$\overleftrightarrow{JK}$ is parallel to $\overleftrightarrow{LM}$

Main Street and Pine Drive intersect. Their intersection forms a right angle.

Lines that intersect to form a right angle are **perpendicular lines**.



$\overleftrightarrow{PQ}$ is perpendicular to $\overleftrightarrow{RS}$

You can classify lines by the way they intersect.

Math is... Precision

How can you explain the relationship between a pair of lines?

Work Together

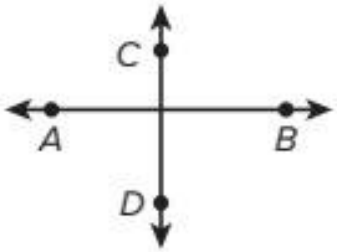
Draw an example of perpendicular lines.
Draw an example of parallel lines.

On My Own

Name _____

How can you describe the pair of lines shown? Label the pair of lines as parallel, perpendicular, or neither.

1.



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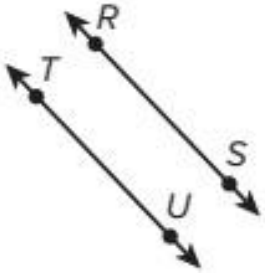

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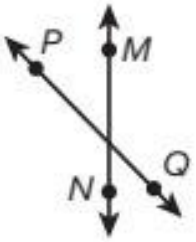
3.



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Draw a pair of lines that match the description.

4. Perpendicular

5. Intersecting, but not perpendicular.

6. Parallel

What capital letter of the alphabet matches the description?

7. Includes perpendicular and parallel lines

8. Includes perpendicular lines, but not parallel lines

9. Includes parallel lines, but not perpendicular lines

10. What is a real-world object that does not include parallel or perpendicular lines? Draw a diagram of your object. Then, explain why your diagram does not include either type of lines.

11. **Error Analysis** Lindsey states that a bookshelf has only parallel line segments because the shelves are parallel to one another. How would you respond to Lindsey?

12. **Extend Your Thinking** Draw a polygon that has both parallel and perpendicular line segments. Label the shape and identify all parallel and perpendicular line segments.

Reflect

How can you identify parallel and perpendicular lines in the world around you?

Math is... Mindset

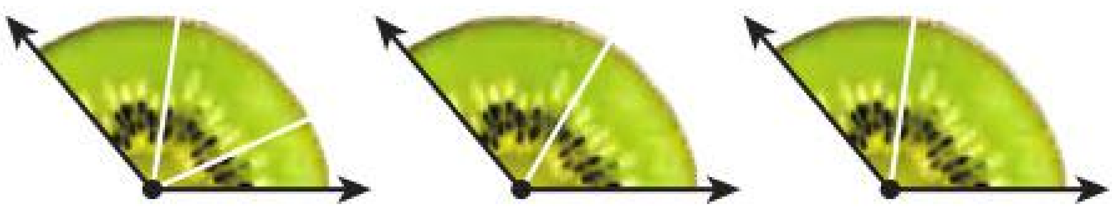
How did your strengths in other areas help you in math today?

Lesson 14-5

Add and Subtract Angle Measures

Be Curious

How are they the same?
How are they different?



Math is... Mindset

How will you use your abilities and skills to be successful today?

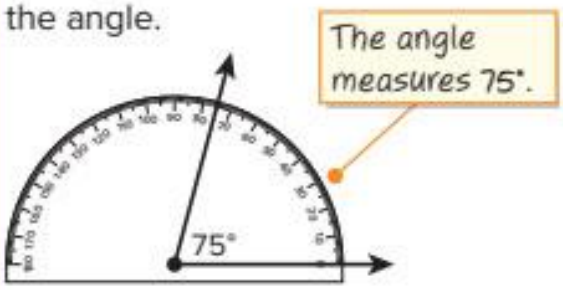
Learn

Yuma cuts a watermelon slice into 2 pieces.

What could be the angle measurement of each piece?

You can draw an angle to represent the angle of the watermelon slice.

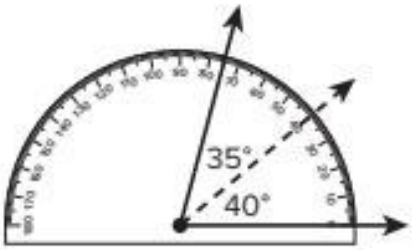
Use a protractor to measure the angle.



You can draw a ray inside the angle to partition the angle into two smaller angles.

The measure of the first angle is 40°.

The sum of the measures of the two smaller angles is 75°.



$40° + ? = 75°$ The measure of the second angle is 35°.

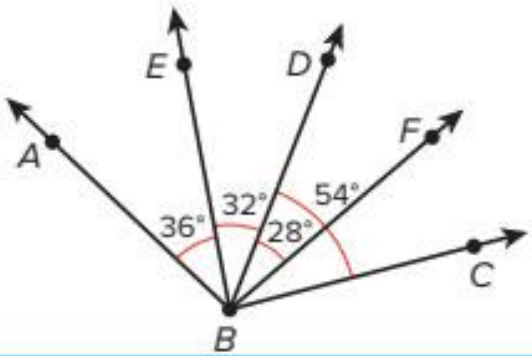
An angle can be partitioned into smaller angles. The sum of the smaller angles is equal to the measure of the original angle.

Math is... Quantities

How does the equation represent the decomposed angle?

Work Together

What are the measurements of angles *ABD*, *FBC*, and *ABC*?

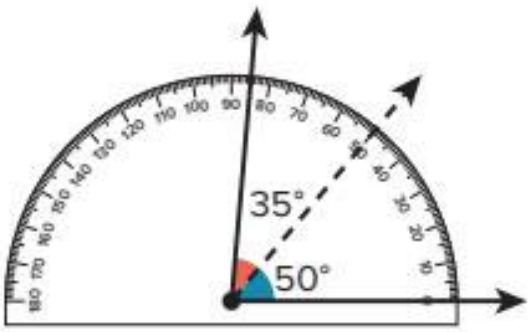


On My Own

Name _____

What is the sum of the two angles?

1.



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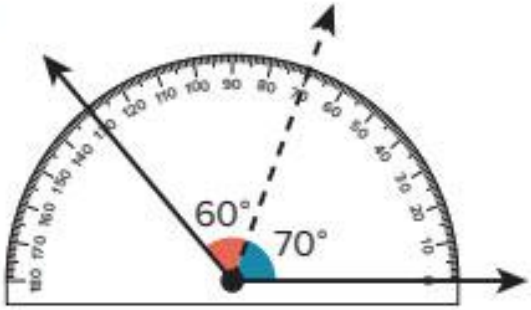
2.



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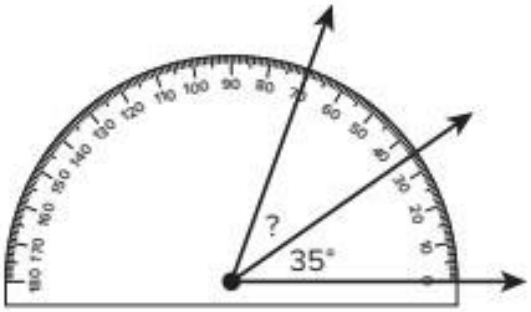
What is the measure of the unknown angle?

3.



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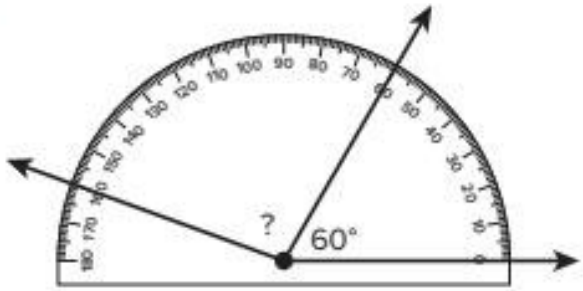
4.



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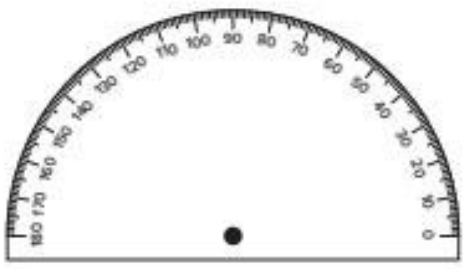
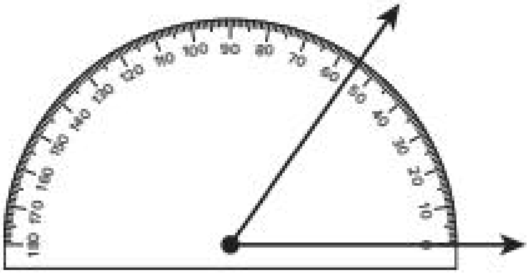
5. Gabriela drew a ray inside an obtuse angle to partition the angle into two acute angles. What is a possible measure of the obtuse angle and the two acute angles? Use the protractor to draw the angles.

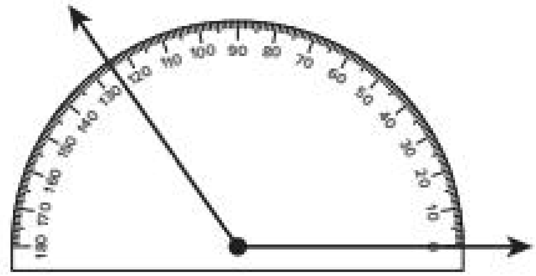


How can the angle be partitioned into two smaller angles? Write possible angle measurements for the two smaller angles.

6.

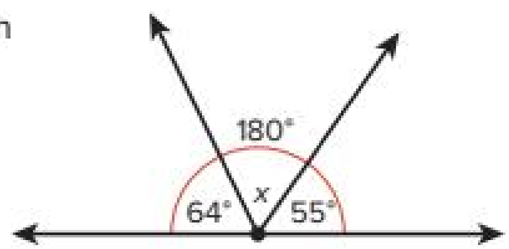


7.



8. Error Analysis Andy wants to cut the orange slice into two smaller pieces. He says that 45° and 55° are possible angle measurements. Do you agree with Andy? Explain why or why not.

9. Extend Your Thinking How can you find th measure of the unknown angle?



Reflect

How did you think like a mathematician when adding and subtracting angle measures?

Math is... Mindset

How did you use your abilities and skills to be successful today?

Lesson **14-6**

Solve Problems Involving Unknown Angle Measures

Be Curious

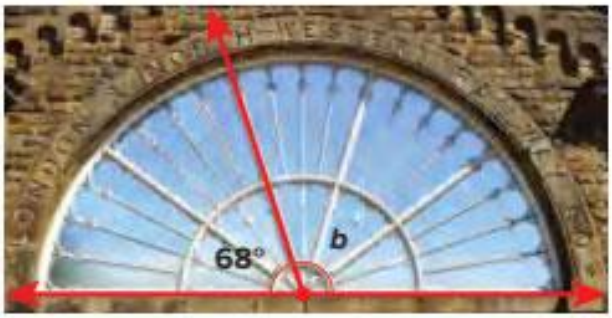
What question could you ask?

Math is... Mindset

How do you show you understand how others are feeling?

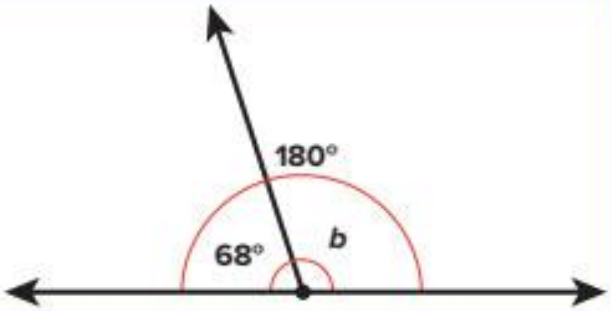
Learn

What is the measure of angle *b*?



The two angles form a half turn of a circle, which measures 180°.

$b + 68° = 180°$



Solve the equation.

$b + 68° = 180°$

$180° - 68° = b$

$180° - 68° = 112°$

$b = 112°$

The measure of angle *b* is 112°.

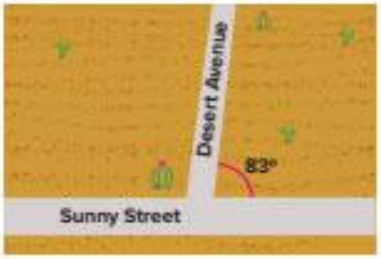
Math is... Generalizations

How is solving this problem similar to other problems you have solved?

You can use equations to solve problems involving an unknown angle measure.

Work Together

What is the measure of the other angle formed by the intersection of Sunny Street and Desert Avenue?

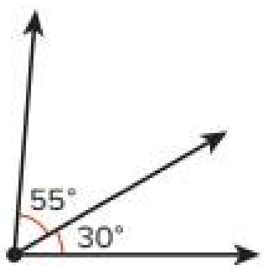


On My Own

Name ______________________________

What is the combined angle measure? Show your work.

1.



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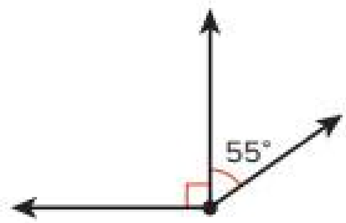
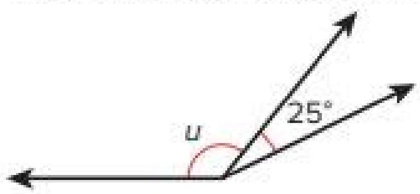
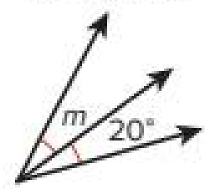


What is the unknown angle measure? Write an equation to show your work.

3. The sum of the angles is 155°.

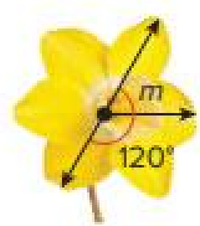


4. The sum of the angles is 45°.



5. The sum of the angles is 72°.

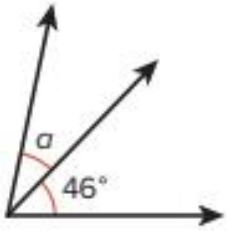
6. The sum of the angles is 180°.



7. The combined angle measure is 140°.

8. The combined angle measure is 133°.

9. STEM Connection The drawing represents the turn made by one of Antonio's robots. The total turn measures 78°. What is the measure of angle a?



10. An angle that measures 65° is partitioned into two smaller angles. The first angle measures 22°. What is the measure of the second angle? Write an equation to solve.

11. Extend Your Thinking Draw an angle that has been divided into three smaller angles. Label two of the angle measures and the combined angle measure. Use an equation to represent the measure of the unknown angle. Then solve.

Reflect

What strategies did you use to solve for unknown angle measures?

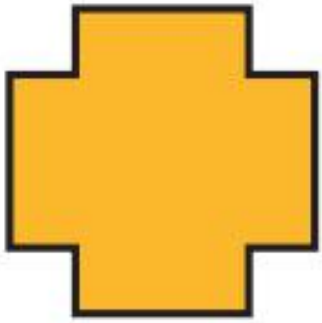
Math is... Mindset

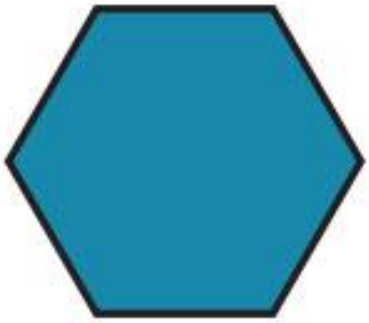
How did you show you understand how others are feeling?

Classify Polygons

Be Curious

Which doesn't belong?



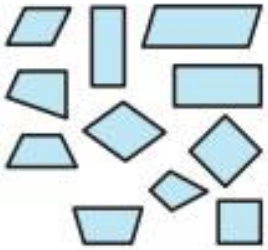


Math is... Mindset

What helps you know when there is a problem?

Learn

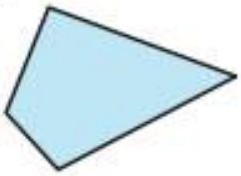
Edgar is classifying quadrilaterals.



How could Edgar use the properties of the quadrilaterals to classify them?

You can classify quadrilaterals based on their shared attributes.

Some quadrilaterals have neither parallel nor perpendicular lines.



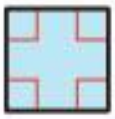
A quadrilateral with exactly one pair of parallel lines is a **trapezoid**.

A quadrilateral with two pairs of parallel lines is a **parallelogram**.

A parallelogram with 4 equal sides is a **rhombus**.

A parallelogram with 4 right angles and 2 pairs of equal sides is a **rectangle**.

A parallelogram with 4 right angles and 4 equal sides is a **square**.



You can classify quadrilaterals based on the absence or presence of parallel or perpendicular lines.

Math is... Precision

Why is it important to use precise vocabulary when classifying figures?

Work Together

How are a square and a rhombus the same? How are they different?

On My Own

Name _____

Match the quadrilateral with its attributes.

1. rhombus	A parallelogram with 4 right angles and 4 equal sides
2. trapezoid	A quadrilateral with two pairs of parallel lines
3. square	A quadrilateral with exactly one pair of parallel lines
4. parallelogram	A parallelogram with 4 equal sides
5. rectangle	A parallelogram with 4 right angles and 2 pairs of equal sides

6. Which statements are true about all squares? Choose all that apply.

   A. All squares have 4 sides.

   B. All squares have 2 pairs of parallel lines.

   C. All squares have 4 right angles.

   D. All squares have 4 equal sides.

7. Which statements are true about all rectangles? Choose all that apply.

   A. All rectangles have 4 sides.

   B. All rectangles have 2 pairs of parallel lines.

   C. All rectangles have 4 right angles.

   D. All rectangles have 4 equal sides.

8. **Error Analysis** Rhonda states that all quadrilaterals have parallel and perpendicular lines. How do you respond to Rhonda?

9. **Extend Your Thinking** Are parallelograms also trapezoids? Explain why or why not.

Reflect

How can you use parallel and/or perpendicular lines to classify quadrilaterals?

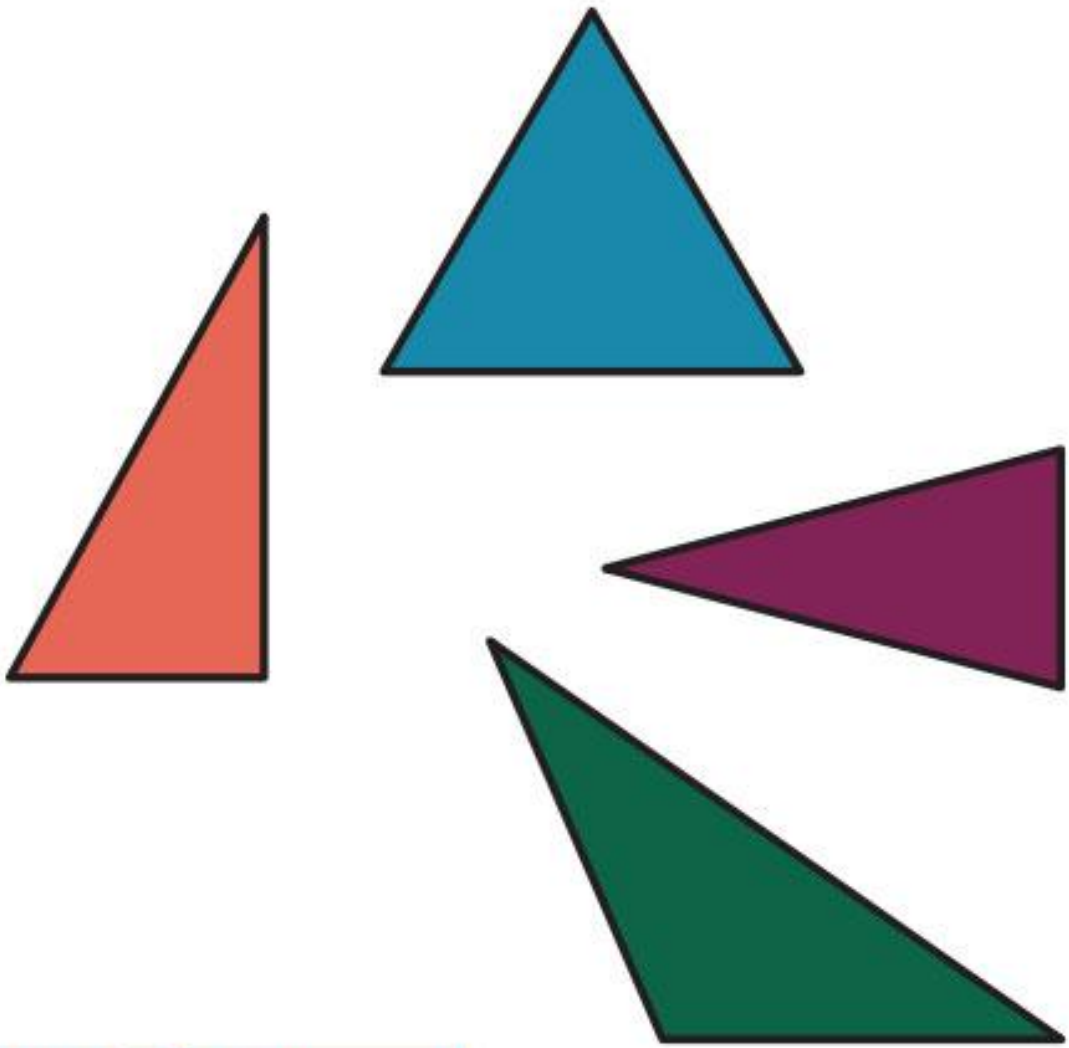
Math is... Mindset

What helped you know if there was a problem?

Classify Triangles

Be Curious

Which doesn't belong?



Math is... Mindset

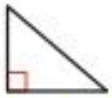
What helps you get started on your work?

Learn

What are different ways you could sort the triangles?

You can classify triangles based on their angles and side lengths.

You can classify triangles by their angles.

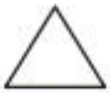


Right triangles have a right angle.

Acute triangles have 3 acute angles.

Obtuse triangles have an obtuse angle.

You can classify triangles by their side lengths.



Equilateral triangles have 3 equal side lengths.

Isosceles triangles have at least 2 equal side lengths.

Scalene triangles have no equal side lengths.

You can classify triangles both by angles and side lengths.

Acute isosceles	Right isosceles	Obtuse isosceles
		
Acute scalene	Right scalene	Obtuse scalene
		

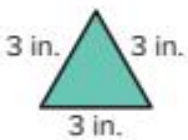
Math is... Explaining

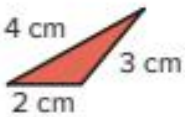
Why do you think that angles and side lengths are used to classify triangles?

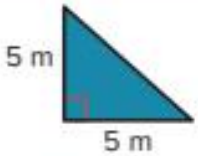
We can classify triangles by angles, by sides, and by angles and sides.

Work Together

How can you classify the triangle?



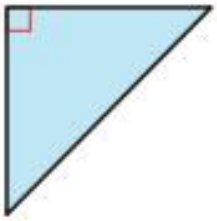




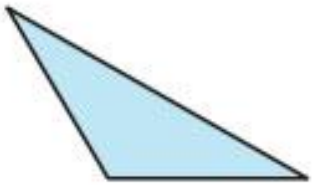
On My Own

Name _____

How can you classify the triangle by its angles?

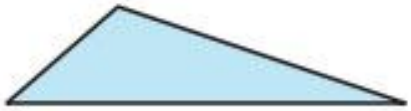
1. 

_____ triangle

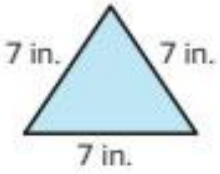
2. 

_____ triangle

How can you classify the triangle by its sides?

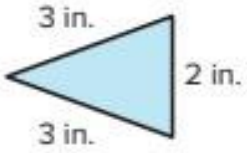
3. 

_____ triangle

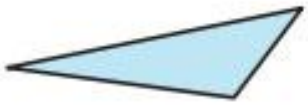
4. 

_____ triangle

How can you classify the triangle by its angles and sides?

5. 

_____ triangle

6. 

_____ triangle

7. Two angles of a triangle are 60°. How can you classify this triangle by its angles? Explain.

8. A triangle has two equal sides and an angle that is 90°. How can you classify the triangle by its angles and sides?

9. A triangle has an angle equal to 140°. How can you classify this triangle? Why can you only classify it by its angle?

10. A triangle has 3 equal sides. Marnie says the triangle is an isosceles triangle, but Bill says it is an equilateral triangle. How do you respond to Marnie and Bill?

11. **STEM Connection** Antonio programs a robot to go from Point *A* to Point *B* to Point *C* in the shape of an isosceles triangle. The distance from Point *B* to Point *C* is the shortest distance. What do you know about the distances from Point *A* to Point *B* and from Point *A* to Point *C*?

12. **Extend Your Thinking** A square is divided into two equal triangles. How can you classify the triangles by the angles and sides?

Reflect

How can you classify triangles?

Math is... Mindset

What helped you get started on your work?

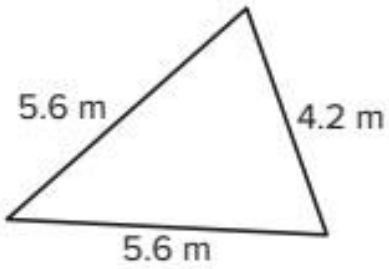
Unit 14

Classifying Shapes

Name _____

Circle *all* words that can name the shape.

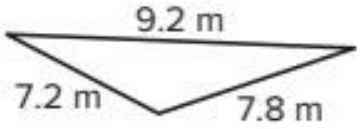
1.



triangle	right triangle
equilateral triangle	acute triangle
scalene triangle	obtuse triangle
isosceles triangle	none of these

Explain your choice or choices.

2.

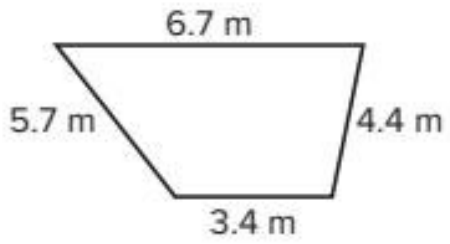


triangle	right triangle
equilateral triangle	acute triangle
scalene triangle	obtuse triangle
isosceles triangle	none of these

Explain your choice or choices.

Circle *all* words that can name the shape.

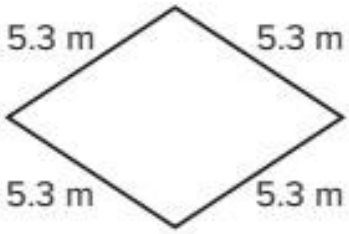
3.



quadrilateral
trapezoid
rhombus
rectangle
square
parallelogram
none of these

Explain your choice or choices.

4.



quadrilateral
trapezoid
rhombus
rectangle
square
parallelogram
none of these

Explain your choice or choices.

Reflect On Your Learning

I'm confused. | I'm still learning. | I understand. | I can teach someone else.

Lesson 14-9

Understand Line Symmetry

Be Curious

How are they the same?
How are they different?

Math is... Mindset

What have you done in the past to help you make decisions?

Learn

Ben notices that some of his alphabet stickers can be folded over a line so that their two halves match exactly.

Math is... Explaining

How can you tell whether a letter has two halves that match exactly?

Which letters can he do this with?

You can look for a line for each letter that the letter can be folded over to make two halves that match exactly.

A figure has line symmetry if it can be folded over a line so that its two halves match exactly. This line is called a **line of symmetry**.

B, M, and H have at least one line of symmetry. They are **symmetrical** figures.

The letters without a line of symmetry are not symmetrical figures.

A figure has line symmetry if it can be folded over a line so that its two halves match exactly.

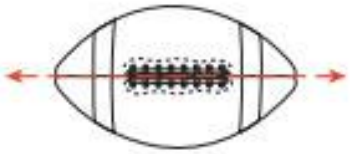
Work Together

Half of this symmetrical figure is missing. How can you use the line of symmetry to help you draw the rest of the figure?

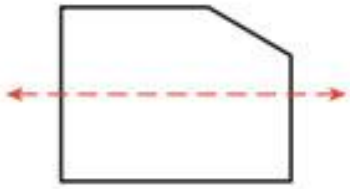
On My Own

Name _____

Does the dashed line show a line of symmetry?

1. 

_____

2. 

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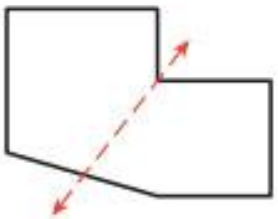
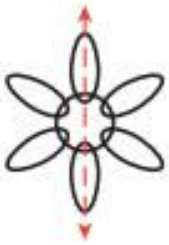
3. 

_____

4. 

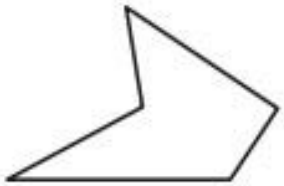
_____

5. Does a rectangle have a line of symmetry? Explain.

6. Does a pentagon with equal side lengths have a line of symmetry? Explain.

Is the figure symmetrical? How do you know?

7. 

8. 

9. How many lines of symmetry are shown on the equilateral triangle?

_____

Complete the figure to make a symmetrical figure.

10.

11.

12. **Extend Your Thinking** Alice plans to make a card in the shape of a heart. How can she make a heart shape that is symmetrical? Describe the steps.

Reflect

How do you know where to draw a line on a shape to find a line of symmetry?

Math is... Mindset

What helped you make decisions today?

Draw Lines of Symmetry

Be Curious

What do you notice?
What do you wonder?

Ava made the following shapes by folding a piece of paper and cutting out the design.

Math is... Mindset

What are some ways to build a positive relationship with classmates?

Learn

Marco thinks all quadrilaterals have the same number of lines of symmetry.

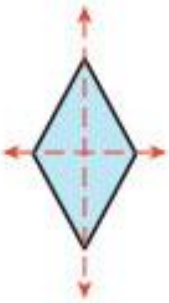
How would you respond to Marco?

A figure can have more than one line of symmetry.

A rhombus has

- 4 equal sides
- 2 pairs of parallel sides

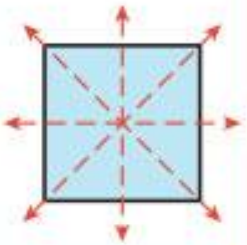
A rhombus has 2 lines of symmetry.



A square has

- 4 equal sides
- 2 pairs of parallel lines
- 4 equal angles

A square has 4 lines of symmetry.



Quadrilaterals do not have the same number of lines of symmetry.

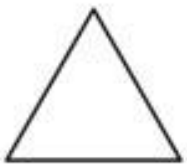
Some figures, such as polygons having the same side lengths, can have more than one line of symmetry.

Math is... Patterns

How can you determine how many lines of symmetry a figure will have?

Work Together

How can you find all the lines of symmetry on the figure? How many lines of symmetry does it have?



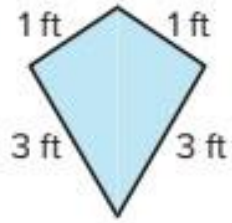
On My Own

Name _____

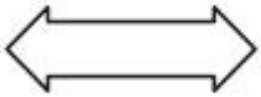
How many lines of symmetry are there? Draw the lines.

1.

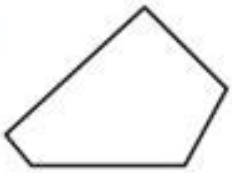
2.



3.

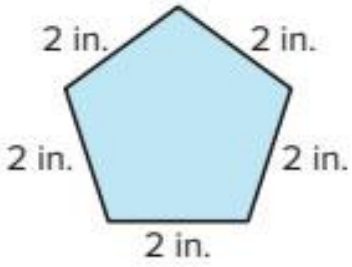


4.

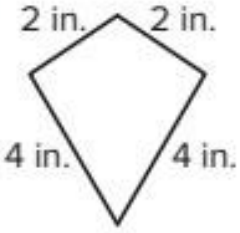


How can you use the attributes of the shape to determine if there are multiple lines of symmetry? Explain.

5.



6.



7. How can you draw 4 or more lines of symmetry on the heptagon with equal side lengths? Draw the lines.

8. What attributes of an octagon with 8 lines of symmetry make it symmetrical in more than one way? Select all that apply.

A. There are 8 sides.
B. The 8 sides are equal.
C. The opposite sides are parallel.
D. The opposite sides are perpendicular.

9. A triangle has only 1 line of symmetry. What kind of triangle could it be? Explain.

10. Roger plants a rectangular garden divided into equal parts by lines of symmetry. One of the parts has length of 3 feet and width of 2 feet. What are the length and width of the rectangle?

11. **Error Analysis** Marcus says all triangles are symmetrical. How do you respond?

12. **Extend Your Thinking** What figure has an infinite number o lines of symmetry? Explain.

Reflect

How do you know a figure has more than one line of symmetry?

Math is... Mindset

How did you build a positive relationship with classmates?

Unit Review

Name _____

Vocabulary Review

Choose the correct word(s) to complete the sentence.

acute angle	degrees	equilateral triangle
isosceles triangle	line of symmetry	obtuse angle
parallel lines	perpendicular lines	right angle

1. A(n) _____ measures 90 degrees. (Lesson 14-2)

2. Lines that will never intersect are called _____. (Lesson 14-4)

3. A(n) _____ has three equal side lengths. (Lesson 14-8)

4. A(n) _____ divides a shape into two equal parts that match up exactly if they are folded over it. (Lesson 14-9)

5. A(n) _____ has two equal side lengths. (Lesson 14-8)

6. Lines that intersect to form a right angle are called _____. (Lesson 14-4)

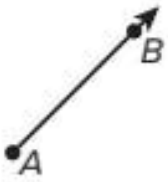
7. A(n) _____ has a measure that is greater than a right angle. (Lesson 14-2)

8. An angle is measured in _____. (Lesson 14-3)

9. A(n) _____ has a measure that is less than a right angle. (Lesson 14-2)

Review

10. What name best describes the figur ? (Lesson 14-1)



_____

11. What name best describes the figur ? (Lesson 14-1)

_____

12. What name best describes the figur ? (Lesson 14-1)

_____

13. How can you classify the angle? (Lesson 14-2)

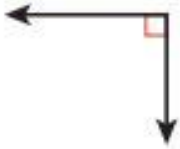
_____

14. Luciana drew an acute angle. Which of the following could be its measure? Select all that apply. (Lesson 14-2)

A. 90° **B.** 43°

C. 12° **D.** 98°

15. How can you classify the angle? (Lesson 14-2)

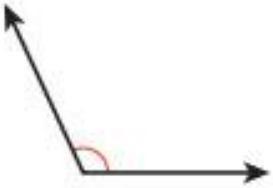


_____

16. Find the angle measure. (Lesson 14-3)

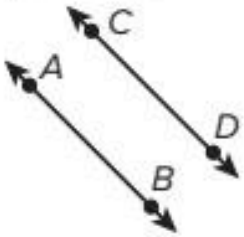
_____

17. Find the angle measure. (Lesson 14-3)



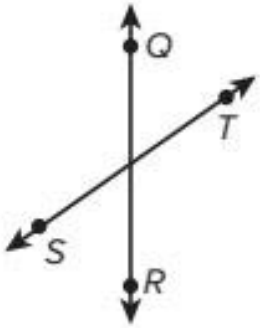
_____

18. Are the lines parallel, perpendicular, or neither? (Lesson 14-4)



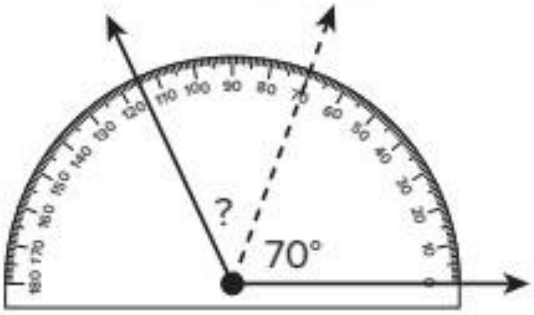
_____

19. Are the lines parallel, perpendicular, or neither? (Lesson 14-4)



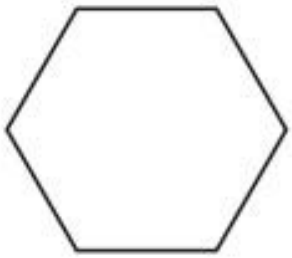
_____

20. What is the measure of the unknown angle? (Lesson 14-5)



_____

21. How many lines of symmetry does the figure hav ? (Lesson 14-10)



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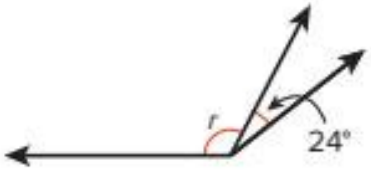
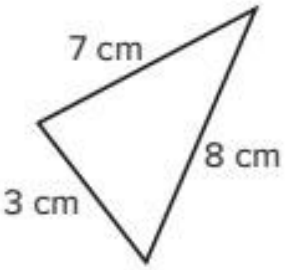
22. The combined angle measure is 142°. What is the measure of the unknown angle? Show your work. (Lesson 14-6)

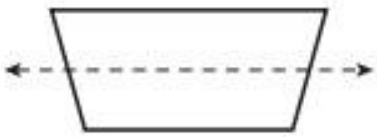


23. How can you classify the triangle by its sides? (Lesson 14-8)



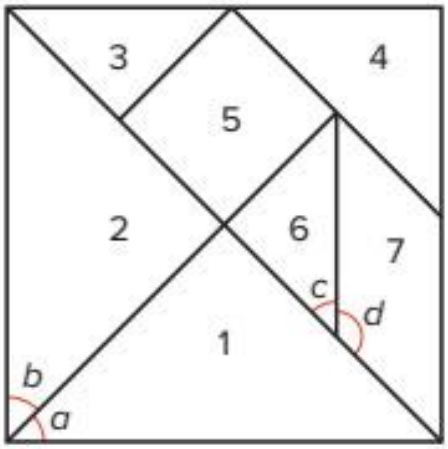
_____

24. Does the dashed line show a line of symmetry? Explain your thinking. (Lesson 14-9)



Performance Task

Antonio has designed a robot that is programmed to follow the paths shown in the diagram.



Part A: Antonio thinks all the triangles in the diagram are right triangles. Is Antonio correct? Explain your answer.

Part B: The corners of the large square are right angles. Angles *a* and *b* are equal. What is the measure of angle *a*? Show your work.

Part C: Antonio states that Figure 7 has 2 lines of symmetry. Is he correct? Explain why or why not.

Reflect

What must you consider when classifying polygons and finding angle measures?

Unit 14

Fluency Practice

Name _____

Fluency Strategy

You can use an algorithm to add or subtract whole numbers. Add or subtract the digits in the same place value. Regroup, if necessary.

$$\begin{array}{r} {\scriptstyle 1\ 1\quad 1\ 1} \\ 425{,}498 \\ +397{,}094 \\ \hline 822{,}592 \end{array} \qquad \begin{array}{r} {\scriptstyle 4\ 16\quad 1\ 17\ 16} \\ 5\cancel{6}\cancel{4}{,}2\cancel{8}6 \\ -292{,}097 \\ \hline 272{,}189 \end{array}$$

Fluency Flash

What is the sum or difference?

1.

	hundred thousands	ten thousands	thousands	hundreds	tens	ones
	5	4	4	7	2	1
+	3	6	2	3	5	6

2.

	hundred thousands	ten thousands	thousands	hundreds	tens	ones
	8	5	4	9	3	9
−	2	7	2	3	2	1

Fluency Check

What is the sum or difference?

3. 15,287 + 84,653 = _____

4. 23,528 − 4,197 = _____

5. 249,583 + 378,299 = _____

6. 30,745 − 17,238 = _____

7. 251,233 − 4,872 = _____

8. 135,972 − 72,405 = _____

9. 23,764 + 3,792 = _____

10. 7,004 − 2,756 = _____

11. 194,645 + 466,375 = _____

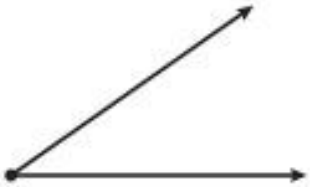
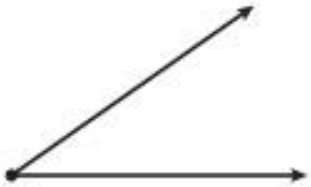
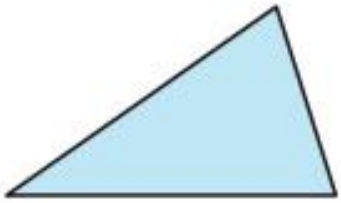
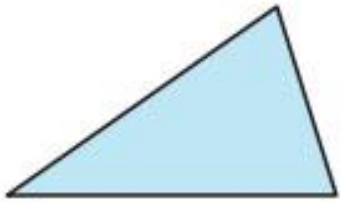
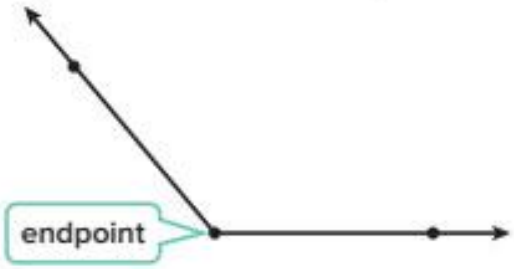
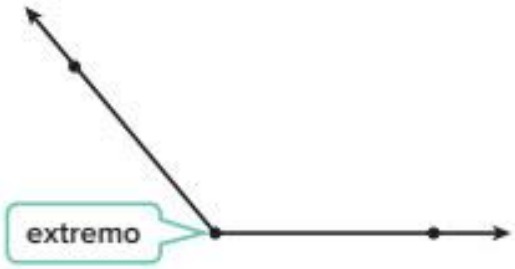
12. 994 + 308 = _____

Fluency Talk

What does it mean to regroup when you add?

How would you tell a friend to subtract 6-digit numbers?

Glossary/Glosario

English	Spanish/Español
Aa	
acute angle An angle with a measure greater than 0° and less than 90°. 	ángulo agudo Un ángulo que mide más de 0° y menos de 90°. 
acute triangle A triangle with all three angles less than 90°. 	triángulo acutángulo Un triángulo cuyos tres ángulos miden menos de 90°. 
additive comparison Comparing two quantities with addition to determine how much more one is than the other.	comparación aditiva Comparación de dos cantidades de adición a fin de determinar cuánto mayor es una que la otra.
algorithm A way of doing something in math. It is a set of steps that always works if done correctly.	algoritmo Manera de resolver en matemáticas. Es una serie de pasos que si se realizan correctamente, siempre funcionan.
angle A figure that is formed by two rays with the same endpoint. 	ángulo Figura formada por dos rayos con el mismo extremo. 

English	Spanish/Español
Associative Property of Multiplication The property which states that the grouping of the factors does not change the product. $(4 \times 2) \times 3 = 4 \times (2 \times 3)$	propiedad asociativa de la multiplicación Propiedad que establece que la agrupación de los factores no altera el producto. $(4 \times 2) \times 3 = 4 \times (2 \times 3)$

Bb

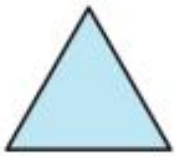
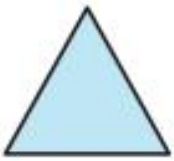
benchmark fractions Commonly used fractions that can be used for estimation.	fracciones de referencia Fracciones comúnmente usadas que pueden utilizarse para realizar estimaciones.

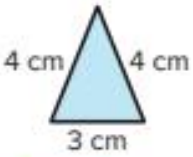
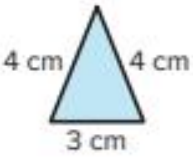
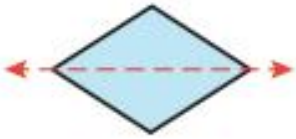
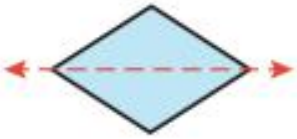
Cc

composite number A whole number that has more than two factors. Example: 12 has the factors 1, 2, 3, 4, 6, and 12.	número compuesto Número entero que tiene más de dos factores. Ejemplo: 12 tiene a los factores 1, 2, 3, 4, 6 y 12.
cup A customary unit for measuring capacity. 1 cup = 8 ounces 16 cups = 1 gallon	taza Una unidad para medir la capacidad. 1 taza = 8 onzas y 16 tazas = 1 galón

Dd

decimal A number that has one or more digits to the right of the decimal point.	decimal Número con uno o mas digitos a la derecho del punto decimal.
decimal point A period separating the ones and the tenths in a decimal number. 0.8 or $3.77	punto decimal Punto que separa las unidades y las décimas en un número decimal. 0.8 o $3.77

English	Spanish/Español
Distributive Property of Multiplication To multiply a sum by a number, you can multiply each addend by the same number and add the products. $8 \times (9 + 5) = (8 \times 9) + (8 \times 5)$	propiedad distributiva de la multiplicación Para multiplicar una suma por un número, puedes multiplicar cada sumando por el mismo número y sumar los productos. $8 \times (9 + 5) = (8 \times 9) + (8 \times 5)$
Ee	
equiangular triangle A triangle with 3 congruent angles.	triángulo equiangular Un triángulo con 3 ángulos congruentes.
equilateral triangle A triangle with three congruent sides. 	triángulo equilátero Triángulo con tres lados congruentes. 
equivalent fractions Fractions that have the same value.	fracciones equivalentes Fracciones que tienen el mismo valor.
Ff	
factor pair The two factors that are multiplied to find a product.	pares de factores Los dos factores que se multiplican para hallar un producto.
fluid ounce A customary unit of capacity.	onza líquida Unidad usual de capacidad.
Hh	
hundredth A place value position. One of one hundred equal parts. Example: In the number 0.57, 7 is in the hundredths place.	centésima Valor de posición. Una de cien partes iguales. Ejemplo: En el número 0.57, 7 está en el lugar de las centésimas.

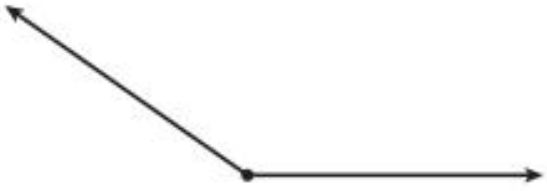
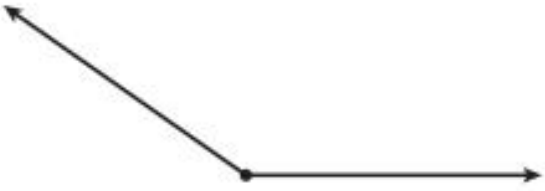
English	Spanish/Español
Ii	
isosceles triangle A triangle with at least 2 sides of the same length. 	triángulo isósceles Triángulo que tiene por lo menos 2 lados del mismo largo. 
Kk	
kilometer A metric unit for measuring length. 1 km = 1,000 m	kilómetro Unidad métrica de longitud. 1 km = 1,000 m
Ll	
line of symmetry A line on which a figure can be folded so that its two halves match exactly. 	eje de simetría Línea por la que puede doblarse una figura de manera que ambas mitades coincidan exactamente. 
line segment A part of a line between two endpoints. The length of the line segment can be measured. 	segmento de recta Parte de una recta entre dos extremos. La longitud de un segmento de recta se puede medir. 

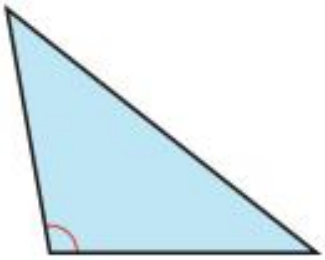
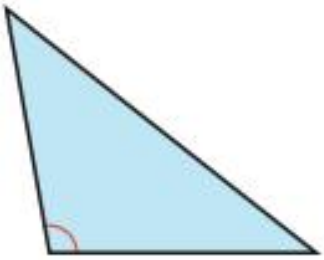
English	Spanish/Español
line symmetry A line that can be drawn through the figure which splits the figures into 2 halves that match.	simetría axial Línea que divide una figura en dos mitades exactamente iguales.
 This cube has line symmetry.	 Este cubo tiene simetría axial.

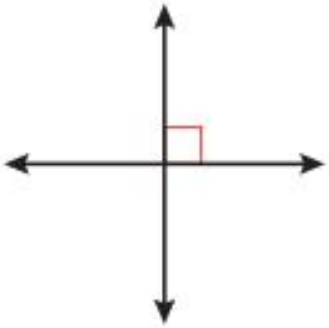
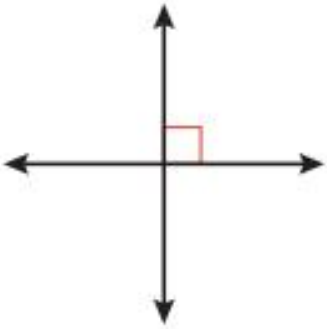
Mm

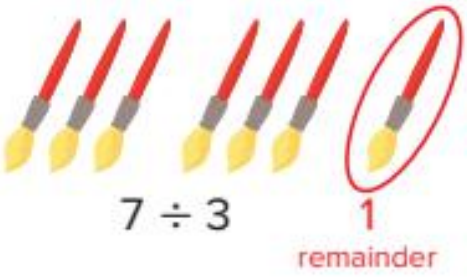
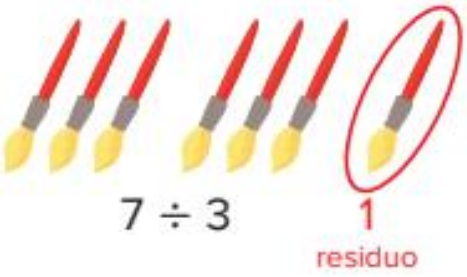
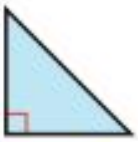
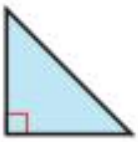
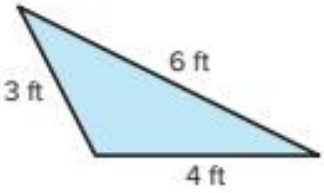
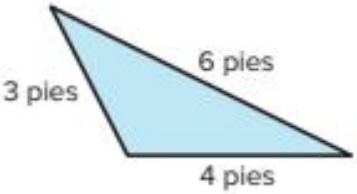
millimeter A metric unit used for measuring length. 1,000 millimeters = 1 meter	milímetro Unidad métrica de longitud. 1,000 milímetros = 1 metro
mixed number A number that has a whole-number part and a fraction part. $6\frac{3}{4}$	número mixto Número compuesto por una parte entera y una parte fraccionaria. $6\frac{3}{4}$
multiplicative comparison Comparing two quantities using multiplication where one is a multiple of the other.	comparación multiplicativa Comparación de la multiplicación de dos cantidades donde una es múltiplo de la otra.

Oo

obtuse angles An angle that measures greater than 90° but less than 180°. 	ángulo obtuso Ángulo que mide más de 90° pero menos de 180°. 

English	Spanish/Español
obtuse triangle A triangle with one obtuse angle. 	triángulo obtusángulo Triángulo con un ángulo obtuso. 
ounce A customary unit for measuring weight or capacity.	onza Unidad inglesa de peso o capacidad.
Pp	
parallel lines Lines that are the same distance apart. Parallel lines do not meet. 	rectas paralelas Rectas separadas por la misma distancia. Las rectas paralelas no se intersecan. 
partial products A multiplication method in which the products of each place value are found separately and then added together.	productos parciales Método de multiplicación por el cual los productos de cada valor posicional se hallan por separado y luego se suman entre sí.
partial quotients algorithm A method that shows the partial answer, or quotient, at each step. After all the steps have been completed, all the partial quotients are added to find the final quotient.	algoritmo de cocientes parciales Método que muestra la respuesta parcial, o cociente, en cada paso. Una vez completados todos los pasos, se suman todos los cocientes parciales para hallar el cociente final.
period The name given to each group of three digits on a place-value chart.	período Nombre dado a cada grupo de tres dígitos en una tabla de valores de posición.

English	Spanish/Español
perpendicular lines Lines that meet or cross each other to form right angles. 	rectas perpendiculares Rectas que se intersecan o cruzan formando ángulos rectos. 
pint A customary unit for measuring capacity. 1 pint = 2 cups	pinta Una unidad de la sistema Inglés para medir la capacidad. 1 pinta = 2 tazas
prime number A whole number with exactly two factors, 1 and itself. 7, 13, and 19	número primo Número entero que tiene exactamente dos factores, 1 y sí mismo. 7, 13, y 19
Qq	
quart A customary unit for measuring capacity. 1 quart = 4 cups	cuarto Unidad usual de capacidad. 1 cuarto = 4 tazas
Rr	
ray A part of a line that has one endpoint and extends indefinitely in one direction. 	semirrecta Parte de una recto que tiene un extremo y que se extiende sin fin en una dirección. 

English	Spanish/Español
remainder The number that is left after one whole number is divided by another.	residuo Número que queda después de dividir un número entero entre otro número entero.
	
right triangle A triangle with one right angle.	triángulo rectángulo Triángulo con un ángulo recto.
	
Ss	
scalene triangle A triangle with no congruent sides.	triángulo escaleno Triángulo sin lados congruentes.
	
Tt	
tenth One of ten equal parts or $\frac{1}{10}$.	décima Una de diez partes iguales ó $\frac{1}{10}$
ton A customary unit to measure weight. 1 ton = 2,000 pounds	tonelada Unidad inglesa de peso. 1 tonelada = 2,000 libras