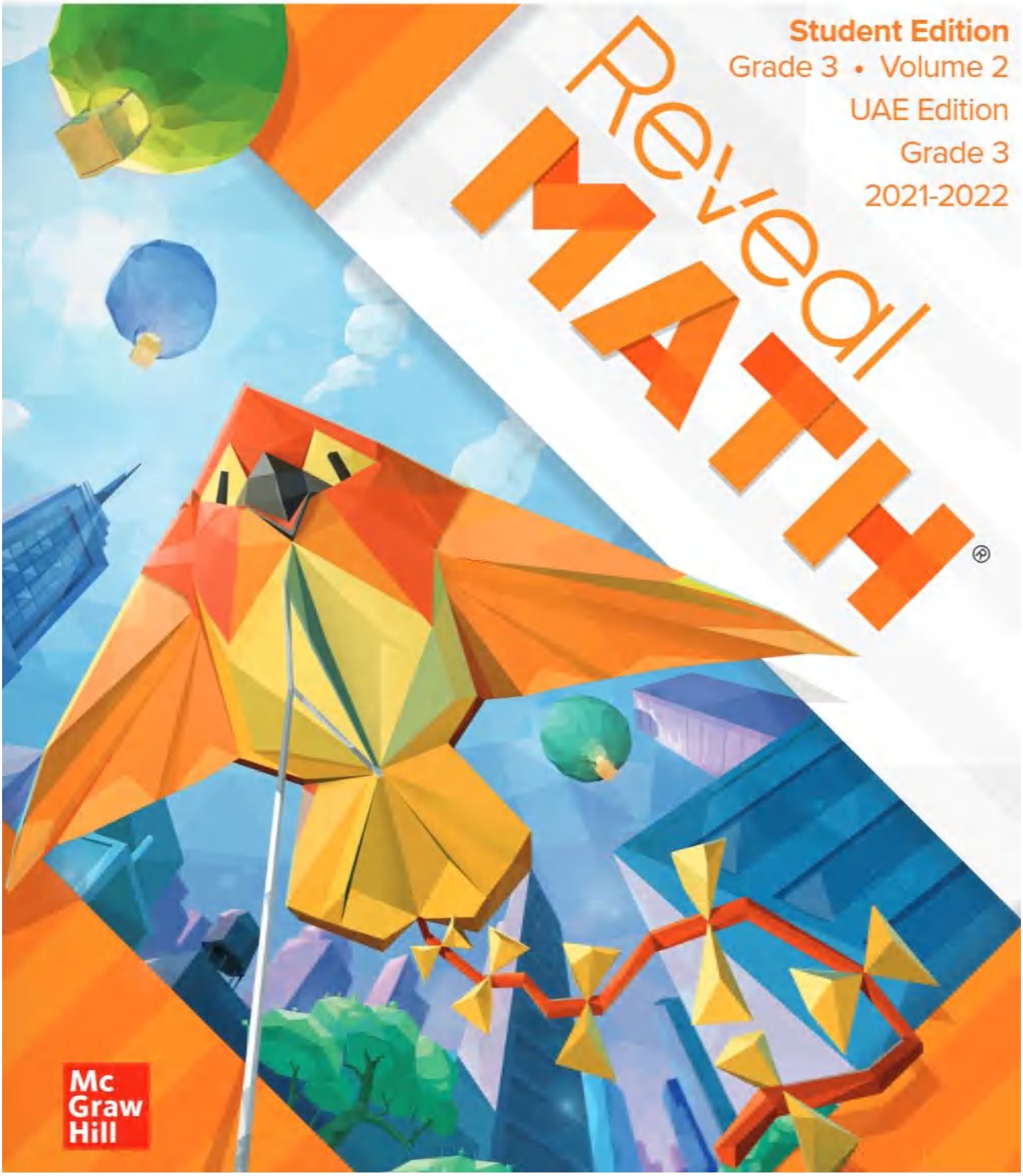
UNITED ARAB EMIRATES
MINISTRY OF EDUCATION

المدرسة الإماراتية



Reveal MATH®

Student Edition
Grade 3 • Volume 2
UAE Edition
Grade 3
2021-2022

Mc Graw Hill

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Glossary G1

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

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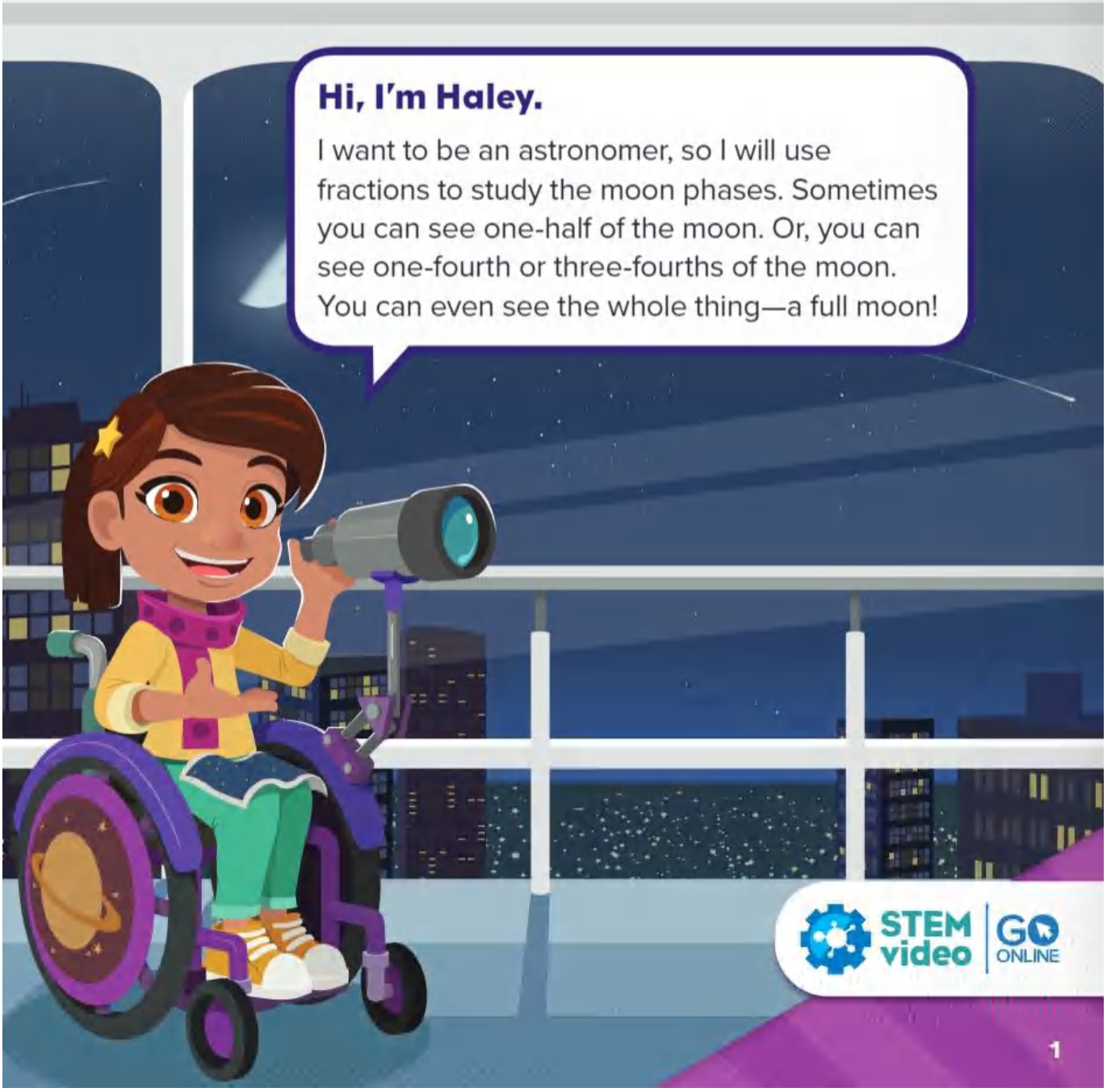
Fractions

Focus Question

What are fractions and how can I represent them?



IGNITE!

Name _____

Sharing Muffins

For each situation, decide how you can share the muffins so each student has the same amount.

Day 1: *6 muffins are equally shared among 3 students.*

Day 2: *3 muffins are equally shared by 2 students.*

Day 3: *2 muffins are equally shared among 4 students.*

Day 4: *6 muffins are equally shared among 4 students.*

Day 5: *5 muffins are equally shared among 4 students.*

Lesson 7-1

Partition Shapes into Equal Parts

Be Curious

How are they the same?
How are they different?

Math is... Mindset

How do you show others that you value their ideas?

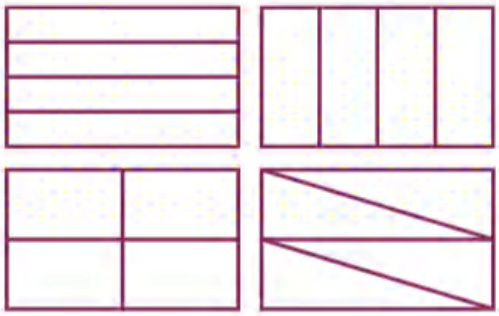
Learn

Arun is designing a flag in the shape of a rectangle. He wants to partition the flag into equal parts and have a different color in each part.

How can he partition the flag into equal parts?

There are many different ways to **partition**, or divide, a shape into equal parts.

4 equal parts, or fourths.



6 equal parts, or sixths.

8 equal parts, or eighths.

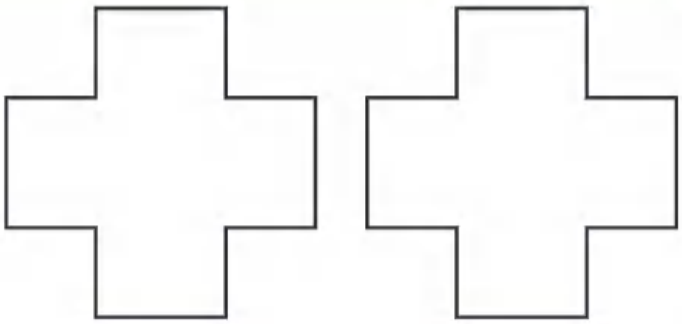
Math is... Explaining

How can you determine whether parts of a shape have equal areas?

Shapes have equal parts when each part has the same area.

Work Together

How can you partition this shape into fourths in two different ways?



On My Own

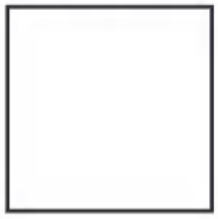
MATH REPLAY | GO ONLINE

Name _____

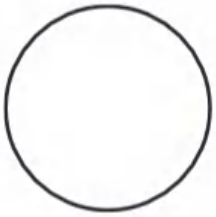
How can you draw a line or lines to partition the shape into equal parts?

1. fourths

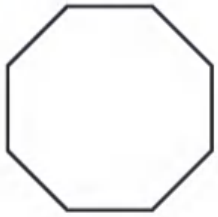
2. sixths



3. eighths



4. fourths

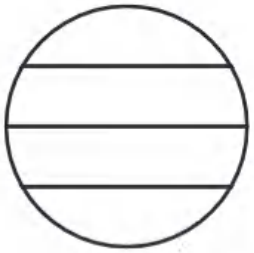


5. sixths

6. eighths

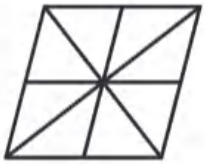
7. Wendy draws three rectangles that are the same size. She partitions each rectangle into equal parts. What happens to the size of each part as the number of parts increases?

8. **Error Analysis** Kelly drew this shape. She says the shape represents fourths because she partitioned the shape into 4 parts. Do you agree? Explain.

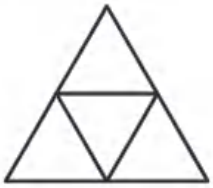


How can you complete the sentence for the shape?

9. The shape is partitioned into _____ equal parts or _____.



10. The shape is partitioned into _____ equal parts or _____.



11. The shape is partitioned into _____ equal parts or _____.

12. **Extend Your Thinking** Paul partitions a rectangle into 4 parts. Are the parts equal? Explain your thinking.

Reflect

How can you partition a shape into equal parts?

Math is... Mindset

How did you show others that you value their ideas?

Understand Fractions

Be Curious

Tell me everything you can.

Math is... Mindset

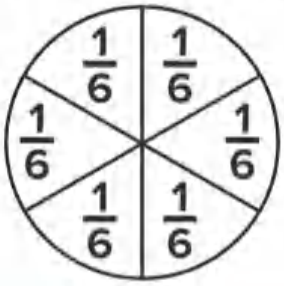
What helps you be motivated to do your best work?

Learn

Maya cuts her pancake into 6 equal parts. She eats some and has 4 parts of her pancake left.

How can you represent how much of the pancake is left?

Partition a circle into 6 equal parts, or *sixths*. Each part is one-sixth of the circle. You can write one-sixth as a fraction.



This is a unit fraction because the numerator is 1.

$\frac{1}{6}$ — numerator, denominator

Shade 4 parts to show how much is left. The **numerator** will be 4. There are 6 parts, so the **denominator** is 6.

$\frac{4}{6}$

Math is... Generalizations

What will happen to the size of the parts as the denominator increases? Why?

A **fraction** is a number that represents a part of a whole. The denominator represents the total number of equal parts in the whole. The numerator represents the number of equal parts of the whole that are being counted.

Work Together

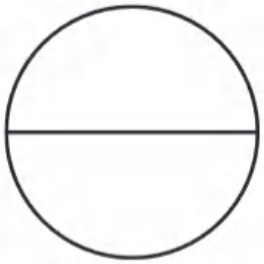
Does the shaded portion of the rectangle represent $\frac{3}{8}$ of the whole? Explain.

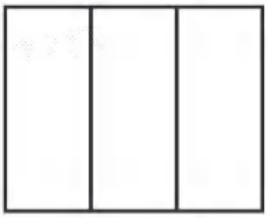
On My Own

MATH REPLAY | GO ONLINE

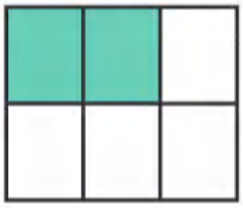
Name _____

What unit fraction is represented by each part of the figure?

1.  $\frac{\square}{\square}$

2.  $\frac{\square}{\square}$

What fraction is represented by the shaded part of the figure?

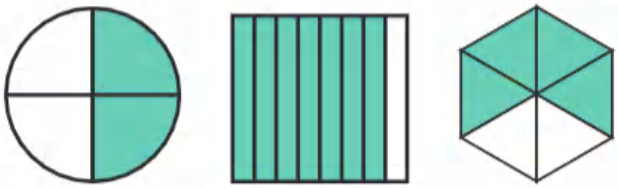
3.  $\frac{\square}{\square}$

4.  $\frac{\square}{\square}$

5.  $\frac{\square}{\square}$

6.  $\frac{\square}{\square}$

7. What fraction represents the shaded part and unshaded part of the figur ?



Fraction to Represent Shaded Part			
Fraction to Represent Unshaded Part			

8. Rubi mowed part of her lawn. The green parts show the parts of the lawn that were not mowed.

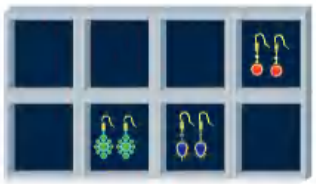
a. Write a fraction to represent the part of the lawn that was mowed.

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

b. Write a fraction to represent the part of the lawn that was not mowed.

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

9. **Error Analysis** Carrie uses a jewelry tray to store her earrings. She says that $\frac{3}{5}$ of the tray is fill d with earrings. Do you agree? Explain.

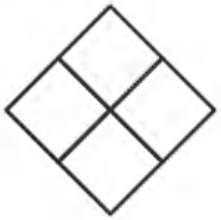


How can you shade equal parts to show the fraction?

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

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

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



13. **Extend Your Thinking** What fractions can represent the shaded area? Explain.

Reflect

How can you describe a fraction that represents one or more parts of a whole?

Math is... Mindset

What helped you be motivated to do your best work?

Unit 7

Representing Fractions

CHERYL TOBEY MATH PROBES

Name _____

Decide if the fraction describes the part of the figure that is shaded.

1. Is $\frac{1}{3}$ of the figure shaded

Circle Yes or No.

Yes No

Explain why you chose Yes or No.

2. Is $\frac{1}{4}$ of the figure shaded

Circle Yes or No.

Yes No

Explain why you chose Yes or No.

Decide if the fraction describes the part of the figure that is shaded.

3. Is $\frac{1}{6}$ of the figure shaded

Circle Yes or No.

Yes No

Explain why you chose Yes or No.

4. Is $\frac{1}{4}$ of the figure shaded

Circle Yes or No.

Yes No

Explain why you chose Yes or No.

Reflect On Your Learning

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

Lesson 7-3

Represent Fractions on a Number Line

Be Curious

How are they the same?
How are they different?

Math is... Mindset

What are your strengths in math?

Learn

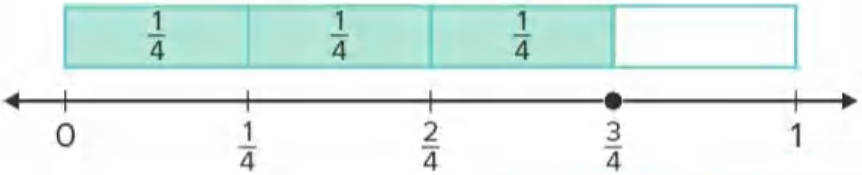
There is a path from Brice's house to school. He walked $\frac{3}{4}$ of the path and stopped for a drink.

How can you represent how far he walked?

The distance from 0 to 1 represents the whole path. Partition the number line into 4 equal intervals. Each interval represents a unit fraction.

Use the numerator to count the number of intervals.

Count by fourths and label $\frac{3}{4}$ with a point.



The distance from 0 to 1 on a number line represents one whole.

Unit fraction intervals can be counted to represent and name other fractions on the number line.

Math is... Structure

How is partitioning a number line like partitioning a shape?

Work Together

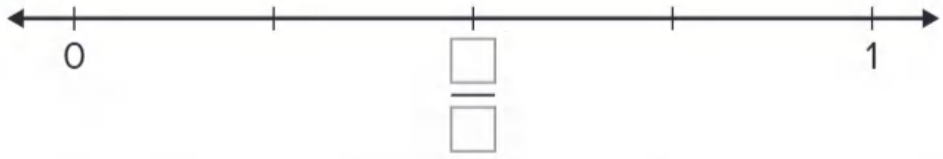
Where would you place $\frac{3}{6}$ on this number line?

On My Own

Name _____

How can you fill in the fraction labeled with a point?

1.



2.

Where would you place the fraction on the number line? Partition the number line to show your thinking.

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

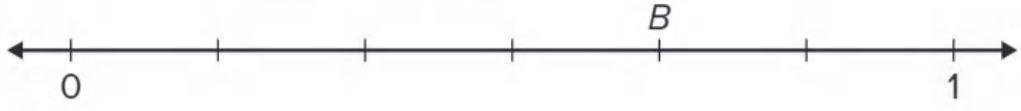
4. $\frac{4}{8}$

5. $\frac{5}{6}$

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

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

8. Rhea placed point *B* on the number line. What fraction is represented by point *B*? Explain how you know.



9. How would you represent $\frac{3}{8}$ on a number line?

10. Julie climbs a rope in gym class. The rope is partitioned into equal-length sections. She climbs to the fifth knot What fraction of the rope does Julie climb? Explain.

11. STEM Connection Haley tracks a spacecraft. A rocket is $\frac{3}{6}$ of the way from Earth to the moon. How can you represent how far it has traveled on a number line?

12. Extend Your Thinking Brice and Cassie are running a race. Brice has completed $\frac{1}{2}$ of the race. Cassie has completed $\frac{4}{6}$ of the race. Show their positions on the racetrack. Who is winning? Explain.

Reflect

How can you represent fractions on a number line?

Math is... Mindset

What strengths did you use today? What can you work on?

Lesson 7-4

Represent One Whole as a Fraction

Be Curious

How are they the same?
How are they different?

Math is... Mindset

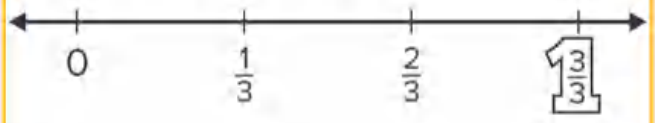
How can you be part of the classroom community?

Learn

Tess represents one whole with the fractions $\frac{3}{3}$, $\frac{6}{6}$, and $\frac{8}{8}$.

How can you determine whether each fraction is equal to one whole?

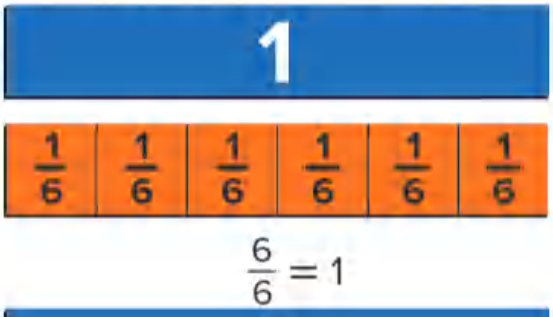
One Way You can use a number line. Use the numerator and denominator to partition and label the number line.



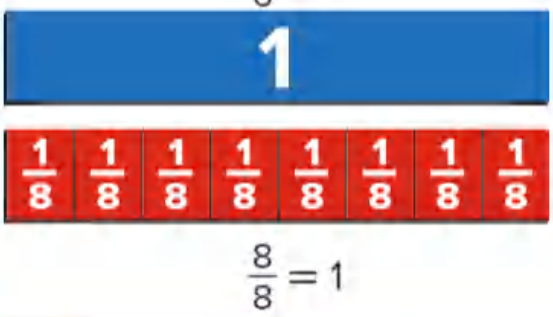
$\frac{3}{3}$ and 1 are at the same point on the number line.

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

Another Way Place **fraction tiles** along the 1 whole tile until they show the same amount.



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



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

A fraction is equal to 1 when the numerator and denominator represent the same number of parts.

Math is... Choosing Tools

What other tools could you use to show that a fraction with the same numerator and denominator is equal to 1?

Work Together

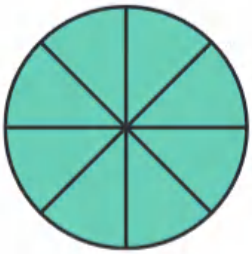
Tyler is counting by sixths. He says these numbers while counting. "*One-sixth*, *two-sixths*, *three-sixths*, *four-sixths*, *five-sixths*, *one*." Is Tyler's counting correct? How do you know?

On My Own

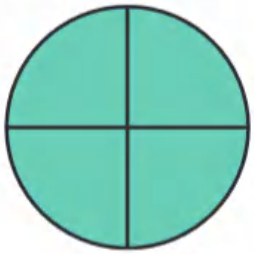
MATH REPLAY | GO ONLINE

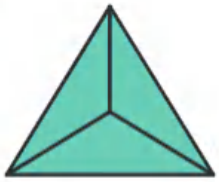
Name _____

What fraction represents the shaded part of the shape?

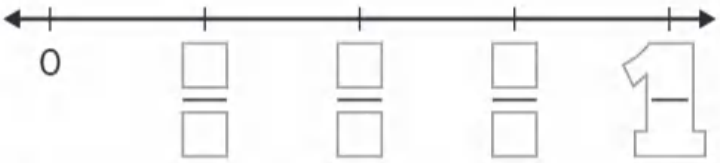
1.  $\frac{\square}{\square}$

2.  $\frac{\square}{\square}$

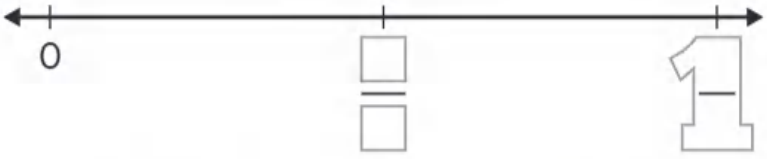
3.  $\frac{\square}{\square}$

4.  $\frac{\square}{\square}$

How can you label the number line using fractions? What fraction represents 1?

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

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

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

8. Which fractions are equal to 1? Circle them.

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

$\frac{3}{3}$ $\frac{3}{4}$ $\frac{6}{8}$

9. How can you model $\frac{3}{3} = 1$ in two different way ?

10. The Harvey family buys a pizza for dinner. The pizza is cut into equal pieces. The family eats $\frac{6}{6}$ of the pizza. How much pizza is left? Explain.

11. **STEM Connection** Haley has studied every part of the sky on her map. Her map is partitioned into 8 equal parts. How can you represent how much of the map she studied as a fraction?

12. **Extend Your Thinking** List 4 fractions equal to one whole. How can you explain why the fractions are equal to one whole without using a model?

Reflect

How can a fraction represent one whole?

Math is... Mindset

How were you part of the classroom community today?

Lesson 7-5

Represent Whole Numbers as Fractions

Be Curious

Is it always true?

Any whole number can be written as a fraction.

Math is... Mindset

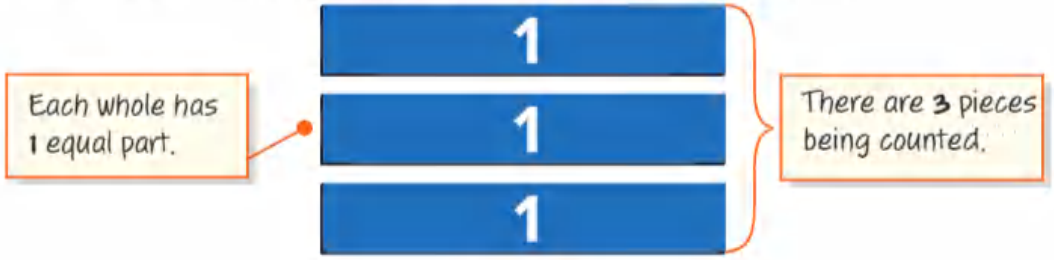
How can you help identify a problem in your class or community?

Learn

Elijah has 3 crackers for snack.

How can you represent the number of crackers he has?

You can represent each cracker with a 1-whole fraction tile.
You can represent the number of crackers as a fraction.



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

Other whole numbers can be written as fractions too.

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

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

You can represent any whole number as a fraction.

Math is... Generalizations

Why can any whole number be written as a fraction?

Work Together

How can you show each whole number as a fraction?
Use pictures, words, or numbers to justify your reasoning.

$$7 = \frac{\square}{\square} \qquad 5 = \frac{\square}{\square}$$

On My Own

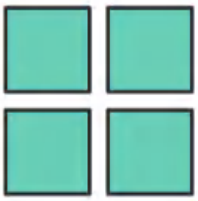
MATH REPLAY | GO ONLINE

Name _____

What fraction represents the whole number? Each piece is one whole.

1. 

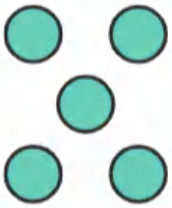
$3 = \frac{\square}{\square}$

2. 

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

3. 

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

4. 

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

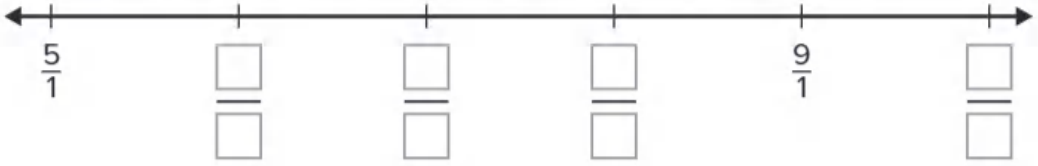
5. Which fractions are equal to a whole number? Circle them.

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

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

6. Lin has 2 blocks of cheese. How can you express the number of blocks of cheese as a fraction? Explain your answer.

7. How can you label the number line using fractions?



8. Is $\frac{1}{3}$ less than or greater than $\frac{3}{1}$? Explain.

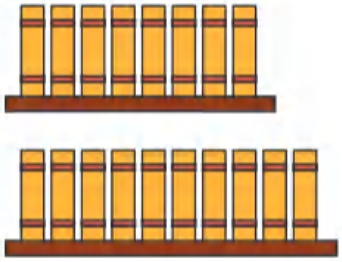
9. How can you use the digits to create a fraction that makes the equation true? Some digits may be used more than once.

1	3	4	5

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

10. STEM Connection Haley will use what she has already learned about $\frac{7}{1}$ different kinds of star when she becomes an astronomer. How many kinds of stars is this? How do you know?

11. Two shelves hold books. How can you write the number of books on each shelf as a fraction?



12. Extend Your Thinking If each star is 1 whole, why is the number of stars *not* $\frac{1}{4}$?

Reflect

Why is a fraction with a denominator of 1 equal to a whole number?

Math is... Mindset

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

Lesson 7-6

Represent a Fraction Greater Than One on a Number Line

Be Curious

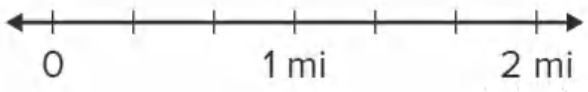
What do you notice?
What do you wonder?

Math is... Mindset

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

Learn

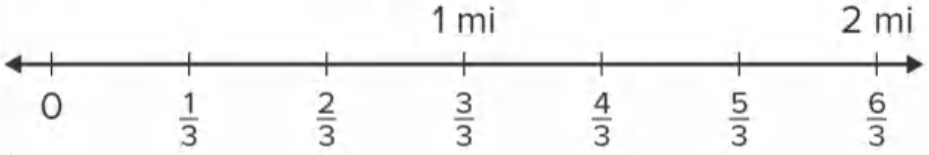
A race had water stops every $\frac{1}{3}$ mile. Marcus stopped at a water stop that was after the 1-mile mark but before the 2-mile mark.



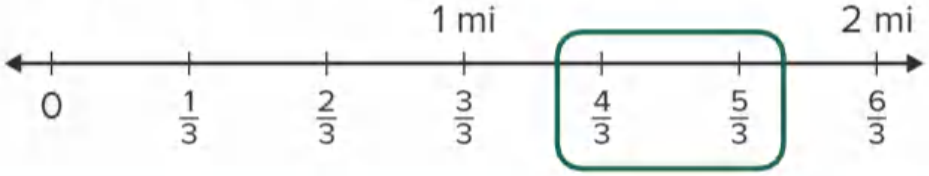
How can you determine the distance Marcus might have run?

Each tick mark is a water stop.

You can count by $\frac{1}{3}$s to label each tick mark on the number line.



The fractions $\frac{4}{3}$ and $\frac{5}{3}$ are greater than 1 and less than 2.



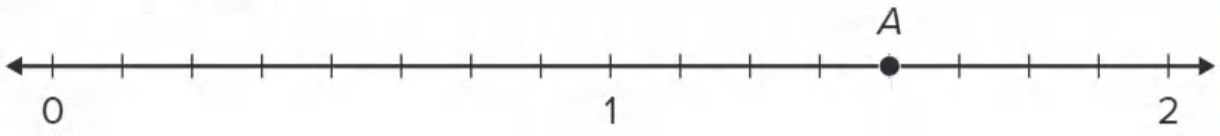
Fractions greater than 1 have a numerator that is greater than the denominator.

Math is... Structure

How do the fractions change along the number line?

Work Together

What fraction does point *A* represent? Explain how you can determine the fraction.



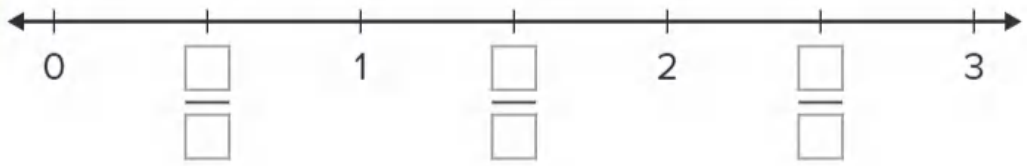
On My Own

MATH REPLAY | GO ONLINE

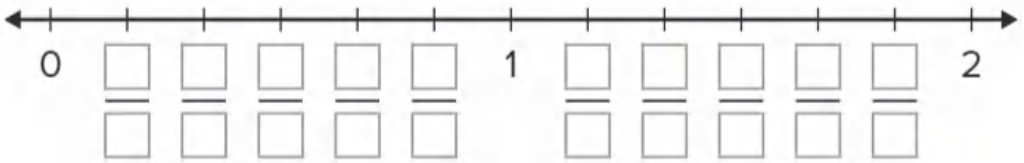
Name _____

How can you label the missing fractions on the number line? Which fractions are greater than 1? Circle them.

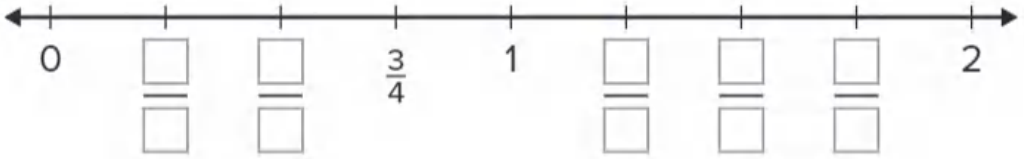
1.



2.



3.



4. Which fractions are greater than 1? Circle them.

$\frac{1}{2}$ $\quad$ $\frac{2}{1}$ $\quad$ $\frac{6}{4}$

$\frac{4}{6}$ $\quad$ $\frac{8}{3}$ $\quad$ $\frac{3}{8}$

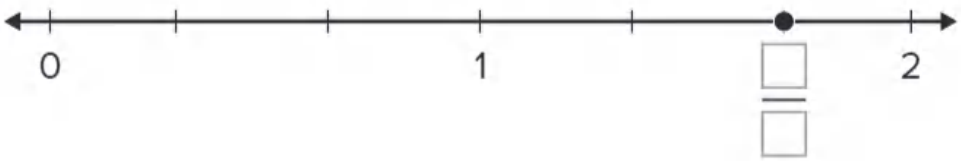
5. How can you use the digits to write a fraction that makes the comparison true? Some digits may be used more than once.

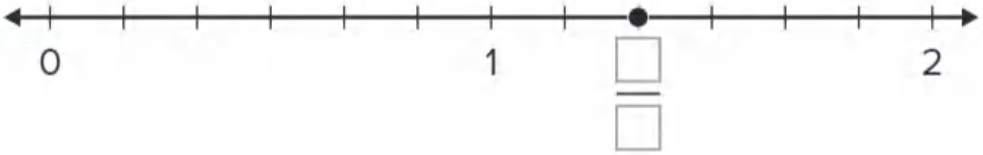
2, 3, 4, 6, 8

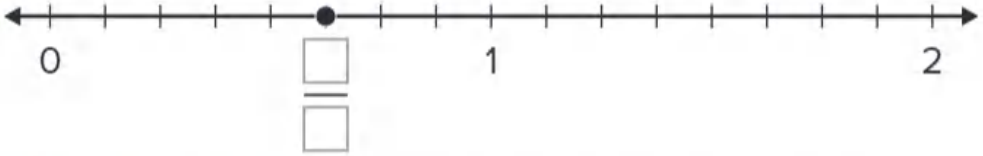
$\frac{\square}{\square} = 1$ $\quad$ $\frac{\square}{\square} > 1$ $\quad$ $\frac{\square}{\square} < 1$

6. **Error Analysis** Emily's goal is to walk her dog more than 1 mile each day. She walked $\frac{7}{8}$ mile. She said she met her goal. Do you agree? Explain your answer.

How can you label the fraction represented by the point?

7. 

8. 

9. 

10. **Extend Your Thinking** Jorge bought a dresser that is $\frac{7}{2}$ feet long. He wants to place the dresser along a wall that is 4 feet long. Will the dresser fit along the 4-foot wall Draw a number line to justify your answer.

Reflect

How can you use the numerator and denominator to determine whether a fraction is less than or greater than 1?

Math is... Mindset

What are some ways you contributed to your group today?

Unit Review

Name _____

Vocabulary Review

Choose the word(s) to complete each sentence.

denominator	numerator
fraction	partition
fraction tiles	unit fraction

1. The _____ represents the number of equal parts being counted. (Lesson 7-2)

2. A(n) _____ is a fraction with a numerator of 1 representing 1 equal part when a whole is partitioned into equal parts. (Lesson 7-2)

3. A(n) _____ is a number that represents one or more parts of a whole that has been partitioned into equal parts. (Lesson 7-2)

4. The _____ represents the total number of equal parts in the whole. (Lesson 7-2)

5. To _____ a shape is to break it into equal parts. (Lesson 7-1)

6. You can model parts of a whole with _____. (Lesson 7-4)

Review

7. Which figure represents one-fourth? Select the correct figur . (Lesson 7-1)

A.

B.

C.

D.

8. Which unit fraction represents the shaded part of the figur ? (Lesson 7-2)

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

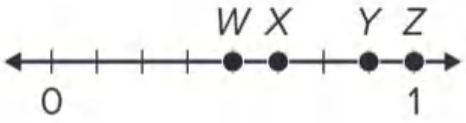
C. $\frac{1}{4}$ **D.** $\frac{1}{5}$

9. Which fraction is marked on the number line? (Lesson 7-3)

A. $\frac{1}{5}$ **B.** $\frac{1}{6}$

C. $\frac{5}{6}$ **D.** $\frac{6}{7}$

10. Which point on the number line represents $\frac{8}{8}$? (Lesson 7-4)



A. *W* **B.** *Z*

C. *X* **D.** *Y*

11. How can you represent the whole number as a fraction? Write the correct numerator. (Lessons 7-4 and 7-5)

$\frac{\square}{16} = 1$

$\frac{\square}{1} = 10$

12. Richard wants to walk more than 1 mile and less than 2 miles every day.

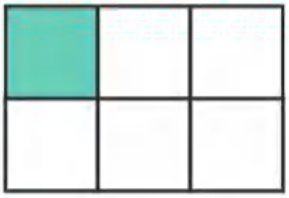
Which fractions could be the amount Richard walks every day? Choose all that are correct. (Lesson 7-6)

A. $\frac{4}{6}$ **B.** $\frac{7}{6}$

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

E. $\frac{8}{6}$ **F.** $\frac{2}{6}$

13. How can you name the shaded part of the figur ? (Lesson 7-1)



A. one-fourth

B. one-half

C. one-sixth

D. one-eighth

14. What fraction represents the shaded part of the shape? (Lesson 7-4)

15. Ryan writes a whole number as a fraction. Which fraction does he write? (Lesson 7-5)

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

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

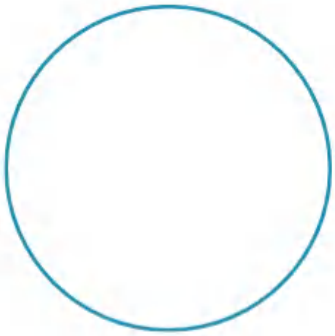
16. Which fractions are greater than 1? Choose all that are correct. (Lesson 7-6)

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

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

E. $\frac{6}{5}$ **F.** $\frac{3}{2}$

Performance Task

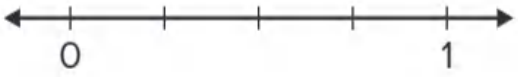


The eyepiece lens of Haley's telescope is partitioned into 4 equal parts.

Part A: How can you partition the circle to represent the eyepiece?

Part B: What fraction represents one part of the lens?

Part C: Haley creates a number line from 0 to 1 and partitions it into 4 equal intervals to represent the lens.



What fraction represents the whole lens?

Part D: A telescope has 2 lenses. What fraction represents the total number of lenses in the telescope?

Reflect

What are two ways to represent a fraction?

Unit 7

Fluency Practice

Name _____

Fluency Strategy

You can use doubling to multiply by 2.

$2 \times 4 = ?$

Double 4 to complete the fact.

$4 + 4 = 8$

So, $2 \times 4 = 8$

1. 2×8 is double 8, or _____ + _____

   $2 \times 8 =$ _____

Fluency Flash

What addition fact and multiplication fact match the model?

2. 

_____ + _____ = _____

_____ × _____ = _____

3. 

_____ + _____ = _____

_____ × _____ = _____

Fluency Check

How can you complete the equation?

4. $165 + 528 =$ _____
5. $2 \times 3 =$ _____
6. $10 \times 2 =$ _____
7. $876 - 124 =$ _____
8. $4 \times 2 =$ _____
9. $285 + 312 =$ _____
10. $2 \times 8 =$ _____
11. $4 \times 2 =$ _____
12. $998 - 265 =$ _____
13. $573 + 318 =$ _____
14. $2 \times 9 =$ _____
15. $589 - 431 =$ _____
16. $6 \times 2 =$ _____
17. $968 - 321 =$ _____

Fluency Talk

How can you explain to a friend how to multiply by 2?

Explain what it means to decompose a number.
How can you use it to subtract?

Unit 8

Fraction Equivalence and Comparison

Focus Question

How can I compare fractions?

IGNITE!

Name _____

Folding Fractions

Listen for directions. Fold your paper to represent fractions.

Step 1

Step 2

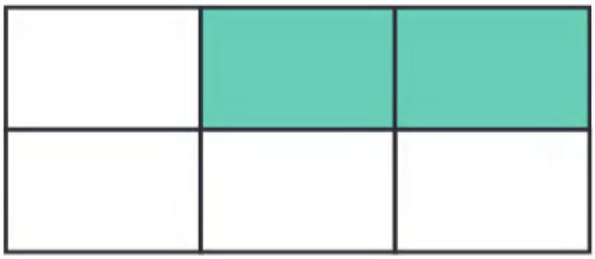
Step 3

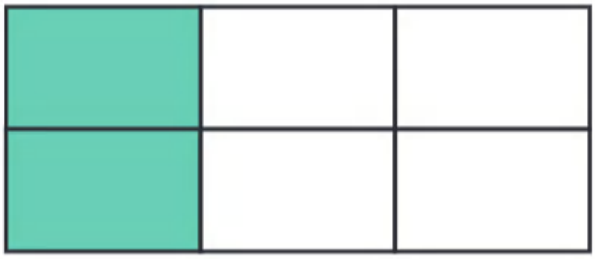
Lesson 8-1

Understand Equivalent Fractions

Be Curious

Which doesn't belong?



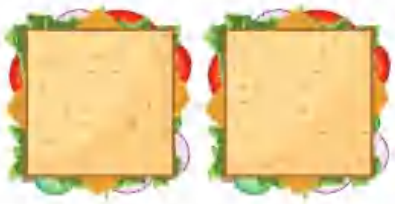


Math is... Mindset

What can you do today to help build a relationship with a classmate?

Learn

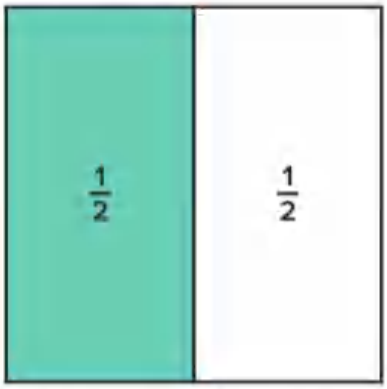
Mr. Gill makes two sandwiches that are the same size. He cuts one sandwich in half and gives 1 part to his daughter. He cuts the other sandwich into fourths and gives 2 parts to his son.



Did Mr. Gill give the same amount of sandwich to each child?

You can represent each sandwich with a square.

Partition the square into 2 parts and shade 1 part.



His daughter has $\frac{1}{2}$ of a sandwich.

Partition the square into 4 parts and shade 2 parts.

His son has $\frac{2}{4}$ of a sandwich.

$\frac{1}{2}$ and $\frac{2}{4}$ represent the same amount of the same whole.

$\frac{1}{2}$ and $\frac{2}{4}$ are **equivalent** fractions.

Fractions that represent the same part of a whole are equivalent fractions.

Math is... Connections

How can models help you decide whether the amounts are the same?

Work Together

How can you decide whether $\frac{3}{6}$ of a circle is equivalent to $\frac{1}{2}$ of a circle?

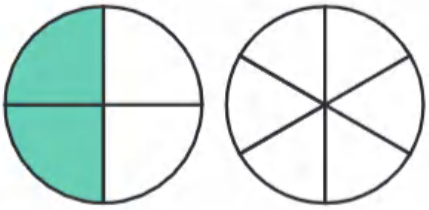
On My Own

MATH REPLAY | GO ONLINE

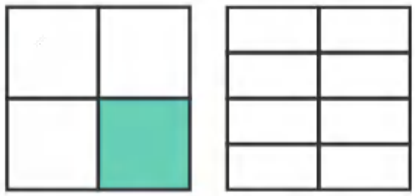
Name _____

How can you shade the model to show the equivalent fraction?

1.



2.



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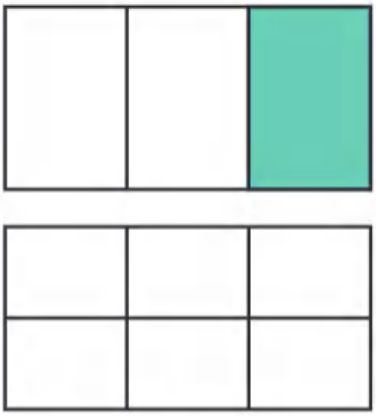


4.

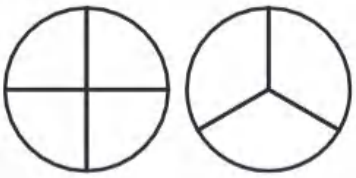
5. The table shows the amounts of cherry, key lime, and peach pie left. Which two pies have the same amount left? Shade the models and explain.

Cherry	Key Lime	Peach
$\frac{4}{6}$	$\frac{2}{3}$	$\frac{3}{4}$

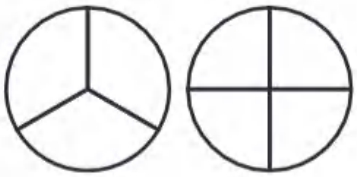
6. Error Analysis Hannah draws two squares that are the same size. One has 8 equal parts with 2 parts shaded. The other has 4 equal parts with 1 part shaded. She says they do not represent equivalent fractions. Do you agree? Explain.

How can you shade the models to decide whether the fractions are equivalent? Write *equivalent* or *not equivalent*.

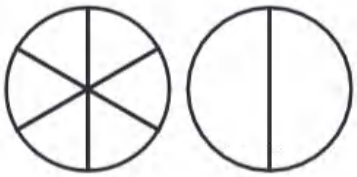
7. $\frac{1}{4}$ and $\frac{2}{3}$



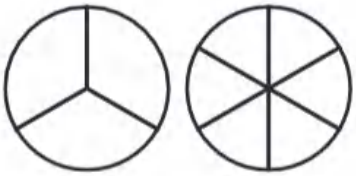
8. $\frac{1}{3}$ and $\frac{2}{4}$



9. $\frac{3}{6}$ and $\frac{1}{2}$



10. $\frac{1}{3}$ and $\frac{2}{6}$



11. Extend Your Thinking The fractions $\frac{1}{2}$ and $\frac{2}{4}$ are equivalent. List 2 more fractions that are equivalent to $\frac{1}{2}$. How can you describe a pattern related to fractions equivalent to $\frac{1}{2}$?

Reflect

How can you use representations to determine whether fractions are equivalent?

Math is... Mindset

What did you do today to help build a relationship with a classmate?

Represent Equivalent Fractions

Be Curious

What do you notice?
What do you wonder?

Math is... Mindset

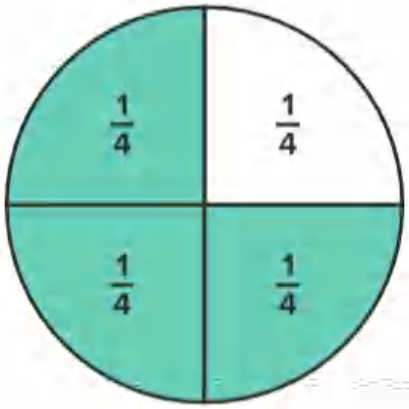
How can a different perspective help you with your work today?

Learn

Leo and Nora each had a small pizza. The two pizzas were the same size. Leo ate $\frac{3}{4}$ of his pizza. Nora ate the same amount of pizza, but her pizza was cut into 8 equal pieces.

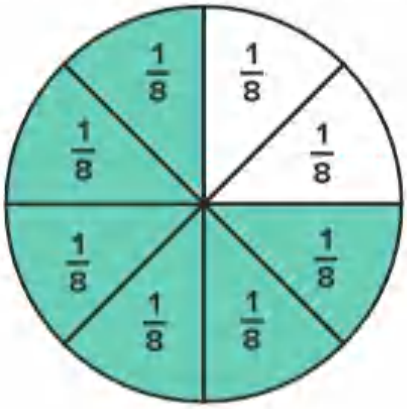
How many pieces of pizza did Nora eat?

The fraction circle represents Leo's pizza. He ate $\frac{3}{4}$ of his pizza.



$\frac{3}{4}$

The fraction circle represents Nora's pizza. The shaded pieces represent the same amount.



$\frac{6}{8}$

Nora ate 6 pieces of pizza.

The fractions $\frac{3}{4}$ and $\frac{6}{8}$ shade the same part of the same-size whole, so they are equivalent fractions. $\frac{3}{4} = \frac{6}{8}$.

Math is... Patterns

What patterns do you notice between the equivalent fractions?

Work Together

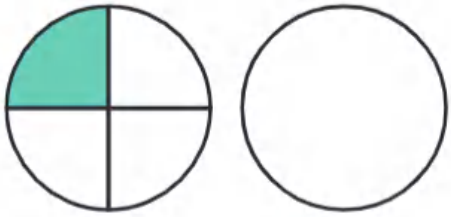
How can you draw a fraction model and name a fraction equivalent to $\frac{2}{4}$?

On My Own

Name _____

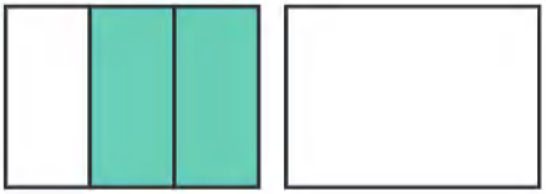
What fraction is equivlaent to the fraction shown?
Create a model to determine the equivalent fraction.

1.



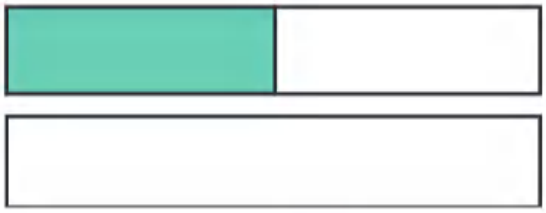
$\frac{1}{4} = \frac{\square}{8}$

2.



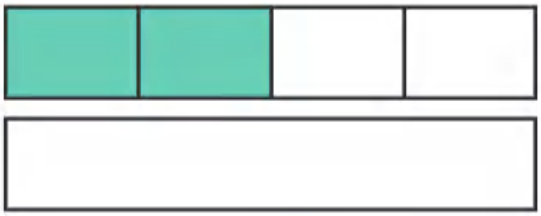
$\frac{2}{3} = \frac{\square}{6}$

3.



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

4.



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

5. Jacob folded a piece of paper into 4 equal parts and shaded 3 parts. Sarah folded her piece of paper into 8 equal parts. She shaded the same amount as Jacob. What equivalent fractions did they represent? Draw a model to justify your answer.

How can you use the fraction tiles to complete the fraction?

6. $\frac{\square}{4} = \frac{6}{8}$

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

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

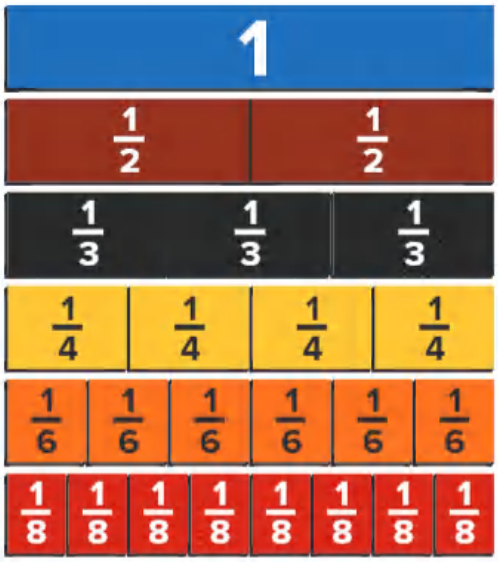
9. $\frac{1}{4} = \frac{\square}{\square}$

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

11. $\frac{4}{\square} = \frac{\square}{2}$

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

13. $\frac{1}{\square} = \frac{\square}{4}$



14. **Error Analysis** Ava says $\frac{1}{2}$ is always the same amount as $\frac{3}{6}$. Charlotte says that is not always true. Who do you agree with? Explain.

15. **Extend Your Thinking** Bella used multiplication to write an equivalent fraction for $\frac{1}{4}$. She wrote $\frac{3}{12}$. How did she use multiplication to write the equivalent fraction? Explain.

Reflect

How can you use representations to make equivalent fractions?

Math is... Mindset

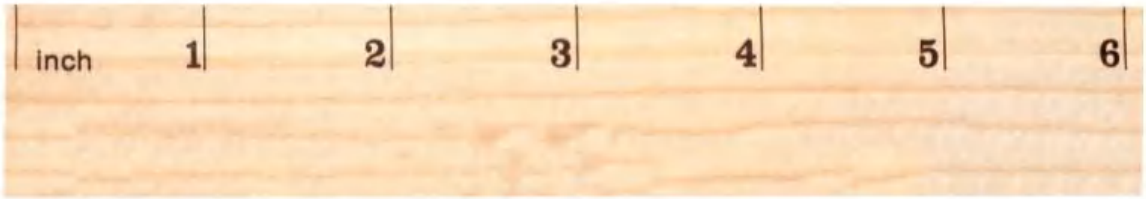
How did a different perspective help you with your work today?

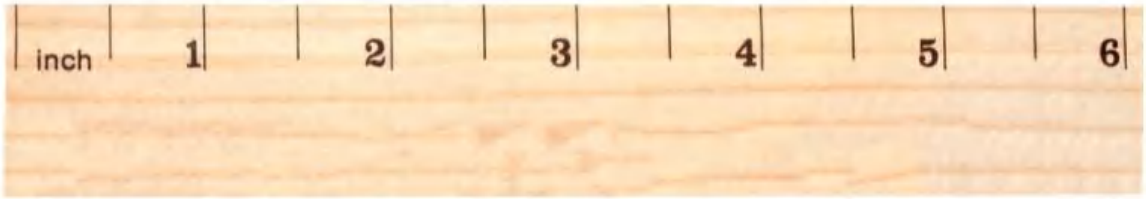
Lesson 8-3

Represent Equivalent Fractions on a Number Line

Be Curious

How are they the same?
How are they different?



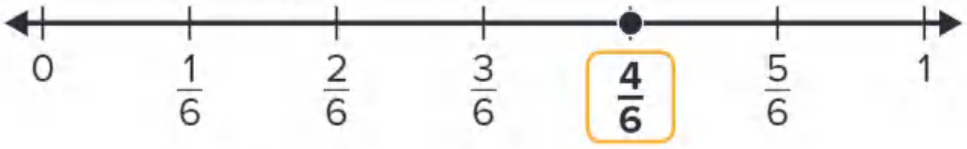


Math is... Mindset

What makes you feel excited when doing math?

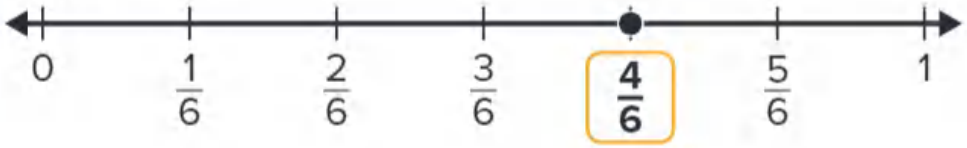
Learn

Jin represents $\frac{4}{6}$ on a number line.



How many thirds are equivalent to $\frac{4}{6}$?

Draw a second number line the same length as the first. Align 0 and 1 on the number lines. Partition it into 3 equal intervals. Place a point the same distance from 0 as $\frac{4}{6}$.



$\frac{4}{6} = \frac{2}{3}$

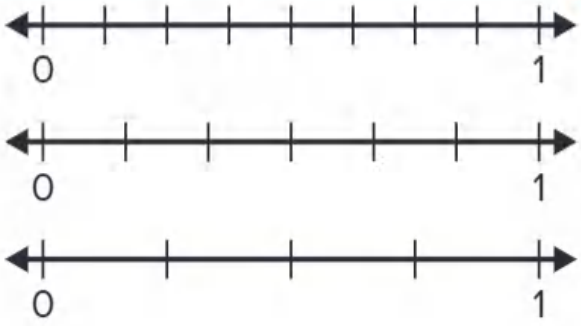
Fractions at the same point on a number line represent equivalent fractions.

Math is... Modeling

How do the number lines show the fractions are equivalent?

Work Together

How can you use the number lines to find the fractions that are equivalent to $\frac{6}{8}$? Explain.



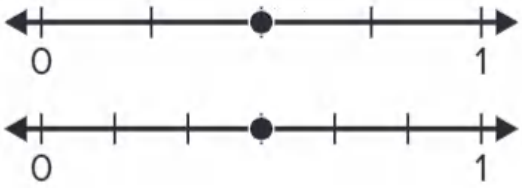
On My Own

MATH REPLAY | GO ONLINE

Name _____

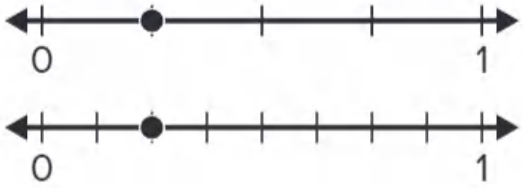
How can you use the points on the number lines to name the equivalent fractions?

1.



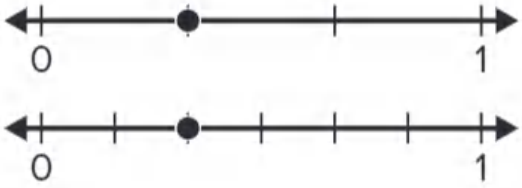
$\frac{\square}{4} = \frac{\square}{\square}$

2.



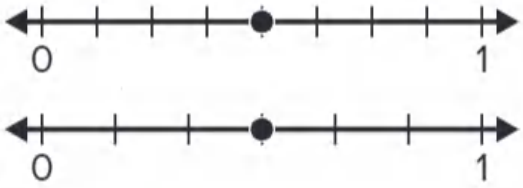
$\frac{1}{\square} = \frac{\square}{\square}$

3.



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

4.



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

5. STEM Connection Owen walks $\frac{1}{2}$ of a path searching for insects. His friend walks $\frac{2}{4}$ of the same path. Who walked farther? Explain your thinking.

How can you use the number lines to complete the equations?

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

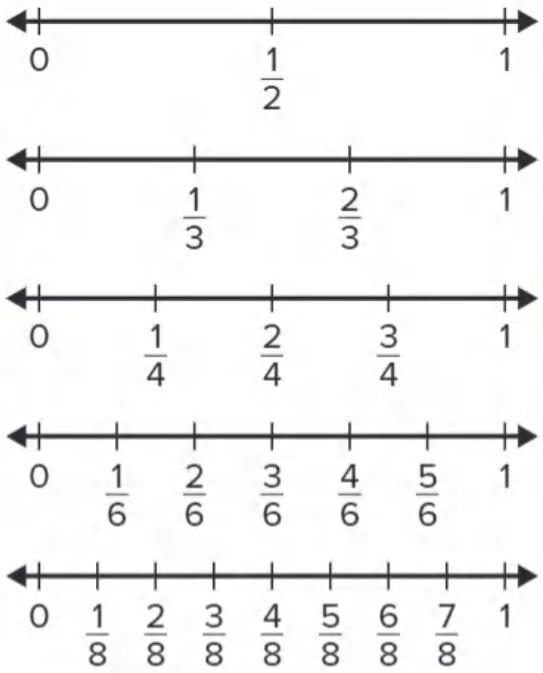
7. $\frac{\square}{\square} = \frac{4}{6}$

8. $\frac{1}{2} = \frac{\square}{6}$

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

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

11. $\frac{\square}{\square} = \frac{1}{4}$



12. **Extend Your Thinking** How can you draw number lines to decide whether $\frac{3}{4}$ is equivalent to $\frac{5}{6}$?

Reflect

How can number lines help you determine equivalent fractions?

Math is... Mindset

What made you feel excited when doing math today?

Lesson 8-4

Understand Fractions of Different Wholes

Be Curious

Is it always true?

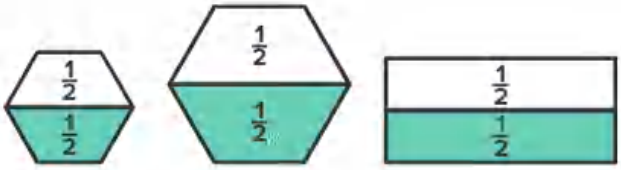
$\frac{1}{4}$ of a figure is always equal to $\frac{1}{4}$ of another figure.

Math is... Mindset

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

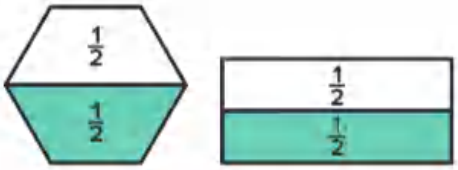
Learn

Hector says that the shaded part of each figure represents the same amount.

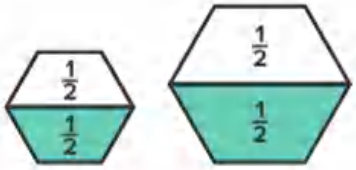


How do you respond to Hector's statement?

The wholes are not the same shape. $\frac{1}{2}$ of the hexagon does not represent the same amount as $\frac{1}{2}$ of the rectangle.



The wholes are not the same size. $\frac{1}{2}$ of the small hexagon does not represent the same amount as $\frac{1}{2}$ of the large hexagon.



To compare fractions, the wholes must be the same shape and size.

You can compare fractions only when they refer to the same whole.

Math is... Precision

What whole could be used to compare to $\frac{1}{2}$ the rectangle?

Work Together

Cale walks $\frac{1}{2}$ the distance from his house to school. Sophia walks $\frac{1}{2}$ the distance from her house to school. Do you have enough information to decide whether they walked the same distance? Explain your reasoning.

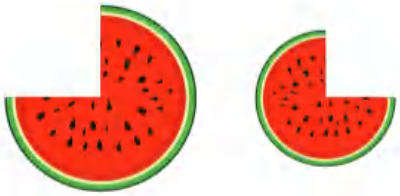
On My Own

MATH REPLAY | GO ONLINE

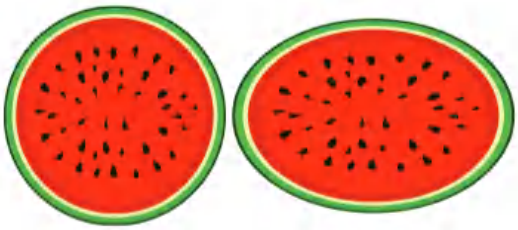
Name _____

Are the parts equivalent? Write *yes* or *no*.

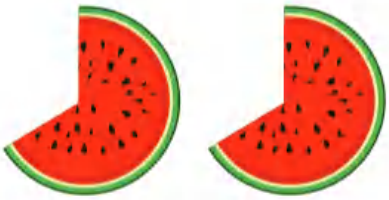
1.



2.



3.



4.

5. Shenae eats $\frac{1}{3}$ of her sandwich. Brody eats $\frac{1}{3}$ of his sandwich. What do you need to know to determine if Shenae and Brody eat the same amount?

6. Blayke said she was $\frac{1}{2}$ the height of her brother. Drew said he was $\frac{1}{2}$ the height of his sister. Do you have enough information to decide if the children are the same height? Explain your reasoning.

How can you draw a picture to match the statement?

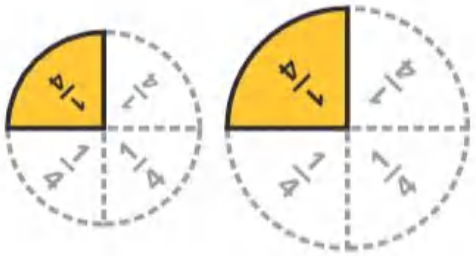
7. Two models of $\frac{1}{3}$ that represent the same amount.

8. Two models of $\frac{1}{4}$ that do not represent the same amount.

9. Two models of $\frac{1}{2}$ that do not represent the same amount.

10. Two models of $\frac{2}{3}$ that represent the same amount.

11. Do the fraction circles represent the same amount? Why or why not?



12. Extend Your Thinking Kara swam $\frac{1}{3}$ the distance of a 100-meter race. Marcus swam $\frac{1}{3}$ the distance of a 500-meter race. Did Kara and Marcus swim the same number of meters? Explain.

Reflect

Why can you only compare fractions when the wholes are the same size?

Math is... Mindset

How did you work well with a classmate even when you disagreed?

Lesson 8-5

Compare Fractions with the Same Denominator

Be Curious

What could the question be?

Suki wrote a fraction. Mark wrote a different fraction with the same denominator. Suki's fraction is greater than Mark's fraction.

Math is... Mindset

What strategies help you work more efficiently?

Learn

Suki writes $\frac{6}{8}$. Mark writes a different fraction with the same denominator. Suki's fraction is greater than Mark's fraction.

What fraction might Mark write?

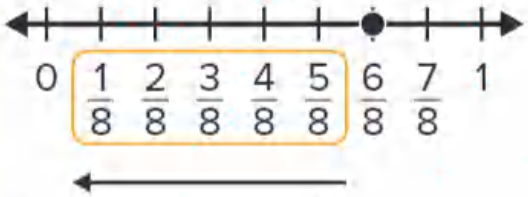
One Way Use fraction models.

5 is less than 6 so $\frac{5}{8}$ is less than $\frac{6}{8}$.

Mark might write $\frac{5}{8}$.

Another Way Use a number line.

Numbers decrease in value from right to left.



$\frac{4}{8}$ is to the left of $\frac{6}{8}$.

$\frac{4}{8}$ is less than $\frac{6}{8}$.

Mark might write $\frac{4}{8}$.

When comparing fractions with the same denominators, the fraction with the greater numerator is greater.

Math is... Structure

How is comparing fractions with the same denominator like comparing whole numbers?

Work Together

How can you use a symbol to compare $\frac{7}{4}$ and $\frac{3}{4}$? Draw a number line to justify your answer.

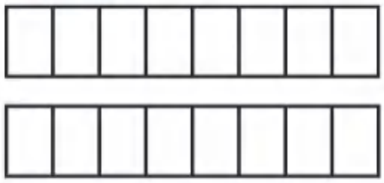
On My Own

Name _____

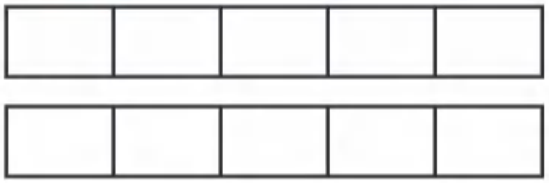
How can you write > or < to make the comparison true? Shade the fraction model to justify your reasoning.

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

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



3. $\frac{2}{5} \square \frac{4}{5}$



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

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

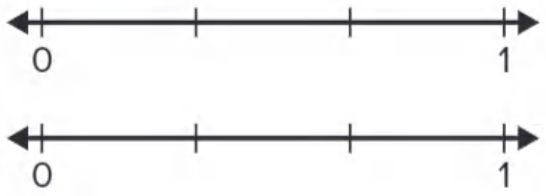
6. $\frac{2}{6} \square \frac{5}{6}$

7. Which comparisons are true? Circle them. Use pictures or words to explain your reasoning.

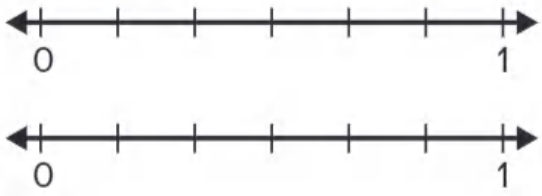
$\frac{3}{8} < \frac{5}{8}$ $\frac{3}{8} > \frac{5}{8}$ $\frac{5}{8} < \frac{3}{8}$ $\frac{5}{8} > \frac{3}{8}$

How can you write > or < to make the comparison true? Draw a point on the number line to justify your reasoning.

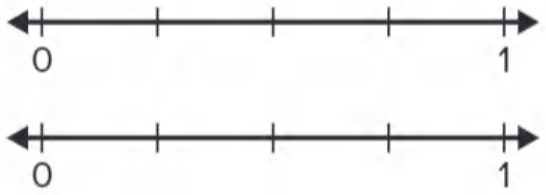
8. $\frac{2}{3} \square \frac{1}{3}$



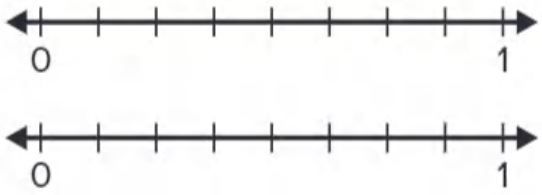
9. $\frac{2}{6} \square \frac{4}{6}$



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



11. $\frac{7}{8} \square \frac{2}{8}$



12. Extend Your Thinking Kelsey and Will are painting a wall in a room. Kelsey paints $\frac{2}{6}$ of the wall. Will paints more of the wall than Kelsey. What fraction of the wall might Will have painted? Use pictures or words to explain your reasoning.

Reflect

How can you compare fractions with the same denominator and different numerators?

Math is... Mindset

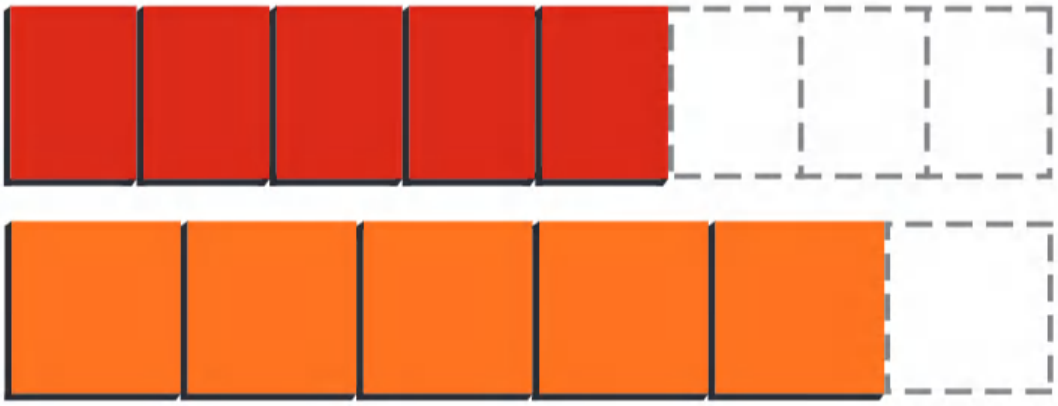
What strategies helped you work more efficiently?

Lesson 8-6

Compare Fractions with the Same Numerator

Be Curious

How are they the same?
How are they different?



Math is... Mindset

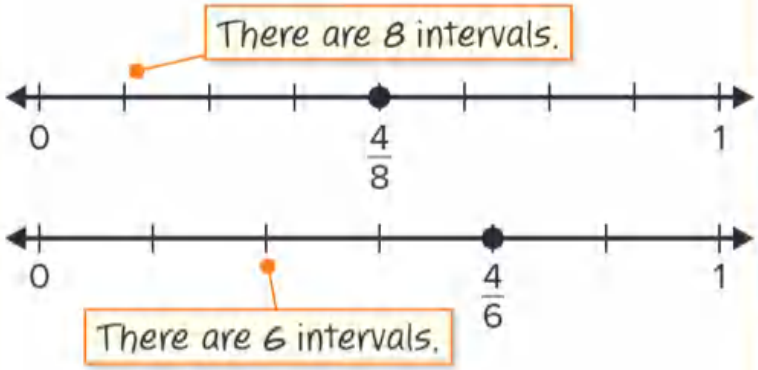
What have you done in the past to help you make decisions?

Learn

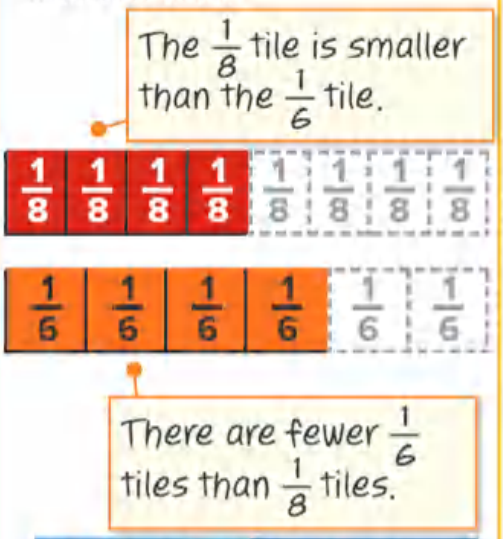
Jesse draws a circle with 8 equal parts. Jenna draws a circle the same size with 6 equal parts. They each shade 4 parts of their circle.

Whose circle has a greater amount shaded?

One Way Use number lines.



Another Way Use fraction tiles.



As the denominator decreases, the size of the fraction increases, so $\frac{4}{8} < \frac{4}{6}$.

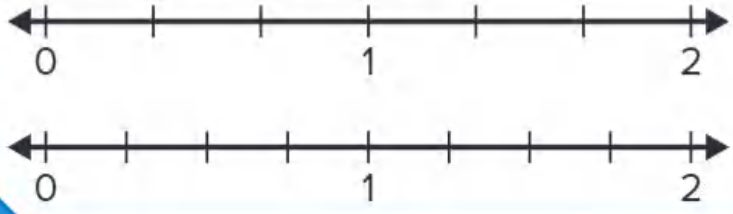
Math is... Explaining

Why is $\frac{1}{6}$ of a whole greater than $\frac{1}{8}$ of the same whole?

When comparing fractions with the same numerators, the fraction with the lesser denominator is greater.

Work Together

How can you use >, <, or = to compare $\frac{5}{3}$ and $\frac{5}{4}$? Use the number lines to justify your answer.



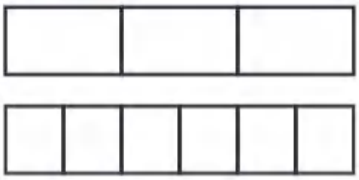
On My Own

MATH REPLAY | GO ONLINE

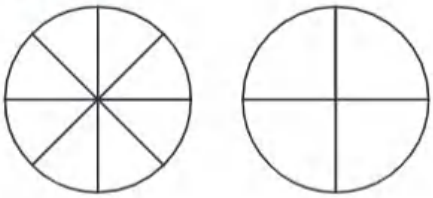
Name _____

How can you write > or < to make the comparison true? Shade the representation to justify your reasoning.

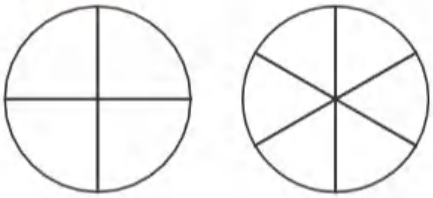
1. $\frac{2}{3} \square \frac{2}{6}$



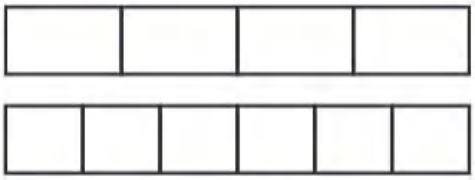
2. $\frac{4}{8} \square \frac{4}{4}$



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

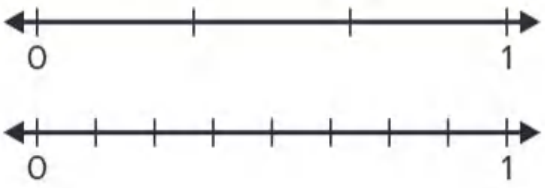


4. $\frac{1}{4} \square \frac{1}{6}$

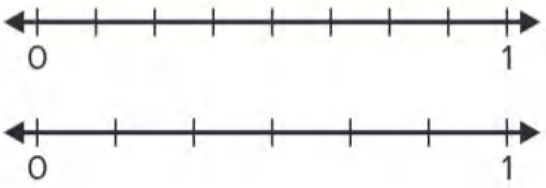


How can you write > or < to make each comparison true? Draw a point on each number line to justify your reasoning.

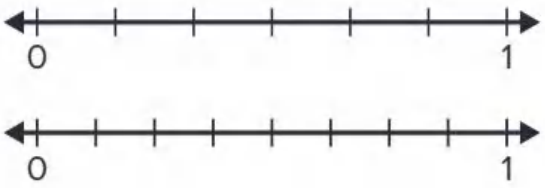
5. $\frac{2}{3} \square \frac{2}{8}$



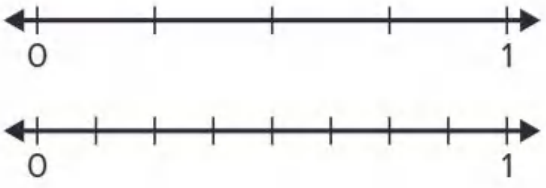
6. $\frac{3}{8} \square \frac{3}{6}$



7. $\frac{1}{6} \square \frac{1}{8}$



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



9. Circle the comparisons that are true. Explain your reasoning.

$\frac{4}{6} < \frac{4}{8}$ $\quad \frac{3}{2} > \frac{3}{3}$ $\quad \frac{2}{3} < \frac{2}{6}$ $\quad \frac{1}{4} > \frac{1}{8}$

10. Circle the fractions that are greater than $\frac{2}{6}$. Explain how you know.

$\frac{2}{2}$ $\quad \frac{2}{3}$ $\quad \frac{2}{4}$ $\quad \frac{2}{6}$ $\quad \frac{2}{8}$

11. STEM Connection Owen searches $\frac{3}{4}$ of Field A for insects. He searches $\frac{3}{8}$ of Field B. Both fields are the same size. Does he search more of Field A or B? Explain how you know.

12. Extend Your Thinking Bryce is comparing $\frac{1}{4}$ and $\frac{2}{3}$. How can he use $\frac{2}{4}$ to help him compare the two fractions and decide which is greater?

Reflect

How can you compare fractions with the same numerator and different denominators?

Math is... Mindset

How did a past decision help you today?

Compare Fractions

Be Curious

Which doesn't belong?

$\frac{2}{4} < \frac{4}{4}$ $\quad\quad$ $\frac{4}{4} = \frac{2}{2}$

$\frac{3}{4} > \frac{3}{6}$ $\quad\quad$ $\frac{4}{1} < \frac{6}{1}$

Math is... Mindset

How can you use what you already know to help you with today's work?

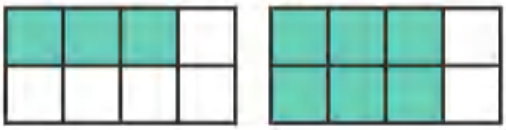
Learn

Three students are making posters. Each poster is the same size. Adaline finished $\frac{3}{4}$ of her poster. Mateo finished $\frac{3}{8}$ of his poster. Niko finished $\frac{6}{8}$ of his poster.

How can you compare the amounts each student finished?

When the denominators are the same, the fraction with the greater numerator is greater.

$\frac{3}{8} < \frac{6}{8}$

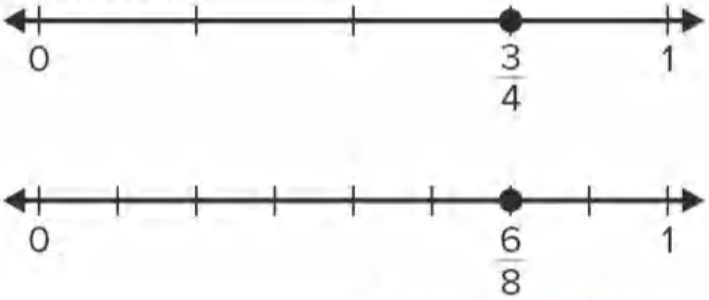


When the numerators are the same, the fraction with the lesser denominator is greater.

$\frac{3}{4} > \frac{3}{8}$

When the fractions are the same distance from 0 on a number line, the fractions are equivalent.

$\frac{3}{4} = \frac{6}{8}$



Fraction models and number lines can justify comparisons between two fractions.

Math is... Quantities

Can fractions with the same numerator or denominator be equivalent?

Work Together

Jonathan eats $\frac{3}{4}$ of a large waffle. His mother eats $\frac{3}{4}$ of a small waffle. Have they eaten the same amount? Use a drawing to support your answer.

On My Own

MATH REPLAY | GO ONLINE

Name _____

How can you use >, <, or = to make the comparison true? Draw a fraction model to justify the answer.

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

2. $\frac{2}{8} \square \frac{1}{4}$

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

4. $\frac{5}{8} \square \frac{5}{6}$

How can you use >, <, or = to make the comparison true? Draw two number lines to justify the answer.

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

6. $\frac{5}{4} \square \frac{2}{4}$

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

8. $\frac{1}{2} \square \frac{4}{8}$

9. Circle the comparisons that are true. Explain your reasoning.

$\frac{2}{3} = \frac{4}{6}$ $\frac{3}{4} > \frac{4}{3}$ $\frac{2}{6} < \frac{5}{6}$ $\frac{3}{1} > \frac{3}{8}$

10. Circle the fractions that are greater than or equal to $\frac{2}{3}$. Draw a representation to justify each.

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

11. Error Analysis How can you check each boy's work to decide if they compared the fractions correctly?

Andrew

$\frac{4}{5} < \frac{4}{6}$

Aiden

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

12. Extend Your Thinking Order the fractions $\frac{2}{4}$, $\frac{2}{6}$, and $\frac{4}{4}$ from least to greatest. Explain your reasoning.

Reflect

How can you use fraction models and number lines to justify comparisons between two fractions?

Math is... Mindset

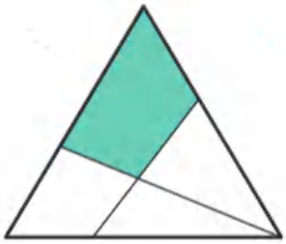
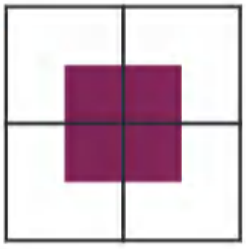
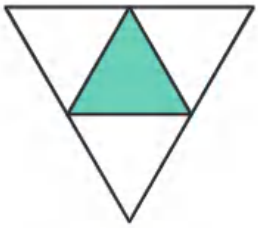
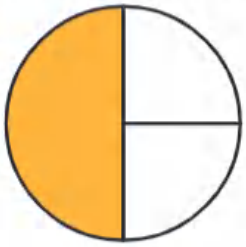
What did you already know that helped you with today's work?

Unit 8

Equivalent Fractions Card Sort

Name _____

Cut out each card.

Equivalent	Not Equivalent
A. 	B. $\frac{1}{4}$ 
C.  $\frac{1}{3}$	D.  $\frac{1}{4}$
E.  $\frac{1}{4}$	F.  $\frac{2}{4}$

Equivalent	Not Equivalent

CHERYL TOBEY MATH PROBES

Name _____

Cut out each card.

G.

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

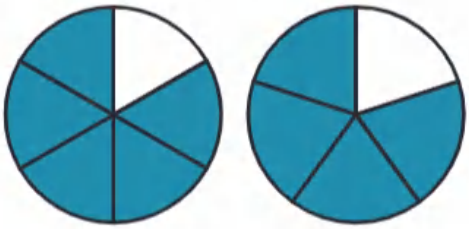
H.

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

I.

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

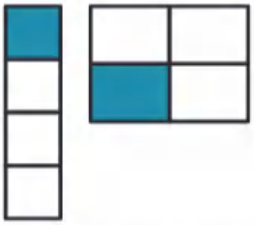
J.



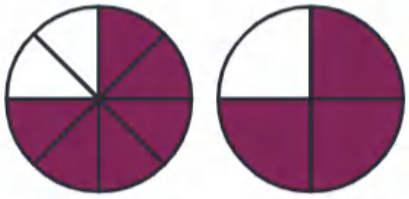
K.

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

L.



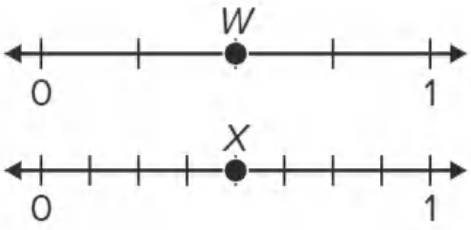
M.



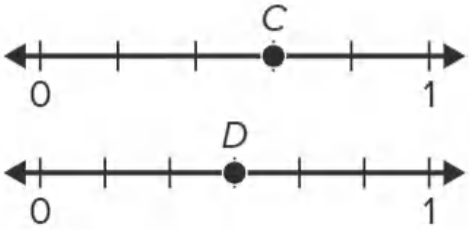
N.

$\frac{2}{3}$ $\frac{4}{6}$

O.



P.



Equivalent	Not Equivalent

Unit Review

Name _____

Vocabulary Review

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

denominator	equivalent	numerator
fraction	number line	

1. A _____ is a number that represents part of a whole. (Lesson 8-1)

2. The _____ represents the number of equal parts being counted. It is the part of the fraction that is written above the line. (Lesson 8-6)

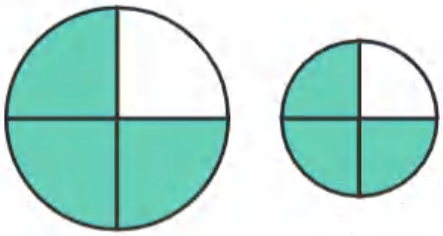
3. Two or more fractions that represent the same amount of the same-size whole are _____ fractions. (Lesson 8-1)

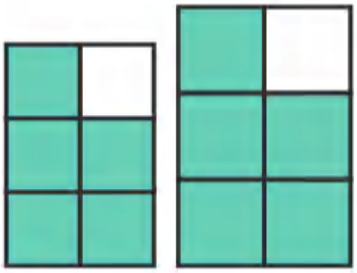
4. The _____ represents the number of equal parts in the whole. It is the part of the fraction that is written below the line. (Lesson 8-5)

5. A _____ is a tool that can represent equivalent fractions. (Lesson 8-3)

Review

6. Determine whether each pair of models show the same amount. Write *yes* or *no* below each model. (Lesson 8-4)





7. Which comparison is true? (Lesson 8-5)

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

B. $\frac{7}{8} < \frac{4}{8}$

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

D. $\frac{3}{6} < \frac{5}{6}$

8. Which comparison is true? (Lesson 8-6)

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

B. $\frac{2}{6} < \frac{2}{8}$

C. $\frac{3}{6} > \frac{3}{4}$

D. $\frac{4}{2} < \frac{4}{3}$

9. Which equation represents the the fraction circles? (Lesson 8-1)

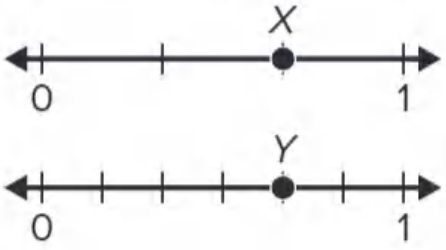
A. $\frac{1}{3} = \frac{2}{6}$

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

C. $\frac{1}{4} = \frac{2}{8}$

D. $\frac{1}{4} = \frac{3}{8}$

10. Which equation represents the number lines? (Lesson 8-3)



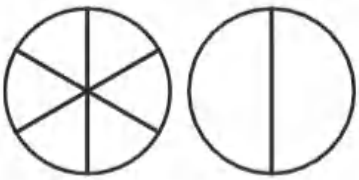
A. $\frac{2}{3} = \frac{4}{6}$

B. $\frac{2}{3} = \frac{6}{8}$

C. $\frac{3}{4} = \frac{4}{6}$

D. $\frac{3}{4} = \frac{6}{8}$

11. Which number can replace the unknown numerator to make the fractions equivalent? Shade the model to help you. (Lesson 8-2)



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

A. 1

B. 3

C. 2

D. 4

12. Amy has a piece of string that is the same length as Jason's string. Amy cuts her string into 4 equal parts and uses 3 parts for bracelets. Jason cuts his into 8 equal parts. Jason uses the same amount of string as Amy. What fraction of his string did he use? (Lesson 8-7)

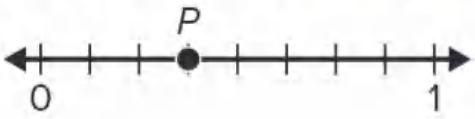
A. $\frac{7}{8}$

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

C. $\frac{4}{8}$

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

13. Which fraction makes the comparison true? (Lesson 8-5)



$P > ?$

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

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

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

D. $\frac{4}{8}$

14. Four friends are each running a mile. The table shows the distance each runs before walking. (Lesson 8-7)

Distance Ran	
Friend	**Mile**
Kellan	$\frac{1}{4}$
David	$\frac{1}{2}$
Becca	$\frac{1}{3}$
Yara	$\frac{1}{8}$

Which friend runs the farthest before walking?

A. David

B. Yara

C. Becca

D. Kellan

Performance Task

Owen measured the lengths of insects in his backyard. He recorded their measurements in the table.

Insect	Insect Length
A	$\frac{1}{4}$ inch
B	$\frac{3}{4}$ inch
C	$\frac{1}{2}$ inch

Part A: Which insect is longer: Insect A or Insect B? Explain your reasoning.

Part B: Which insect is longer: Insect A or Insect C? Explain your reasoning.

Reflect

How can you compare fractions?

Unit 8

Fluency Practice

Name _____

Fluency Strategy

You can use patterns to multiply by 10.

$10 \times 4 = 40$

Products of 10 and a whole number have a 0 in the ones place.

$10 \times 9 = 90$

The digit in the tens place in a product of 10 and a single digit is the same as the digit that is multiplied by 10.

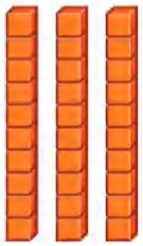
1. The product of 7×10 must have a _____ in the ones place.

$7 \times 10 =$ _____

Fluency Flash

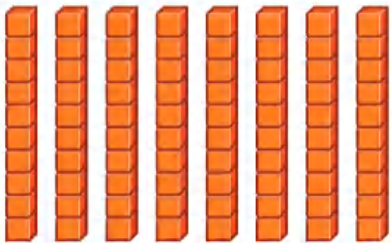
How can you write a multiplication fact for the model?

2.



_____ × _____ = _____

3.



_____ × _____ = _____

Fluency Check

How can you complete the equation?

4. $10 \times 2 =$ _____
5. $749 - 327 =$ _____
6. $7 \times 2 =$ _____
7. $10 \times 9 =$ _____
8. $787 - 634 =$ _____
9. $4 \times 2 =$ _____
10. $4 \times 10 =$ _____
11. $5 \times 10 =$ _____
12. $6 \times 10 =$ _____
13. $477 - 253 =$ _____
14. $2 \times 5 =$ _____
15. $10 \times 10 =$ _____
16. $10 \times 7 =$ _____
17. $2 \times 9 =$ _____

Fluency Talk

How can you can use patterns to multiply by 10?

How does multiplying by 2 relate to doubling?

Use Multiplication to Divide

Focus Question

How can I use multiplication to recall division facts?

IGNITE!

Name _____

Collect 4 Multiplication

Cover 4 squares in a row horizontally, vertically, or diagonally to win!

1	2	3	4	5	6	7	8	9	10

50	28	12	2
54	30	14	3
56	32	15	4
60	35	16	5
63	36	18	6
70	40	20	7
72	42	21	8
80	45	24	9
90	48	27	10

Lesson 9-1

Use Multiplication to Solve Division Equations

Be Curious

What do you notice?
What do you wonder?

Math is... Mindset

What can help you understand a problem situation?

Learn

42 students volunteer to clean up the city park. They form groups of 6.

How many groups are there?

You can use a division equation to represent the problem.

A fact triangle can help you rewrite a division equation as an unknown factor problem to help you solve.

$42 \div 6 = ?$

$42 \div ? = 6$

$6 \times ? = 42$

$? \times 6 = 42$

The related facts use the same 3 numbers. The set of related facts forms a fact family.

$42 \div 6 = \mathbf{7}$

$42 \div \mathbf{7} = 6$

$6 \times \mathbf{7} = 42$

$\mathbf{7} \times 6 = 42$

The relationship between multiplication and division can be used to represent a division equation as an unknown-factor problem.

Math is... Connections

How are multiplication and division related?

Work Together

48 students sit in equal groups at 8 picnic tables. How many students are at each table? Explain how to use the relationship between multiplication and division to find the unknown.

On My Own

MATH REPLAY | GO ONLINE

Name _____

How can you complete the fact family?
Use the fact triangle to help you.

1. $35 \div 7 = \_\_\_\_$

$35 \div \_\_\_\_ = 7$

$7 \times \_\_\_\_ = 35$

$\_\_\_\_ \times 7 = 35$

2. $18 \div 3 = \_\_\_\_$

$18 \div \_\_\_\_ = 3$

$3 \times \_\_\_\_ = 18$

$\_\_\_\_ \times 3 = 18$

3. $\_\_\_\_ \div \_\_\_\_ = \_\_\_\_$

$\_\_\_\_ \div \_\_\_\_ = \_\_\_\_$

$\_\_\_\_ \times \_\_\_\_ = \_\_\_\_$

$\_\_\_\_ \times \_\_\_\_ = \_\_\_\_$

How can you complete the division equation?
Write a related multiplication fact to show your work.

4. $24 \div 6 = \_\_\_\_$

5. $\_\_\_\_ = 21 \div 7$

6. $30 \div \_\_\_\_ = 6$

7. $15 \div 3 = \_\_\_\_$

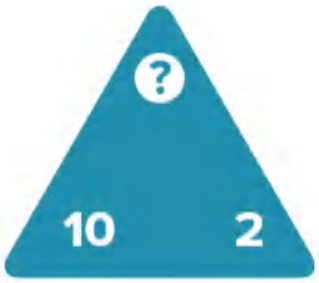
8. $72 \div 9 = \_\_\_\_$

9. $8 = 64 \div \_\_\_\_$

10. At the library, 20 books are arranged on shelves in a bookcase in equal groups as shown. How many shelves are in the bookcase? Explain.

11. Malia practices the piano 4 times each week for a total of 40 minutes of weekly practice. How many minutes does she practice each day? Show your work.

12. Error Analysis Cameron says he can write two division facts using the fact triangle shown. Do you agree? Explain.



13. Extend Your Thinking Write 4 related facts in a fact family. Draw a fact triangle to represent the fact family you wrote.

Reflect

How can you use an unknown-factor problem to solve a division equation?

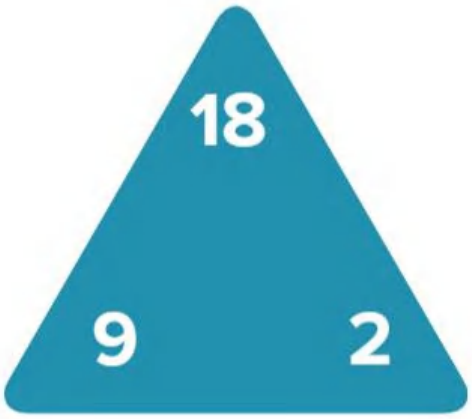
Math is... Mindset

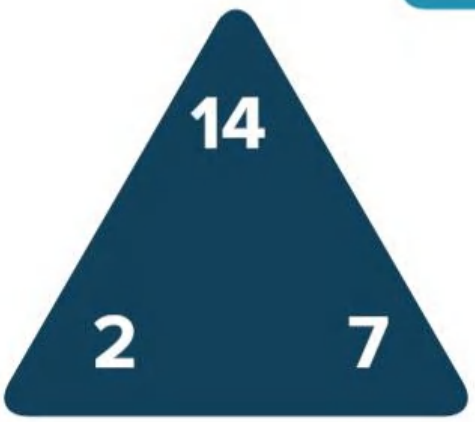
How did you understand a problem situation?

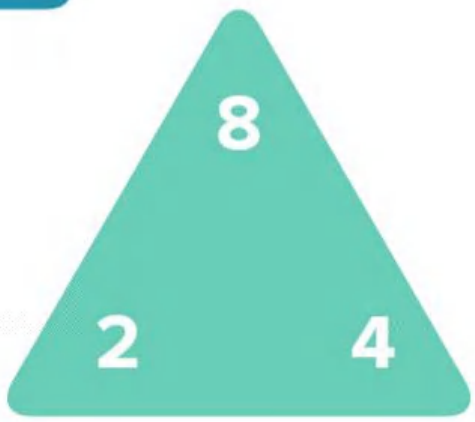
Divide by 2

Be Curious

Tell me everything you can.







Math is... Mindset

What behaviors show respect towards someone?

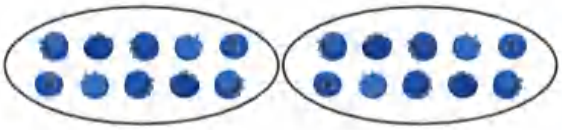
Learn

Kobe has 20 blueberries and 18 raspberries.
He divides the berries evenly between 2 bowls.

How many of each berry does Kobe put in each bowl?

One Way Draw a model.

$20 \div 2 = ?$



Think of a related multiplication fact.

$2 \times \mathbf{10} = 20$

$20 \div 2 = \mathbf{10}$

Kobe puts 10 blueberries in each bowl.

Another Way Use a fact triangle.

$18 \div 2 = ?$

Use a related multiplication fact.

$2 \times \mathbf{9} = 18$

$18 \div 2 = \mathbf{9}$

Kobe puts 9 raspberries in each bowl.

The relationship between multiplication and division can be used to divide by 2.

Math is... Generalizations

How are multiplying by 2 and dividing by 2 related?

Work Together

Kobe also has 16 strawberries that he needs to divide equally between the 2 bowls. How many strawberries should he put in each bowl? Explain your strategy.

On My Own

MATH REPLAY | GO ONLINE

Name _____

1. Which equations can help you find the unknow ?
Circle all the correct answers.

$14 \div 2 = ?$

$14 \times 2 = ?$ $\quad ? \times 2 = 14$ $\quad 14 = 2 \times ?$ $\quad ? \times 2 = 2$

2. Draw a line to the number that makes each equation true.

$20 \div 2 = ?$	**10**
$4 \div 2 = ?$	**8**
$16 \div 2 = ?$	**3**
$6 \div 2 = ?$	**2**

What number makes the equation true?
Write a related multiplication equation to help you.

3. $12 \div 2 =$ _____

4. _____ $= 8 \div 2$

5. _____ $= 18 \div 2$

6. $20 \div 2 =$ _____

7. $2 \div 2 =$ _____

8. $14 \div 2 =$ _____

9. What number completes the division equation? Write a related multiplication fact and draw a model to show your work.

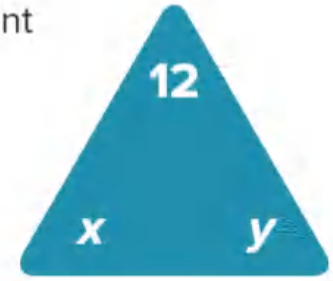
$10 \div 2 = ?$

10. Jin is finding the unknown in the equation $16 \div ? = 2$. What multiplication fact can help him find the unknow ? Explain.

11. Priya has an even number of stickers. She gives half of her stickers to Brock. Write an equation to represent the number of stickers Priya and Brock each might have. Explain.

12. STEM Connection Malik plans to work with fibe optic cables when he is an engineer. One cable is 20 meters long. Malik needs to divide it in half. What is the length of each half? Explain the the strategy you used.

13. Extend Your Thinking Can the unknowns represent more than one pair of whole numbers? Explain.



Reflect

How can you describe different strategies used to recall division facts with 2?

Math is... Mindset

What behaviors did you use to show respect towards someone today?

Divide by 5 and 10

Be Curious

What do you notice?
What do you wonder?

Math is... Mindset

What do you do to stay focused on your work?

Learn

Padma has 50 cents in pennies.

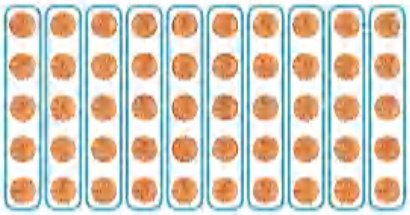
If Padma trades her pennies for nickels, how many nickels will she get? If she trades her pennies for dimes, how many dimes will she get?

The value of a nickel is 5 cents.

Divide 50 into groups of 5.

Think about 5 multiplied by what number equals 50.

$$\mathbf{10} \times 5 = 50$$



$$50 \div 5 = \mathbf{10}$$

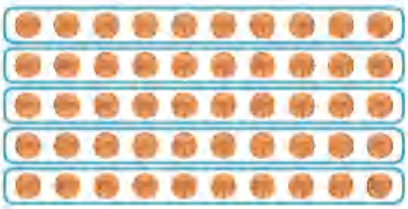
Padma will get 10 nickels.

The value of a dime is 10 cents.

Divide 50 into groups of 10.

Think about 10 multiplied by what number equals 50.

$$\mathbf{5} \times 10 = 50$$



$$50 \div 10 = \mathbf{5}$$

Padma will get 5 dimes.

The relationship between multiplication and division can be used to divide by 5 and 10.

Math is... Precision

Why is the quotient equal to a factor in a related multiplication equation?

Work Together

How can Jayden use multiplication to help him complete the facts $35 \div 5$ and $90 \div 10$?

On My Own

MATH REPLAY | GO ONLINE

Name _____

1. Which equations can help you find the unknow ?
Circle all the correct answers.

$20 \div 5 = ?$

$20 = 5 \times ?$ $\quad ? \times 5 = 20$ $\quad ? = 20 \times 5$ $\quad 20 \times ? = 5$

2. Draw a line to the number that makes each equation true.

$10 \div 10 = ?$	**9**
$40 \div 5 = ?$	**1**
$45 \div 5 = ?$	**6**
$60 \div 10 = ?$	**7**
$35 \div 5 = ?$	**8**

What number makes the equation true?
Write a related multiplication equation to help you.

3. $15 \div 5 =$ _____

4. _____ $= 30 \div 10$

5. _____ $= 70 \div 10$

6. $100 \div 10 =$ _____

7. _____ $= 5 \div 5$

8. $30 \div 5 =$ _____

9. What are the facts in the multiplication and division fact family that use 5, 2, and 10?

10. Error Analysis Maya says she can use a related multiplication fact to help her find the unknown in $30 \div ? = 10$. Do you agree? Explain.

11. Leon has 60 tickets. He wants to use all of his tickets, but is only allowed to get 6 prizes. How can he use all his tickets to buy only 6 prizes?

12. Extend Your Thinking How might you use multiplication to help you find the unknown in the division equation show ? $500 \div 100 = ?$

Reflect

How can you describe different strategies used to recall division facts with 5 and 10?

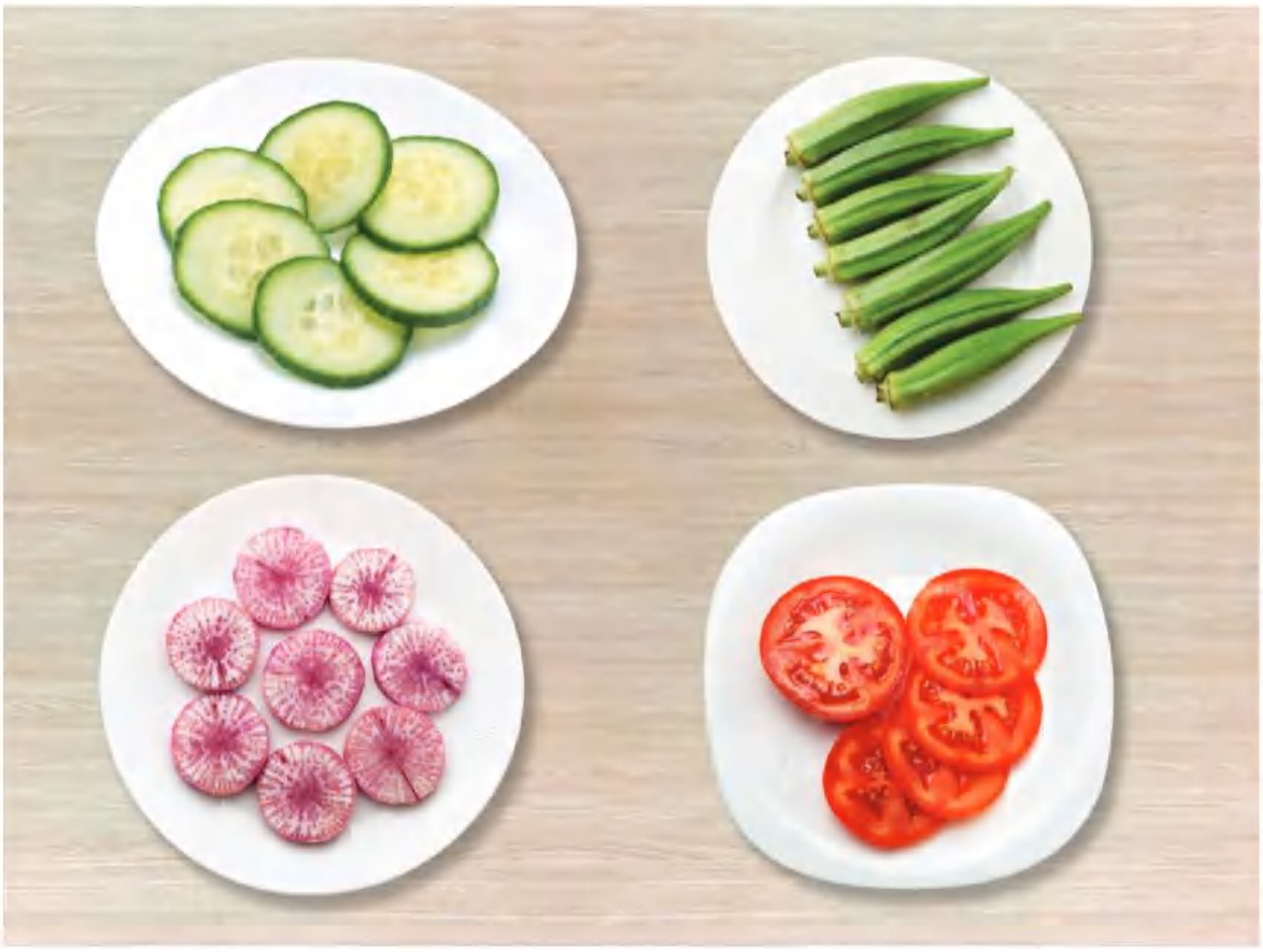
Math is... Mindset

What did you do today to stay focused on your work?

Understand Division with 1 and 0

Be Curious

How are they the same?
How are they different?



Math is... Mindset

How can you show that you are listening attentively?

Learn

How can you help Asher understand how to divide with 0 and 1?

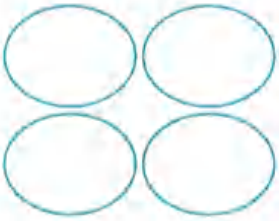
$0 \div 4 = ?$ $4 \div 1 = ?$

$4 \div 0 = ?$ $4 \div 4 = ?$

Dividing 0 by a nonzero number is always 0 because any number multiplied by 0 equals 0.

$0 \div 4 = \mathbf{0}$

$4 \times \mathbf{0} = 0$



It is not possible to divide a number by 0 because you cannot divide objects into 0 groups.

~~$4 \div 0 = ?$~~

~~$0 \times ? = 4$~~

Multiplying by 0 always equals 0.

Any number divided by 1 equals itself because the number multiplied by 1 equals itself.

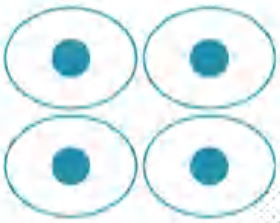
$4 \div 1 = \mathbf{4}$

$1 \times \mathbf{4} = 4$

Any number divided by itself equals 1 because the number multiplied by 1 equals itself.

$4 \div 4 = \mathbf{1}$

$4 \times \mathbf{1} = 4$



Related multiplication facts can help you understand patterns with division facts with 0 and 1.

Math is... Generalizations

How are multiplication and division with 0 different from addition and subtraction with 0?

Work Together

How can you complete each fact, if possible? Explain your thinking.

$5 \div 1 = ?$ $0 \div 8 = ?$ $7 \div 7 = ?$

On My Own

MATH REPLAY | GO ONLINE

Name _____

What number makes the statement true?

1. When dividing 0 by a nonzero number, the quotient is always _____.

2. When the dividend and the divisor are the same nonzero number, the quotient is always _____.

3. It is not possible to divide a number by _____.

4. When the divisor is _____, the quotient is the same as the dividend.

What number makes the equation true?
Write a multiplication equation to help you.
Cross out any equation that cannot be solved.

5. $7 \div 7 =$ _____

6. _____ $= 8 \div 0$

7. $10 = 10 \div$ _____

8. $8 \div 1 =$ _____

9. _____ $= 5 \div 0$

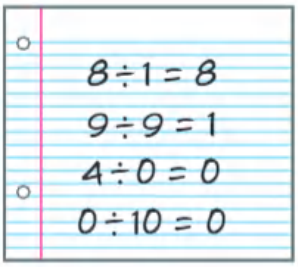
10. _____ $\div 6 = 0$

11. _____ $= 9 \div 9$

12. _____ $= 0 \div 10$

13. There are 5 erasers, 5 pencils, and 10 pens to divide equally among 5 bags. How many of each item are in each bag? Show your work.

14. Error Analysis Which product is incorrect? Explain.



15. Extend Your Thinking Eli checks out some books from the library. He reads 1 book per day. How many days will it take Eli to read all his books? Explain.

Reflect

How can you describe different patterns and rules to recall division facts with 1 and 0?

Math is... Mindset

How did you show that you were listening attentively today?

Divide by 3 and 6

Be Curious

What question could you ask?

Gia is making triangles and hexagons with craft sticks.

Math is... Mindset

What helps you focus when you feel frustrated?

Learn

Gia will make triangles or hexagons with 24 craft sticks. She uses one stick for each side.

How many triangles can she make with all the sticks?

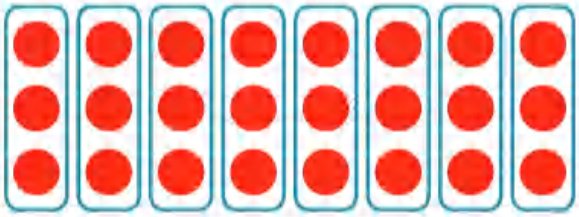
How many hexagons can she make with all the sticks?

One Way Use an array.

A triangle has 3 sides.

$24 \div 3 = ?$

$? \times 3 = 24$



$\mathbf{8} \times 3 = 24$

$24 \div 3 = \mathbf{8}$

Gia can make 8 triangles with 24 craft sticks.

Another Way Use a fact triangle.

A hexagon has 6 sides.

$24 \div 6 = ?$

$? \times 6 = 24$

$\mathbf{4} \times 6 = 24$

$24 \div 6 = \mathbf{4}$

Gia can make 4 hexagons with 24 craft sticks.

You can use related multiplication facts to divide by 3 and 6.

Math is... Choosing Tools

When might you use a fact triangle to solve a problem?

Work Together

Michaela has two sheets of 30 stickers. One sheet has 3 rows of star stickers. The second sheet has 6 rows of circle stickers. How many stickers are in each row of each sheet? Explain how you found the answer.

On My Own

MATH REPLAY | GO ONLINE

Name _____

What number makes the equation true?
Write a related multiplication equation to help you.

1. $6 \div 6 =$ _____

2. _____ $= 27 \div 3$

3. _____ $= 24 \div 6$

4. $54 \div 6 =$ _____

5. _____ $= 18 \div 6$

6. $21 \div 3 =$ _____

7. $15 \div 3 =$ _____

8. _____ $= 36 \div 6$

What is the unknown number? Write the fact family.

9.

_____ _____

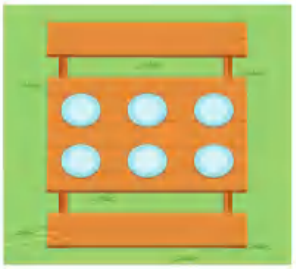
_____ _____

10.

_____ _____

_____ _____

11. Dante is setting tables for a cookout. He sets each table the same way as shown. He uses a total of 42 plates. How many tables does he set? Show your work.



12. STEM Connection When Saffron is a pastry che , she will need to know how to divide the ingredients in a recipe. How can she divide the recipe by 3?

13. Extend Your Thinking Abby is packaging granola bars in bags of 3. She needs enough bags to package 36 bars. How does the number of bags compare if she decides to package 6 in each bag instead?

Reflect

How can you describe different strategies used to recall division facts with 3 and 6?

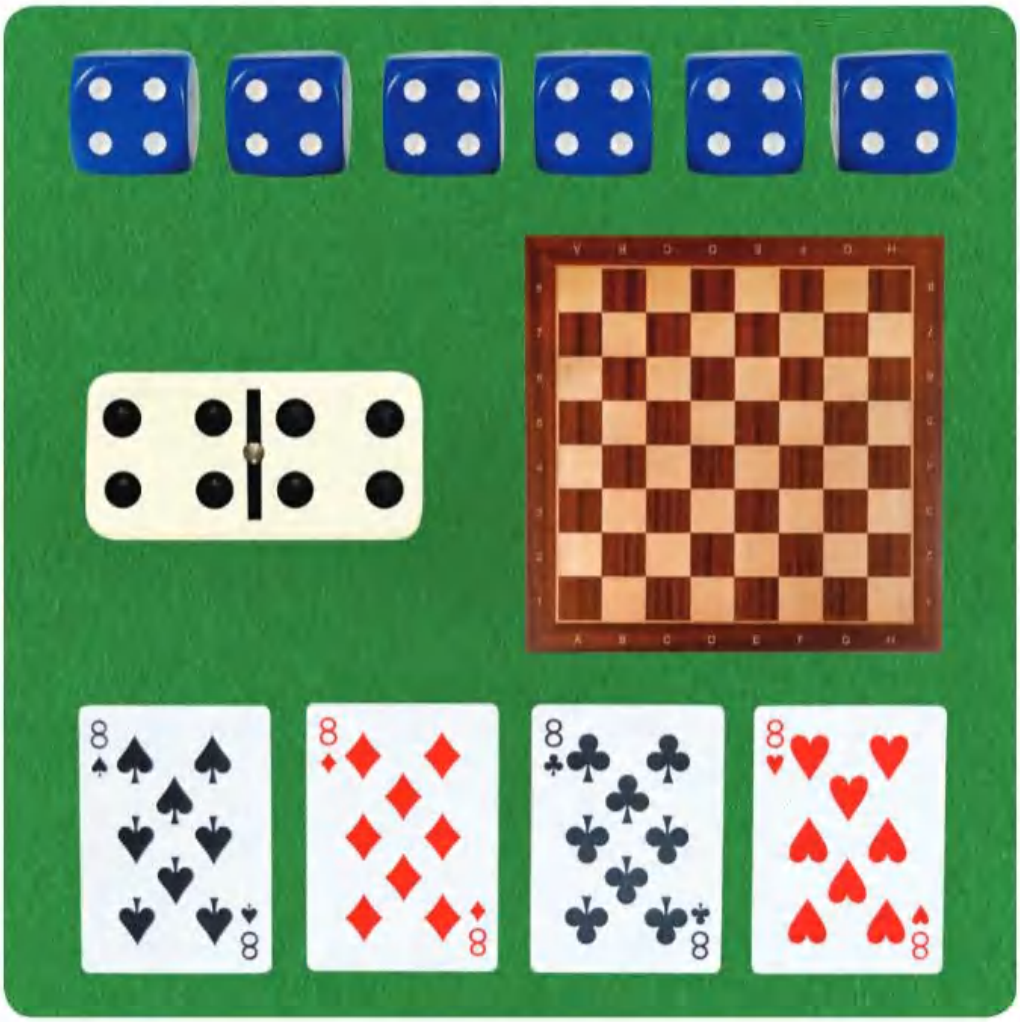
Math is... Mindset

What helped you focus when you felt frustrated today?

Divide by 4 and 8

Be Curious

Which doesn't belong?



Math is... Mindset

What do you want your classmates to know about your math story?

Learn

Grant has 16 game pieces.

How many pieces will be in each group if he divides them into 4 equal groups?

How many pieces will be in each group if he divides them into 8 equal groups?

Fact triangles can help you determine each quotient.

$16 \div 4 = ?$

$4 \times ? = 16$

$4 \times \mathbf{4} = 16$

$16 \div 4 = \mathbf{4}$

There will be 4 pieces in each of 4 equal groups.

$16 \div 8 = ?$

$? \times 8 = 16$

$\mathbf{2} \times 8 = 16$

$16 \div 8 = \mathbf{2}$

There will be 2 pieces in each of 8 equal groups.

The relationship between multiplication and division can be used to divide by 4 and 8.

Math is... Explaining

How can multiplication help you find the unknown quotient?

Work Together

Maya has a package of 32 pencils. She puts equal groups of pencils into 4 boxes. How many pencils are in each box? Write a division and a multiplication equation to represent the problem.

On My Own

MATH REPLAY | GO ONLINE

Name _____

What number makes the equation true?
Write a related multiplication equation to help you.

1. $40 \div 8 =$ _____

2. _____ $= 40 \div 4$

3. _____ $= 64 \div 8$

4. $8 \div 4 =$ _____

5. _____ $= 28 \div 4$

6. $32 \div 4 =$ _____

7. $24 \div 4 =$ _____

8. _____ $= 72 \div 8$

9. What is the unknown number? Write the fact family.

_____ _____

_____ _____

What are the other facts in the fact family?
Write the three other facts.

10. $8 \times 10 = 80$

_____

_____

_____

11. $4 \times 7 = 28$

_____

_____

_____

12. There are 36 quarts of milk in Mr. Agarwal's refrigerator. How many gallons of milk are in the refrigerator? Explain.

13. How can you represent a situation with 56 ÷ 8? Write a word problem that represents 56 ÷ 8. Include the answer.

14. Extend Your Thinking Think about the relationship between 4 and 8. Why might any number that can be divided by 8 also be divided by 4?

Reflect

How can you describe different strategies used to recall division facts with 4 and 8?

Math is... Mindset

What did you share with your classmates about your math story?

Unit 9

Word Problems

Name _____

Read the word problem. Choose the equation that represents the problem situation. Do not actually solve the problem.

1. Ms. Bailey is making supply boxes for her classroom. She has 8 boxes and 24 colored pencils. How many colored pencils should she put in each box so that each box has the same number?

Circle your choice.

a. $8 \times 24 = ?$

b. $24 - 8 = ?$

c. $8 \div 24 = ?$

d. $24 \div 8 = ?$

Explain why you chose the equation.

Read the word problem. Choose the equation that represents the problem situation. Do not actually solve the problem.

2. Tami goes for a walk and sees 6 tricycles. Each tricycle has 3 wheels. How many wheels does Tami see?

Circle your choice.

a. $6 + 3 = ?$

b. $6 - 2 = ?$

c. $6 \times 3 = ?$

d. $6 \div 3 = ?$

Explain why you chose the equation.

Reflect On Your Learning

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

Divide by 9

Be Curious

Is it always true?

You can use a multiplication fact table to determine a quotient.

×	0	1	2	3	4	5	6	7	8	9	10
0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10
2	0	2	4	6	8	10	12	14	16	18	20
3	0	3	6	9	12	15	18	21	24	27	30
4	0	4	8	12	16	20	24	28	32	36	40
5	0	5	10	15	20	25	30	35	40	45	50
6	0	6	12	18	24	30	36	42	48	54	60
7	0	7	14	21	28	35	42	49	56	63	70
8	0	8	16	24	32	40	48	56	64	72	80
9	0	9	18	27	36	45	54	63	72	81	90
10	0	10	20	30	40	50	60	70	80	90	100

Math is... Mindset

How can you recognize and understand how others are feeling?

Learn

How can Zeke use the multiplication fact table to complete division facts?

A related multiplication fact can help you complete the division fact.

$63 \div 9 = ?$

$9 \times ? = 63$

You can find the product in the row of the known factor.

The unknown factor labels the column where the product is found.

$9 \times \mathbf{7} = 63$

$63 \div 9 = \mathbf{7}$

×	0	1	2	3	4	5	6	7	8	9	10
0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10
2	0	2	4	6	8	10	12	14	16	18	20
3	0	3	6	9	12	15	18	21	24	27	30
4	0	4	8	12	16	20	24	28	32	36	40
5	0	5	10	15	20	25	30	35	40	45	50
6	0	6	12	18	24	30	36	42	48	54	60
7	0	7	14	21	28	35	42	49	56	63	70
8	0	8	16	24	32	40	48	56	64	72	80
9	0	9	18	27	36	45	54	63	72	81	90
10	0	10	20	30	40	50	60	70	80	90	100

The relationship between multiplication and division can be used to divide by 9.

Math is... Explaining

How can you use a multiplication fact table to solve a division equation?

Work Together

What strategies can you use to find the unknown in $54 \div ? = 9$?

On My Own

Name _____

What is the quotient? Use the related multiplication fact and the multiplication fact table.

1. $45 \div 9 =$ _____

$9 \times$ _____ $= 45$

2. $54 \div 9 =$ _____

$9 \times$ _____ $= 54$

3. $36 \div 9 =$ _____

$9 \times$ _____ $= 36$

4. $81 \div 9 =$ _____

$9 \times$ _____ $= 81$

×	0	1	2	3	4	5	6	7	8	9	10
0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10
2	0	2	4	6	8	10	12	14	16	18	20
3	0	3	6	9	12	15	18	21	24	27	30
4	0	4	8	12	16	20	24	28	32	36	40
5	0	5	10	15	20	25	30	35	40	45	50
6	0	6	12	18	24	30	36	42	48	54	60
7	0	7	14	21	28	35	42	49	56	63	70
8	0	8	16	24	32	40	48	56	64	72	80
9	0	9	18	27	36	45	54	63	72	81	90
10	0	10	20	30	40	50	60	70	80	90	100

What number makes the equation true?

5. $9 \div 9 =$ _____

6. _____ $= 18 \div 9$

7. _____ $= 72 \div 9$

8. $36 \div 9 =$ _____

9. _____ $= 63 \div 9$

10. $27 \div 9 =$ _____

11. What are the other facts in the fact family? Write the three other facts.

$9 \times 10 = 90$

_____

_____

_____

12. **Error Analysis** Kevin is finding $63 \div 9 = ?$ using a multiplication fact table. He uses the 9s column instead of the 9s row to find 63. Can he still find the unkno ? Explain.

13. Meg separates a bin of crayons into bags of 9 crayons each. She isn't sure exactly how many crayons are in the bin, but she knows there are no more than 72. How many bags of crayons might she make?

14. **Extend Your Thinking** Mikayla draws a model of her bedroom for an art project. If one bedroom wall is 18 feet long, how many inches long will it be in her drawing?

Key: 1 inch = 9 feet

Reflect

How can you describe different strategies used to recall division facts with 9?

Math is... Mindset

What strategies helped you understand how others are feeling?

Divide by 7

Be Curious

Which doesn't belong?

28 days

42 days

31 days

49 days

Math is... Mindset

How can your strengths in other areas help you in math?

Learn

How can you determine the number of weeks that are equal to each number of days?

Days	7	14	21	28	35	42
Weeks	1	?	?	?	?	?

You can divide each number by 7 because 1 week equals 7 days. Use a related multiplication fact to find the unknown.

$14 \div 7 = ?$

$7 \times ? = 14$

$14 \div 7 = \mathbf{2}$

$7 \times \mathbf{2} = 14$

14 days is equal to 2 weeks.

×	0	1	2	3	4	5	6	7	8	9	10
0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10
2	0	2	4	6	8	10	12	14	16	18	20
3	0	3	6	9	12	15	18	21	24	27	30
4	0	4	8	12	16	20	24	28	32	36	40
5	0	5	10	15	20	25	30	35	40	45	50
6	0	6	12	18	24	30	36	42	48	54	60
7	0	7	14	21	28	35	42	49	56	63	70
8	0	8	16	24	32	40	48	56	64	72	80
9	0	9	18	27	36	45	54	63	72	81	90
10	0	10	20	30	40	50	60	70	80	90	100

The relationship between multiplication and division can be used to divide by 7.

Math is... Perseverance

What steps can you take to find the rest of the number of weeks?

Work Together

How can Wes use the multiplication fact table to complete $63 \div 7$?

On My Own

Name _____

What is the quotient?
Use the related multiplication fact and the multpilication fact table.

1. $63 \div 7 =$ _____
$7 \times$ _____ $= 63$

2. $21 \div 7 =$ _____
$7 \times$ _____ $= 21$

3. $7 \div 1 =$ _____
$7 \times$ _____ $= 7$

4. $42 \div 7 =$ _____
$7 \times$ _____ $= 42$

×	0	1	2	3	4	5	6	7	8	9	10
0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10
2	0	2	4	6	8	10	12	14	16	18	20
3	0	3	6	9	12	15	18	21	24	27	30
4	0	4	8	12	16	20	24	28	32	36	40
5	0	5	10	15	20	25	30	35	40	45	50
6	0	6	12	18	24	30	36	42	48	54	60
7	0	7	14	21	28	35	42	49	56	63	70
8	0	8	16	24	32	40	48	56	64	72	80
9	0	9	18	27	36	45	54	63	72	81	90
10	0	10	20	30	40	50	60	70	80	90	100

What number makes the equation true?

5. $28 \div 7 =$ _____

6. $56 \div 7 =$ _____

7. _____ $= 70 \div 7$

8. _____ $= 35 \div 7$

9. $49 \div 7 =$ _____

10. $14 \div 7 =$ _____

11. Which equations are true? Circle all the correct answers.

$42 \div 7 = 6$

$9 = 49 \div 7$

$54 \div 9 = 7$

$4 = 28 \div 7$

12. Luke reads the same number of pages of his book each day. He reads 49 pages in 1 week. How many pages does Luke read each day? Explain.

13. Li spends 35 hours each week working in her garden. She works the same number of hours each day. She is deciding if she wants to work Monday through Sunday or Monday through Friday. How many hours would she work each day in each situation? Show your work.

14. Extend Your Thinking Ms. Abbot is fillin the school supply closet. She buys 70 packs of paper. How much does she spend on paper? Explain.

Reflect

How can you describe different strategies used to recall division facts with 7?

Math is... Mindset

How did your strengths in other areas help you in math today?

Lesson 9-9

Multiply and Divide Fluently within 100

Be Curious

What do you notice?
What do you wonder?

Math is... Mindset

How can you act with your classmates to build a safe classroom culture?

Learn

At field day, students make 8 teams of 5 for a game.

How many students are playing the game?

One Way Use multiplication patterns. Multiples of 5 have a 0 or 5 in the ones place.

$8 \times 5 = ?$

×	0	1	2	3	4	5
0	0	0	0	0	0	0
1	0	1	2	3	4	5
2	0	2	4	6	8	10
3	0	3	6	9	12	15
4	0	4	8	12	16	20
5	0	5	10	15	20	25
6	0	6	12	18	24	30
7	0	7	14	21	28	35
8	0	8	16	24	32	40

$8 \times 5 = \mathbf{40}$

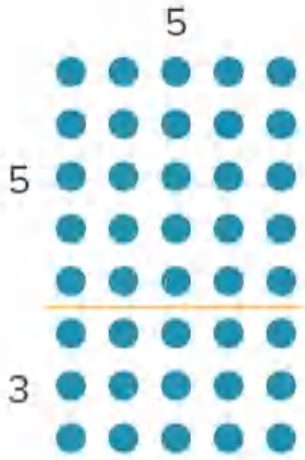
Another Way Decompose 8 and add the products of the parts.

$8 \times 5 = ?$

$5 \times 5 = \mathbf{25}$

$3 \times 5 = \mathbf{15}$

$\mathbf{25} + \mathbf{15} = 40$



$8 \times 5 = \mathbf{40}$

The same 40 students make 4 teams. How many students are on each team?

$40 \div 4 = ?$ $\quad 40 \div 4 = \mathbf{10}$

$4 \times ? = 40$ $\quad 4 \times \mathbf{10} = 40$

There are **10** students on each team.

Math is... Modeling

Is there only one correct way to represent the problem? Explain.

Any multiplication or division strategy can be used to fluently multiply and divide.

Work Together

At field day, the teachers have 4 packages of 6 ribbons. The same number of ribbons are given to each of the 8 teams. How many ribbons does each team get? Show your work.

On My Own

Name _____

What number makes the equation true?

1. $7 \times \_\_\_\_ = 42$

2. $\_\_\_\_ = 30 \div 10$

3. $6 = 48 \div \_\_\_\_$

4. $9 \times 5 = \_\_\_\_$

5. $4 = \_\_\_\_ \div 4$

6. $\_\_\_\_ \times 8 = 24$

7. $6 \times 4 = \_\_\_\_$

8. $\_\_\_\_ \div 7 = 0$

What number makes the equation true? Describe the strategy you used.

9. $9 \times 3 = ?$

10. $56 \div 7 = ?$

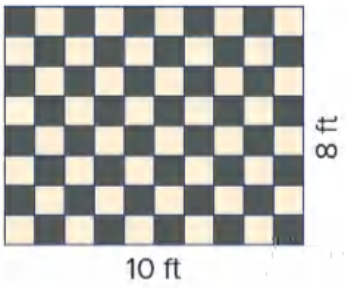
11. Lena needs to sell 35 tickets to the school play by Saturday. Her goal is to sell the same number of tickets Monday though Friday. How many tickets does Lena need to sell each day to meet her goal? Show the strategy you used.

12. How can you decompose 5×9 to find the product? Circle all the correct answers.

$5 \times 7 + 5 \times 2$ $2 \times 4 + 3 \times 5$

$2 \times 9 + 3 \times 9$ $5 \times 3 + 4 \times 6$

13. STEM Connection Malik needs to use 1 laser for every 10 square feet of a floor whe designing a museum security system. How many lasers does Malik need for the room? Explain.



14. Extend Your Thinking John needs 2 yards of fabric for each banner. John uses 16 yards of fabric to make banners for the school. He hangs the same number of banners in each of the 4 hallways. How many banners does he hang in each hallway?

Reflect

How can you explain how to use multiplication and division strategies to recall facts?

Math is... Mindset

How did you and your classmates help build a safe classroom culture?

Unit Review

Name _____

Vocabulary Review

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

decompose	dividend	divisor
fact triangle	multiplication fact table	fact family
quotient	unknown	

1. The _____ is the missing number, or the number to be solved for, in an equation. (Lesson 9-1)

2. To break a number into smaller parts is to _____ it. (Lesson 9-9)

3. A(n) _____ shows three numbers that are related through multiplication and division. (Lesson 9-1)

4. The _____ shows factors and their products. (Lesson 9-7)

5. The _____ is the answer to a division equation. (Lesson 9-1)

6. The _____ is the number that you divide by. (Lesson 9-4)

7. Facts that are related are called a _____. (Lesson 9-1)

8. The number that is being divided is the _____. (Lesson 9-4)

Review

9. A pack of 24 crayons is shared equally among 3 friends. Which equations can be used to determine the number of crayons each friend is given? Choose all that apply. (Lesson 9-1)

A. $24 \div 3 = ?$

B. $24 - 3 = ?$

C. $3 \div ? = 24$

D. $3 \times ? = 24$

10. Tammy worked 8 hours a day. During the week, she worked 40 hours. How many days did Tammy work during the week? (Lesson 9-6)

_____ days

11. Ryan has 20 stickers that he plans to share with his friends. If he gives each friend 4 stickers, how many friends will get stickers? (Lesson 9-6)

A. 16 **B.** 10

C. 5 **D.** 6

12. What number makes the equation true? (Lesson 9-2)

$18 \div$ _____ $= 9$

13. Travis brings 16 quarts of water to share at soccer practice. If there are 4 quarts in every gallon, how many gallons does Travis bring to soccer practice? (Lesson 9-6)

A. 5 **B.** 4

C. 3 **D.** 6

14. Kelly needs to buy 24 erasers. They come in bags of 6. How many bags does Kelly need to buy? (Lesson 9-5)

A. 4 **B.** 3

C. 2 **D.** 5

15. Complete the division equation. $45 \div 9 = ?$ (Lesson 9-7)

A. 4 **B.** 5

C. 6 **D.** 7

16. Kenji bought 21 books to add to his home library. The books came in sets of 7. How many sets of books did Kenji buy? (Lesson 9-8)

_____ sets

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17. Which equations can be represented by the fact triangle?

Choose all that apply. (Lesson 9-1)

A. $2 \times 7 = 14$

B. $14 - 7 = 2$

C. $14 \div 2 = 7$

D. $14 \div 7 = 2$

E. $2 \times 14 = 7$

F. $7 + 7 = 14$

G. $7 \times 2 = 14$

18. David uses 10 pennies to make an array with 2 rows. How many columns does David use to make his array? (Lesson 9-2)

A. 10 **B.** 5

C. 25 **D.** 7

19. Lydia buys packs of toys for 6 cousins. Lydia buys each cousin 1 pack. How many packs of toys does Lydia buy? (Lesson 9-4)

_____ packs

20. Kendall places 0 pieces of construction paper into 8 baskets. How many pieces of construction paper are in each basket? (Lesson 9-4)

_____ pieces

21. Greg read 60 books during the past 10 months. He read the same number of books every month. How many books did Greg read each month? (Lesson 9-3)

A. 5 **B.** 6

C. 50 **D.** 600

22. Archer spends $35 on computer games. Each game costs $5. How many computer games does Archer buy? (Lesson 9-3)

_____ computer games

23. Travis is on a road trip and drives 60 miles in one hour. How far can Travis drive in 0 hours? (Lesson 9-4)

_____ miles

Performance Task

Hiro went fishing. He cast his lure 70 feet from the boat. He reeled in about 10 feet of line with every turn of the reel, but the fish would pull the lure back out 5 feet every time.

Part A: How many times does Hiro have to reel to get the fish to the boat? Explain your answer.

Part B: How many feet would the fish pull if Hiro reeled it in with 10 turns of the reel? Explain your answer.

Reflect

How can you use multiplication to help you divide?

Unit 9

Fluency Practice

Name _____

Fluency Strategy

You can use patterns to multiply by 5.
Multiples of 5 have a 0 or a 5 in the ones place.

When 5 is multiplied by an even factor, the product has a 0 in the ones place. $5 \times 2 = 10$ $5 \times 4 = 20$

When 5 is multiplied by an odd factor, the product has a 5 in the ones place. $5 \times 7 = 35$ $5 \times 9 = 45$

1. The product of 5×6 must have a _____ in the ones place because 6 is an even number.

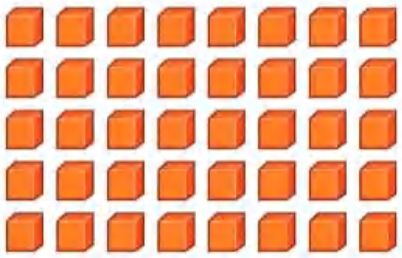
   $5 \times 6 =$ _____

Fluency Flash

Write a multiplication fact for each model.

2. 

   _____ × _____ = _____

3. 

   _____ × _____ = _____

Fluency Check

Find the product.

4. $2 \times 5 =$ _____
5. $10 \times 2 =$ _____
6. $7 \times 2 =$ _____
7. $5 \times 5 =$ _____
8. $5 \times 9 =$ _____
9. $3 \times 2 =$ _____
10. $4 \times 10 =$ _____
11. $2 \times 8 =$ _____
12. $6 \times 10 =$ _____
13. $8 \times 5 =$ _____
14. $2 \times 6 =$ _____
15. $10 \times 10 =$ _____
16. $5 \times 10 =$ _____
17. $5 \times 4 =$ _____

Fluency Talk

How can you use a pattern to help you check whether a product of 5 and another number is correct?

How do you know if a number is a product of a number and 10?

Unit 10

Use Properties and Strategies to Multiply and Divide

Focus Question

How can I use properties and strategies to multiply and divide?

IGNITE!

Name _____

Which Option Is Better?

Option 1

Earn 3 dollars each time you empty the dishwasher. The dishwasher needs to be emptied twice each week. You will have to do this chore for 5 weeks.

Option 2

Earn 5 dollars each time you fold the laundry. The laundry gets done 3 times a week. You will have to do this chore for 2 weeks.

Which option is better?
Explain your thinking in words, numbers, and/or drawings.

Lesson 10-1

Patterns with Multiples of 10

Be Curious

Which doesn't belong?

4×20 40×2

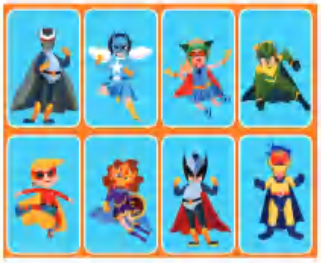
$4 \times 2 \times 10$ $2 \times 10 \times 4$

Math is... Mindset

What actions can help you achieve your day's goal?

Learn

A trading card album has 8 cards on each page. There are 60 pages full of cards.



How can you determine the total number of cards in the album?

A multiplication equation can represent the problem.

One Way Use basic facts and place value.

$60 \times 8 = c$

$60 \times 8 = 6 \text{ tens} \times 8$

$6 \times 8 = 48$

$6 \text{ tens} \times 8 = 48 \text{ tens}$

$48 \text{ tens} = 480$

$\mathbf{480} = c$

Another Way Decompose 60.

$60 \times 8 = c$

$60 \times 8 = ?$

$6 \times 10 \times 8 = ?$

$6 \times 8 \times 10 = ?$

$48 \times 10 = \mathbf{480}$

Basic facts, place-value understanding, and patterns can be used to multiply with multiples of 10.

Math is... Structure

Why do multiples of 10 always have a zero in the ones place?

Work Together

How can you determine the product of 90×5? Explain your thinking.

On My Own

MATH REPLAY | GO ONLINE

Name _____

How can you use place value to multiply?

1. 5 × 40

_____ × _____ tens = _____ tens

So, 5 × 40 = _____.

2. 6 × 50

_____ × _____ tens = _____ tens

So, 6 × 50 = _____.

3. 7 × 90

_____ × _____ tens = _____ tens

So, 7 × 90 = _____.

4. 8 × 30

_____ × _____ tens = _____ tens

So, 8 × 30 = _____.

5. Nia uses 50 blocks to create a sculpture. Use place value to find how many bloc s she uses to create 7 sculptures.

How can you decompose the multiple of 10 to multiply?

6. 4 × 90

4 × ___ × 10

___ × 10 = ___

7. 3 × 70

3 × ___ × 10

___ × 10 = ___

8. 6 × 40

6 × ___ × 10

___ × 10 = ___

9. 8 × 50

8 × ___ × 10

___ × 10 = ___

10. How can you use basic facts and place value to show how to find $a = 7 \times 40$? Then solve for a.

11. There are 30 markers in each package. Jacob buys 8 packages. How many markers does he buy?

12. STEM Connection Hiro tracks turtles for 3 nights. He sees the same number of turtles each night. If he saw 150 turtles, how many did he see each night? Explain your answer.

13. Extend Your Thinking Write two multiplication equations that use a multiple of 10 and have a product of 180.

Reflect

How can you find the product of a 1-digit number and a multiple of 10?

Math is... Mindset

What actions helped you achieve your day's goal?

More Multiplication Patterns

Be Curious

Is it always true?

Asha says the product of two even numbers is always even and the product of two odd numbers is always odd.

×	0	1	2	3	4	5	6	7	8	9	10
0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10
2	0	2	4	6	8	10	12	14	16	18	20
3	0	3	6	9	12	15	18	21	24	27	30
4	0	4	8	12	16	20	24	28	32	36	40
5	0	5	10	15	20	25	30	35	40	45	50
6	0	6	12	18	24	30	36	42	48	54	60
7	0	7	14	21	28	35	42	49	56	63	70
8	0	8	16	24	32	40	48	56	64	72	80
9	0	9	18	27	36	45	54	63	72	81	90
10	0	10	20	30	40	50	60	70	80	90	100

Math is... Mindset

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

Learn

What patterns do you see in the multiplication fact table?

×	0	1	2	3	4
0	0	0	0	0	0
1	0	1	2	3	4
2	0	2	4	6	8
3	0	3	6	9	12
4	0	4	8	12	16

One half of the multiplication fact table mirrors the other half of the multiplication fact table.

×	0	1	2	3	4
0	0	0	0	0	0
1	0	1	2	3	4
2	0	2	4	6	8
3	0	3	6	9	12
4	0	4	8	12	16

$4 \times 3 = 12$ $3 \times 4 = 12$

The order of the factors does not change the product. This is a property of multiplication.

Products of 4s facts are double the products of 2s facts.

×	0	1	2	3	4
0	0	0	0	0	0
1	0	1	2	3	4
2	0	2	4	6	8
3	0	3	6	9	12
4	0	4	8	12	16

$4 \times 3 = 2 \times 3 + 2 \times 3$

You can decompose 4s facts into two 2s facts using a property of multiplication.

You can find patterns with factors and products in the multiplication fact table.

Some of these patterns can be explained by properties of multiplication.

Math is... Explaining

What patterns do you see in the table that involve doubling? Explain.

Work Together

Why do the products with a factor of 3 follow a pattern that is even and odd?

On My Own

MATH REPLAY | GO ONLINE

Name _____

1. What patterns do you see with the multiples of 1 in the multiplication fact table?

×	0	1	2	3	4	5	6
0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6
2	0	2	4	6	8	10	12
3	0	3	6	9	12	15	18
4	0	4	8	12	16	20	24
5	0	5	10	15	20	25	30
6	0	6	12	18	24	30	36

2. Keller notices that the numbers in the 2s column are the same as the numbers in the 2s row. How can you explain this pattern?

3. Use the multiplication fact table. What pattern do you notice with the multiples of 6?

4. Use the multiplication fact table. What pattern do you notice with the multiples of 5?

5. How do multiples of 10 relate to multiples of 5? Explain.

6. **Error Analysis** Eva says that the product of 8 × 6 is 49. Do you agree? How can you use patterns to explain your thinking?

7. Use the multiplication fact table. What patterns do you see with the products of 0?

8. How can you use patterns to predict the product?

   a. Circle the multiplication facts that will have an even product.

4 × 5	3 × 6	1 × 9	2 × 4
5 × 7	5 × 2	7 × 8	10 × 6

   b. Explain why the products are even.

9. Are the products of 6s facts double the products of 2s facts? Explain.

Fill in the blank with *always*, *sometimes*, or *never*.

10. Products of 6s facts are _____ double the products of 3s facts.
11. Products of 7s facts are _____ even.
12. Products of 4s facts are _____ odd.
13. **Extend Your Thinking** How can you explain the pattern shown?

×	0	1	2	3	4	5	6
0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6
2	0	2	4	6	8	10	12
3	0	3	6	9	12	15	18
4	0	4	8	12	16	20	24
5	0	5	10	15	20	25	30
6	0	6	12	18	24	30	36

Reflect

How can knowing whether a product will be even or odd help you?

Math is... Mindset

What were some ways you built a positive relationship with classmates today?

Lesson 10-3

Understand the Associative Property

Be Curious

What do you notice?
What do you wonder?

Math is... Mindset

What makes you feel confident about your work today?

Learn

Five basketball players each make 3 baskets.
Each of the baskets is worth 2 points.

How many points do the players score?

You can write an equation to solve. $5 \times 3 \times 2 = ?$

One Way

Multiply the product of the first two factors by the last factor.

$5 \times 3 \times 2 = ?$

$15 \times 2 = \mathbf{30}$

Another Way

Multiply the first factor by the product of the second two factors.

$5 \times 3 \times 2 = ?$

$5 \times 6 = \mathbf{30}$

The products are the same.

You can group factors in different ways. Grouping the factors in different ways does not change the product. This is a property of multiplication.

Math is... Explaining

What might help you choose how to group the factors?

Work Together

Kate ran 2 laps around a track 2 days a week. She did this for 3 weeks in a row. How can you determine the number of laps she ran in different ways?

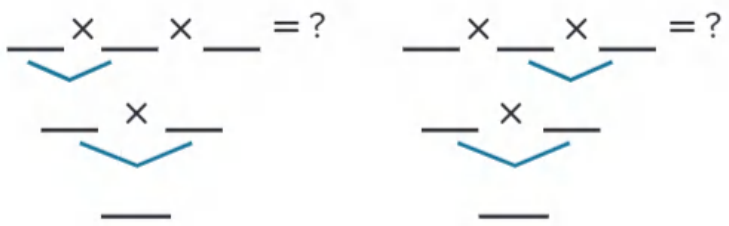
On My Own

MATH REPLAY | GO ONLINE

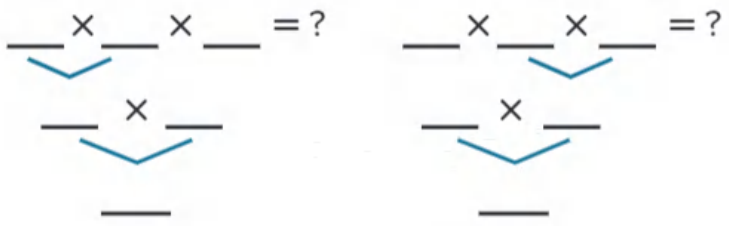
Name _____

How can you solve the equation two ways?

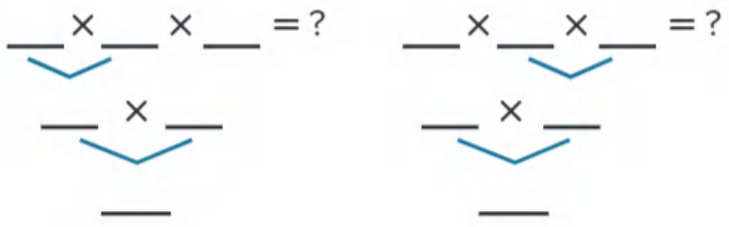
1. $4 \times 3 \times 2 = ?$



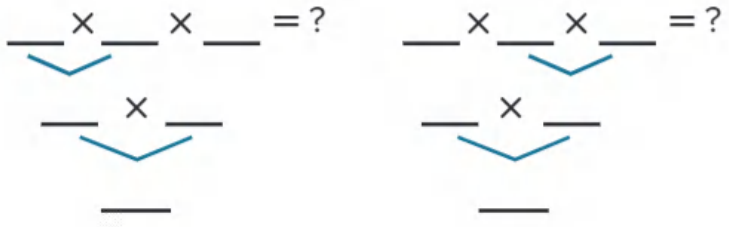
2. $3 \times 3 \times 4 = ?$



3. $2 \times 3 \times 3 = ?$



4. $5 \times 2 \times 3 = ?$



How can you solve the problem two ways?

5. Mrs. Dean makes 2 sandwiches for her 3 children 4 days a week. How many sandwiches does Mrs. Dean make each week?

6. Jose paints 2 paintings in 1 day each week. How many paintings does he paint in 7 weeks?

7. Candice works 3 hours in 1 day. She works 3 days each week. How many hours does she work in 6 weeks? in 9 weeks?

8. **Error Analysis** Korena's work is shown. Do you agree with her solution? Explain.

$5 \times 2 \times 4 = ?$

$5 \times 2 = 10 \quad 2 \times 4 = 8$

$10 \times 8 = 80$

$5 \times 2 \times 4 = 80$

9. **Extend Your Thinking** You can group the factors $4 \times 7 \times 10$ two different ways. Explain which is more efficient for y

Reflect

Why might you group the factors in different ways when multiplying three numbers?

Math is... Mindset

What made you feel confident about your work today?

Unit 10

Multiplication Equations

Name _____

Four students showed their thinking about other ways to show:
$7 \times 9 \times 10 = ?$

Decide if each student's thinking provides a correct way to think about the product. You do not need to calculate the actual product.

Circle your choice.	Explain why you chose Yes or No.
$7 \times 9 \times 10 = ?$ **1.** Student A *I can use 7×90 as a way to think about the product.* *Do you agree?* **Yes** **No**	
$7 \times 9 \times 10 = ?$ **2.** Student B *I can use $7 \times 9 + 7 \times 10$ as a way to think about the product.* *Do you agree?* **Yes** **No**	

Four students showed their thinking about other ways to show:
$7 \times 9 \times 10 = ?$

Decide if each student's thinking provides a correct way to think about the product. You do not need to calculate the actual product.

Circle your choice.	Explain why you chose Yes or No.
$7 \times 9 \times 10 = ?$ **3.** Student C *I can use 63 × 10 as a way to think about the product.* *Do you agree?* **Yes** **No**	
$7 \times 9 \times 10 = ?$ **4.** Student D *I can use 70 × 9 as a way to think about the product.* *Do you agree?* **Yes** **No**	

Reflect On Your Learning

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

Lesson 10-4

Two-Step Problems Involving Multiplication and Division

Be Curious

What math do you see in this problem?

Mason brings juice boxes to soccer practice. He needs more than one juice box for each of the players. The juice boxes are in packages.

Math is... Mindset

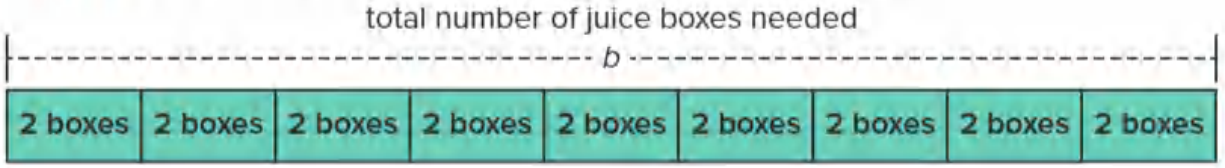
How do you know that you are making good decisions?

Learn

Mason brings juice boxes to soccer practice. He needs 2 juice boxes for each of the 9 players. The juice boxes are in packages of 6.

How many packages of juice boxes does Mason need to bring?

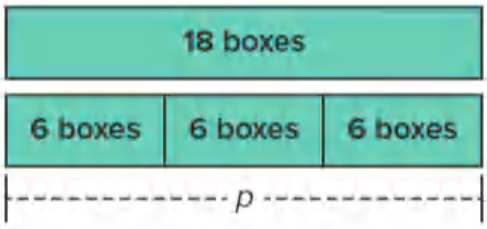
Step 1 Find the total number of juice boxes he needs.



$9 \times 2 = b$

$\mathbf{18} = b$

Step 2 Then find the number of packages.



Mason needs to bring 3 packages of juice boxes.

$18 \div 6 = p$

$\mathbf{3} = p$

You can represent a two-step problem with more than one multiplication or division equation. Use a letter to represent the unknown in each equation.

Math is... Exploring

How can you use the bar diagram to answer the question?

Work Together

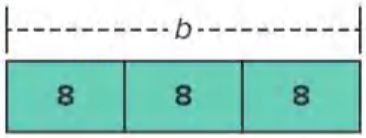
Last week, Mason brought 28 watermelon slices to soccer practice. Each of the 7 players got the same number of slices. This week, Mason doubles the number of slices for each player. Write equations with a letter for the unknown to find the number of watermelon slices he gives each player this week.

On My Own

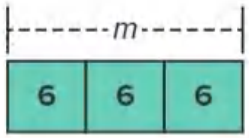
Name _____

What equation represents the bar diagram?

1.



2.



How can you use equations with letters for the unknowns to solve the problem?

3. Jerry's mother brings orange slices to dance class. She cut each orange into 4 slices. There are 2 slices for each of the 8 dancers. How many oranges did his mother cut?

4. Connie's photo album has 6 pages and each page has 6 photos. She decides to put all the photos already in her album on just 4 pages. She puts the same number of photos on all 4 pages. How many photos will she put on each page?

5. How do you know when to multiply and when to divide to solve a real-world problem? Explain your reasoning.

How can you use equations with letters for the unknowns to solve the problem?

6. Lana brings home 48 shells from the beach. She divides the shells into 6 equal groups and keeps 1 group for herself. Then she gives half of her group to her brother. How many shells does Lana give to her brother?

7. **STEM Connection** Hiro explored 12 shipwrecks with 4 robots. Each robot explored the same number of shipwrecks. One of the robots brought back 2 items from each wreck it explored. How many objects did it bring back?

8. Francine uses 24 yards of fabric to make 8 blankets. She uses the same amount of fabric for each blanket. How many yards of fabric does she need to make 4 blankets?

9. Kyle buys 9 spools of ribbon. Each spool has 4 yards of ribbon on it. If she uses 6 yards of ribbon per bow, how many bows can she make?

10. **Extend Your Thinking** Mrs. Tyler buys boxes of pencils. She gives 5 pencils to each student. 8 students get pencils. How many boxes could she have bought and how many pencils could be in each box?

Reflect

How can you solve a two-step word problem involving multiplication and division?

Math is... Mindset

How do you know that you made good decisions today?

Solve Two-Step Problems

Be Curious

What is the question?

Paulo needs to buy children's tickets and an adult ticket for a family trolley ride.

Math is... Mindset

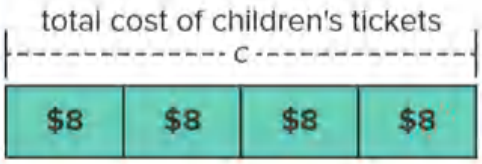
How do you show others you respect their ideas?

Learn

Paulo needs to buy 4 children's tickets and 1 adult ticket for a family trolley ride.

How much money will he spend?

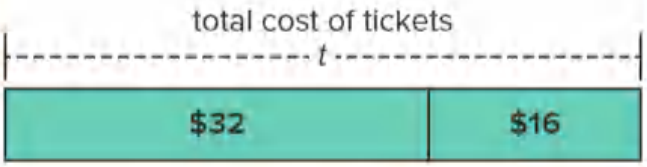
Step 1 Find the total cost of the children's tickets.



$4 \times 8 = c$

$\mathbf{32} = c$

Step 2 Then find the total amount they spend.



$32 + 16 = t$

$\mathbf{48} = t$

Paulo will spend $48.

You can represent a two-step problem with more than one equation. You can use a letter to represent the unknown in each equation.

Math is... Choosing Tools

Does the first bar diagram represent the solution to the problem? Explain.

Work Together

Martin has a goal to sell 42 shirts for a school fundraiser. He has already sold 12 shirts. He has 5 weeks to sell the remaining shirts. Martin sells the same number of shirts each week. How many shirts does he need to sell each week to meet his goal?

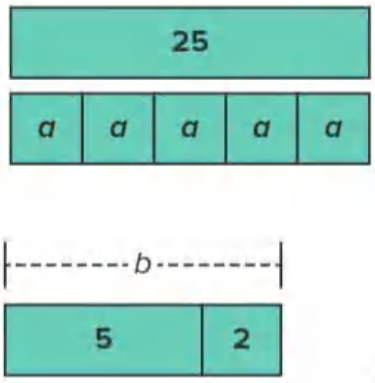
On My Own

MATH REPLAY | GO ONLINE

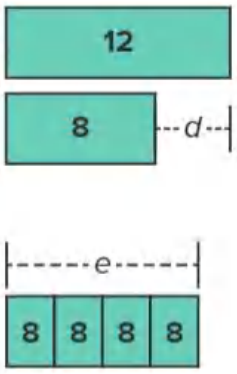
Name _____

What equation represents the bar diagram?

1.



2.



How can you use equations with letters for the unknowns to solve the problem?

3. All 5 people in Marcela's family order a sandwich and a drink. The total cost of the drinks is $9. How much does Marcela's family pay for lunch?

4. The garden center sells plants in packs of 6. Felix buys 9 packs and 16 individual plants. How many plants does he buy in all?

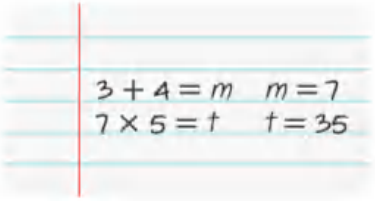
5. Tiffany shares 28 cherries equally among 4 friends. Then she gives each friend 7 additional pieces of fruit. How many pieces of fruit does each friend receive?

6. How do you choose what the letter in your equation represents?

7. At recess, 34 children lined up to play volleyball. Then 4 children decided to play basketball instead. The rest of the children made teams of 6 people. How many teams were there? Show your work.

8. Nathan had 8 strawberries. His brother had 12 strawberries. He and his brother shared them equally. How many strawberries did Nathan eat? Show your work.

9. **Error Analysis** Peter works for 3 hours each day for 5 days in a week. Then he works 4 hours on another day. His work shows how he calculates his total work hours. How can you help him understand his mistake? Explain.



10. **Extend Your Thinking** Is the order in which you complete the steps to solve a two-step word problem important? Explain.

Reflect

How can you solve a two-step word problem involving any of the four operations?

Math is... Mindset

How did you show others you respect their ideas?

Lesson 10-6

Explain the Reasonableness of a Solution

Be Curious

What do you notice?
What do you wonder?

Math is... Mindset

What behaviors help you be successful?

Learn

There are 8 cups of colored pencils in Tate's classroom. There are 9 pencils in each cup. Tate needs to give 29 colored pencils to another class. He thinks there will be 15 pencils left in his classroom.

How can you determine whether his answer is reasonable?

Math is... Thinking

How could you organize the information in this problem?

Step 1 You can use mental math.

$$8 \times 9 = p$$

$$72 = p$$

Tate's classroom has 72 colored pencils.

Step 2 You can estimate.

$$72 - 29 = t$$

$$70 - 30 = t$$

$$40 = t$$

Tate's classroom will have about 40 pencils left.

Estimate: 40 Tate's answer: 15

Tate's answer is not reasonable because it is not close to the estimate.

You can use mental computation and estimation to determine the reasonableness of an answer to a two-step problem.

Work Together

Mr. Kim buys 5 adventure books for his class. Then he buys a mystery book. Is it reasonable to say he spent $53? Explain why or why not.

BOOKS

Mystery	$8
Science	$7
Adventure	$9

On My Own

MATH REPLAY | GO ONLINE

Name _____

How can you estimate to determine the reasonableness of an answer? Circle the reasonable answer.

1. At the train station, Matt buys breakfast for $4 and 3 weekly train passes for $9 each. How much does Matt spend at the station?

   A. $21 **B.** $31

   C. $18 **D.** $55

2. Ava shares 42 stickers evenly among 6 friends. Then she gives each friend 4 more stickers. How many stickers does each friend receive?

   A. 11 stickers **B.** 25 stickers

   C. 5 stickers **D.** 33 stickers

Is the answer reasonable? Show your thinking.

3. Maria walks 3 minutes to the bus stop. Then she rides the bus 8 minutes to get to school. She does this 5 days per week. She says she spends 55 minutes traveling to school each week.

4. Marcus spends $36 on sunflowers and buys 4 zinnia plants for his garden. Marcus says he spent $98 on plants.

Solve. Then use an estimate to show that your answer is reasonable.

5. John has 7 packages of pencils. There are 9 pencils in each package. He donates 49 pencils to the school supply closet. How many pencils does John have left?

6 Evelyn has 80 beads. She uses 24 for a necklace. She wants to use the rest to make 8 bracelets with the same number of beads on each. How many beads will each bracelet have?

7. **STEM Connection** Hiro designs a boat to carry research supplies. His boat carries 6 crates filled with 9 boxes each. It also carries 5 boxes of snacks. He thinks the boat carries 59 boxes. Is his answer reasonable?

8. **Extend Your Thinking** Kara has a box of 30 crackers. She eats 3 and wants to give the rest to 5 friends to share equally. She estimates there are enough for each friend to get 5 crackers. Explain Kara's estimate.

Reflect

How can you explain the reasonableness of a solution?

Math is... Mindset

What behaviors helped you be successful today?

Unit Review

Name _____

Vocabulary Review

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

bar diagram	product
pattern	multiple
factor	unknown

1. A missing number, or the number to be solved for, is called the _____. (Lesson 10-4)

2. A(n) _____ is a number that is multiplied by another number. (Lesson 10-2)

3. A(n) _____ is the product of that number and any whole number. (Lesson 10-1)

4. The _____ is the answer to a multiplication equation. (Lesson 10-2)

5. A(n) _____ is an arrangement or sequence of numbers according to a rule or structure. (Lesson 10-2)

6. A representation that shows the relationship between the numbers in a problem and the unknown is a(n) _____. (Lesson 10-4)

Review

7. Jenna counts 7 cars in the parking lot, and each car has 4 tires. She multiplies 7×4 to find the total number of tires in the parking lot. Which is another way she could have found the total number of tires? (Lesson 10-2)

A. 7×2

B. 7×7

C. 4×4

D. 4×7

8. Complete the equation. (Lesson 10-3)

$$2 \times 5 \times 7 = b$$

$$\_\_\_\_\_ \times 7 = b$$

$$\_\_\_\_\_ = b$$

9. Which of the following shows a correct way to decompose 60×5? (Lesson 10-1)

A. $10 \times 6 \times 5$

B. $10 \times 6 + 5$

C. $10 + 6 \times 5$

D. $10 + 6 + 5$

10. Amanda buys 24 apples. She divides them equally among 6 bags. She gives away 2 bags of apples. How many apples does she give away? (Lesson 10-4)

11. Shaina is shopping for school clothes. She wants to buy 5 t-shirts for $6 each and a pair of shoes for $20. She thinks that she will spend about $30. Is this answer reasonable? (Lesson 10-6)

A. Yes, it is reasonable because $5 + 6 = 11$, which is about 10 and $10 + 20 = 30$.

B. No, it is not reasonable because $5 + 6 = 11$, which is about 10 and $20 - 10 = 10$.

C. No, it is not reasonable because $5 \times 6 = 30$ and $30 + 20 = 50$.

D. No, it is not reasonable because $5 \times 6 = 30$, and 30×20 is more than 30.

MATH REPLAY | GO ONLINE

12. Explain how knowing 2×9 can help find 4×9. (Lesson 10-2)

13. Complete the equation. (Lesson 10-3)

$10 \times 4 \times 2 = a$

$\_\_\_\_ \times 8 = a$

$\_\_\_\_ = a$

14. Fill in the correct missing numbers. (Lesson 10-1)

$6 \times 8 = \_\_\_\_$ $6 \times 80 = \_\_\_\_$

$9 \times 3 = \_\_\_\_$ $9 \times 30 = \_\_\_\_$

$7 \times 4 = \_\_\_\_$ $7 \times 40 = \_\_\_\_$

15. Denise is organizing her colored pencils for art class. She has 5 packs of pencils with 8 pencils in each pack. She puts the colored pencils in groups of 4 pencils. How many groups of pencils can Denise make? (Lesson 10-4)

16. Look at the restaurant menu.

Food Item	Cost
Hot Dog	$2
Side Salad	$4
Chicken Tenders	$5
Water	$1

Which statements about the costs of food are true? Choose all that are correct. (Lesson 10-5)

A. Buying 2 orders of chicken tenders and 1 hot dog would cost $7.

B. If you pay for 2 side salads with $10, you will get $2 in change.

C. Three hot dogs cost more than 2 side salads.

D. $6 would be enough to buy 2 hot dogs and 2 waters.

17. What pattern do you see in the products of the 7s facts? Write *even, odd,* or *even and odd.* (Lesson 10-2)

The products of the 7s facts are _____.

Performance Task

Hiro plans to purchase some diving equipment for when he can work in the ocean. He will need batteries for his dive computer, mouth pieces for his regulator, and hoods for his wet suit.

Equipment	Cost
batteries	$4
mouth pieces	$5
hoods for wet suit	$7

Part A: If Hiro buys 2 of each piece of equipment, how much will he spend? Show your work.

Part B: If Hiro buys 3 mouth pieces and then purchases a mask for $24, how much would he spend?

Part C: Hiro decided to buy multiples of one kind of equipment. He places an order and then decides he needs more. The first order was $28, and the second order was $14. What piece of equipment did he buy and how many? Explain how you found your answer.

Reflect

What are some different strategies you can use to make it easier to multiply?

Unit 10

Fluency Practice

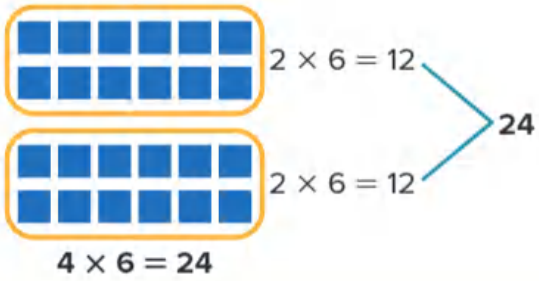
Name _____

Fluency Strategy

You can decompose 4s facts into two 2s facts to multiply.

Find the product of of the 2s facts.

Then double the product.



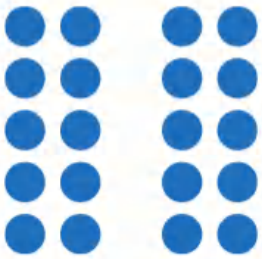
1. $4 \times 9 = 2 \times$ _____ $+ 2 \times$ _____

   $4 \times 9 =$ _____ $+$ _____

   $4 \times 9 =$ _____

Fluency Flash

How can you write a 2s fact that represents one array and a 4s fact that represents both arrays?

2. 

   _____ $\times 2 =$ _____

   _____ $\times 4 =$ _____

3. 

   $2 \times$ _____ $=$ _____

   $4 \times$ _____ $=$ _____

Fluency Check

What is the product?

4. $4 \times 6 =$ _____
5. $9 \times 4 =$ _____
6. $10 \times 3 =$ _____
7. $5 \times 6 =$ _____
8. $7 \times 4 =$ _____
9. $7 \times 10 =$ _____
10. $10 \times 8 =$ _____
11. $4 \times 8 =$ _____
12. $5 \times 3 =$ _____
13. $4 \times 3 =$ _____
14. $5 \times 4 =$ _____
15. $2 \times 10 =$ _____
16. $9 \times 5 =$ _____
17. $2 \times 4 =$ _____

Fluency Talk

How can you use doubling to multiply by 4?

What pattern can help you multiply by 5?

Perimeter

Focus Question

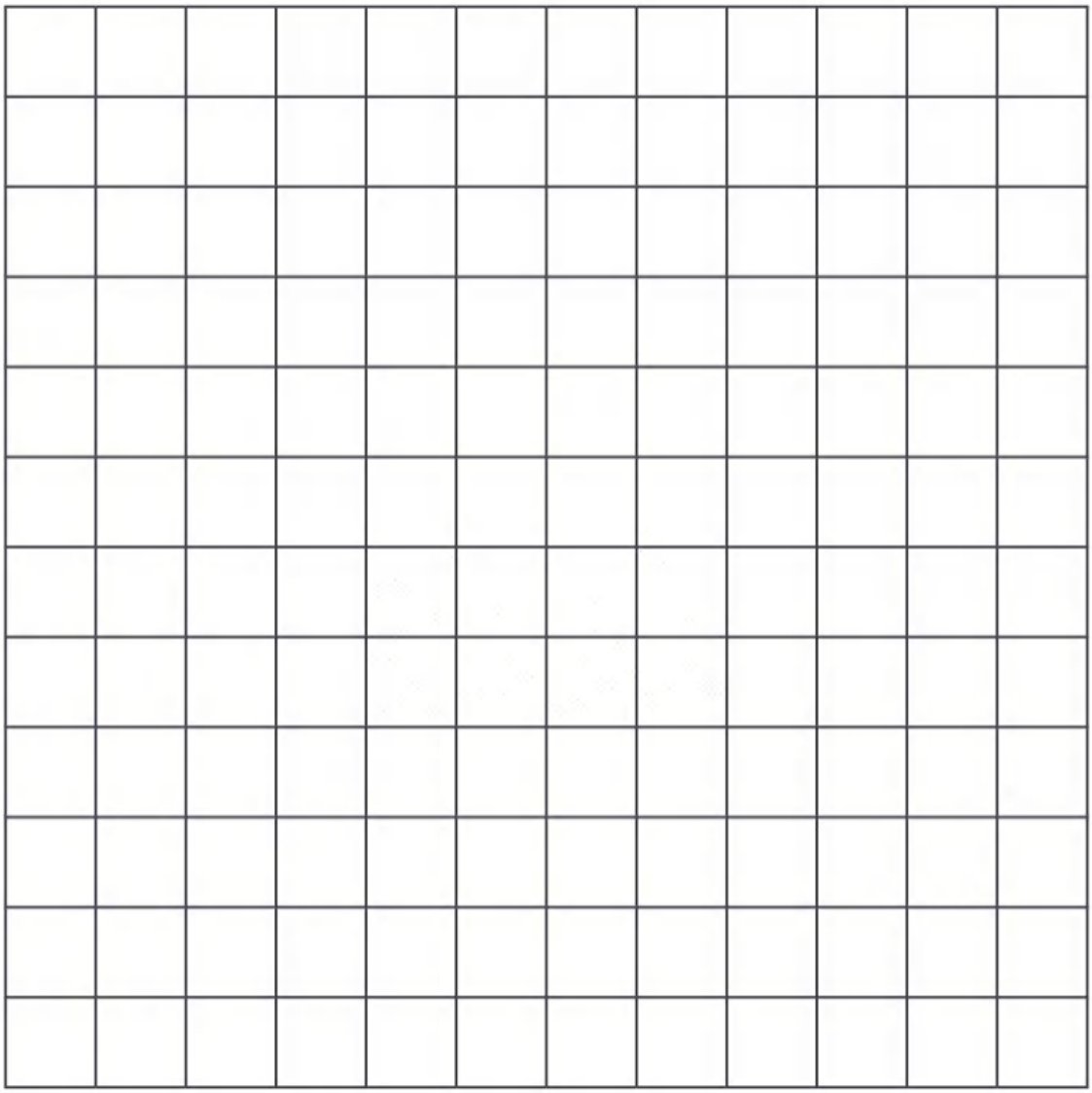
How can I solve perimeter problems?

IGNITE!

Name _____

Rectangles: The "Ins" and the "Outs"

Listen to your teacher. Draw rectangles.



Key

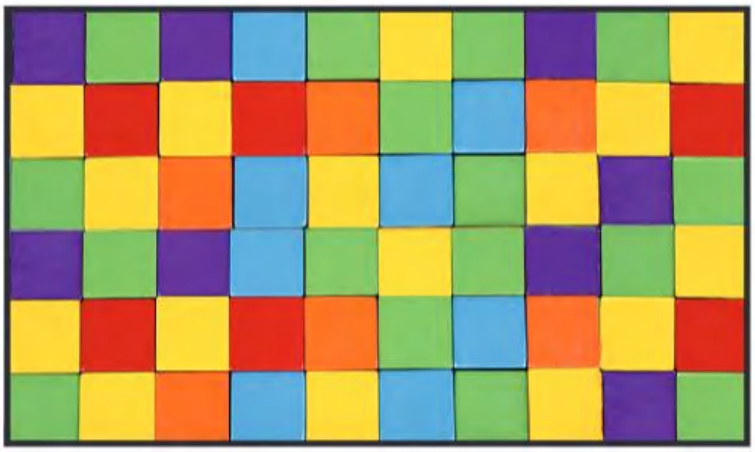
1 grid square, or 1 square unit 

1 edge segment, or 1 unit

Understand Perimeter

Be Curious

What do you notice?
What do you wonder?

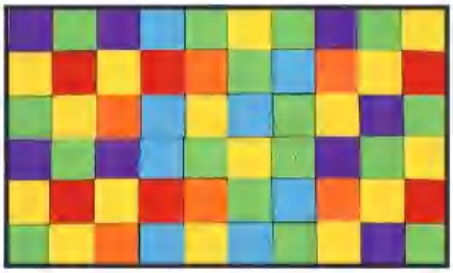


Math is... Mindset

How can different ideas and viewpoints help you learn better?

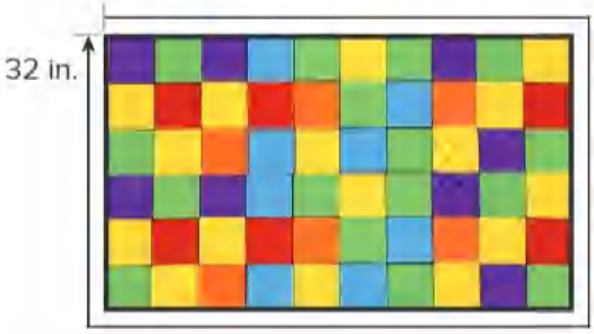
Learn

Alyssa creates a rectangle with square-inch tiles. She traces around the edge of the rectangle.



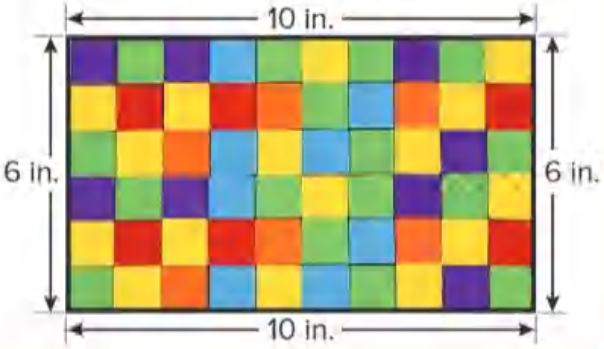
What is the distance around the rectangle?

One Way The side length of each tile is 1 inch. Count the number of inches around the rectangle.



Another Way Find the length of each side of the rectangle. Then add them together.

$10 + 6 + 10 + 6 = 32$



The distance around a figure is called the **perimeter**.

The perimeter of the figure is 32 inches.

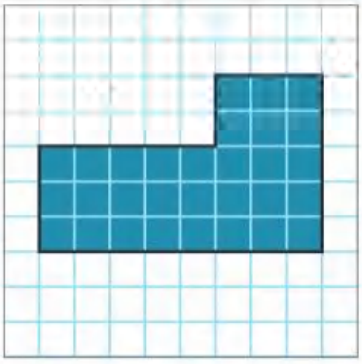
The perimeter is the sum of the side lengths of a figure.

Math is... Explaining

How is the perimeter of a rectangle different from the area of a rectangle?

Work Together

Each square on the grid is a square centimeter. How can you find the perimeter of the figure?

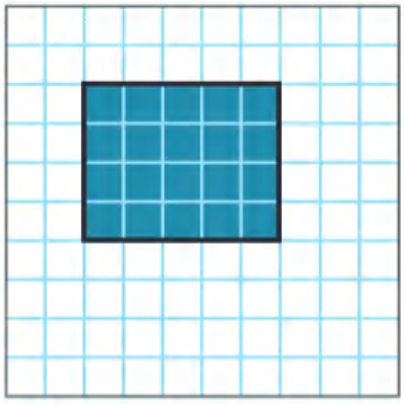


On My Own

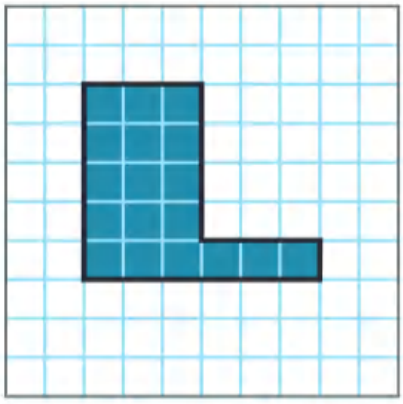
MATH REPLAY | GO ONLINE

Name _____

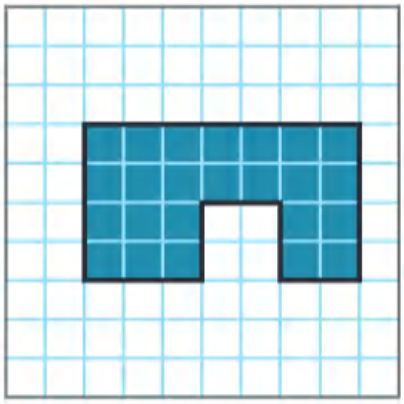
What is the perimeter of the figure?

1. 

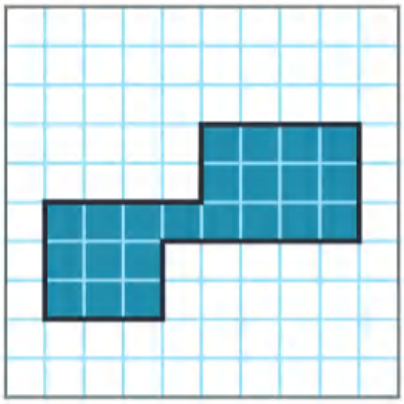
_____ units

2. 

_____ units

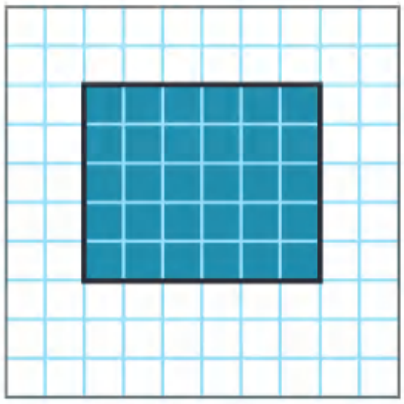
3. 

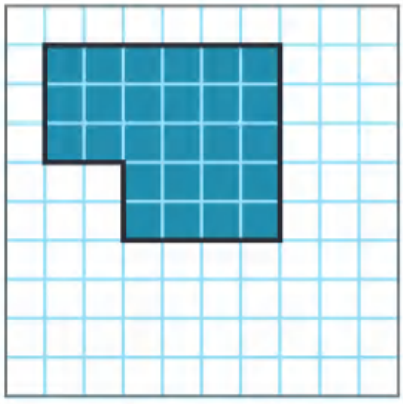
_____ units

4. 

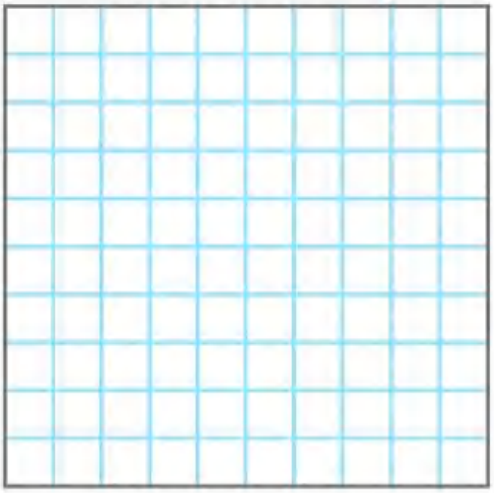
_____ units

What equation can you write to represent the perimeter?

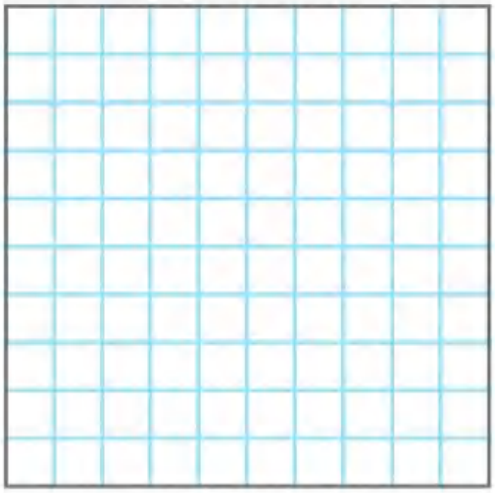
5. 

6. 

7. Jose drew a rectangle that was 7 units long and 5 units wide. Draw the rectangle on the grid. What is the perimeter?



8. Kevin drew a square with side lengths of 4 units. Draw the square on the grid. What is the perimeter?



9. **STEM Connection** Finn needs to place a fence around a construction site. How can you explain whether he should find the area or perimeter?

10. **Extend Your Thinking** Jayda is building a frame for her picture and hanging it on the wall. How might she use area and perimeter to help her complete the project?

Reflect

How can you explain perimeter and how to find it?

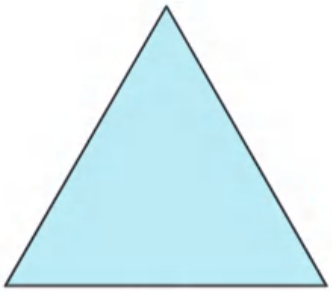
Math is... Mindset

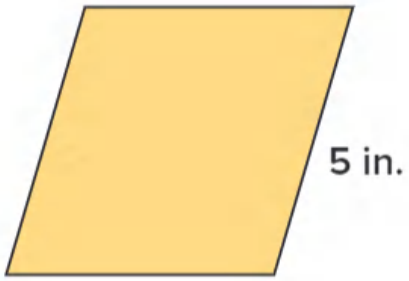
How did different ideas and viewpoints help you learn better?

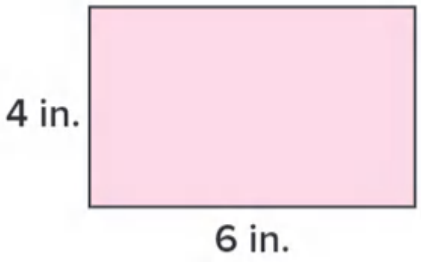
Determine Perimeter of Figures

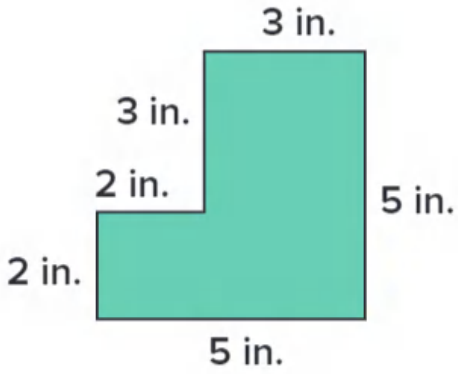
Be Curious

Which doesn't belong?









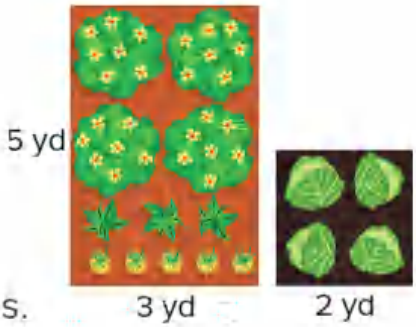
Math is... Mindset

What helps you understand your feelings?

Learn

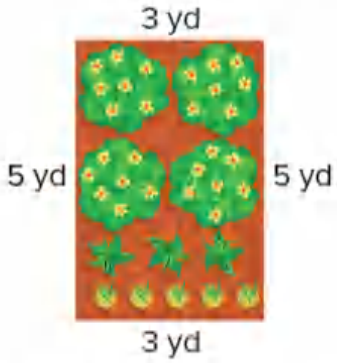
Sam wants to add a fence around his gardens.

How can Sam determine the number of yards of fencing he needs for each garden?



You can find the perimeter of each garden to determine the number of feet of fencing Sam needs.

The opposite sides of a rectangle are equal lengths.

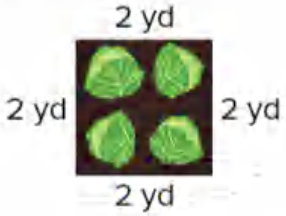


$3 + 5 + 3 + 5 = 16$

Add all the side lengths.

The perimeter is 16 yards.

All side lengths of a square are equal.



$2 + 2 + 2 + 2 = 8$

$4 \times 2 = 8$

Add all the side lengths or multiply the side length by 4.

The perimeter is 8 yards.

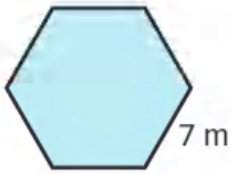
You can determine the perimeter of a figure using different strategies.

Math is... Connections

Why can you use addition or multiplication to find the perimeter of a square?

Work Together

All sides of the hexagon are the same length. How can you find the perimeter of the hexagon?



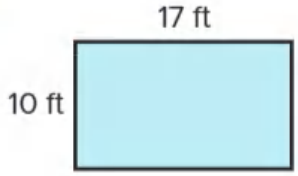
On My Own

MATH REPLAY | GO ONLINE

Name _____

What is the perimeter of the figure? Complete the equation.

1.



_____ + _____ + _____ + _____ = _____

_____ feet

2.

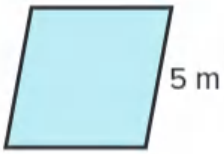
_____ + _____ + _____ + _____ + _____ = _____

_____ × _____ = _____

_____ inches

What is the perimeter of the figure? Include the unit.

3.



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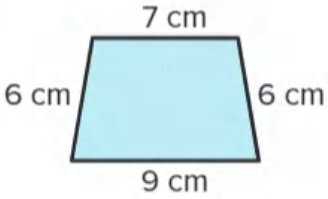
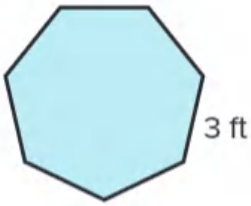


5.



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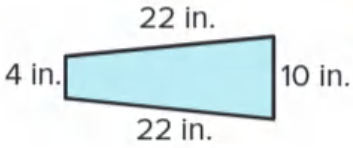

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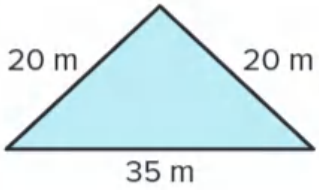

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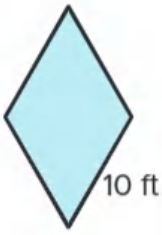
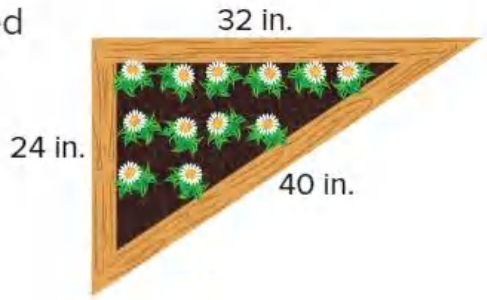
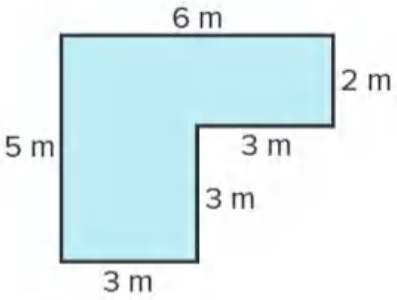


9. How can you determine the perimeter of a rectangle that is 3 cm wide and 5 cm long in two different way ? Which strategy do you think is more efficien

10. Hannah put a border around her flower bed. How many inches of border did she use? Write an equation to show your work.



11. STEM Connection Sam drafts a plan for a room as shown. How can he determine the perimeter of the room?



12. Extend Your Thinking Jamal's bedroom is in the shape of a rectangle. The perimeter of his room is 40 feet. What could be reasonable lengths and widths of Jamal's bedroom? Explain your answer.

Reflect

What different strategies can you use to find the perimeter of a figure?

Math is... Mindset

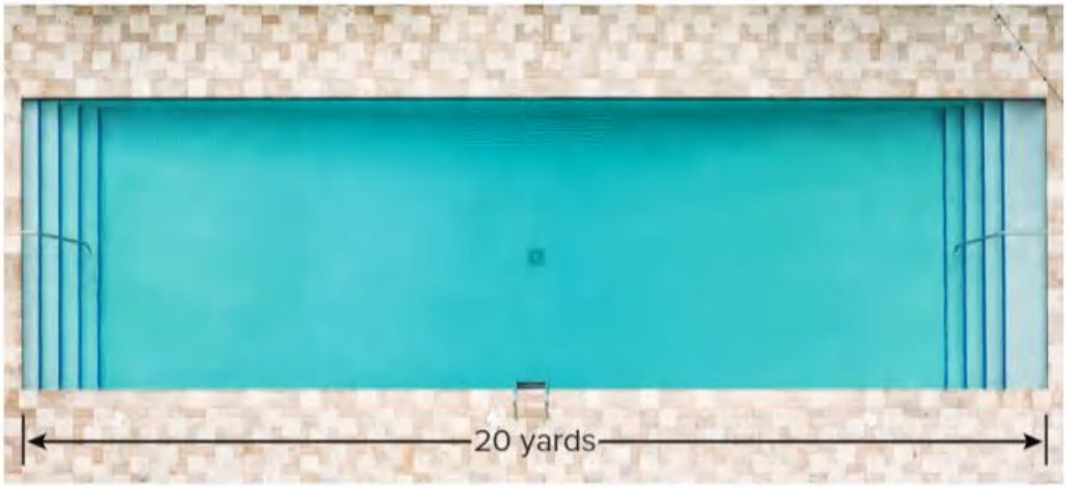
What helped you understand your feelings today?

Lesson 11-3

Determine an Unknown Side Length

Be Curious

What do you notice?
What do you wonder?



Math is... Mindset

What helps you work well in a team?

Learn

The plan for a pool deck shows most of the side lengths of the deck.

How can you determine the unknown side length?

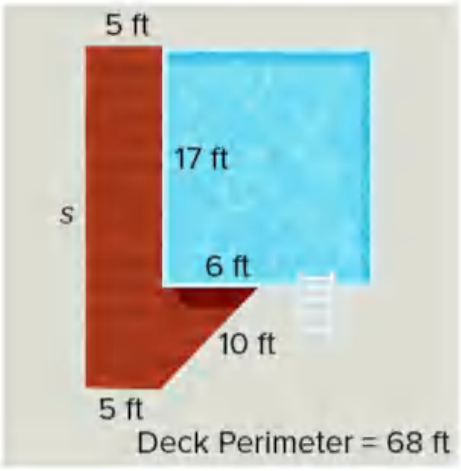
Math is... Thinking

How does the shape of the deck affect your strategy?

You can use the perimeter to find the unknown side length.

Write an equation that represents the perimeter and include the unknown.

$$68 = 5 + 17 + 6 + 10 + 5 + s$$



Add the side lengths you know.

Then subtract the sum of the side lengths from the perimeter.

$$68 = 5 + 17 + 6 + 10 + 5 + s$$

$$43$$

$$68 - 43 = s$$

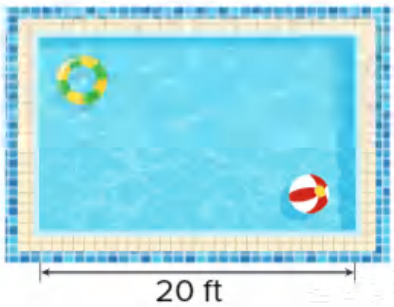
$$25 = s$$

The unknown side length is 25 feet.

You can determine an unknown side length by subtracting the sum of the known side lengths from the perimeter.

Work Together

The pool shown has a perimeter of 64 feet. How can you determine the unknown side length?



On My Own

Name _____

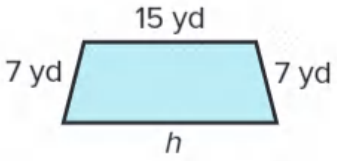
How can you find the unknown side length of the figure?

1. The perimeter is 46 yards.

$46 = \_\_\_\_ + \_\_\_\_ + \_\_\_\_ + h$

$46 = \_\_\_\_ + h$

$46 - \_\_\_\_ = h$



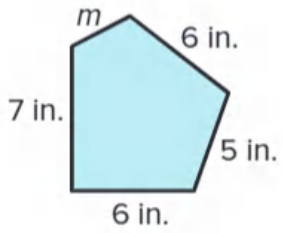
The unknown side length is _____ yards.

2. The perimeter is 27 inches.

$27 = \_\_\_\_\_$

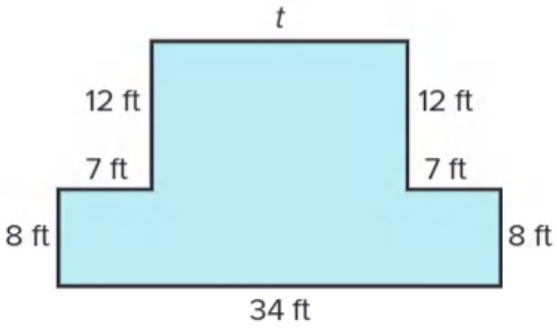
$27 = \_\_\_\_ + \_\_\_\_$

$27 - \_\_\_\_ = \_\_\_\_$



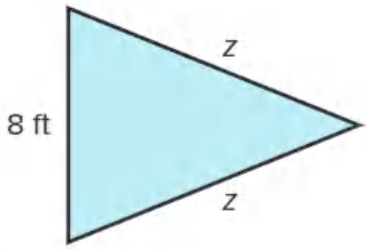
The unknown side length is _____ inches.

3. The perimeter is 108 feet.



The unknown side length is _____ _____.

4. A triangular flag has 2 sides of equal length The perimeter of the flag is 28 feet. What ar the unknown lengths?



5. Leo's painting is in the shape of a rectangle. Two sides are 8 inches long. The perimeter of the painting is 20 inches. What is the length of the other two sides? Show your thinking.

6. **Error Analysis** Margo has a square rug with a perimeter of 32 feet. She says she does not have enough information to find the side lengths of the rug. How can you help Margo understand how to find the side length ?

7. **Extend Your Thinking** Bryan draws a rectangle and a square. One side of the rectangle is 2 inches. Another side is twice as long. The rectangle and the square have the same perimeter. What are the side lengths of the square? Explain.

Reflect

How can you explain how to find an unknown side length if the perimeter is known?

Math is... Mindset

What helped you work well in a team today?

Lesson 11-4

Solve Problems Involving Area and Perimeter

Be Curious

Is it always true?

Two rectangles with the same perimeters always have the same areas.

Math is... Mindset

What helps you make sense of a situation?

Learn

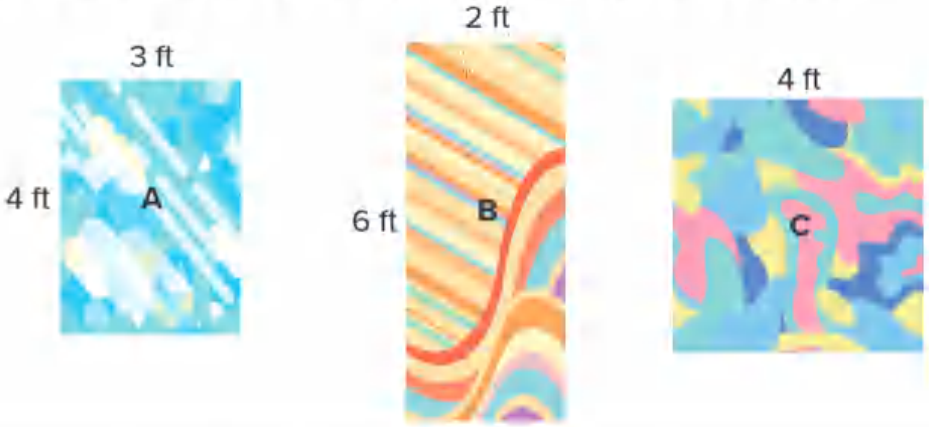
Liam is hanging three posters on his wall.

How can you compare the perimeter and area of the posters?

Math is... Planning

What steps must you take before you can compare the perimeters and areas of the posters?

You can use equations to represent the perimeters and areas.



Perimeter	$3 + 4 + 3 + 4 = 14$	$2 + 6 + 2 + 6 = 16$	$4 + 4 + 4 + 4 = 16$
Area	$3 \times 4 = 12$	$2 \times 6 = 12$	$4 \times 4 = 16$

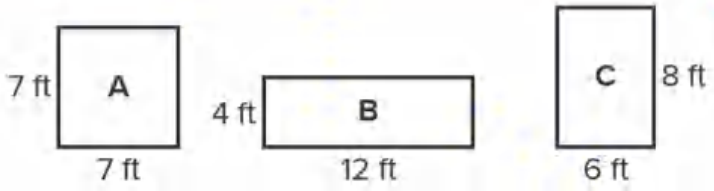
Posters B and C have the same perimeter but different areas.

Posters A and B have the same area but different perimeters.

Figures with the same area can have different perimeters.
Figures with the same perimeter can have different areas.

Work Together

Alexis has 3 booth sizes to choose from for selling jewelry at the fair. How can she find the perimeter and area of each booth and compare the 3 choices?



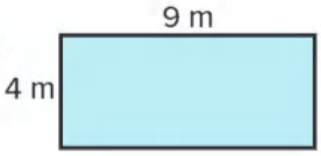
On My Own

MATH REPLAY | GO ONLINE

Name _____

What is the perimeter and area of the figure? Include the unit.

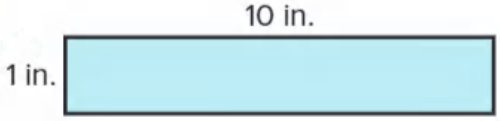
1.



perimeter = _____

area = _____

2.



perimeter = _____

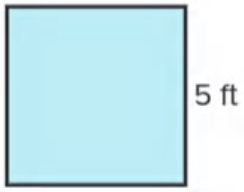
area = _____

3.

perimeter = _____

area = _____

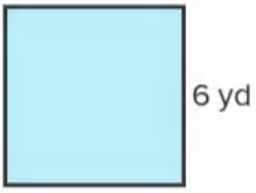
4.



perimeter = _____

area = _____

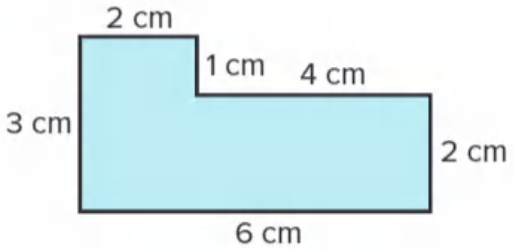
5.



perimeter = _____

area = _____

6.



perimeter = _____

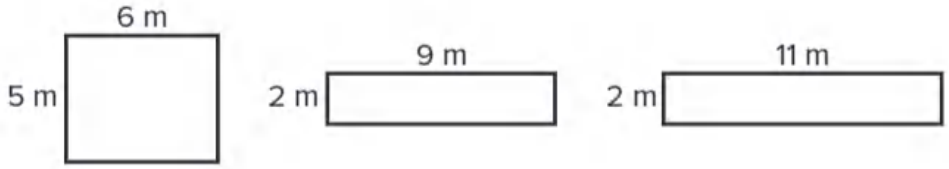
area = _____

7. A rectangle has an area of 20 square centimeters. What could be the length and width of the rectangle?

8. A rectangular patch of grass has a perimeter of 24 feet. If one of the side lengths is 10 feet, what are the other side lengths? Write an equation to support your answer.

9. **Error Analysis** Penny draws a square with side lengths of 4 units. She says that since the perimeter is 16 units and the area is 16 square units, the perimeter and area are always the same. What example can you give Penny to help her correct her thinking?

10. Which rectangles have a perimeter of 22 m? Circle them.



11. Two rectangular rooms are covered with 36 square feet of tile but are different lengths. How can this b ? Explain.

12. **Extend Your Thinking** Draw 2 rectangles with the same perimeter and different areas. What equations represent the perimeter and area of each?

Reflect

How did you think like a mathematician when solving problems involving area and perimeter?

Math is... Mindset

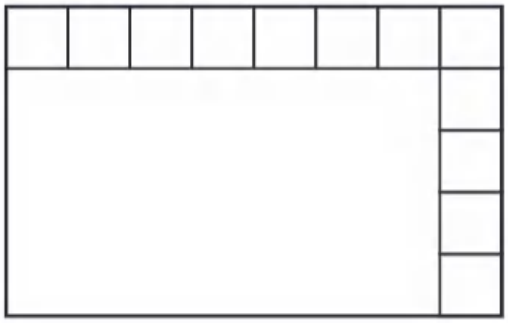
What helped you make sense of a situation today?

Unit 11

Expressions for Perimeter and Area

Name _____

1. Which expression can be used to find the perimeter of the large rectangle?



Circle the correct answer.

a. 8×5

b. $8 + 8 + 5 + 5$

c. $8 + 5$

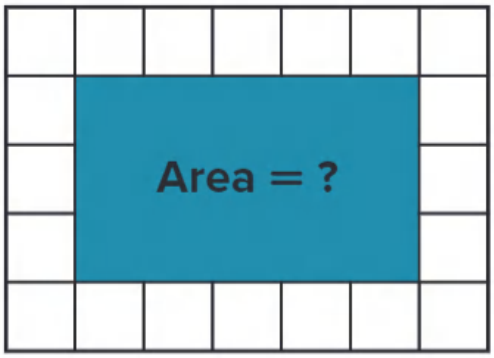
d. $8 \times 5 \times 8 \times 5$

e. $8 + 8 + 4 + 4$

f. 8×4

Explain your choice.

2. Which expression can be used to find the area of the shaded rectangle?



Circle the correct answer.

a. 7×5

b. $7 + 7 + 5 + 5$

c. 3×5

d. $5 + 5 + 3 + 3$

e. $5 \times 5 \times 3 \times 3$

f. $3 + 5$

Explain your choice.

Reflect On Your Learning

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

Lesson 11-5

Solve Problems Involving Measurement

Be Curious

What math do you see in this problem?

Tre makes wristbands out of string. He needs the same amount of string for each wristband.

Math is... Mindset

How can you help yourself get started on your work?

Learn

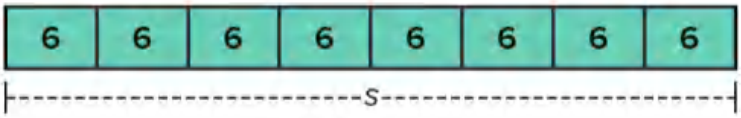
At camp, Tre makes wristbands out of string. He needs 6 inches of string for each wristband.

How many inches of string does he need to make 8 wristbands?

Math is... Modeling

How will you choose a representation to help you solve this problem?

One Way A bar diagram and an equation can represent the problem and help you solve.



$8 \times 6 = s$

$48 = s$

Another Way An equation can represent the problem. Decompose a factor to help you multiply.

$8 \times \mathbf{6} = 8 \times \mathbf{3} + 8 \times \mathbf{3}$

$8 \times 3 = 24$

$8 \times 3 = 24$

48

Tre needs 48 inches of string.

$8 \times 6 = 48$

You can solve word problems involving length measurements by representing the problem with an equation and using strategies to solve the equation.

Work Together

A sports field is 72 meters long. John needs to partition the length of the field into 8 equal lengths for field day. How can you find the length of each part?

On My Own

MATH REPLAY | GO ONLINE

Name _____

What equation describes the situation?

1. 49 feet of rope cut into pieces 7 feet long

2. 9 strips of paper each 6 inches long

3. 4 miles each day for 8 days

4. 10 yards of fabric cut into 5 pieces

5. Layla is using yarn for different projects. For each project, the number of pieces of yarn, the length of each piece of yarn, and the total amount of yarn she needs changes. What number completes the row?

Pieces of Yarn	Length of Each Piece (inches)	Total Amount of Yarn (inches)
3	5	
6	7	
7	8	
	9	45
8		48
	7	28

6. There are 3 boxes lined up against one wall of a warehouse. Each box is 6 feet long. How can you find the total length of the 3 boxes? Write an equation to show your work.

7. A board is 64 inches long. Michael plans to cut the board into 8 equal sections. How can you find the length of each section? Write an equation to show your work.

8. **Error Analysis** Mandy needs to make 4 bracelets. Each requires 9 inches of string. She says she can use an equation to help her find the total number of inches she needs. Do you agree? Explain why or why not.

9. Sheila tapes together 4 postcards. The total length of the 4 postcards is 24 inches. How long is each postcard? Write an equation to represent the problem.

10. A classroom is 28 feet wide. The teacher divides the classroom into 4 sections of equal width. How wide is each section? Write an equation to represent the problem.

11. **Extend Your Thinking** The school track is 400 meters. Sahir ran half the length of the track. Esme ran half the length that Sahir ran. How far did Esme run? Explain your thinking.

Reflect

How can you solve problems involving measurement?

Math is... Mindset

How did you help yourself get started on your work today?

Unit Review

Name _____

Vocabulary Review

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

length	perimeter	unknown
area	bar diagram	

1. The missing value in an equation that you are looking for is the _____.(Lesson 11-3)

2. The _____ of a 2-dimensional figure is the amount of surface inside the figur . (Lesson 11-4)

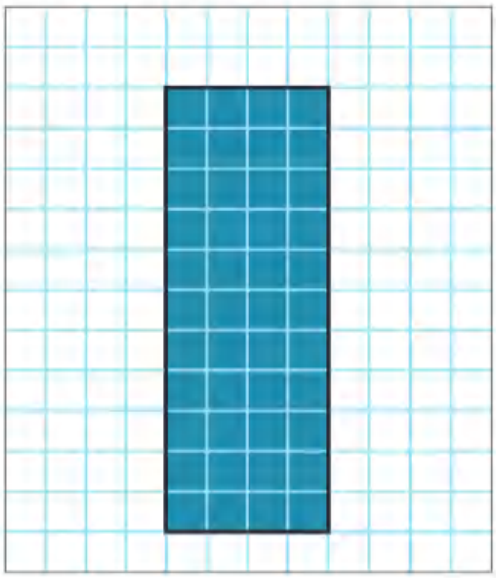
3. One way to partition a string into equal parts is to know the _____ of each part. (Lesson 11-5)

4. The distance around a shape is the _____. (Lesson 11-1)

5. A _____ can be used to represent a problem. (Lesson 11-5)

Review

6. What is the perimeter of the rectangle? (Lesson 11-1)



A. 44 units

B. 30 units

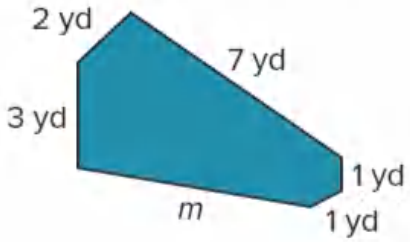
C. 15 units

D. 6 units

7. Find the perimeter of each rectangle. (Lesson 11-2)

Rectangle	length	width	perimeter
A	7 cm	15 cm	_____ cm
B	10 cm	4 cm	_____ cm
C	5 cm	12 cm	_____ cm

8. Hillary builds a fence around a pond using 20 yards of fencing.



What is the unknown side length? (Lesson 11-3)

A. 3 yards **B.** 5 yards

C. 2 yards **D.** 6 yards

9. A photo has a length of 7 inches and a width of 5 inches. What is the perimeter of the photo? (Lesson 11-2)

A. 12 inches **B.** 20 inches

C. 24 inches **D.** 35 inches

10. A rectangular window has a perimeter of 22 feet. What is the length and width of the window? (Lesson 11-2)

A. 11 feet and 1 foot

B. 9 feet by 4 feet

C. 7 feet by 4 feet

D. 6 feet by 6 feet

MATH REPLAY | GO ONLINE

11. What is the length and width of a rectangle with a perimeter of 24 units and an area of 20 square units?

(Lesson 11-4)

A. 8 units and 2 units

B. 10 units and 2 units

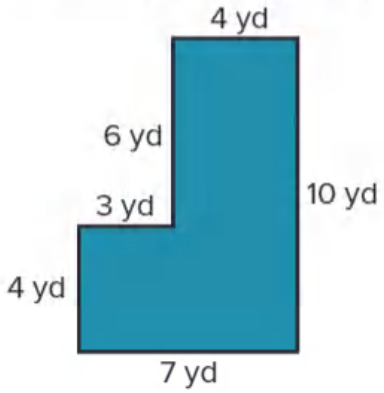
C. 5 units and 4 units

D. 20 units and 1 unit

12. Ari uses 7 strips of tape that are each 3 inches long to wrap a present. How much tape does he use? (Lesson 11-5)

_____ inches

13. What is the area and perimeter of the figur ? (Lesson 11-4)



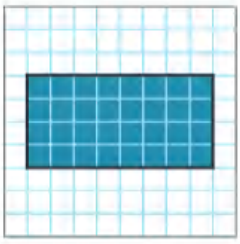
perimeter = _____

area = _____

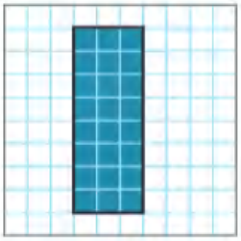
14. Which rectangle has a perimeter of 24 units and an area of 32 square units?

(Lesson 11-4)

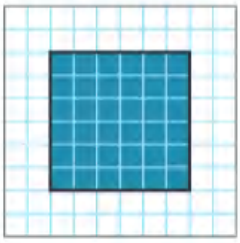
A.



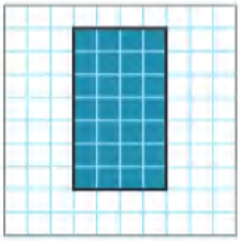
B.



C.

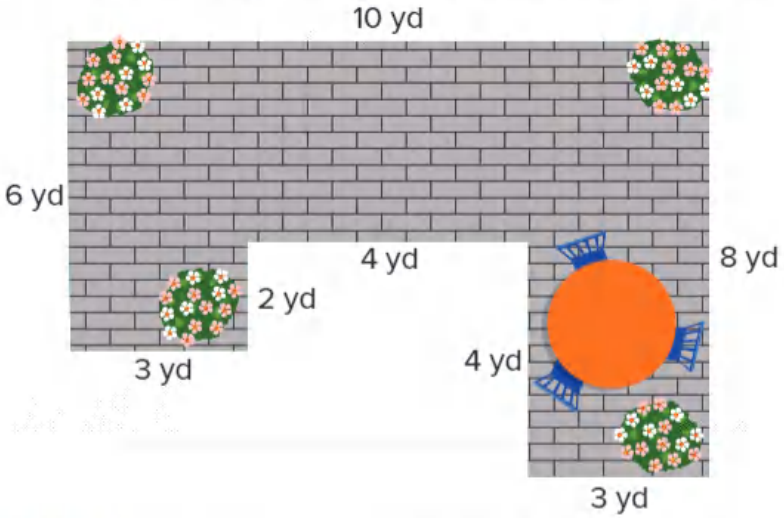


D.



Performance Task

Sam is drawing plans for a patio in the park.



Part A: Each paver brick that Sam uses covers 2 square yards. How many paver bricks does Same need? Show your work.

Part B: Sam adds a sitting wall around the patio. The sitting wall has 2 openings that are each 3 yards wide. How many yards of sitting wall, not including the openings, are needed for his design? Show your work.

Reflect

How can you find perimeter?

Unit 11

Fluency Practice

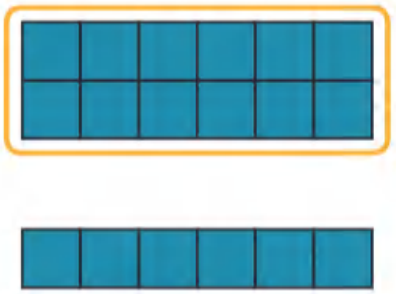
Name _____

Fluency Strategy

You can decompose a 3s fact into a 2s fact and a 1s fact to help you find products of 3.

Find the product of the 2s facts.

Add 1 more group of 6.



$2 \times 6 = 12$

$1 \times 6 = 6$

$12 + 6 = \mathbf{18}$

$3 \times 6 = 18$

1. 3×9 is double _____ and one more _____

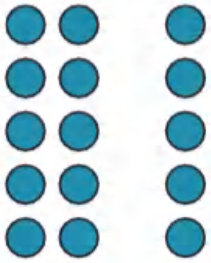
$3 \times 9 = 2 \times$ _____ $+ 9$

$3 \times 9 =$ _____

Fluency Flash

How can you decompose the 3s fact to find the product?

2.



$5 \times 3 =$ _____ $\times 2 +$ _____

$5 \times 3 =$ _____ $+$ _____

$5 \times 3 =$ _____

3.

$7 \times 3 =$ _____ $\times 2 +$ _____

$7 \times 3 =$ _____ $+$ _____

$7 \times 3 =$ _____

Fluency Check

What is the product?

4. $3 \times 8 =$ _____
5. $9 \times 4 =$ _____
6. $4 \times 3 =$ _____
7. $5 \times 6 =$ _____
8. $3 \times 7 =$ _____
9. $7 \times 4 =$ _____
10. $9 \times 3 =$ _____
11. $4 \times 8 =$ _____
12. $3 \times 10 =$ _____
13. $4 \times 5 =$ _____
14. $3 \times 3 =$ _____
15. $5 \times 10 =$ _____
16. $2 \times 3 =$ _____
17. $2 \times 4 =$ _____

Fluency Talk

How can you explain to a friend how to recall a 3s fact?

How is multiplying by 3 similar to multiplying by 4?

Unit
12

Measurement and Data

Focus Question

How can I measure and record data?

Name _____

Comparing Buildings

What do you notice about the buildings?

Building A Building B Building C

Measure Liquid Volume

Be Curious

What do you notice?
What do you wonder?

Math is... Mindset

What do you do to avoid feeling stressed?

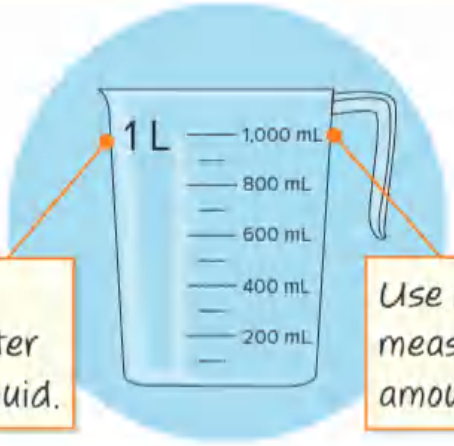
Learn

Jana thinks the tall glass has more juice.

How can you determine which glass has more juice?

You can use **milliliters (mL)** or **liters (L)** to measure an amount of liquid, or **liquid volume**.

1 liter is equal to 1,000 milliliters.

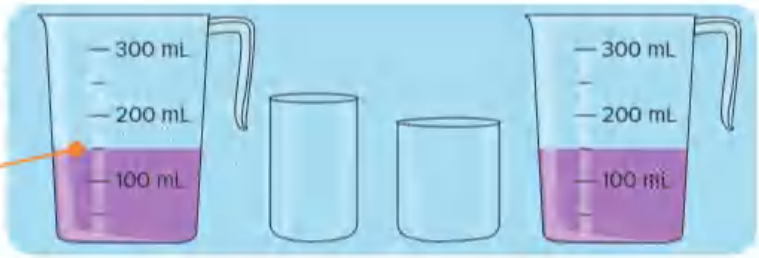


Use liters to measure greater amounts of liquid.

Use milliliters to measure lesser amounts of liquid.

Measure the amounts using milliliters to compare.

150 mL is halfway between 100 mL and 200 mL.



Both glasses have 150 milliliters of juice.

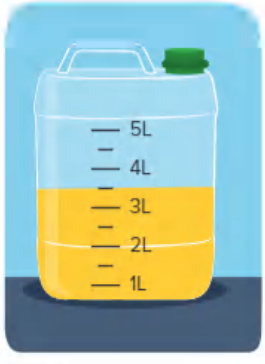
The amount of liquid in a container is called liquid volume.

Math is... Choosing Tools

How do you decide whether to measure liquid volume in milliliters or liters?

Work Together

How much vegetable oil is in the container?



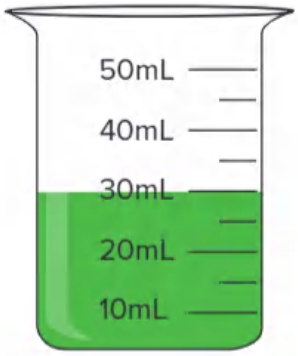
On My Own

MATH REPLAY | GO ONLINE

Name _____

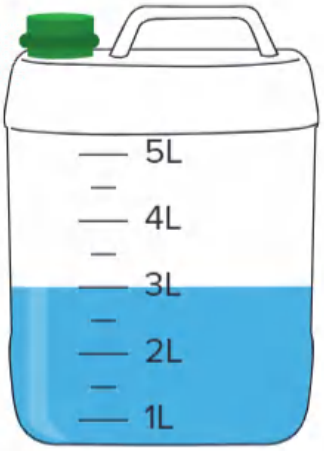
What is the volume of the liquid in the container?

1.



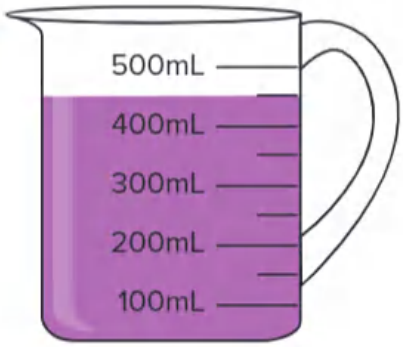
_____ milliliters

2.



_____ liters

3.

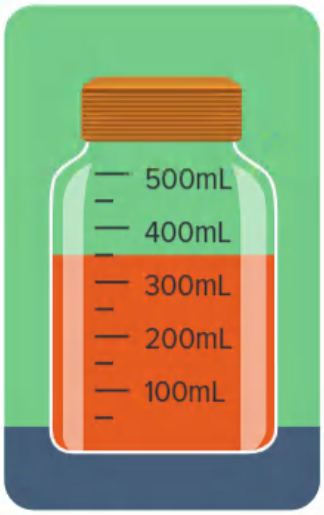


_____ milliliters

4.

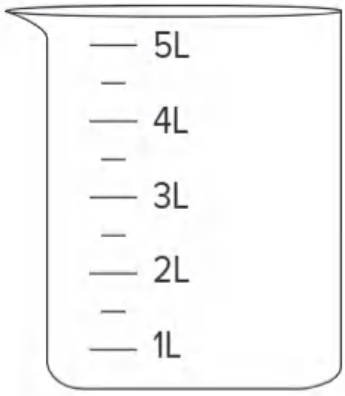
_____ liters

5. Error Analysis Alex pours soup into a jar. He says he has 400 milliliters of soup. How do you respond to Alex?

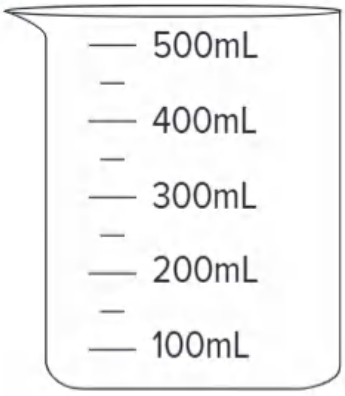


Shade the container to show the given liquid volume.

6. 4 liters



7. 250 milliliters



8. Brayden's water bottle is marked with lines that represent milliliters. He fills his bottle with water to a line that does not have a label. How might he determine the liquid volume of the water?

9. You have two different glasses of wate . How might you determine which glass has more water?

10. Extend Your Thinking Sameer drank 1 liter of water and Meredith drank 1,000 milliliters of water. Who drank more water? Explain your reasoning.

Reflect

How can you explain liquid volume and when it might be useful in your life?

Math is... Mindset

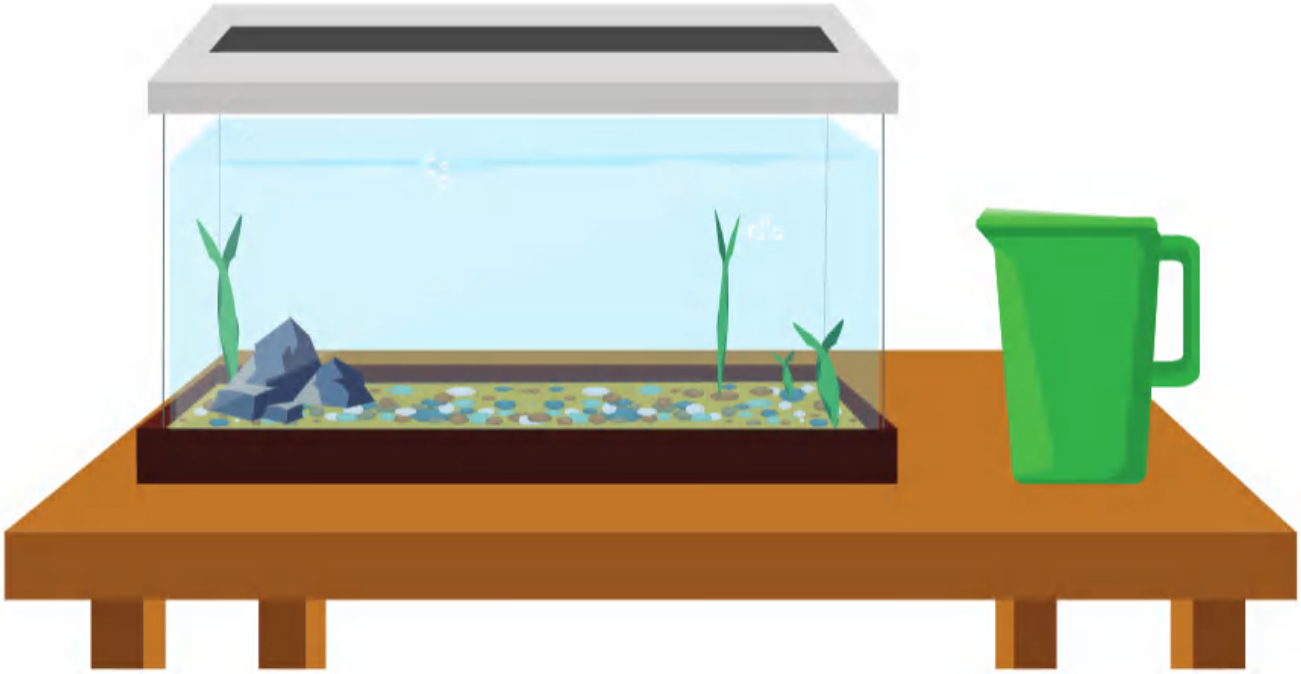
What did you do to avoid feeling stressed today?

Lesson 12-2

Estimate and Solve Problems with Liquid Volume

Be Curious

What question could you ask?

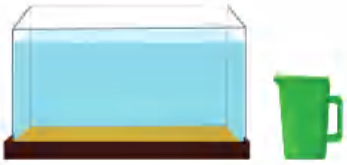


Math is... Mindset

What are your strengths in math?

Learn

Sawyer fills her fish tank with 10 full pitchers of water.



About how many liters of water are in the tank?

You can use the liquid volume of everyday containers to help you estimate.

About 4 bottles of water fill the pitcher.

The pitcher holds about 4 liters of water.

Multiply to find how many liters are in the tank.

$$10 \times 4 = t$$
$$40 = t$$

There are about 40 liters of water in the tank.

Math is... In My World

Why is it helpful to know the liquid volume of different containers?

Everyday containers of liquid can be used to estimate liquid volume.

You can solve problems involving liquid volume by representing the problem with an equation and using strategies to solve.

Work Together

Which container has about one liter of liquid? Explain your reasoning.

On My Own

MATH REPLAY | GO ONLINE

Name _____

Which is the best estimate for the liquid volume?

1. cup of tea

18 milliliters
180 milliliters
180 liters

2. bowl of soup

24 liters
24 milliliters
240 milliliters

3. bathtub of water

3 liters
300 liters
300 milliliters

4. bottle of soap

200 milliliters
20 liters
200 liters

5. bucket of water

10 liters
100 milliliters
10 milliliters

6. bottle of ketchup

450 milliliters
45 milliliters
45 liters

7. Justin pours 95 milliliters of pineapple juice and 425 milliliters of cranberry juice in a pitcher. How much juice does Justin pour in the pitcher? Show your work.

8. The table shows the liquid volume of three different bottles of lotio in milliliters. How much more lotion is in Bottle B than in Bottle A?

Bottle A	Bottle B	Bottle C
235 mL	475 mL	290 mL

9. Kim sells 3 liters of lemonade each day. How much lemonade does Kim sell in a week? Explain your thinking.

10. Wayne uses 40 liters of water to water 10 tomato plants. He uses the same amount of water for each plant. How much water does each plant get?

11. Extend Your Thinking Write a problem that involves liquid volume. Write an equation to represent your problem and solve.

Reflect

What are some ways you can estimate liquid volume?

Math is... Mindset

Which of your strengths in math did you use today?

Measure Mass

Be Curious

What do you notice?
What do you wonder?

Math is... Mindset

How do you show you understand how others are feeling?

Learn

Which ball has the greatest mass?

Mass is the amount of matter in an object.

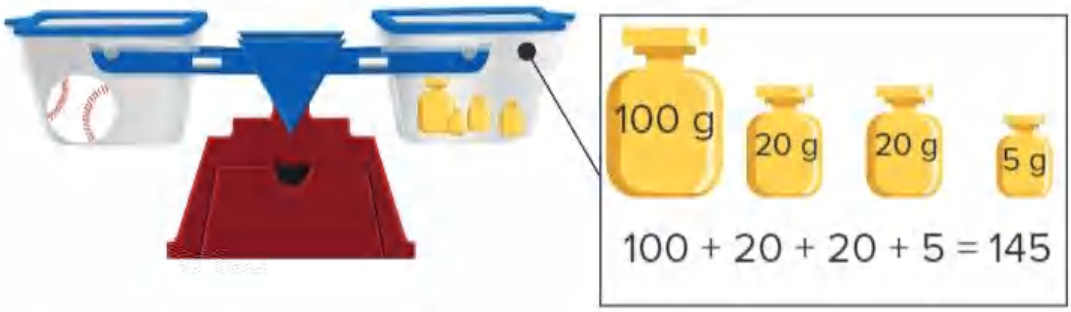
You use **grams (g)** and **kilograms (kg)** to measure mass.

Math is... Thinking

How can you compare the masses without finding the exact mass of each ball?

One kilogram (kg) is equal to 1,000 grams (g).

A **balance scale** measures mass. Place a ball in one bucket and gram weights on the other until the scale is balanced.



The baseball has a mass of 145 grams.

You can measure the mass of objects using a balance scale and kilograms and grams.

Work Together

Tess is using a balance scale to measure the mass of a marker. How will she know when she has added the correct amount of masses to the scale?

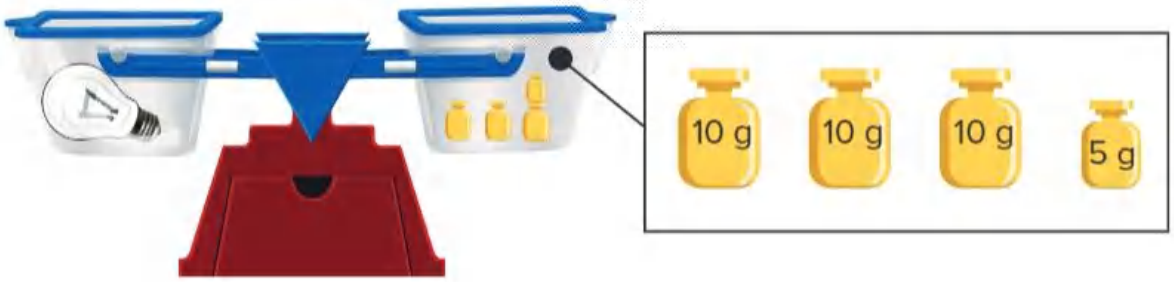
On My Own

MATH REPLAY | GO ONLINE

Name _____

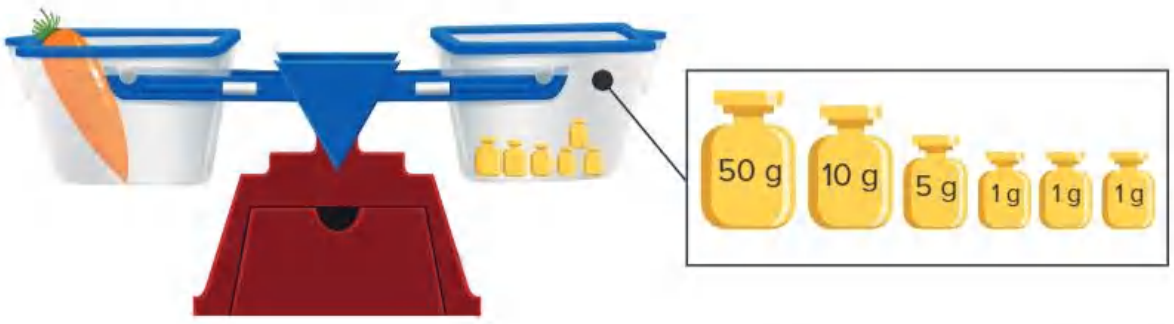
1. What is the mass of the brick?

2. What is the mass of the lightbulb?



3. What is the mass of the orange?

4. What is the mass of the carrot?



5. How can you decide whether a marker or a glue stick has a greater mass without using gram weights?

6. **Error Analysis** Maeve says that a balloon has more mass than a stapler because it is bigger. Do you agree? Explain.

7. Faris is measuring the mass of a pencil. Which of the weights do you think he should place on the scale first? Explain

8. How can you use a balance scale to determine whether two objects have the same mass without using gram weights?

9. **Extend Your Thinking** Cherise is measuring the mass of a small toy on a balance scale. She does not have any gram weights, but she has crayons that each have a mass of about 5 grams. How can she estimate the mass of the toy?

Reflect

How can you use a balance scale to measure the mass of an object?

Math is... Mindset

How did you show you understood how others were feeling today?

Estimate and Solve Problems with Mass

Be Curious

Which doesn't belong?

Math is... Mindset

What goal do you want to accomplish today?

Learn

A toothbrush has a mass of about 15 grams.

About how much more mass does a toothbrush have than a bar of soap?

You can use the mass of everyday objects to help you estimate.

1 gram | 100 grams | 1 kilogram

You can use a balance scale to compare masses.

A bar of soap has about the same mass as an apple, 100 grams.

You can use a subtraction equation to find the difference in mass.

$$100 - 15 = d$$
$$85 = d$$

A bar of soap has about 85 grams more mass than a toothbrush.

Math is... Choosing Tools

What other objects might you use to estimate mass?

Everyday objects can be used to estimate mass. You can solve problems involving mass by representing the problem with an equation and using strategies to solve.

Work Together

How can you estimate whether the mass of an object is greater than or less than 1 kilogram?

On My Own

MATH REPLAY | GO ONLINE

Name _____

Which is the best estimate for the mass of the object?

1. nickel

5 grams
50 grams
5 kilograms

2. loaf of bread

50 grams
500 grams
5 kilograms

3. three oranges

6 grams
600 grams
6 kilograms

4. hamster

20 grams
200 grams
2 kilograms

5. cantaloupe

1 kilogram
10 kilograms
100 kilograms

6. sandwich

2 grams
250 grams
25 kilograms

7. Sylvia feeds her dog 128 grams of dog food two times each day. How many grams of dog food does she feed her dog each day? Show your work.

8. Eight apple slices have a mass of 32 grams. Each slice has the same mass. What is the mass of each apple slice? Show your work.

9. Rakesh bought blueberries, raspberries, blackberries, and strawberries for his bakery. He bought 4 kilograms of each type of berry. How many kilograms of berries did he buy?

10. Vince's backpack full of books has a mass of 850 grams. What is the mass of his backpack full of books if he removes a book with a mass of 415 grams?

11. **Error Analysis** Shane finds the mass of a box of markers and a thumbtack. He says he can use these masses to estimate the mass of a notebook. How do you respond to Shane?

100 grams

1 gram

12. **Extend Your Thinking** Shoshi's packed bag cannot have a mass greater than 15 kilograms. Her empty bag has a mass of 2 kilograms. She packs 5 items that have a mass of 3 kilograms each in her bag. Will her packed bag be less than 15 kilograms? Explain your reasoning.

Reflect

How can using everyday objects help you estimate mass?

Math is... Mindset

How have you worked to accomplish your goal today?

Tell Time to the Nearest Minute

Be Curious

How are they the same?
How are they different?

Math is... Mindset

What helps you feel a part of the classroom community?

Learn

The clock shows the time Landon's train leaves the station.

What time does Landon's train leave?

You know each number on the clock represents 5-minute intervals.

The departure time is between 9:30 and 9:35.

Each tick mark between the numbers represents 1 minute. The minute hand is 3 tick marks, or 3 minutes, after 9:30.

The departure time is 9:33.

You can read the time as *9:33*, *33 minutes past 9*, or *27 minutes before 10*. On a digital clock, the same time looks like this.

On an analog clock, you can count tick marks from a given number to tell time to the nearest minute.

Math is... In My World

Why might you need to know the exact time?

Work Together

How can you determine the time shown on the clock?

On My Own

MATH REPLAY | GO ONLINE

Name _____

What time is shown on the clock?

1. 

_____ : _____

2. 

_____ : _____

3. 

_____ : _____

Tina, Troy, and Tim went to bed at different times.

4. What time did Tina go to bed?

Tina

_____ : _____

5. What time did Troy go to bed?

Troy

_____ : _____

6. What time did Tim go to bed?

Tim

_____ : _____

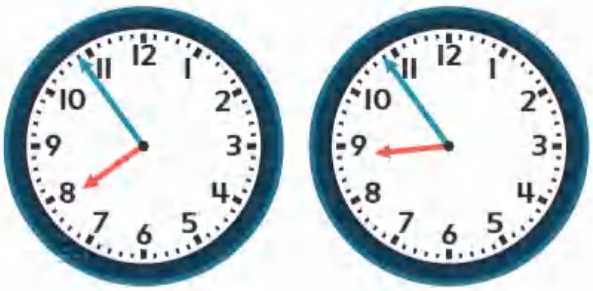
7. What would Tina's clock look like if she went to bed at 9:38?

8. What would Tim's clock look like if he went to bed at 9:12?

Use the clocks for exercises 9 through 11.

9. Ray went for a walk at 8:54. Circle the clock that shows the time he left for his walk.

10. What time does the other clock show?



11. What is the difference between the two time ? Explain your answer.

12. STEM Connection Maya and Lamar arrive at an excavation site at different times one morning. Who arrived first? Explain your answer.

Maya

Lamar

13. Extend Your Thinking Jenette went outside to play at 11:27. Camden went outside 2 hours later. How can you show the time each girl went outside on the clocks?

Jenette

Camden

Reflect

How can you tell time to the nearest minute?

Math is... Mindset

How were you a part of the classroom community today?

Solve Problems Involving Time

Be Curious

What do you notice?
What do you wonder?

Departures				7:36 PM
City	Time	Flight	Gate	Status
Alamosa	8:51p	2524	A89	delayed
Albuquerque	7:50p	9678	B56	boarding
Aspen	7:55p	5677	B87	on time
Austin	9:05p	4688	B54	on time
Billings	8:10p	4789	B80	delayed
Bismarck	8:00p	5789	B91	on time
Boise	7:45p	3678	B62	delayed
Boston	7:58p	6890	B67	on time

Math is... Mindset

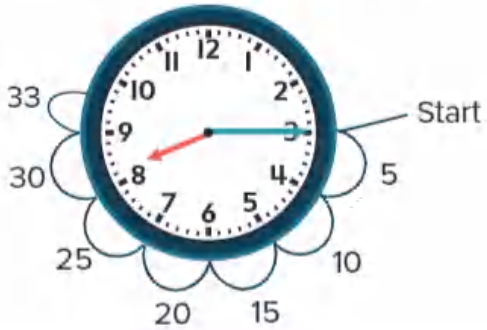
How do you contribute to a productive classroom culture?

Learn

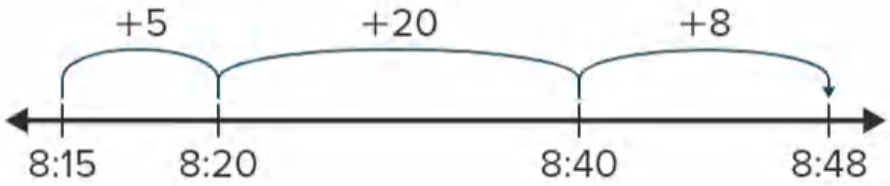
Chloe's hike started at 8:15 a.m. and ended at 8:48 a.m.

How many minutes was her hike?

One Way Use a clock. Start at 8:15. Count on by 5s the minutes from 8:15 to 8:45. Then count on 3 from 8:45 to 8:48.



Another Way Use a number line. Start at 8:15. Count on from 8:15 to 8:48. Add to find the total number of minutes.



Chloe's hike was 33 minutes.

You can solve problems involving time intervals using an analog clock or a number line.

Math is... Thinking

How can you determine the number of minutes in a different way?

Work Together

Kendrick gets on the bus at 3:15. The bus ride takes 25 minutes. Then he walks 17 minutes home. What time does he arrive home? Show your work on the number line.

On My Own

MATH REPLAY | GO ONLINE

Name _____

How long was the activity?
Show your work on the clock or number line.

1. George started his walk to school at 7:15 a.m. and ended his walk at 7:35 a.m. How long was his walk to school?

2. Band practice started at 3:08 p.m. and ended at 3:56. How long was band practice?

3. Rita visited her friend from 4:12 p.m to 4:49 p.m. How long was her visit?

4. The party started at 3:25 p.m. and lasted 45 minutes. When did the party end?

5. Sam's art class started at 4:05 p.m. It lasted 48 minutes. When did the class end?

6. Sara finished cooking at the a.m. time shown. She cooked for 32 minutes. What time did she start cooking?

7. Aaron's game lasted 37 minutes. It ended at 12:59 p.m. When did his game start?

8. The clocks show when Dion started reading and when he ended. How long did he read?

Start (a.m.)

End (p.m.)

9. Raj and Erik got home from school at the times shown. Who arrived earlier and by how many minutes?

Raj

Erik

10. It took Wen 23 minutes to walk from school to home. When she got home, she worked on her math homework for 25 minutes. She finished her math homework at 3:48 p.m. What time did Wen start her walk home?

11. STEM Connection Maya monitored an earthquake that occurred at 11:05 a.m. An aftershock happened 43 minutes after the earthquake. What time did the aftershock take place?

12. Extend Your Thinking Gia's concert starts at 7:35 p.m. and lasts 45 minutes. When does her concert end?

Reflect

How can you determine how much time has passed from the start of an activity to the end of an activity?

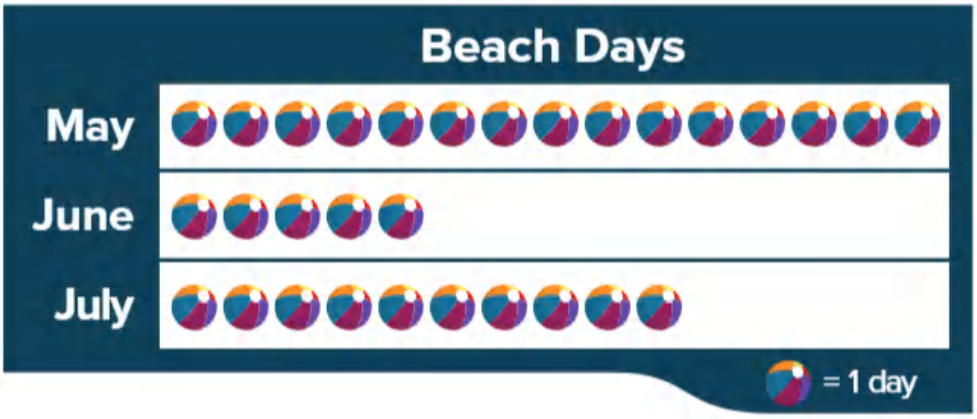
Math is... Mindset

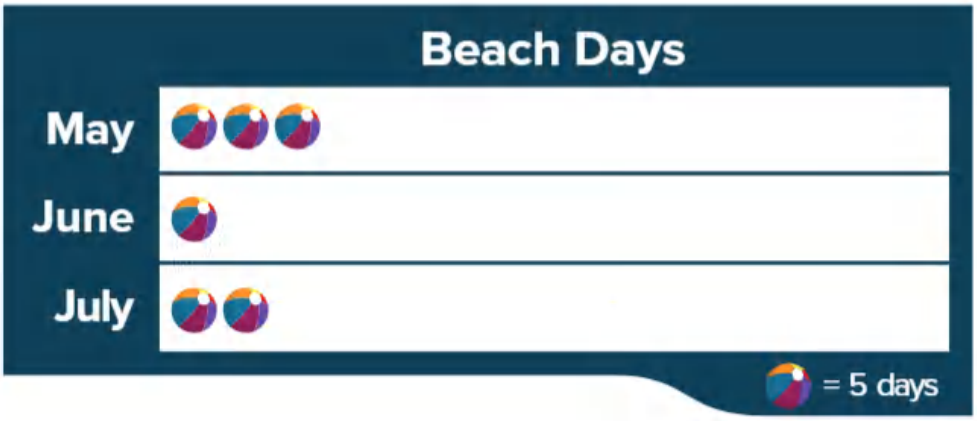
How did you contribute to a productive classroom culture?

Understand Scaled Picture Graphs

Be Curious

How are they the same?
How are they different?





Math is... Mindset

What behaviors show respect towards someone?

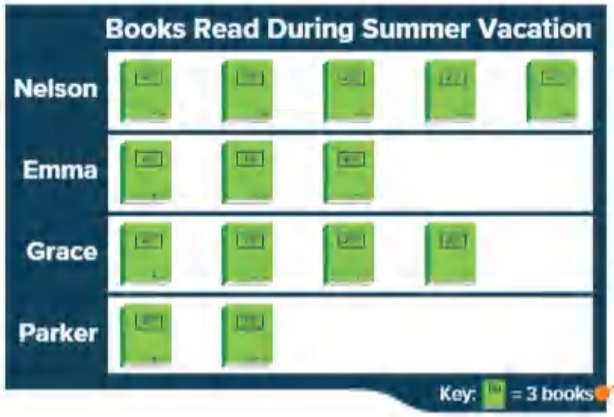
Learn

Emma surveyed three friends about the number of books they read during summer vacation. The table shows the results.

Person	Books Read
Nelson	15
Emma	9
Grace	12
Parker	6

How can you display the data?

You can use a scaled picture graph.



The **scale** tells the amount represented by each picture on the graph.

The key shows the scale.

A scaled picture graph uses pictures or symbols to represent more than one data point.

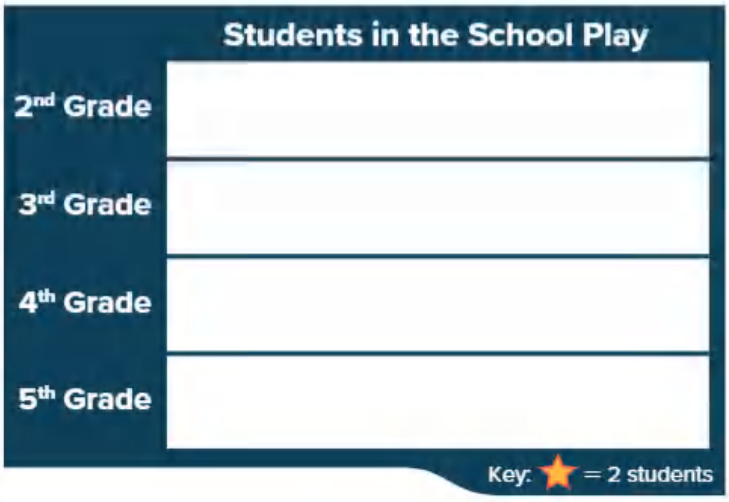
Math is... Precision

When creating a picture graph, how can you decide the scale of the graph?

Work Together

How can you display the data in a picture graph?

Grade	Number of Students
2nd Grade	4
3rd Grade	12
4th Grade	11
5th Grade	7

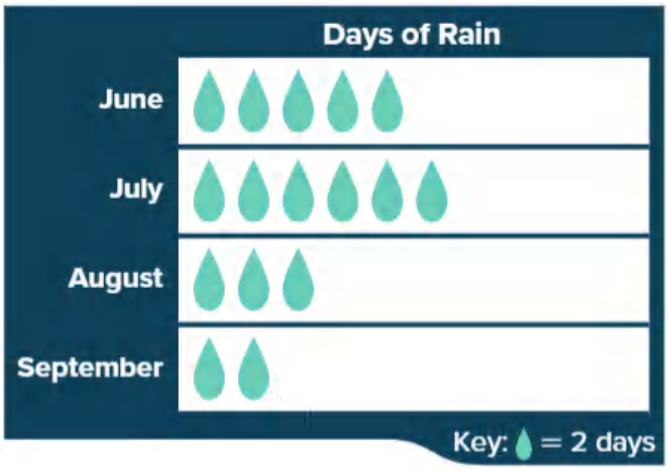


On My Own

MATH REPLAY | GO ONLINE

Name _____

Use the picture graph to complete exercises 1 and 2.

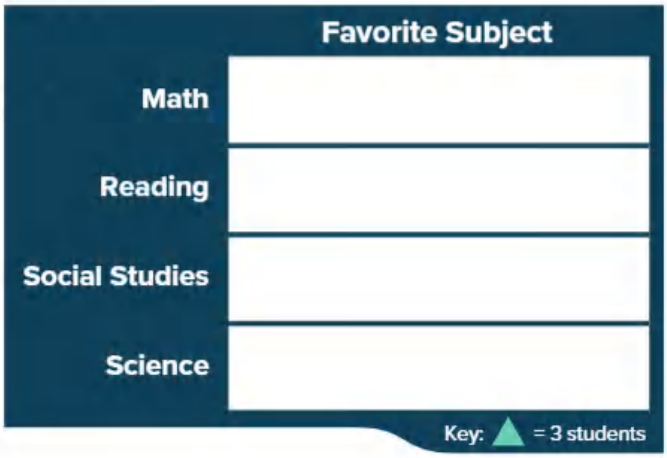


1. How many days of rain are represented by each picture? Explain how you know.

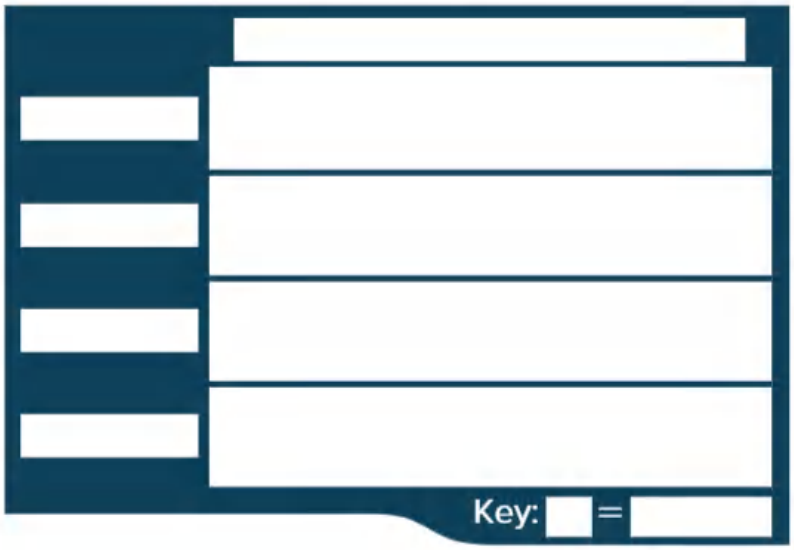
2. How many days did it rain in June? Explain how you know.

3. The table shows each third grader's favorite subject. How can you display the data in the picture graph?

Favorite Subject	Third Graders
Math	9
Reading	12
Social Studies	6
Science	15



4. The table shows the number of points each player scored in a basketball game. How can you display the data in a scaled picture graph?



Players	Points
Matt	12
Alexa	6
Jim	9
Heidi	18

5. **Extend Your Thinking** What are 3 differen scales you could use in a picture graph to represent the data shown in the table?

Students	Votes
Arthur	24
Susan	16
Sabine	32
Rich	8
Juan	40

Reflect

How can you display data using a scaled picture graph?

Math is... Mindset

What behaviors did you use to show respect towards someone today?

Lesson 12-8

Understand Scaled Bar Graphs

Be Curious

Is it always true?

Bar graphs cannot display data with greater numbers.

Math is... Mindset

What helps you want to do your best work?

Learn

Duncan surveys his friends about their favorite outdoor activity. He shows the results in a table.

Activity	Number of Friends
Hiking	8
Jogging	4
Fishing	16
Biking	14

How can you display the data in another way?

You can use a scaled bar graph to display the data.

Decide on a scale, or the amount each interval represents.

Each interval represents 4 friends.

A scaled bar graph uses intervals greater than 1.

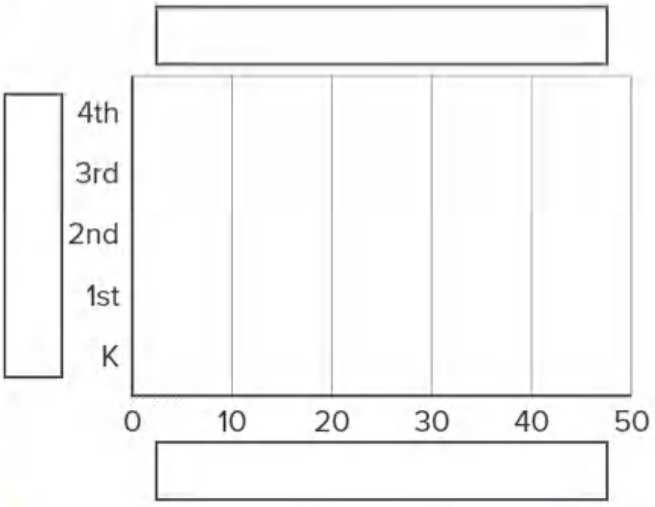
Math is... Thinking

How can you change the scale and represent the same data?

Work Together

How can you display the data in a bar graph?

Bus Riders	
Grade	Number of Students
K	10
1st	25
2nd	45
3rd	30
4th	40



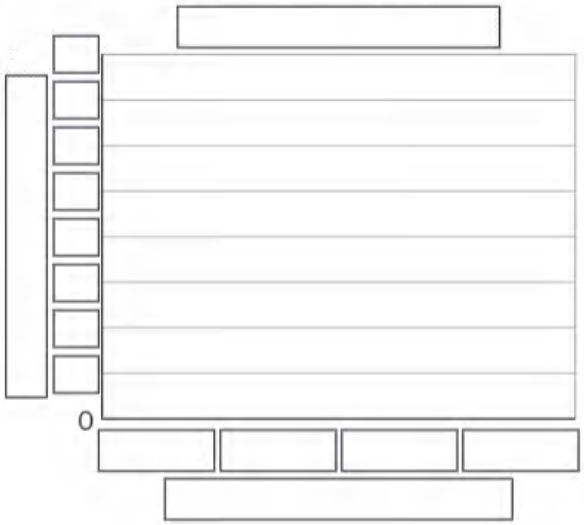
On My Own

MATH REPLAY | GO ONLINE

Name _____

1. How can you display the data in a scaled bar graph?

Class Goldfish Name	
Name	**Number of Votes**
Flash	8
Bubbles	6
Squirt	16
Cheese	10

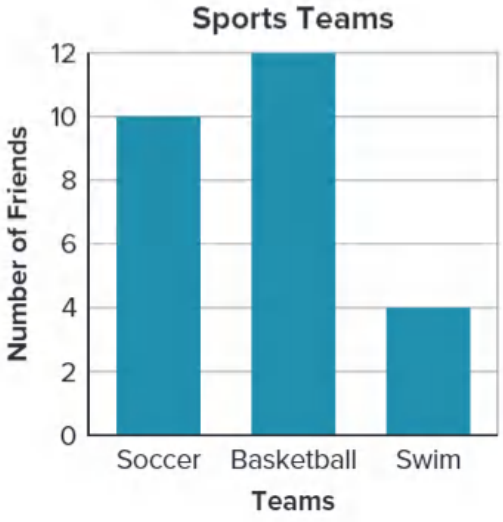


a. How did you decide the scale of your graph?

b. What is another scale you could use for your graph?

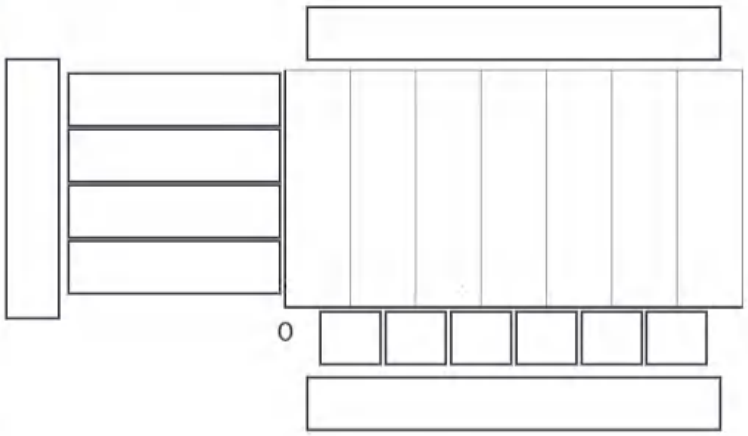
2. **Error Analysis** Cameron created a bar graph using the data in the table. How can you explain the error in the graph?

Sports Teams	
Team	**Number of Friends**
Soccer	5
Basketball	6
Swim	2



3. How can you display the data in a scaled bar graph?

Summer Trips	
Place	Trips to Each Place
City	15
Lake	10
Beach	30
State Park	25



4. Which parts of the graph did you need to complete before displaying the data with bars? Explain why these needed to be completed first

5. How can you explain the difference between a scaled bar graph and a bar graph?

6. **Extend Your Thinking** Why might you choose to display a set of data in a bar graph instead of a picture graph? Explain your thinking.

Reflect

How can you display data in a scaled bar graph?

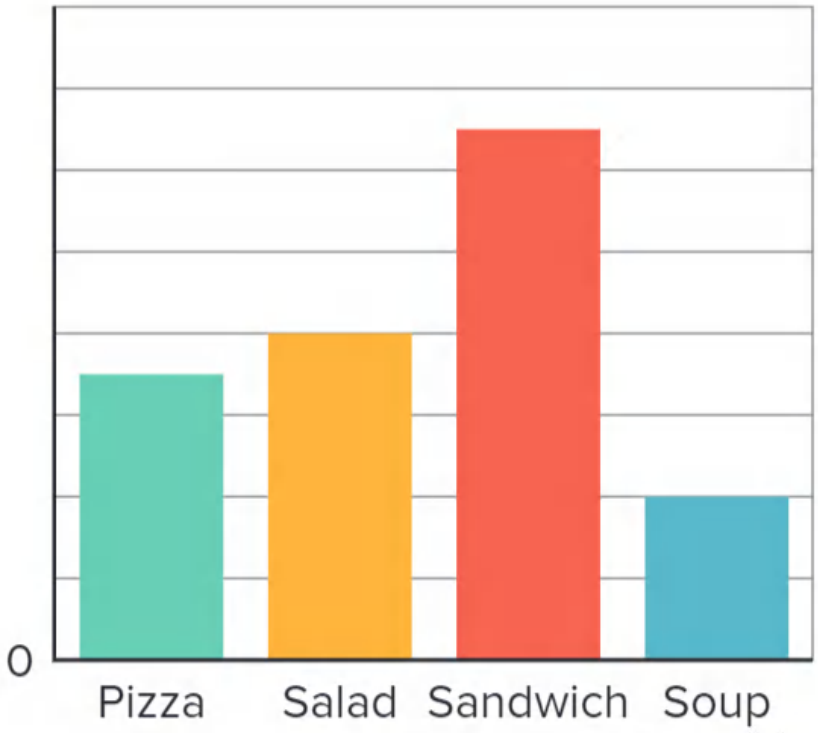
Math is... Mindset

What helped you want to do your best work today?

Solve Problems Involving Scaled Graphs

Be Curious

What question could you ask?



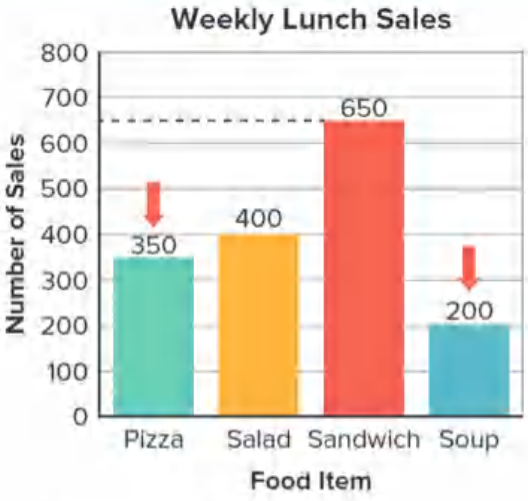
Math is... Mindset

How does a plan help you solve a problem?

Learn

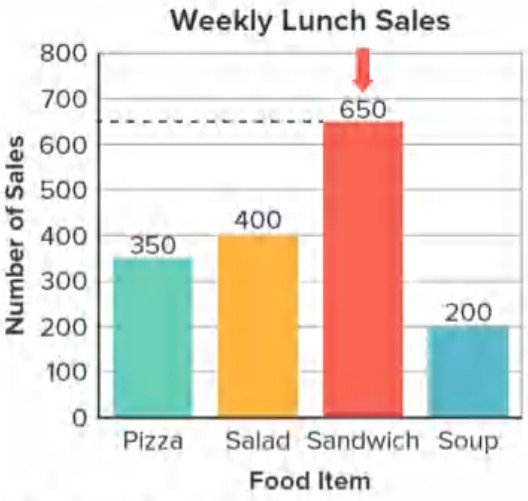
Some students tracked the numbers and types of lunch items bought. They displayed the data in a bar graph.

How many more sandwiches did students buy than pieces of pizza and bowls of soup?



$350 + 200 = \mathbf{550}$

The students bought 550 pieces of pizza and bowls of soup.



$650 - 550 = \mathbf{100}$

The students bought 100 more sandwiches than pizza and soup.

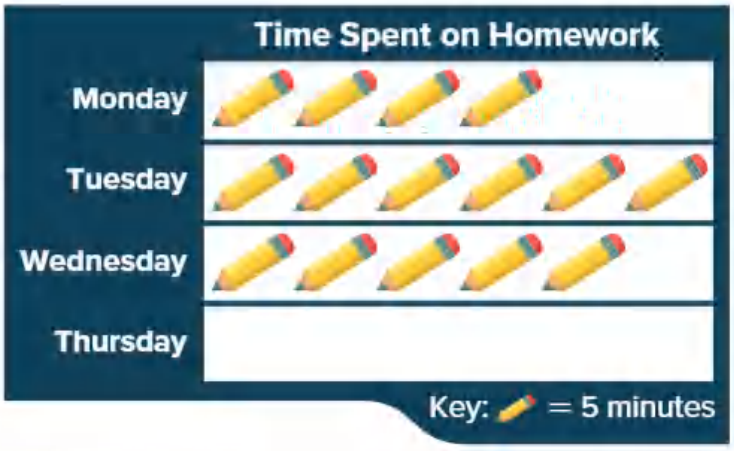
Solve problems with scaled graphs by making sense of the data and writing an equation to represent the problem.

Math is... Precision

How does the scale of the graph help you find the number of items sold?

Work Together

On Thursday, Sam spent 10 fewer minutes on homework than he did on Tuesday. How many pencils belong in the last row?

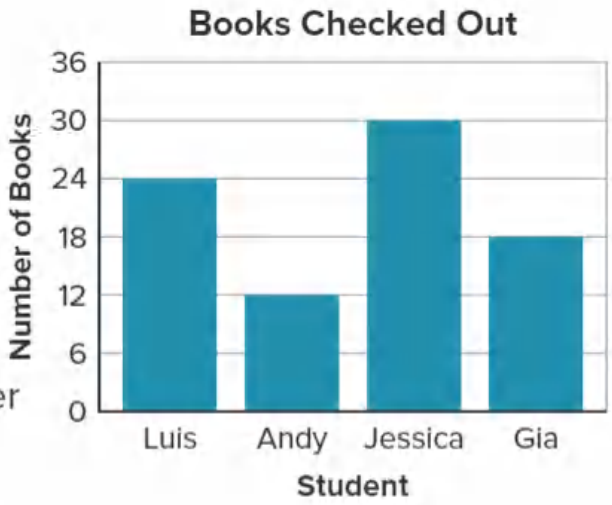


On My Own

MATH REPLAY | GO ONLINE

Name _____

Use the bar graph to complete exercises 1 through 3.



1. How many more books did Jessica check out than Luis?

2. What is the difference betwee the greatest number of books checked out and the fewest number of books checked out?

3. The number of books Jessica checked out is the same as the total number of books checked out by which two students? Explain how you know.

Use the picture graph to complete exercises 4 through 6.

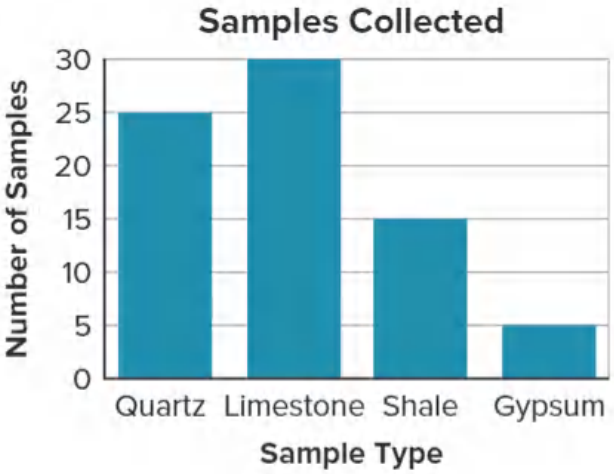
4. How many fewer banana nut muffins sold than blueber ?

5. How many more chocolate muffins sold than corn an blueberry muffins combined Show your work.

6. How can you compare the sales of blueberry muffins to cor and banana nut muffins combined? Explai

Use the bar graph to complete exercises 7 through 9.

7. STEM Connection Maya tracks the number of rock and mineral samples she finds at a dig sit . How many fewer gypsum samples did she find than limestone samples?



8. Which two samples combined equal the same amount as one single sample?

9. Extend Your Thinking Maya visits a second dig site. She collects 5 fewer samples of each type. How many total samples does she collect at the second dig site?

Reflect

How can you find the difference between two data points on a scaled graph?

Math is... Mindset

How did a plan help you solve a problem today?

Measure to Halves or Fourths of an Inch

Be Curious

How are they the same?
How are they different?

Math is... Mindset

Why is it important to have confidence in your work?

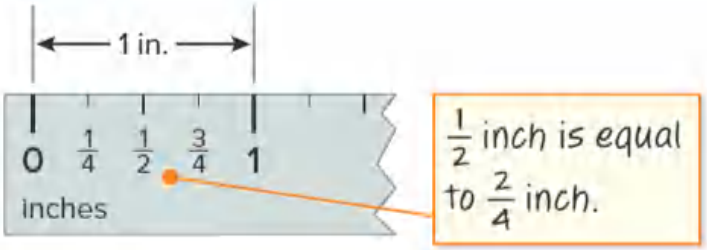
Learn

Lola is measuring items around her classroom.

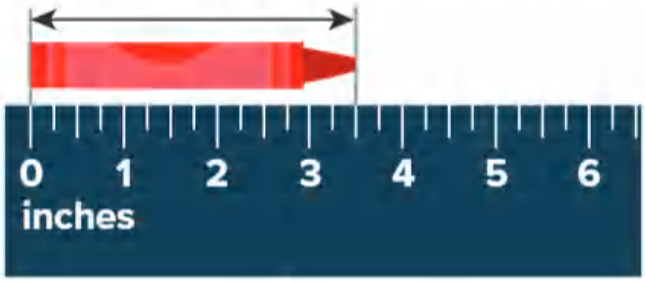
How can she determine the most precise measurement of each item?

Use an inch **ruler** to measure length.

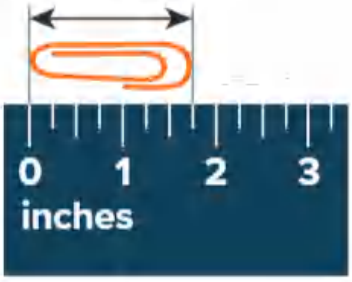
It is marked in halves and fourths, or quarters, of an inch.



Place one end of the object at the 0 mark. Then find the nearest half-inch or quarter-inch mark at the other end of the object.



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



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

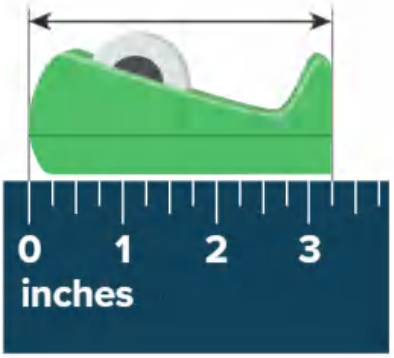
You can measure an object to the nearest half inch or quarter inch to find the most precise measurement.

Math is... Precision

How can you decide which units on the ruler are a good choice for your measurement?

Work Together

What is the most precise measurement of the tape dispenser?



On My Own

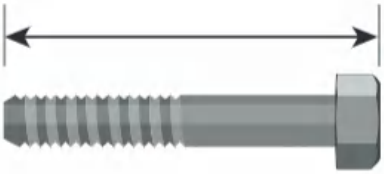
MATH REPLAY | GO ONLINE

Name _____

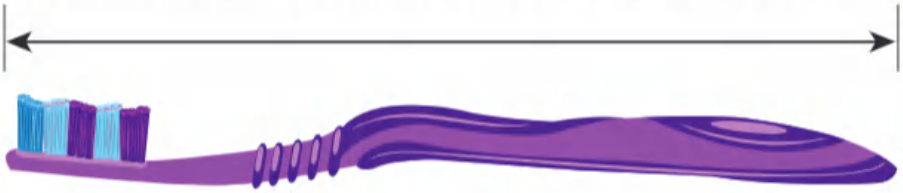
What is the length of each object to the nearest half inch?

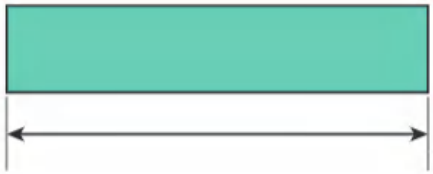
1. 

2. 

3. 

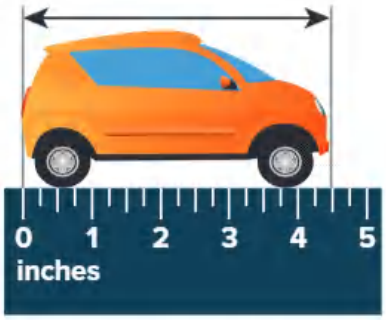
What is the length of each object to the nearest quarter inch?

4. 

5. 

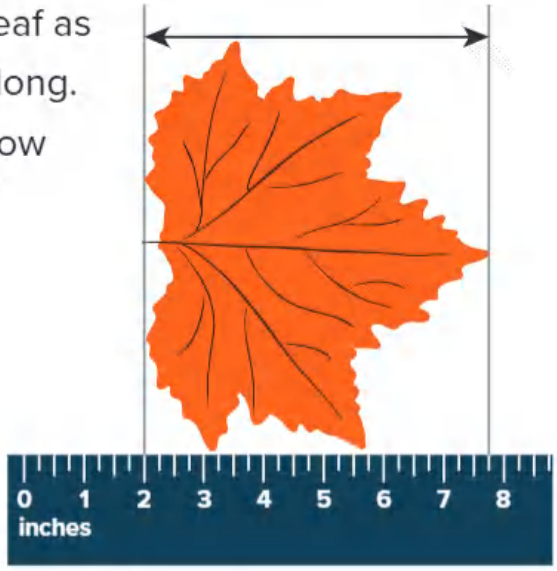
6. 

7. What is the most precise measurement of the toy car using the ruler in the picture?



Use the image of the leaf and ruler for exercises 8 through 10.

8. Error Analysis Tyler measures the leaf as shown. He says the leaf is $7\frac{3}{4}$ inches long. How can you help Tyler understand how to measure the leaf?



9. Is the length of the leaf more or less than $7\frac{3}{4}$ inches? Explain how you know.

10. Extend Your Thinking How can you determine about how many inches long the leaf is?

Reflect

How can you measure an object to a half or a fourth of an inch?

Math is... Mindset

How did having confidence in your work help you do your best today?

Unit 12

Measuring Length

Name _____

Use the inch ruler shown to answer the question about the length of the segment.

1. Is the segment about $2\frac{1}{4}$ inches long?

Circle Yes or No.

Yes No

Explain your thinking.

2. Is the segment about $3\frac{1}{2}$ inches long?

Circle Yes or No.

Yes No

Explain your thinking.

3. Is the segment about 2 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 12-11

Show Measurement Data on a Line Plot

Be Curious

What do you notice?
What do you wonder?

Plant Heights			
$2\frac{1}{2}$	3	$4\frac{1}{2}$	2
$4\frac{1}{2}$	6	$5\frac{1}{2}$	$5\frac{1}{2}$

Math is... Mindset

How does working as a team help you achieve your goal?

Learn

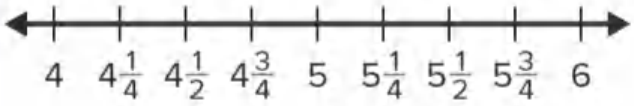
The table shows the length of 15 pencils.

How many pencils are longer than 5 inches?

Pencil Lengths (in.)				
$4\frac{1}{4}$	$5\frac{3}{4}$	$4\frac{1}{4}$	5	4
5	$4\frac{3}{4}$	$5\frac{3}{4}$	5	6
$4\frac{3}{4}$	5	$4\frac{3}{4}$	$4\frac{1}{2}$	$5\frac{1}{2}$

You can use a **line plot.** A line plot displays data above a number line.

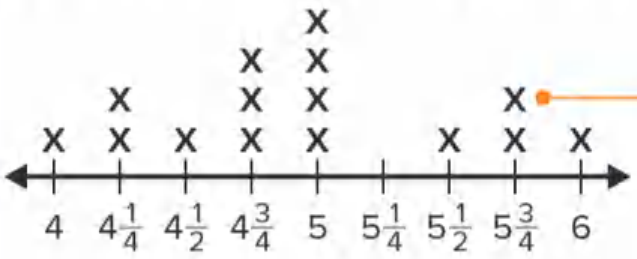
Label a number line with values from the data set.



Pencil Lengths (in.)

Label the line plot.

Place one X above the measurement for each pencil length.



4 Xs to the right of 5.

Pencil Lengths (in.)

Four pencils are longer than 5 inches.

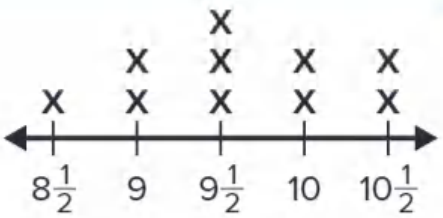
Math is... Modeling

How can a line plot help you understand a data set?

You can display measurement data in a line plot. Each X can represent one data point.

Work Together

How many shoes were measured?
Which shoe length was most common?
Explain how you know.

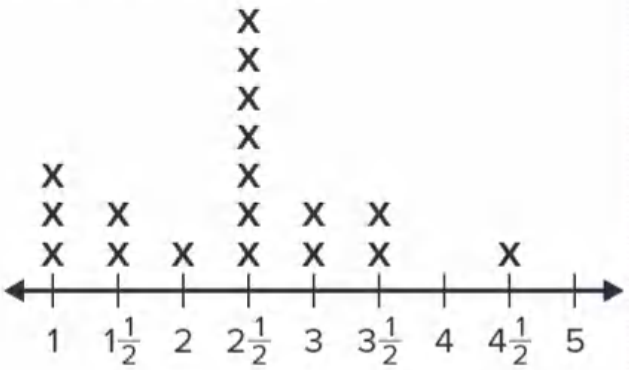


Shoe Lengths (in.)

On My Own

Name _____

Use the line plot to complete exercises 1 through 3.



Heights of Figurines (in.)

1. How many figurines are in the collection?

2. Which height is most common?

3. Which measurements were not the height of any figurine ?

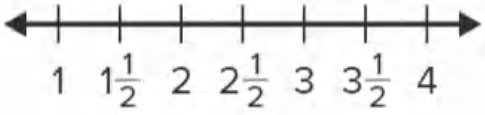
4. How many figurines are shorter than 2 inches?

5. How many figurines are taller than 3 inches?

Brody measures his crayons to the nearest half inch. He records the measurements in a table.

Crayon Lengths (in.)				
2	3	$1\frac{1}{2}$	3	$1\frac{1}{2}$
$3\frac{1}{2}$	$2\frac{1}{2}$	$3\frac{1}{2}$	3	2
2	$3\frac{1}{2}$	3	2	$2\frac{1}{2}$
3	$3\frac{1}{2}$	$3\frac{1}{2}$	$1\frac{1}{2}$	3

6. How can you display the data in a line plot?



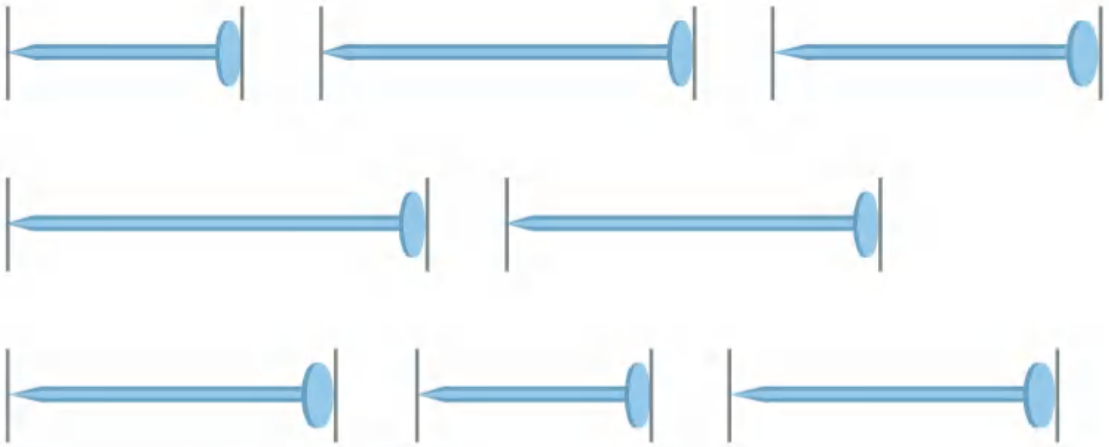
Lengths of Crayons (in.)

7. How many crayons are $2\frac{1}{2}$ inches long?

8. How many more 3-inch crayons are there than $1\frac{1}{2}$-inch crayons?

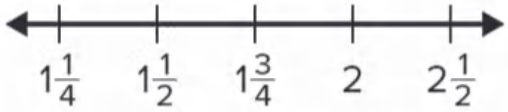
9. How many crayons are shorter than 3 inches?

10. What is the measurement of each nail to the nearest quarter inch? Record the data in the table and create a line plot.



Lengths of Nails (in.)			

11. Error Analysis Meg begins a line plot to record the lengths of the nails. How might you correct the number line? Explain your thinking.



12. Extend Your Thinking How can showing measurement data on a line plot help someone understand the data?

Reflect

How can you explain how to create a line plot from length measurements?

Math is... Mindset

How did working as a team help you achieve your goal?

Unit Review

Name _____

Vocabulary Review

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

analog clock	line plot	milliliter
balance scale	liquid volume	ruler
gram	liter	scale
kilogram	mass	

1. A clock that uses hands to show the time is called a(n) _____. (Lesson 12-5)

2. _____ is the amount of matter in an object. (Lesson 12-3)

3. The amount of liquid in a container is _____. (Lesson 12-1)

4. In a picture graph, a(n) _____ tells the amount represented by each picture on the graph. (Lesson 12-7)

5. One _____ is equal to 1,000 grams. (Lesson 12-3)

6. A liter is equal to 1,000 _____. (Lesson 12-1)

7. A(n) _____ is used to measure liquid volume. (Lesson 12-1)

8. A(n) _____ is a unit used to measure mass. (Lesson 12-3)

9. A(n) _____ is a tool used to measure length. (Lesson 12-10)

10. A(n) _____ displays data using Xs above a number line. (Lesson 12-11)

11. A(n) _____ is a tool used to measure mass. (Lesson 12-3)

Review

12. Which of the following is the best estimate for the mass of a bowling ball? (Lesson 12-4)

A. 5 kilograms

B. 5 grams

C. 50 kilograms

D. 50 grams

13. What time is shown on the clock? (Lesson 12-5)

A. 3:50

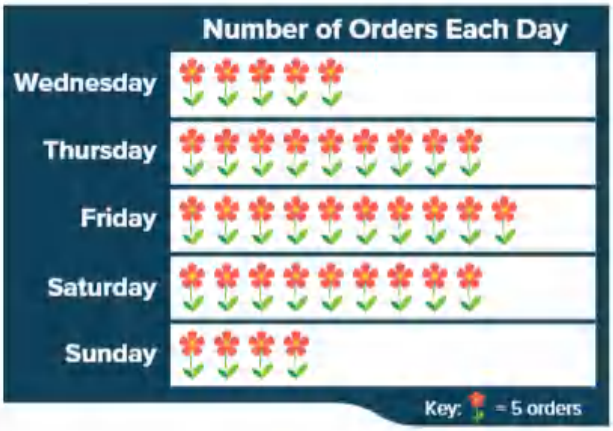
B. 3:48

C. 10:19

D. 10:18

14. Joshua eats 367 grams of bananas and 559 grams of apples this week. What is the total mass of the fruit Josh eats? (Lesson 12-4)

15. The scaled picture graph shows how many orders Jenna received each day at her flower shop.

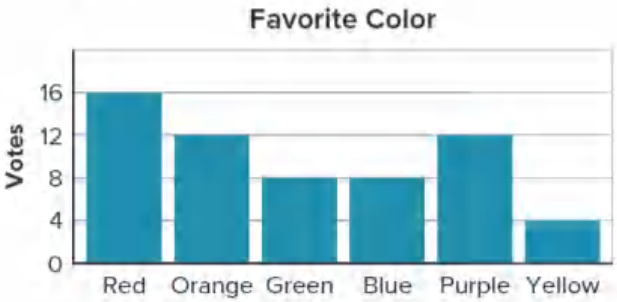


How many more orders did Jenna receive on Saturday than on Sunday? (Lesson 12-9)

A. 13 orders **B.** 65 orders

C. 5 orders **D.** 25 orders

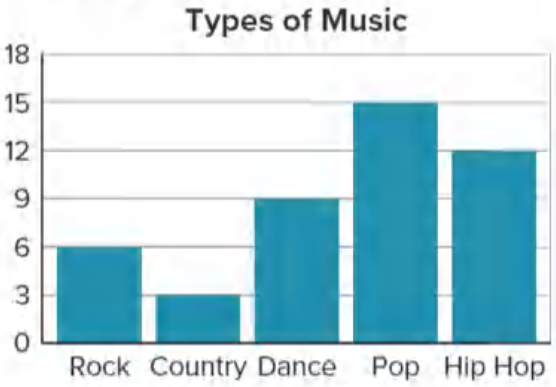
16. Students were asked to name their favorite color. The results of the survey are shown in the bar graph.



How many students were surveyed in all? (Lesson 12-9)

17. The path Greg jogs takes 45 minutes to complete. If Greg starts jogging at 4:13 p.m., at what time will he finish jogging? (Lesson 12-6)

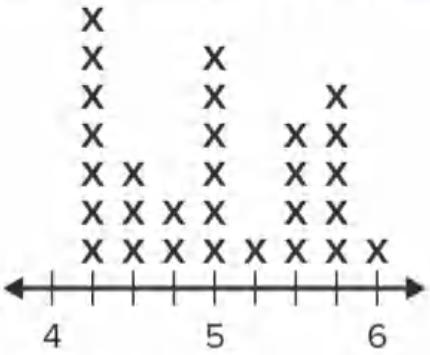
18. The bar graph represents the number of songs Shawn has for each type of music in his playlist.



Decide whether each statement is true or false. Check *True* or *False* for each. (Lesson 12-9)

	True	False
Shawn has more pop music than rock and country music combined.		
Shawn has 45 songs in his playlist.		
Hip Hop music has the most songs.		

19. Each student was given a piece of ribbon and asked to measure its length to the nearest quarter inch. The line plot shows the lengths of all the pieces of ribbon. (Lesson 12-11)



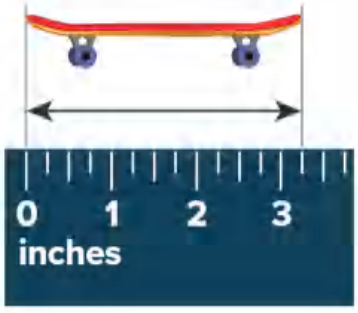
Lengths of Ribbon (inches)

How many pieces of ribbon are less than 5 inches long?

A. 12 **B.** 18

C. 29 **D.** 6

20. What is the length of the mini-skateboard to the nearest quarter inch? (Lesson 12-10)



Performance Task

Maya visits the office of local geologists. Maya makes a list of her tasks she will be helping with. She also notes how long each task should take.

Task	Time (in minutes)
Site study	30
Lab tests	35
Post lab results	25
Gather soil samples	20

Part A: Maya has worked half of her time. What tasks could she have completed? Explain.

Part B: Maya took twice as long to complete one of the tasks. If she completes her other tasks on time, how long will it take her to complete all tasks?

Reflect

How can you measure and record data?

Unit 12

Fluency Practice

Name _____

Fluency Strategy

You can decompose 6s facts into a 5s fact and 1s fact to multiply.	You can decompose 7s facts into a 5s fact and 2s fact to multiply.
$6 \times 4 = ?$ $5 \times 4 \quad + \quad 1 \times 4$ $20 \quad + \quad 4$ 24 $6 \times 4 = 24$	$7 \times 8 = ?$ $5 \times 8 \quad + \quad 2 \times 8$ $40 \quad + \quad 16$ 56 $7 \times 8 = 56$

Fluency Flash

How can you decompose a factor to represent each model to multiply?

1. 

$6 \times 3 =$ _____ $\times 3 + 1 \times$ _____

$6 \times 3 =$ _____ $+$ _____

$6 \times 3 =$ _____

2. 

$7 \times 6 =$ _____ $\times 6 + 2 \times$ _____

$7 \times 6 =$ _____ $+$ _____

$7 \times 6 =$ _____

Fluency Check

What is the product?

3. $3 \times 6 =$ _____
4. $9 \times 5 =$ _____
5. $7 \times 5 =$ _____
6. $4 \times 9 =$ _____
7. $4 \times 7 =$ _____
8. $3 \times 4 =$ _____
9. $6 \times 7 =$ _____
10. $3 \times 8 =$ _____
11. $8 \times 6 =$ _____
12. $5 \times 8 =$ _____
13. $6 \times 6 =$ _____
14. $3 \times 10 =$ _____
15. $6 \times 9 =$ _____
16. $2 \times 3 =$ _____

Fluency Talk

How can you explain to a friend how to recall a 7s fact?

How is multiplying by 6 similar to multiplying by 7?

Unit 13

Describe and Analyze 2-Dimensional Shapes

Focus Question

How can I identify, classify, and draw 2-dimensional shapes?

IGNITE!

Name _____

Hidden Squares

Count the number of squares.

Figure 1

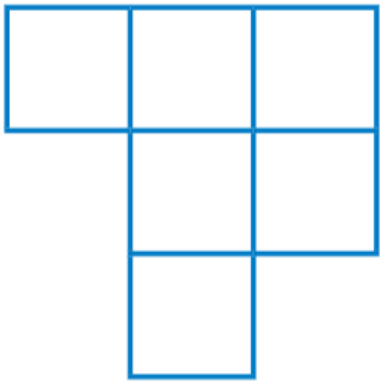
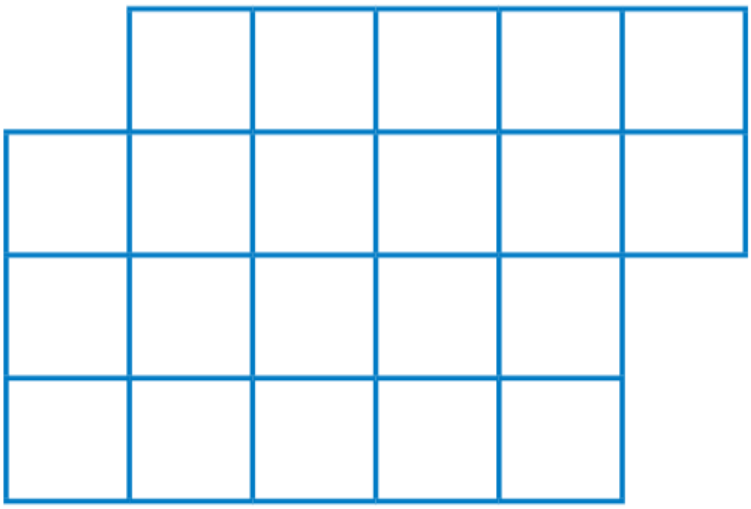


Figure 2



Describe and Classify Polygons

Be Curious

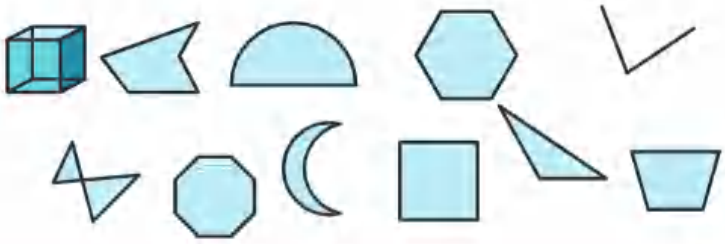
How are they the same?
How are they different?

Math is... Mindset

What helps you stay focused?

Learn

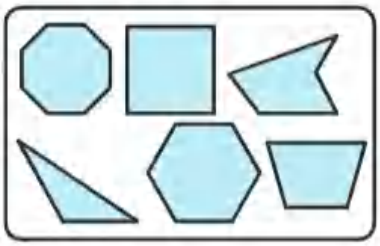
Sasha is sorting shapes.



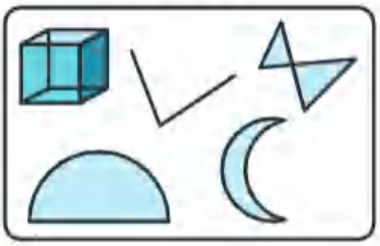
How can she classify them based on their attributes?

She can classify them as polygons and not polygons. A **polygon** is a closed 2-dimensional shape formed by 3 or more straight sides that do not cross.

Polygons

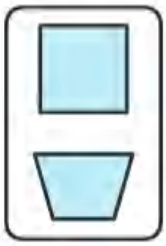


Not Polygons



You can name polygons based on their number of sides and angles.

Triangle
3 sides
3 angles



Quadrilateral
4 sides
4 angles

Pentagon
5 sides
5 angles

Hexagon
6 sides
6 angles

Octagon
8 sides
8 angles

A polygon is a closed 2-dimensional shape formed by 3 or more straight sides that do not cross. Polygons are named and classified based on their shared attributes.

Math is... Structure

Why is categorizing and naming shapes important?

Work Together

Is this shape a polygon? How do you know?

On My Own

Name _____

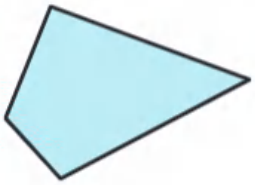
Is the shape a polygon? If not, explain why.

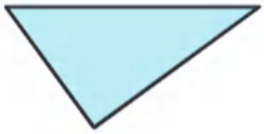
1. 

2. 

3. 

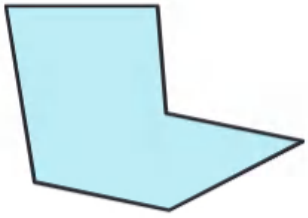
How can you name the polygon?
Write *triangle*, *quadrilateral*, *pentagon*, *hexagon*, or *octagon*.

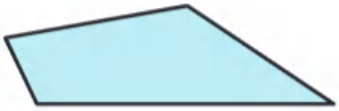
4. 

5. 

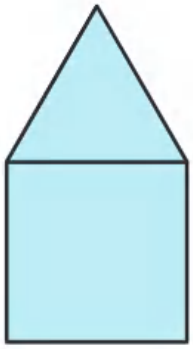
6. 

7. 

8. 

9. 

10. Penny put a square pattern block and a triangle pattern block together as shown. What polygon did she create? Explain how you know.



11. Error Analysis Phil and Tiana both said they drew polygons. Do you agree? Explain why.

Phil's Figure

Tiana's Figure

12. Extend Your Thinking Are all quadrilaterals polygons? Are all polygons quadrilaterals? Explain.

Reflect

How can you describe and classify polygons?

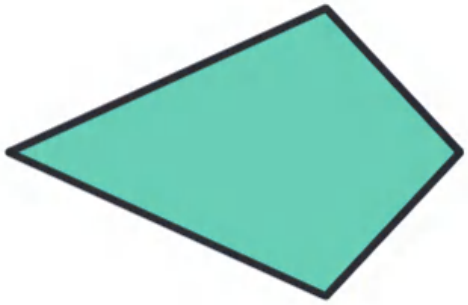
Math is... Mindset

What helped you stay focused today?

Describe Quadrilaterals

Be Curious

Which doesn't belong?



Math is... Mindset

Why is it important to speak clearly and concisely?

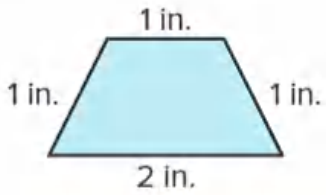
Learn

Kane is comparing three quadrilaterals.

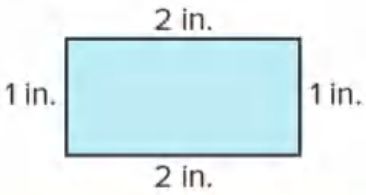
How can he describe the attributes of the quadrilaterals?

You can look at the sides and the angles of the quadrilaterals.

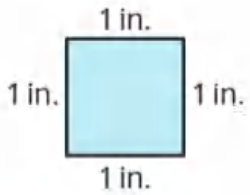
Sides can be the same length.



1 pair of equal sides

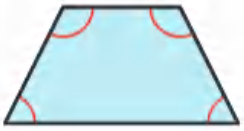


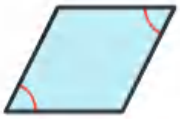
2 pairs of equal sides

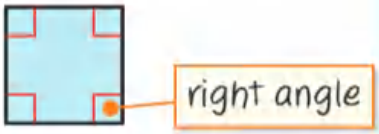


4 equal sides

Some angles are right angles. A **right angle** forms a square corner.







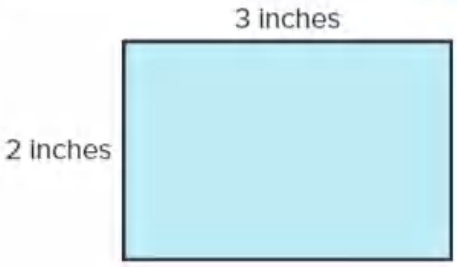
You can describe quadrilaterals based on the number of equal sides and angles.

Math is... Patterns

Why might it be important to examine different attributes of shapes?

Work Together

How can you describe the number of equal side lengths and angles?



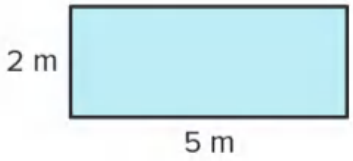
On My Own

MATH REPLAY GO ONLINE

Name _____

How many pairs of equal side lengths and right angles does each quadrilateral have?

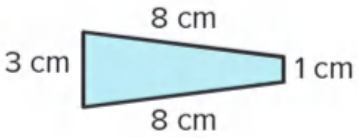
1.



_____ pair(s) of equal sides

_____ right angle(s)

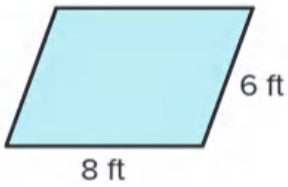
2.



_____ pair(s) of equal sides

_____ right angle(s)

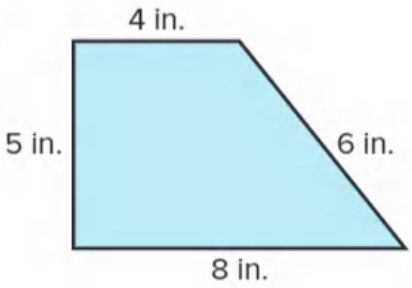
3.



_____ pair(s) of equal sides

_____ right angle(s)

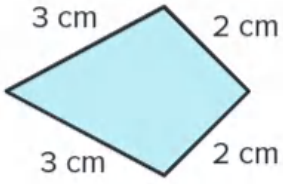
4.



_____ pair(s) of equal sides

_____ right angle(s)

5.



_____ pair(s) of equal sides

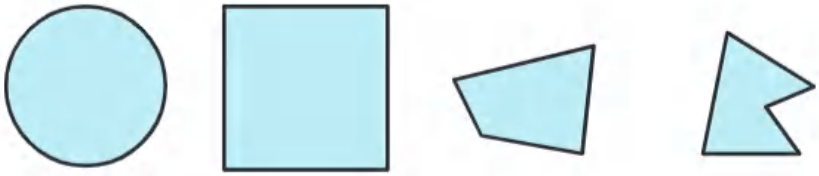
_____ right angle(s)

6.

_____ pair(s) of equal sides

_____ right angle(s)

7. I am a quadrilateral with 0 pairs of equal sides and 0 right angles. What shape am I?



8. **Error Analysis** Laila sees a quadrilateral with 4 equal sides and 0 right angles. She says the quadrilateral is a square. How can you help Laila understand and correct her mistake?

9. Describe the shape of the sign using its attributes.

10. **Extend Your Thinking** How can you determine whether a quadrilateral has any right angles?

Reflect

How can you use the attributes of a quadrilateral to describe it?

Math is... Mindset

Why was it important to speak clearly and concisely today?

Classify Quadrilaterals

Be Curious

Is it always true?

All squares are rectangles.

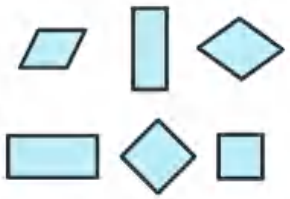
All rectangles are squares.

Math is... Mindset

How do you show that you understand your partner's point of view?

Learn

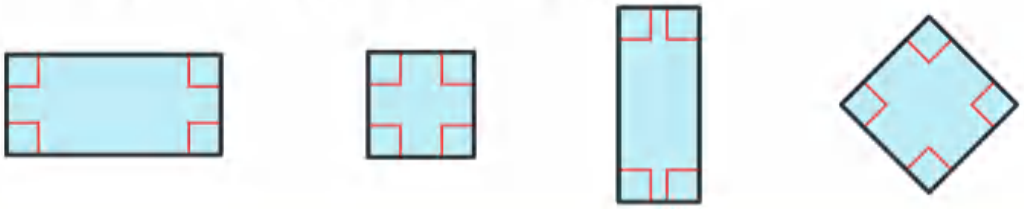
Nora sorts 6 quadrilaterals.



What are some different ways she can classify the quadrilaterals?

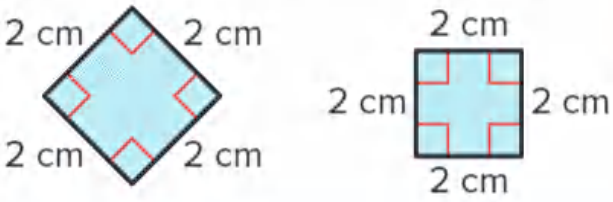
You can sort quadrilaterals by side lengths and angles.

A quadrilateral with 4 right angles is a rectangle.



A quadrilateral with 4 equal sides is a rhombus.

A quadrilateral with 4 right angles and 4 equal sides is a square.



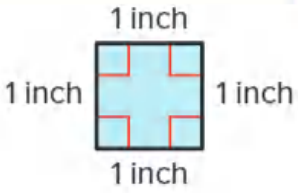
Math is... Explaining

How can you explain the relationship between a square and other types of quadrilaterals?

Quadrilaterals are classified into different categories based on their shared attributes.

Work Together

Can this quadrilateral be classified in more than one way? Explain your thinking.



On My Own

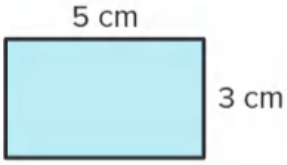
MATH REPLAY GO ONLINE

Name _____

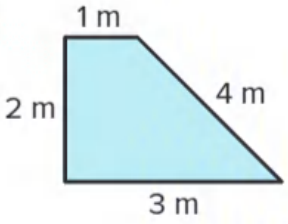
How can you classify the shapes?
Some may have more than one label.

Write *square*, *rectangle*, *rhombus*, and *quadrilateral*.

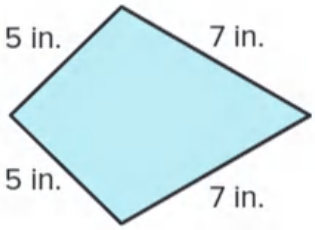
1.



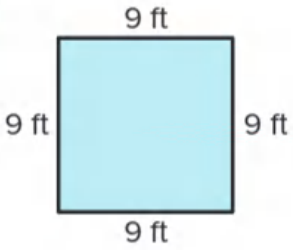
2.



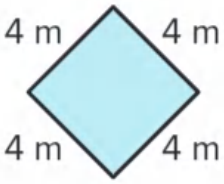
3.



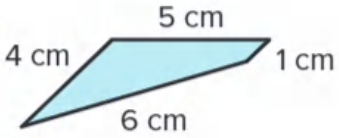
4.



5.

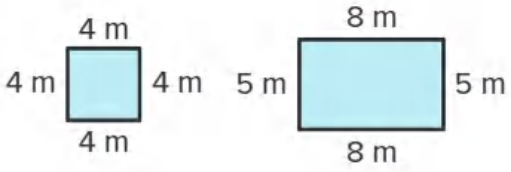


6.

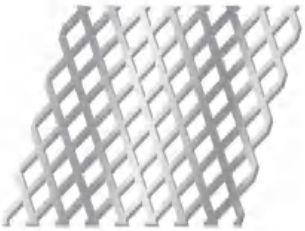


7. What is the same about the quadrilaterals shown in Problems 1 and 4 above? What is different

8. How can you classify the quadrilaterals shown? Explain.



9. STEM Connection If Hannah is welding a piece of metal with this repeating pattern, how can she explain that the quadrilateral in the pattern is a rhombus and not a square?



10. What is the name of a quadrilateral with 0 right angles and 4 sides of equal length?

11. Describe the attributes of a quadrilateral that is not a rectangle or a rhombus.

12. Extend Your Thinking How can you explain why a rectangle or rhombus is not always a square?

Reflect

How can you classify quadrilaterals by their attributes?

Math is... Mindset

How did you show that you understood your partner's point of view?

Unit 13

Classifying Shapes

Name _____

Decide how to classify each shape based on its attributes.

1. Circle *all* words that are names for the shape.

quadrilateral

square

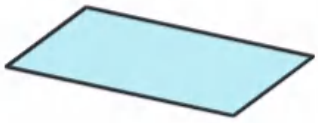
rectangle

rhombus

none of these

Explain your choice(s).

2. Circle *all* words that are names for the shape.



quadrilateral

square

rectangle

rhombus

none of these

Explain your choice(s).

3. Circle *all* words that are names for the shape.

quadrilateral

square

rectangle

rhombus

none of these

Explain your choice(s).

Reflect On Your Learning

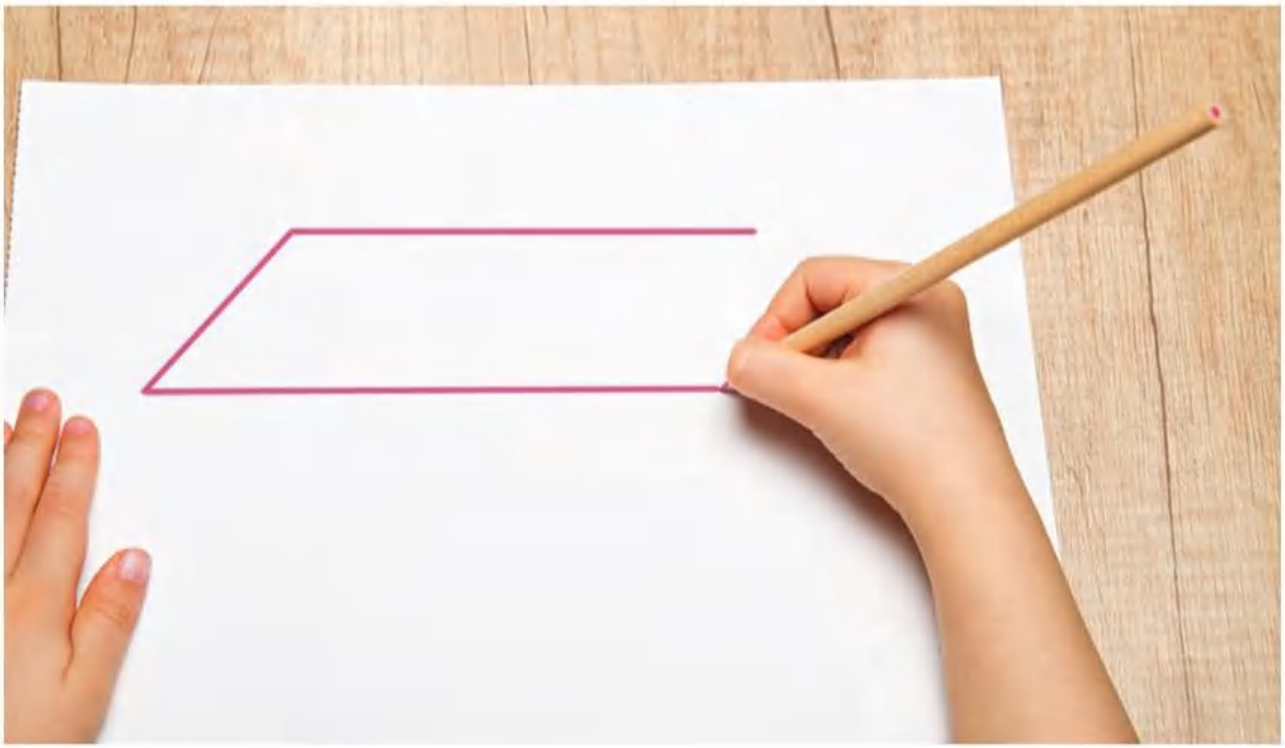
I'm confused. — I'm still learning. — I understand. — I can teach someone else.

Lesson 13-4

Draw Quadrilaterals with Specific Attributes

Be Curious

What do you notice?
What do you wonder?



Math is... Mindset

What helps you know when there is a problem?

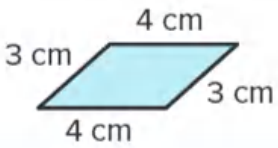
Learn

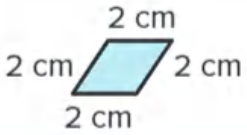
How can you draw 2 different quadrilaterals that are not rectangles?

Make a list of the attributes the quadrilaterals must have.

- 4 sides
- not 4 right angles

Use a ruler to help you draw quadrilaterals with these attributes.





You can use side lengths and angles to draw quadrilaterals.

Math is... Choosing Tools

What tools could you use if you don't have a ruler?

Work Together

How can you draw a quadrilateral with only 1 pair of opposite sides that are the same length?

On My Own

Name _____

1. What are some attributes of a shape that are important to include in a description?

How can you draw a quadrilateral to match the description?

2. 1 pair of opposite sides of equal length

3. no right angles

4. 4 right angles

5. a rhombus with 4 right angles

6. 0 sides of equal length and 0 right angles

7. no right angles and 2 pairs of opposite sides of equal length

8. 4 sides of equal length

9. not a rectangle or a rhombus

10. Draw 2 quadrilaterals with exactly 1 pair of opposite sides that are equal and no right angles.

11. STEM Connection Hannah needs to create a metal support for a bridge. It is a quadrilateral with 2 pairs of opposite sides of equal length and 4 right angles. Draw and name the support she could build to fit the description

12. Extend Your Thinking Draw and name a polygon that is not a quadrilateral that matches the attributes below. Then explain how you determined what figure to dra .

- 6 sides
- opposite sides are equal lengths

Reflect

How can you use your understanding of attributes to draw quadrilaterals?

Math is... Mindset

What helped you know when there was a problem today?

Unit Review

Name _____

Vocabulary Review

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

polygon	quadrilateral	right angle
pentagon	octagon	rhombus

1. A(n) _____ is a closed 2-dimensional figure formed by three or more sides that do not cross. (Lesson 13-1)

2. A(n) _____ is an angle that forms a square corner. (Lesson 13-2)

3. A(n) _____ is a quadrilateral with four sides of equal length. (Lesson 13-3)

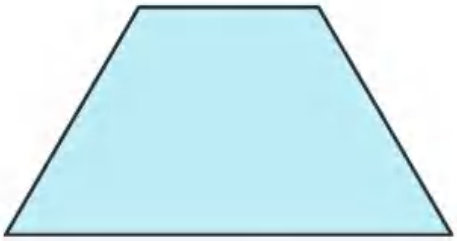
4. A(n) _____ is a polygon with four sides. (Lesson 13-1)

5. A(n) _____ is a polygon with eight sides. (Lesson 13-1)

6. A(n) _____ is a polygon with five sides. (Lesson 13-1)

Review

7. What attributes best describe this figur ? (Lesson 13-2)



Choose all that apply.

A. It has 2 right angles.

B. It has 4 angles.

C. It has 4 sides.

D. It has 4 right angles.

8. Which attributes are shared between a square and a rhombus?

Choose all that apply. (Lesson 13-3)

A. 4 angles

B. 4 sides

C. 4 right angles

D. 4 equal side lengths

E. 2 right angles

F. closed figure

9. Which attribute best describes this figur ? (Lesson 13-2)

A. 1 pair of equal sides

B. 2 pairs of equal sides

C. all angles are right angles

D. all sides are the same length

10. How can you complete the sentences to classify the figure ? (Lesson 13-3)

A. Figures 1 and 2 are both _____.

polygons

quadrilaterals

pentagons

B. Figures 3 and 4 are both _____.

squares

quadrilaterals

rectangles

MATH REPLAY | GO ONLINE

11. Alejandro drew a polygon that has more sides than a hexagon. Which polygon could Alejandro have drawn? (Lesson 13-1)

A. triangle

B. quadrilateral

C. octagon

D. pentagon

12. Which statement best describes a pentagon? (Lesson 13-1)

A. a polygon with 5 sides and 4 angles

B. a polygon with 5 sides and 5 angles

C. a polygon with 6 sides and 5 angles

D. a polygon with 6 sides and 6 angles

13. Fill in the blanks with *always, sometimes,* or *never.* (Lesson 13-3)

A square is _____ a rectangle.

A rectangle is _____ a square.

A triangle is _____ a rhombus.

14. Amy draws a quadrilateral that is not a rectangle. Which statements could be true? (Lesson 13-4)

Choose all that apply.

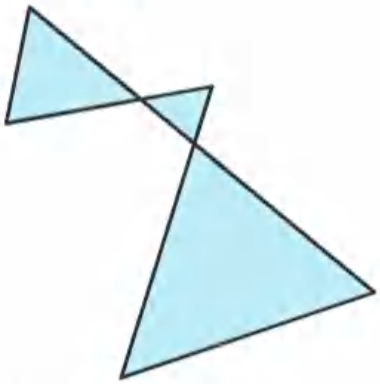
A. The figure could have 4 pairs of equal sides.

B. The figure could have 4 equal side lengths.

C. The figure could have 4 right angles.

D. The figure could have 4 different side lengths.

15. Is this figure a polygo ? (Lesson 13-1)



A. Yes, it is a polygon.

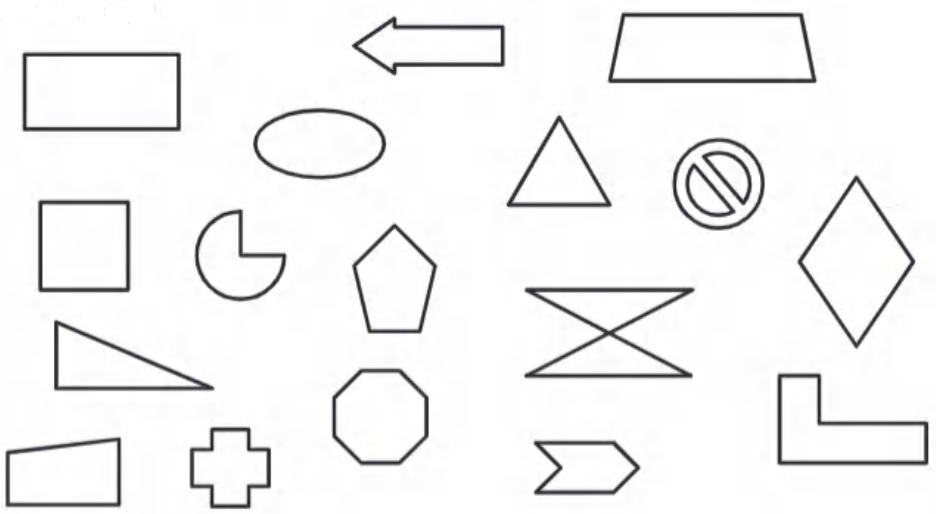
B. No, it has too many sides.

C. No, it is an open figure.

D. No, its sides cross each other.

Performance Task

Hannah is designing a stained-glass window.



Part A: Hannah only uses polygons. Design a stained-glass window with different types of polygons or just quadrilaterals that Hannah could use.

Part B: Which polygons fit better next to other polygons?

Reflect

What are different ways you can classify polygons?

Unit 13

Fluency Practice

Name _____

Fluency Strategy

You can decompose 8s facts into two 4s facts to multiply.

$8 \times 3 = ?$

$4 \times 3 = 12$

$4 \times 3 = 12$

$12 + 12 = 24$

$8 \times 3 = 24$

You can decompose 9s facts into a 5s fact and 4s fact to multiply.

$9 \times 3 = ?$

$5 \times 3 + 4 \times 3$

$15 + 12$

27

$9 \times 3 = 27$

1. $9 \times 2 =$ _____ $\times 2 +$ _____ $\times 2$

   $9 \times 2 =$ _____ $+$ _____

   $9 \times 2 =$ _____

Fluency Flash

How can you decompose a factor to multiply? Use the model.

2. 

   $8 \times 4 =$ _____ $\times 4 +$ _____ $\times 4$

   $8 \times 4 =$ _____ $+$ _____

   $8 \times 4 =$ _____

3. 

   $9 \times 6 =$ _____ $\times 6 + 4 \times$ _____

   $9 \times 6 =$ _____ $+$ _____

   $9 \times 6 =$ _____

Fluency Check

What is the product?

4. $9 \times 6 =$ _____

5. $7 \times 5 =$ _____

6. $7 \times 8 =$ _____

7. $6 \times 6 =$ _____

8. $4 \times 8 =$ _____

9. $3 \times 4 =$ _____

10. $6 \times 8 =$ _____

11. $6 \times 4 =$ _____

12. $8 \times 9 =$ _____

13. $3 \times 9 =$ _____

14. $9 \times 7 =$ _____

15. $7 \times 10 =$ _____

16. $9 \times 9 =$ _____

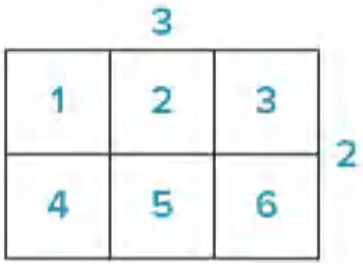
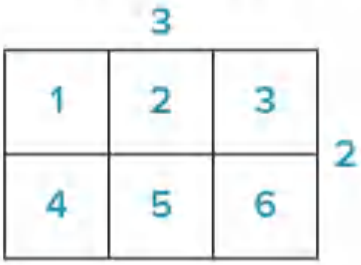
17. $7 \times 6 =$ _____

Fluency Talk

Explain to a friend how to recall a 9s fact.

How is multiplying by 8 similar to multiplying by 4?

Glossary/Glosario

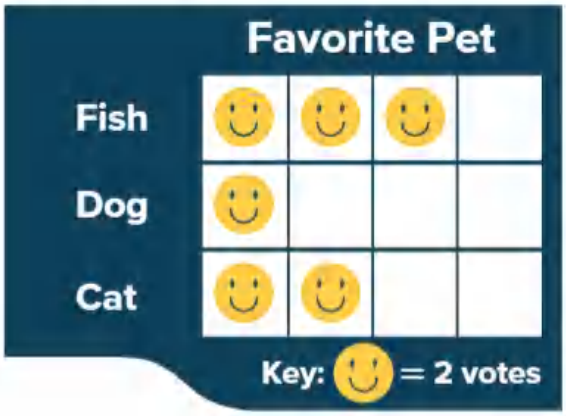
English	Spanish/Español
Aa	
area The amount of surface inside a 2-dimensional figure. Area can be measured by covering the region with unit squares. 	área La cantidad de superficie dentro de una figura bidimensional. El área se puede medir cubriendo la región con unidades cuadradas. 
Cc	
compatible numbers Numbers in a problem or related numbers that are easy to work with mentally.	números compatibles Números en un problema o números relacionados que son fáciles de calcular mentalmente.
composite shape A composite shape is made up of two or more polygons.	figura compuesta Figura conformada por dos o más figuras.
Dd	
denominator The bottom number in a fraction. In $\frac{5}{6}$, 6 is the denominator.	denominador El número inferior en una fracción. En $\frac{5}{6}$, 6 es el denominador.
divide To separate into equal groups.  $9 \div 3 = 3$	divider Separar en grupos iguales.  $9 \div 3 = 3$

English	Spanish/Español
Ee	
equal groups Groups that have the same number of objects.	grupos iguales Grupos que tienen el mismo número de objetos.
equal sharing Equal sharing means that objects are shared equally among groups.	reparto equitativo Compartir equitativamente significa que los objetos se comparten por igual entre grupos.
equivalent fractions Fractions that have the same value.	fracciones equivalentes Fracciones que tienen el mismo valor.
expanded form The representation of a number as a sum that shows the value of each digit. Example: 536 is written as $500 + 30 + 6$.	forma desarrollada Representación de un número como una suma que muestra el valor de cada dígito. Ejemplo: 536 se escribe como $500 + 30 + 6$.
Ff	
factor(s) A number that divides a whole number evenly. Also a number that is multiplied by another number. $3 \times 6 = 18$ ↑ ↑	factor Número que divide exactamente a otro número entero. También es un número multiplicado por otro número. $3 \times 6 = 18$ ↑ ↑
fraction A number that represents equal parts of a whole or a set.	fracción Número que representa partes iguales de un entero o un conjunto.
Gg	
gram A metric unit for measuring mass.	gramo Una unidad métrica para medir masa.

English	Spanish/Español

Kk

key Tells what or how many each symbol stands for.



clave Indica qué significa o cuánto vale cada símbolo.

kilogram A metric unit for measuring mass.

1,000 grams

kilogramo Unidad métrica de masa.

1,000 gramos

Ll

line plot A graph that uses columns of Xs above a number line to show frequency of data.

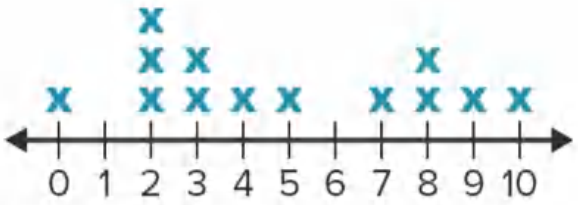
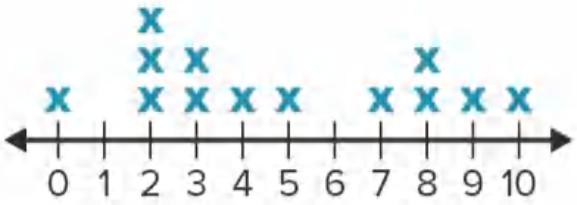


diagrama lineal Gráfica que usa columnas de X sobre una recta numérica para mostrar la frecuencia de los datos.



liquid volume The amount of liquid in a container.

volumen líquido La cantidad de líquido en un recipiente.

Mm

mass The amount of matter in an object. Two examples of units of measure would be pound and kilogram.

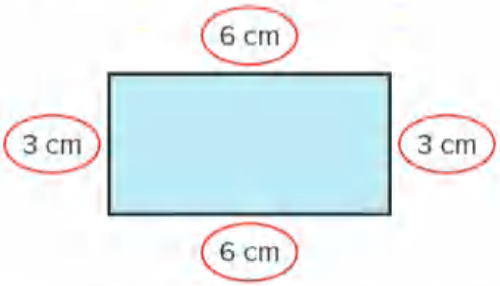
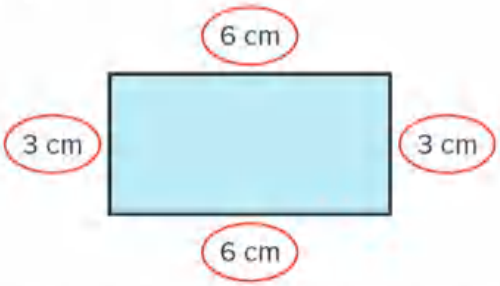
masa Cantidad de materia de un cuerpo. Dos ejemplos de unidades de medida son la libra y el kilogramo.

English	Spanish/Español
multiple A multiple of a number is the product of that number and any whole number. Example: 15 is a multiple of 5 because $3 \times 5 = 15$.	múltiplo Un múltiplo de un número es el producto de ese número por cualquier otro número entero. Ejemplo: 15 es múltiplode 5 porque $3 \times 5 = 15$.
multiply To find the product of two or more numbers. Example: $4 \times 3 = 12$. Four groups of three are equal to twelve. It can also be thought of as repeated addition: $3 + 3 + 3 + 3 = 12$.	multiplicar Calcular el producto. Ejemplo: $4 \times 3 = 12$. Cuatro grupos de tres son igual a doce. También se puede pensar como una suma repetida: $3 + 3 + 3 + 3 = 12$.

Nn

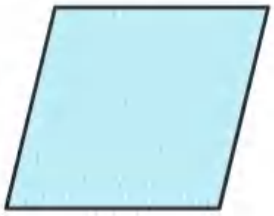
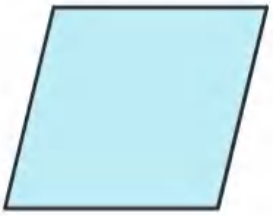
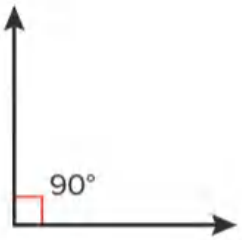
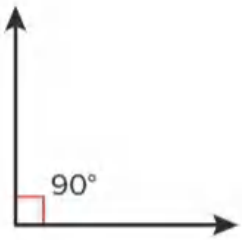
numerator The top number in a fraction; the part of the fraction that tells how many of the equal parts are being used.	numerador El número superior en una fracción; la parte de la fracción que indica cuántas partes iguales se están usando.

Pp

perimeter The distance around a shape or region.  6 cm + 3 cm + 6 cm + 3 cm = 18 cm	perímetro Distancia alrededor de una figura o región.  6 cm + 3 cm + 6 cm + 3 cm = 18 cm
polygon A closed plane figure formed using line segments that meet only at their endpoints. 	polígono Figura plana cerrada formada por segmentos de recta que sólo concurren en sus extremos. 

English	Spanish/Español
product The result of multiplying two or more numbers. $3 \times 4 = 12$	product El resultado de multiplicar dos o más números. $3 \times 4 = 12$

Rr

rhombus A quadrilateral with four sides of the same length. 	rombo El cuadrilátero con cuatro lados del mismo largo. 
right angle An angle of a square corner (90°). 	ángulo recto Ángulo que mide 90°. 
round To change the value of a number to one that is easier to work with. To find the nearest value of a number based on a given place value. Example: 27 rounded to the nearest ten is 30.	redondear Cambiar el valor de un número por uno con el que es más fácil trabajar. Ejemplo: 27 redondeado a la décima más cercana es 30.

English	Spanish/Español
Ss	
scale Equally spaced marks along an axis of a graph.	escala Conjunto de números igualmente separados en un lado de una gráfica.
scaled picture graph A scaled picture graph uses a symbol to represent more than one amount or value.	pictografía a escala La pictografía a escala usa símbolos para representar más de una cantidad o un valor.
Tt	
thousands A place value of a number. Example: In the number 1,253, the 1 is in the thousands place.	millares Valor de posición de un número. Ejemplo: 1,253, el 1 está en el lugar de las unidades de millar.
time interval The time that passes from the start of an activity to the end of an activity.	intervalo de tiempo Tiempo que transcurre entre el comienzo y el final de una actividad.
Uu	
unit fraction Any fraction with a numerator of 1. $\frac{1}{2}, \frac{1}{3}, \frac{1}{4}$	fracción unitaria Cualquier fracción cuyo numerador es 1. $\frac{1}{2}, \frac{1}{3}, \frac{1}{4}$
unknown factor The missing number, or the number to be solved for, in a multiplication equation.	incógnita El número faltante o el número que se debe hallar en una ecuación de multiplicación.