Name _____

Compare Fractions and Decimals

Essential Question How can you compare decimals, fractions, and mixed numbers on a number line?

Unlock the Problem

Real World

The Tech Club compared the weights of three cell phones. Estéban's phone weighed 4.7 ounces. Jill's phone weighed $4\frac{3}{5}$ ounces. Mona's phone weighed 4.35 ounces. Who has the phone with the lightest weight?

You can use a number line to compare fractions and decimals.

Remember: Greater values on a number line lie farther to the right.

- How can you identify the number with the least value?

_____

_____

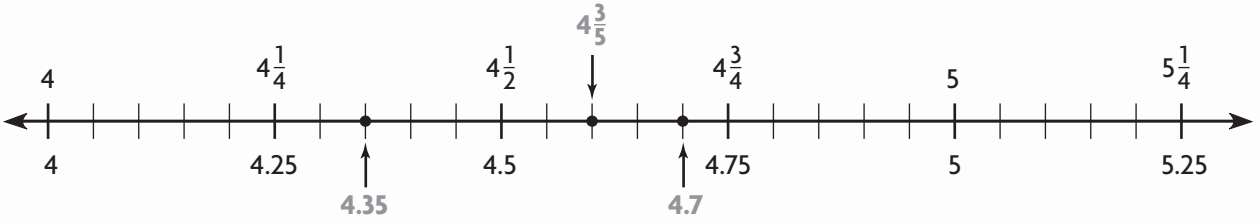
_____

_____

Compare the values on a number line.

STEP 1 Locate some benchmarks.

- Benchmark decimals: 4, 4.25, 4.5, 4.75, 5…
- Benchmark mixed numbers: 4, $4\frac{1}{4}$, $4\frac{1}{2}$, $4\frac{3}{4}$, 5…



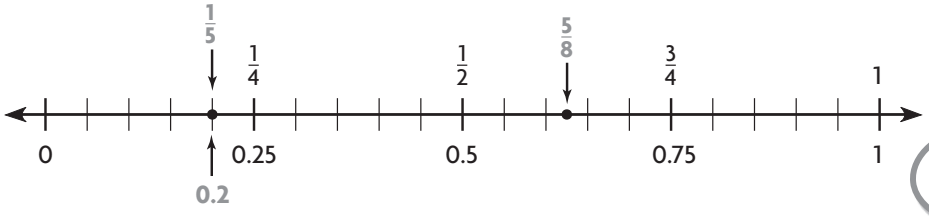
STEP 2 Mark the weight of each cell phone on the number line.

- Find the location of 4.7, $4\frac{3}{5}$, and 4.35.

Since $4.35 < 4\frac{3}{5} < 4.7$, Mona's phone is lightest.

Try This! **Compare $\frac{1}{5}$, $\frac{5}{8}$, and 0.2. Which number has the greatest value?**

- Mark each value on a number line.



The greatest number is _____. **Explain** how you decided.

Math Talk Mathematical Practices

Explain how you can tell that $\frac{1}{5}$ and 0.2 are equal.

Share and Show

MATH BOARD

For 1–2, identify the points on the number line. Then write the greater number.

1. point A as a decimal

_____

2. point B as a fraction

_____ _____ is greater.

Locate each number on a number line. Then complete the sentence.

3. $0.55, \frac{2}{5}, 0.46$

The number with the greatest value is _____.

On Your Own

Locate each number on a number line. Then complete the sentence.

4. $0.4, \frac{3}{4}, 0.15$

The number with the greatest value is _____.

5. $2\frac{2}{3}, 2.45, 2\frac{2}{5}$

The number with the least value is _____.

6 $3.95, 3\frac{5}{6}, 3\frac{4}{5}$

The number with the greatest value is _____.

Problem Solving

Real World

7. Hannah made 0.7 of her free throws in a basketball game. Abra made $\frac{9}{10}$ of her free throws. Dena made $\frac{3}{4}$ of her free throws. Who was the best shooter? **Explain.**

_____

_____

Name _____

Order Fractions and Decimals

Essential Question How can you order decimals, fractions, and mixed numbers on a number line?

Unlock the Problem

Real World

In tennis, Jocelyn's serve takes 0.97 of a second to reach her opponent. Dave's serve takes $\frac{4}{5}$ of a second. Monica's serve takes 0.85 of a second. Order the three serves from shortest to longest time.

- You want to order the times from shortest to longest. Should you read the numbers on the number line left to right or right to left?

_____

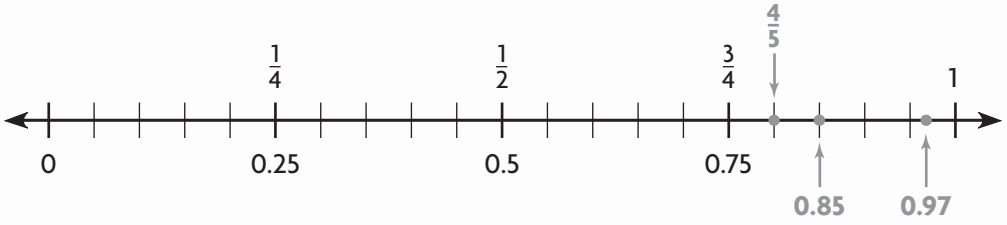
_____

_____

Order the fractions and decimals on the number line.

STEP 1 Locate the benchmarks on the number line.

- Benchmark decimals: 0, 0.25, 0.5, 0.75, 1.
- Benchmark fractions: 0, $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, 1.



STEP 2 Locate 0.97, $\frac{4}{5}$, and 0.85 on the number line.

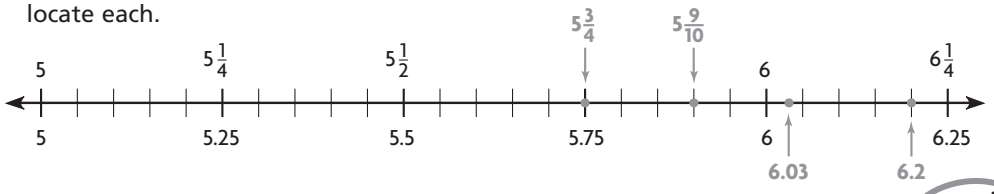
STEP 3 Order the fractions and decimals.

Remember: The point farthest to the left is the least value.

So, the times in order from shortest to longest are: $\frac{4}{5}$, 0.85, 0.97.

Try This! **Order 6.03, $5\frac{9}{10}$, $5\frac{3}{4}$, and 6.2 from greatest to least.**

- Locate each fraction and decimal on the number line. Use benchmarks to help you locate each.



From the greatest to least: _____, _____, _____, _____

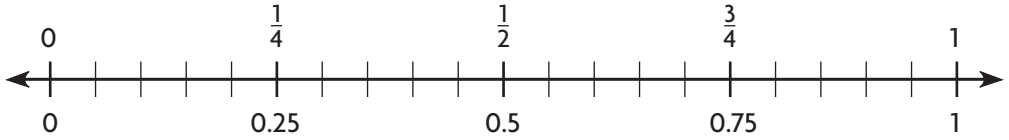
Math Talk **Mathematical Practices**

How does the number line help you order numbers from greatest to least?

Share and Show

MATH BOARD

Locate each number on the number line.
Then write the numbers in order from least to greatest.



1. $\frac{3}{5}$, 0.54, 0.35

_____

For 2–3, locate each set of numbers on a number line.
Then write the numbers in order from greatest to least.

2. 1.16, $1\frac{1}{4}$, 1.37, $1\frac{1}{10}$

_____

3. $\frac{5}{8}$, 0.5, $\frac{2}{5}$, 0.78

_____

On Your Own

For 4–5, locate each number on a number line.
Then write the numbers in order from least to greatest.

4. 0.6, $\frac{1}{2}$, $\frac{2}{3}$, 0.39

_____

5. $7\frac{1}{4}$, 7.4, $7\frac{3}{4}$, 7.77

_____

For 6–7, locate each number on a number line.
Then write the numbers in order from greatest to least.

6. $\frac{3}{10}$, 0.222, $\frac{3}{5}$, 0.53

_____

7. 2.96, $3\frac{1}{5}$, 3.48, $3\frac{1}{4}$

_____

Problem Solving

Real World

8. Judges in a skateboarding competition gave scores of 8.2, $8\frac{1}{3}$, $8\frac{4}{5}$, 8.44, and $8\frac{1}{5}$. Which two scores were closest to one another? **Explain**.

_____

_____

Name _____

Factor Trees

Essential Question How can you factor numbers using a factor tree?

Unlock the Problem

Real World

Mr. Shu gives this puzzle to his math students.

"Write 24 as a product of factors that are prime. Remember that a prime number must be greater than 1 and can have only 1 and itself as factors."

You can use a diagram called a **factor tree** to find the factors of a number.

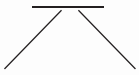
- Give an example of a number greater than 1 that has only 1 and itself as factors.

_____

Use a factor tree to find the prime number factors that have a product of 24.

STEP 1

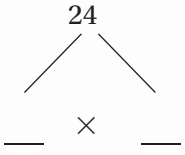
Write the number to be factored at the top of the factor tree.



STEP 2

Write it as a product of any two factors.

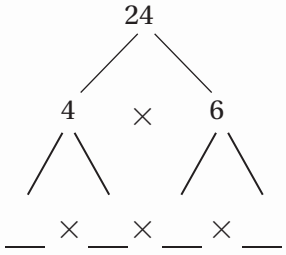
Think: $4 \times 6 = 24$



STEP 3

Write each factor as the product of two factors.

Think: $2 \times 2 = 4$ and $2 \times 3 = 6$



STEP 4

Continue until each factor is a prime number.

Think: $2 \times 1 = 2$ and $3 \times 1 = 3$

Write the factors that are prime numbers from least to greatest.

___ × ___ × ___ × ___

So, 24 = _____ .

Try This! **Make a different factor tree for 24.**

- Is the product of factors the same as in the Example? **Explain.**

_____

_____

_____

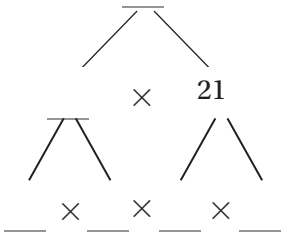
Math Talk **Mathematical Practices**

Explain how you can use factored numbers to find common factors.

Share and Show

MATH BOARD

1. Use a factor tree to find the prime number factors that have a product of 210.



- Write 210 as a product of any two factors.

  _____ = _____ × 21

- Write each factor as the product of factors.

  10 = _____ × _____ 21 = _____ × _____

Now each factor has only _____ and itself as factors.

So, 210 = _____ × _____ × _____ × _____.

ERROR Alert

Remember to continue to factor a number if it has factors other than 1 and itself.

Use a factor tree to find the prime number factors.

2. 8

_____

3. 45

_____

4. 350

_____

On Your Own

Use a factor tree to find the prime number factors.

5. 36

_____

6. 72

_____

7. 540

_____

Problem Solving

Real World

Mr. Shu gave these problems to his math students. Solve.

8. Write 500 as a product of prime number factors. Each factor must be greater than 1 and can have only 1 and itself as factors.

_____

9. Find a number that has four identical even factors. Each factor must be greater than 1 and can have only 1 and itself as factors.

_____

Name _____

Model Percent

Essential Question How can you express real world quantities as percents and use them to solve problems?

Unlock the Problem

Real World

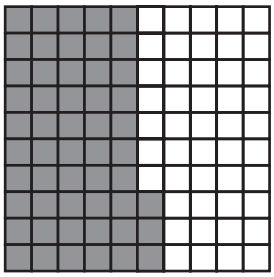
Percent means "per hundred" or "out of 100." So, when you find percent you are finding a part of 100. Sixty percent, for example, means 60 out of 100. You can write percents using the percent symbol, %. So, 60 percent is written as 60%.

- What number is always compared in a percent?

_____

Example 1

Name the percent that is shaded.



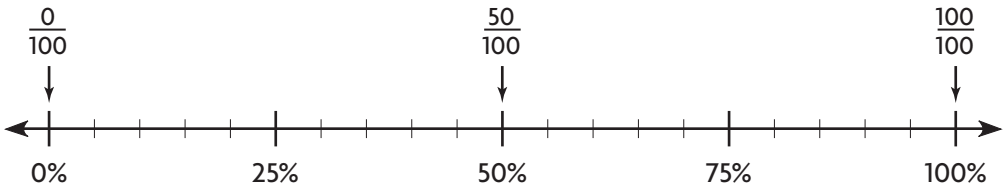
- 5 columns: $5 \times 10 = 50$.
- 3 squares: $3 \times 1 = 3$
- Total: $50 + 3 = 53$ out of 100, or 53 percent is shaded.

Example 2

Name the percent that is not shaded.

- 4 columns: $4 \times 10 = 40$.
- 7 squares: $7 \times 1 = 7$
- Total: $40 + 7 = 47$ out of 100, or 47 percent is not shaded.

Try This! **Use the number line. Tell what these percents mean: 0 percent, 50 percent, 100 percent.**



A. 0 percent means _____ out of 100, or none of the total.

B. 50 percent means _____ out of 100, or half of the total.

C. 100 percent means _____ out of 100, or all of the total.

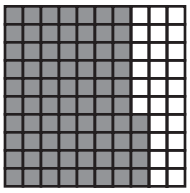
Math Talk **Mathematical Practices**

Which benchmark is 33% closest to? **Explain** how you know.

Share and Show

MATH BOARD

Use the diagram to write the percent.



1. How many whole columns and single squares are shaded?

_____

2. What percent is shaded?

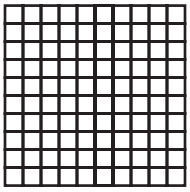
_____

3. What percent is unshaded?

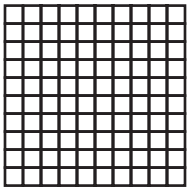
_____

Shade the grid to show the percent.

4. 20 percent

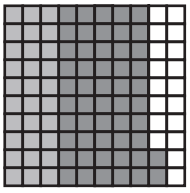


5. 86 percent



On Your Own

Use the diagram to write the percent.



6. light shading

_____

7. dark shading

_____

8. not shaded

_____

9. not shaded

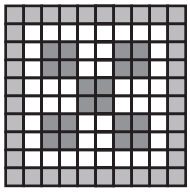
_____

10. dark shading

_____

11. light shading

_____



Write the closest benchmark for the percent.

12. 48%

_____

13. 94%

_____

14. 4%

_____

Problem Solving

Real World

15. In an election between Warren and Jorge, Warren declared victory because he received 58 percent of the vote. Is he correct? **Explain**.

_____

_____

Name _____

Relate Decimals and Percents

Essential Question How can you express decimals as percents and percents as decimals?

Unlock the Problem

Real World

Decimals and percents are two ways of expressing the same number. You can write a percent as a decimal. You can also write a decimal as a percent.

- In percent, the "whole" is 100. What is the "whole" in decimal form?

_____

Example 1

Model 0.42. Write 0.42 as a percent.

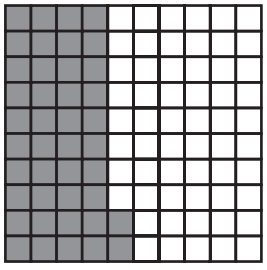
STEP 1 Write the decimal as a ratio.

0.42 = 42 hundredths = 42 out of 100.

STEP 2 Make a model that shows 42 out of 100.

STEP 3 Use the model to write a percent.

42 shaded squares = 42 percent, or 42 %



Example 2

Model 19 percent. Write 19% as a decimal.

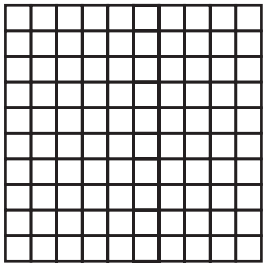
STEP 1 Write the percent as a fraction.

$19\% = \frac{19}{100}$

STEP 2 Make a model that shows 19 out of 100.

STEP 3 Use the model to write a decimal.

19 shaded squares out of 100 squares = _____

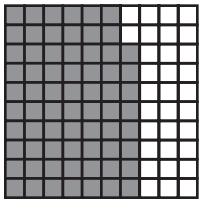


Math Talk Mathematical Practices

Suppose a store is having a 50% off sale. What does this mean?

Share and Show

MATH BOARD



Use the model. Complete each statement.

1a. 0.68 = _____ out of 100

1b. How many squares are shaded?

_____

1c. What percent is shaded?

_____

Write the percents as decimals.

2. 47 percent

_____

3. 11 percent

_____

On Your Own

Write the decimals as percents.

4. 0.20

_____

5. 0.39

_____

6. 0.44

_____

7. 0.93

_____

8. 0.07

_____

9. 0.7

_____

10. 0.06

_____

11. 0.6

_____

Write the percents as decimals.

12. 12 percent

_____

13. 31%

_____

14. 99 percent

_____

15. 13 percent

_____

16. 4 percent

_____

17. 14 percent

_____

18. 90 percent

_____

19. 9%

_____

Problem Solving

Real World

20. In basketball, Linda made 0.56 of her shots. What percent of her shots did Linda miss?

_____

Name _____

Fractions, Decimals, and Percents

Essential Question How can you convert between fractions, decimals, and percents?

Unlock the Problem

Every percent and decimal number can also be written as a fraction. All fractions can be written as decimals and percents. For example, $\frac{2}{5}$ of the songs in Bonnie's music collection are country songs. What percent of her song collection is country?

Write the percent that is equivalent to $\frac{2}{5}$.

STEP 1 Set up the equivalent fraction with a denominator of 100.

$$\frac{2 \times ?}{5 \times ?} = \frac{}{100}$$

STEP 2 Ask: By what factor can you multiply the denominator to get 100?

$$\frac{2 \times ?}{5 \times 20} = \frac{}{100}$$ ← multiply the denominator by 20

STEP 3 Multiply the numerator by the same factor, 20.

$$\frac{2 \times 20}{5 \times 20} = \frac{40}{100}$$

STEP 4 Write the fraction as a percent.

$$\frac{40}{100} = \underline{40} \text{ percent}$$

So, $\frac{2}{5}$ equals 40 percent.

More Examples

A. Write $\frac{8}{25}$ as a decimal.

STEP 1 Write an equivalent fraction with a denominator of 100.

$$\frac{8 \times 4}{25 \times 4} = \frac{32}{100}$$ ← multiply denominator and numerator by 4

STEP 2 Write the fraction as a decimal.

$$\frac{32}{100} = 0.32$$

B. Write 90 percent as a fraction in simplest form.

STEP 1 Write 90% as a fraction.

$$90\% = \frac{90}{100}$$

STEP 2 Simplify.

$$90\% = \frac{90 \div 10}{100 \div 10} = \frac{9}{10}$$

Math Talk Mathematical Practices

How are 9% and 90% alike when written as decimals? How are they different?

Share and Show

MATH BOARD

Complete the steps to write $\frac{7}{20}$ as a percent.

1. By what factor should you multiply the denominator and numerator? _____

$$\frac{7 \times ?}{20 \times ?} = \frac{?}{100}$$

2. For $\frac{7}{20}$, what is an equivalent fraction with a denominator of 100?

3. What percent is equivalent to $\frac{7}{20}$?

Write a decimal, a percent, or a simplified fraction.

4. $\frac{1}{4}$ as a decimal

5. $\frac{3}{10}$ as a percent

6. 80% as a fraction

On Your Own

Write a decimal, a percent, or a simplified fraction.

7. $\frac{1}{2}$ as a percent

8. $\frac{9}{10}$ as a decimal

9. $\frac{11}{20}$ as a percent

10. 75% as a fraction

11. $\frac{3}{5}$ as a percent

12. $\frac{9}{25}$ as a decimal

13. $\frac{29}{50}$ as a percent

14. $\frac{1}{20}$ as a percent

15. 4% as fraction

16. $\frac{4}{5}$ as a percent

17. $\frac{24}{25}$ as a decimal

18. $\frac{41}{50}$ as a percent

Problem Solving

Real World

19. Whitney has finished $\frac{9}{20}$ of her book. What percent of the book does Whitney still need to read?

20. Roger has completed $\frac{4}{25}$ of his math homework. What percent of his math homework does he still need to do?

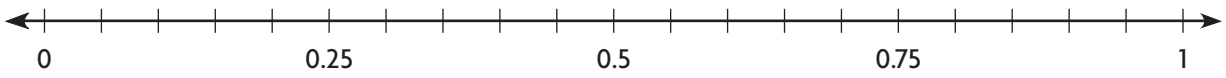
Name _____

Checkpoint

Concepts and Skills

Locate each number on the number line. Then complete the sentence.

1. 0.4, $\frac{3}{5}$, 0.35



The number with the least value is _____.

Write the numbers in order from least to greatest.

2. 0.4, $\frac{3}{5}$, 0.55, $\frac{1}{4}$

_____

3. $\frac{3}{4}$, 0.7, $\frac{1}{2}$, 0.1

_____

Use a factor tree to find the prime number factors.

4. 16

_____

5. 36

_____

6. 42

_____

Write a decimal, a percent, or a simplified fraction.

7. 0.08 as a percent

_____

8. $\frac{3}{5}$ as a decimal

_____

9. 80% as a fraction

_____

10. $\frac{13}{20}$ as a percent

_____

Problem Solving

For 11–12, use the data in the table.

11. What percent of the apes in the Wild Country Zoo are orangutans?

_____

12. One species makes up 40% of the apes in the zoo. Which species is it?

_____

Apes in the Wild Country Zoo	
Species	**Number**
Bonobo	4
Chimpanzee	20
Gorilla	15
Orangutan	11
Total	**50**

Fill in the bubble or grid completely to show your answer.

13. Entries for the Lake Manatee Bass Fishing Contest are shown. First place is awarded to the contestant with the heaviest fish.

Lake Manatee Bass Contest	
Contestant	**Weight of fish caught**
George	6.25 pounds
Mia	$6\frac{2}{5}$ pounds
Harvey	$6\frac{1}{3}$ pounds

What is the correct order from first place to third place?

Ⓐ First: George, Second: Mia, Third: Harvey

Ⓑ First: Mia, Second: George, Third: Harvey

Ⓒ First: Mia, Second: Harvey, Third: George

Ⓓ First: Harvey, Second: Mia, Third: George

14. Ric used a factor tree to write 180 as a product of factors that are prime numbers. How many factors were in Ric's product?

Ⓐ 2

Ⓑ 3

Ⓒ 4

Ⓓ 5

15. On Monday, 6% of the students at Riverside School were absent. Written as a decimal, what portion of Riverside's students attended school that day?

Ⓐ 0.06

Ⓑ 0.6

Ⓒ 0.94

Ⓓ 9

16. The Hastings family drove $\frac{12}{25}$ of the distance to Yellowstone National Park on the first day of their vacation. What percent of the distance to the park remained for them to drive?

Ⓐ 12%

Ⓑ 13%

Ⓒ 48%

Ⓓ 52%

Name _____

Divide Fractions by a Whole Number

Essential Question How do you divide a fraction by a whole number?

Unlock the Problem

Real World

Four friends share $\frac{2}{3}$ of a quart of ice cream equally. What fraction of a quart of ice cream does each friend get?

- What operation will you use to solve the problem?

_____

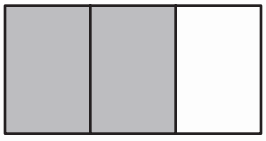
Divide. $\frac{2}{3} \div 4$

STEP 1

Let the rectangle represent 1 quart of ice cream. Divide it into thirds by drawing vertical lines. Shade 2 of the thirds.

STEP 2

Divide the rectangle into fourths by drawing horizontal lines. Shade $\frac{1}{4}$ of the $\frac{2}{3}$ already shaded.

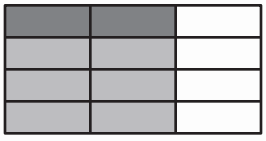


STEP 3

The rectangle is now divided into _____ equal parts.

Each part is _____ of the rectangle. Of the 12 equal parts, _____ parts are shaded twice. So,

_____ of the rectangle is shaded twice.



So, each friend gets _____ of a quart of ice cream.

Math Talk Mathematical Practices

Explain why you divided the rectangle into fourths in Step 2.

Try This! **Divide.** $\frac{3}{4} \div 2$

STEP 1

Divide the rectangle into fourths. Shade 3 of the fourths.

STEP 2

Divide the rectangle into halves. Shade $\frac{1}{2}$ of the $\frac{3}{4}$ already shaded.

STEP 3

Of the 8 equal parts, _____ parts are shaded twice. So, _____ of the rectangle is shaded twice.

So, $\frac{3}{4} \div 2 =$ _____.

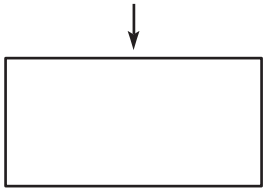
Share and Show

MATH BOARD

Complete the model to find the quotient. Write the quotient in simplest form.

1. $\frac{5}{6} \div 2 =$ _____

Divide the rectangle into sixths.
Shade 5 of the sixths.



Divide the rectangle into halves. Shade $\frac{1}{2}$ of $\frac{5}{6}$.

2. $\frac{3}{4} \div 3 =$ _____

3. $\frac{2}{3} \div 3 =$ _____

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

On Your Own

Complete the model to find the quotient. Write the quotient in simplest form.

5. $\frac{2}{5} \div 2 =$ _____

6. $\frac{5}{8} \div 3 =$ _____

Draw a model to find the quotient. Write the quotient in simplest form.

7. $\frac{4}{9} \div 2 =$ _____

8. $\frac{4}{5} \div 3 =$ _____

Problem Solving

Real World

9. Heather, Jocelyn, and Dane are each swimming one leg of a $\frac{9}{10}$ mile race. They will divide the distance equally. How far will each team member swim?

_____

Name _____

Ratios

Essential Question How can you express real world quantities as ratios?

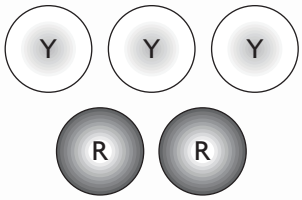
Unlock the Problem

Max sells bouquets of roses. There are 3 yellow roses and 2 red roses. What is the ratio of yellow to red roses?

A ratio is a comparison of two numbers.

- A ratio is expressed by comparing one part to another, such as 4 feet to 20 toes, or 3 yellow roses to _____.

Activity **Materials** ■ two-color counters



Model the data.

STEP 1 Use 3 counters with the yellow side up to represent yellow roses and 2 counters with the red side up to represent red roses.

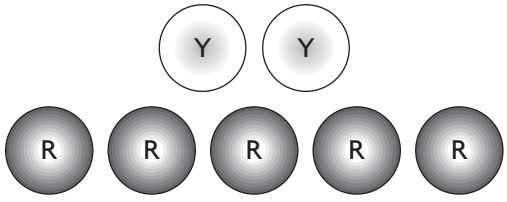
STEP 2 Write the ratio of yellow to red roses.

- Ratios can be written in different ways.
  3 to 2 or 3:2 or $\frac{3}{2}$ (as a fraction)

So, the ratio of yellow roses to red roses is 3 to 2, 3:2, or $\frac{3}{2}$.

In the example above, you compared a part to a part. You can also use a ratio to compare a part to a whole or a whole to a part.

Try This! **Show a ratio of red counters to total counters.**



STEP 1 Count to find the number of red counters. _____

STEP 2 Count to find the total number of counters. _____

STEP 3 Write the ratio. _____

Math Talk **Mathematical Practices**

How would the ratio change if you found the ratio of total counters to red counters?

Share and Show

MATH BOARD

Find the ratio of red counters to yellow counters.

1a. How many red counters are there?

_____

1b. How many yellow counters are there?

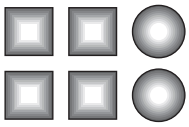
_____

1c. What is the ratio of red to yellow counters?

_____

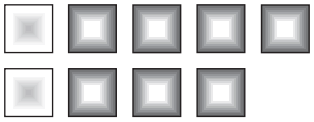
Write the ratio.

2. squares to circles



_____

3. total squares to dark squares



_____

On Your Own

For 4–6, use the drawing to write the ratio.

4. dark to light

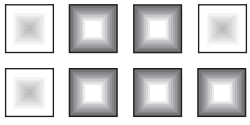
_____

5. light to dark

_____

6. light to total

_____



For 7–9, use the drawing to write the ratio.

7. triangles to circles

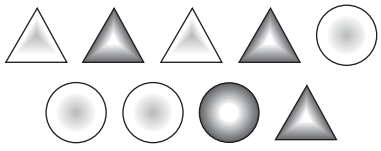
_____

8. dark to light

_____

9. total shapes to circles

_____



For 10–12, write the ratio.

10. weekdays to weekend days

_____

11. weekend days to days in a week

_____

12. days in a week to days in January

_____

Problem Solving

Real World

13. The ratio of length to width in Gus's driveway is 13 yards to 4 yards. What is this ratio in feet? (Hint: 3 ft = 1 yd)

_____

Name _____

Equivalent Ratios

Essential Question How can you determine if two ratios are equivalent?

Unlock the Problem

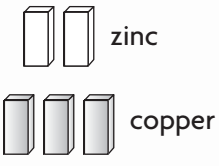
Real World

To make brass, you can mix 2 parts zinc to 3 parts copper, a ratio of 2 to 3. If you have 12 bars of copper and use them all, how many bars of zinc do you need to make brass?

- You know that each group of zinc to copper bars needed to make brass has a ratio of 2 to 3. How can you use this group to find an equivalent ratio?

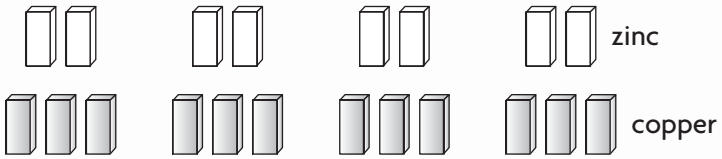
Since ratios can be written as fractions, 2 to 3 can be written as $\frac{2}{3}$. Use what you know about equivalent fractions to find equivalent ratios.

Use a diagram to find an equivalent ratio.



STEP 1 Draw bars to represent a 2 to 3 ratio of zinc to copper.

STEP 2 Add groups until you have 12 bars of copper.



STEP 3 Count the zinc bars. Write an equivalent ratio.

There are 8 zinc bars. So, 2 to 3 is equivalent to the ratio 8 to 12.

Try This! **Use equivalent ratios to find out if 6:8 is equivalent to 18:24.**

STEP 1 Write the ratios as fractions.

$6:8 = \frac{6}{8}$ $18:24 = \frac{18}{24}$

STEP 2 Write the fractions in simplest form. Then compare.

$\frac{6 \div 2}{8 \div 2} = \frac{3}{4}$ $\frac{18 \div 6}{24 \div 6} = \frac{3}{4}$

Both ratios equal $\frac{3}{4}$, so they are equivalent.

Math Talk **Mathematical Practices**

How does knowing how to simplify fractions help you decide whether two ratios are equivalent?

Share and Show

Are the ratios 3:5 and 12:20 equivalent?

1a. Write both ratios as fractions.

_____

1b. Are both ratios in simplest form?

_____

1c. Write both ratios in simplest form.

_____

1d. Are the ratios equivalent?

_____

Write *equivalent* or *not equivalent.*

2. 1 to 3 and 2 to 6

_____

3. 3 to 7 and 12 to 21

_____

On Your Own

Write the equivalent ratio.

4. 5 to 2 = _____ to 4

5. 3 to 6 = 7 to _____

6. 7:2 = _____ :6

7. 14 to 21 = _____ to 15

8. 6:10 = _____ :30

9. 8 to 9 = 40 to _____

Write *equivalent* or *not equivalent.*

10. 3:5 and 21:35

_____

11. 4 to 3 and 36 to 24

_____

12. 27:72 and 9:24

_____

Problem Solving

13. Three of every 5 pizzas that Miggy's Pizza sells are cheese pizzas. Miggy's sold 80 pizzas today. How many of them would you expect were cheese?

_____

Name _____

Rates

Essential Question How can you find rates and unit rates?

Unlock the Problem

Real World

CONNECT You know how to write ratios to compare two quantities. A **rate** is a ratio that compares two quantities that have different units of measure. A **unit rate** is a rate that has 1 unit as its second term.

Rafael is shopping at a used book and music store. A sign advertises 4 CDs for $12. What is the unit rate for the cost of 1 CD?

- What are the units of the quantities that are being compared?

_____

- What operations can you use to write equivalent ratios?

_____

_____

Write the rate in fraction form. Then find the unit rate.

STEP 1

Write the rate in fraction form to compare dollars to CDs.

$$\frac{\text{dollars}}{\text{CDs}} \longrightarrow \frac{12}{\square}$$

_____

STEP 2

Divide to find an equivalent rate so that 1 is the second term.

$$\frac{12}{4} = \frac{12 \div \square}{4 \div \square} = \frac{\square}{1} \longleftarrow \text{unit rate}$$

So, the unit rate for CDs is _____ for 1 CD.

Math Talk Mathematical Practices

Would it make sense to compare CDs to dollars to find a unit rate? **Explain.**

- **What if** the regular price of CDs is 5 for $20? What is the unit rate for CDs at the regular price? **Explain** how you found your answer.

_____

_____

_____

Share and Show

MATH BOARD

1. Find the unit rate of speed for 120 miles in 2 hours.

$$\frac{\text{miles}}{\text{hours}} \quad \frac{120}{\square} = \frac{\square \div 2}{2 \div \square} = \frac{\square}{\square}$$

The unit rate of speed is _____ per _____.

Find the unit rate.

2. $5.00 for 2 T-shirts

_____

3. 200 words in 4 min

_____

4. 150 mi on 10 gal of gas

_____

On Your Own

Write the rate in fraction form.

5. 90 words in 2 min

_____

6. $1.20 for 6 goldfish

_____

7. $0.05 per page

_____

Find the unit rate.

8. $208 for 4 tires

_____

9. 300 mi per 15 gal

_____

10. 240 people per 2 sq mi

_____

Problem Solving

Real World

11. An ice skating rink charges $1.50 to rent ice skates for 30 minutes. What is the unit rate per hour for renting ice skates?

_____

Name _____

Distance, Rate, and Time

Essential Question How can you solve problems involving distance, rate, and time?

Unlock the Problem

You can use the formula $d = r \times t$ to solve problems involving distance, rate, and time. In the formula, d represents distance, r represents rate, and t represents time. The rate is usually a unit rate comparing distance to time, such as miles per hour.

- What word is used in place of rate?

  _____

- What are the given values?

  _____

- What is the unknown value?

  _____

Example 1

The winner of an automobile race drove 500 miles at an average speed of 150 miles per hour. How long did it take the winner to finish the race?

STEP 1

Write the formula.

$d = r \times t$

STEP 2

Replace d with 500 and r with 150.

$d = r \times t$

$500 = \square \times t$

STEP 3

Use what you know about inverse operations to find t.

$500 \div \square = t$

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

So, it takes the winner _____ hours or _____ hours _____ minutes to complete the race.

Example 2

A race car driver traveled at an average speed of 120 miles per hour to finish a race in 2 hours. What was the length of the race?

STEP 1

Write the formula.

$d = r \times t$

STEP 2

Replace r with 120 and t with 2.

$d = r \times t$

$d = \square \times \square$

STEP 3

Multiply to solve for d.

$d = 120 \times 2$

$d = \square$

So, the race was _____ miles long.

Math Talk Mathematical Practices

Why were different operations used in Step 3 of Examples 1 and 2?

Share and Show

MATH BOARD

1. A cyclist travels 45 miles in 3 hours. What is the cyclist's speed?

Write the formula: $d = \square \times \square$

Replace d with _____.

Replace t with _____.

The rate is _____ miles per hour.

Use the formula $d = r \times t$ to solve. Include the units in your answer.

2. A train travels at an average speed of 80 miles per hour for 5 hours. How far does the train travel?

_____

3. A horse travels at an average speed of 12 miles per hour. How long does it take the horse to travel 60 miles?

_____

On Your Own

Use the formula $d = r \times t$ to solve. Include the unit in your answer.

4. A hiker travels at a speed of 3 miles per hour for 3 hours. How far does the hiker travel in that time?

_____

5. A snail travels at a speed of 2 centimeters per minute. How long does the snail take to travel 30 centimeters?

_____

6. A boat travels 6 miles in 24 minutes. What is the average speed of the boat?

_____

7. $d = 320$ cm

$r =$ _____

$t = 8$ sec

8. $d =$ _____

$r = 50$ km per hr

$t = 6$ hr

9. $d = 150$ ft

$r = 20$ ft per min

$t =$ _____

_____

Problem Solving

Real World

10. In an experiment, Ava found that it took a ball 5 seconds to roll down an 80-foot ramp. What is the average speed of the ball?

_____

11. Jason's family is driving 1,375 miles to Grand Canyon National Park. They plan to drive at an average speed of 55 miles per hour. How long will they be driving to reach the park?

_____

Name _____

Checkpoint

Concepts and Skills

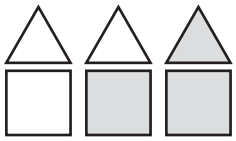
Draw a model to find the quotient. Write the quotient in simplest form.

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

2. $\frac{2}{3} \div 5$ _____

3. $\frac{3}{7} \div 2$ _____

For 4—6, use the drawing to write the ratio.



4. squares to triangles _____

5. total to dark _____

6. triangles to total _____

Write the equivalent ratio.

7. 8 to 3 = ____ to 12

8. 2 to 6 = 4 to ____

9. 11:4 = ____ :16

Find the unit rate. (pp. P243–P244)

10. 45 visitors with 5 tour guides _____

11. 450 mi on 15 gal of gas _____

12. $56 in 8 hr _____

Use the formula $d = r \times t$ to solve the problem. Include the units in your answer.

13. d = _____
r = 40 km per hr
t = 3 hr

14. d = 90 ft
r = 10 ft per sec
t = _____

15. d = 300 mi
r = _____
t = 4 hr

Problem Solving Real World

Use the table for 16–17.

16. Fuel efficiency can be written as a rate comparing the distance driven to the gallons of gas used. What is the fuel efficiency of Car A written as a unit rate?

_____

17. During the test, Car B was driven at the speed of 48 miles per hour. How long did the test take?

_____

Fuel Test Results		
Car	Distance (in mi)	Gas (in gal)
A	308	14
B	288	12

Fill in the bubble completely to show your answer.

18. To make fruit punch for a party, Alison used 3 quarts of pineapple juice and 2 gallons of orange juice. There are 4 quarts in a gallon. What is the ratio of pineapple to orange juice in quarts?

Ⓐ 3 to 2

Ⓑ 3 to 5

Ⓒ 3 to 8

Ⓓ 8 to 3

19. Three out of every 10 pairs of skis sold by Snow Sports are cross-country skis. Snow Sports sold 450 pairs of skis during the winter season. How many of the skis were likely to have been cross-country skis?

Ⓐ 443

Ⓑ 135

Ⓒ 45

Ⓓ 30

20. At Greentree Elementary School, there are 72 fifth graders in 3 classrooms. What unit rate describes this situation?

Ⓐ $14\frac{2}{5}$ fifth graders per class

Ⓑ 18 fifth graders per class

Ⓒ 24 fifth graders per class

Ⓓ 216 fifth graders per class

21. Eduardo rides his bicycle for 6 hours. What was Eduardo's average speed if he rides a distance of 84 miles? Use the formula $d = r \times t$.

Ⓐ 504 mi per hr

Ⓑ 90 mi per hr

Ⓒ 78 mi per hr

Ⓓ 14 mi per hr

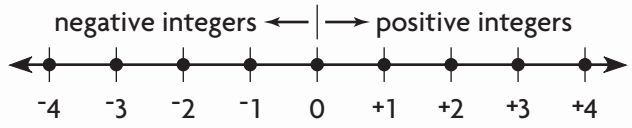
Name _____

Understand Integers

Essential Question How can you use positive and negative numbers to represent real world quantities?

Unlock the Problem

Connect You have used a number line to show 0 and whole numbers. You can extend the number line to the left of 0 to show the **opposites** of the whole numbers. For example, the opposite of $^{+}3$ is $^{-}3$. Any whole number or the opposite of a whole number is called an **integer**.



Negative integers are written with a negative sign, $^{-}$. Positive integers are written with or without a positive sign, $^{+}$.

- How can you tell whether a number is an integer or not?

_____

_____

_____

Example 1

The temperature in Fairbanks, Alaska, was 37 degrees below zero. Write an integer to represent the situation.

STEP 1 Decide whether the integer is positive or negative.

The word _____ tells me that the integer is _____.

_____

STEP 2 Write the integer: _____.

So, the temperature in Fairbanks was _____ degrees.

Example 2

The Koala Bears gained 11 yards on a football play. Write an integer to represent the situation. Then, tell what 0 represents in that situation.

STEP 1 Decide what positive integers and negative integers represent.

Positive integers represent yards _____.

Negative integers represent yards _____.

_____

STEP 2 Decide what 0 represents.

So, 0 means yards were neither _____

nor _____.

Math Talk Mathematical Practices

Identify some words that might tell you that an integer is negative.

Share and Show

MATH BOARD

Write an integer to represent the situation.

1. a loss of $25

The word *loss* represents an integer that is

_____.

The integer that represents the situation

is _____.

2. 73 degrees above zero _____

3. 200 feet below sea level _____

4. a profit of $76 _____

Write an integer to represent the situation. Then, tell what 0 represents.

Situation	Integer	What Does 0 Represent?
5. The passenger jet flew at an altitude of 34,000 feet.		
6. Zack lost 45 points on his first turn.		
7. Craig was 20 minutes early for his appointment.		

On Your Own

Write an integer to represent the situation.

8. the temperature went up 2 degrees _____

9. 11 feet below sea level _____

10. an increase of 37 students _____

11. 15 seconds before rocket liftoff _____

Write an integer to represent the situation. Then, tell what 0 represents.

Situation	Integer	What Does 0 Represent?
12. Amelia earned $1,200 in one week.		
13. The coal was 2 miles below ground level.		
14. The alarm clock rang 5 minutes early.		

Problem Solving

Real World

15. Gina withdrew $600 from her checking account to pay for her new guitar. What integer can you write to represent the withdrawal? What does 0 represent?

_____

Name _____

Write and Evaluate Expressions

Essential Question How can you write and evaluate expressions?

Unlock the Problem

Real World

Montel hires Shea to buy some tools for him at the hardware store. Montel will pay Shea $5 more than the cost of the tools she buys.

- The problem states that Montel will pay $5 *more than cost*. What operation do the words *more than* suggest?

_____

A. How can you represent this payment as an expression?

B. How can you use the expression to calculate what Montel will pay Shea?

Write an expression for what Montel will pay.

STEP 1 Choose a variable and explain what it stands for.

Let c equal the cost of the tools.

STEP 2 Write a word expression.

$5 more than the cost.

STEP 3 Replace the word expression with an addition expression using c.

$5 + c$

5 dollars more than the cost

$5 + c$

So, an expression that tells how much Montel owes Shea is $5 + c$.

Try This! **If the tools cost a total of $18, how much will Montel pay Shea? Evaluate the expression $5 + c$ for $c = 18$.**

STEP 1 Write the expression. _____

STEP 2 Replace c with _____. $5 +$ _____

STEP 3 Add to evaluate. $5 + 18 =$ _____

So, Montel will pay Shea _____.

Math Talk **Mathematical Practices**

What key words might tell you that you need to use addition in a word problem?

Share and Show

MATH BOARD

Write an expression.
Tallahassee's temperature is 15 degrees less than the temperature in Miami.

1a. What operation does the phrase *less than* suggest?

_____

1b. Write a word expression:

_____

1c. Write an expression for Tallahassee's temperature. Let m stand for the temperature in Miami.

_____

1d. Evaluate the expression for Tallahassee's temperature for $m = 90$.

_____

Evaluate each expression for the value given.

2. $b - 45$ for $b = 70$

_____

3. $13 + a$ for $a = 40$

_____

On Your Own

Write an expression.

4. Zeke has some tropical fish, *f*. Dean gave Zeke 5 new fish. How many fish does Zeke have now?

_____

5. Myra had some candles, *c*. She used up 12 of them. How many candles does Myra have now?

_____

Evaluate each expression for the value given.

6. $s - 18$ for $s = 80$

_____

7. $49 + k$ for $k = 31$

_____

8. $w \times 6$ for $w = 13$

_____

9. $60 \div n$ for $n = 20$

_____

10. $t \times 12$ for $t = 8$

_____

11. $r - 25$ for $r = 110$

_____

Problem Solving

Real World

12. Keith is 2 inches shorter than his sister. If *s* represents his sister's height, what expression can you write that represents Keith's height?

_____

Name _____

Understand Inequalities

Essential Question How can you use inequalities to solve problems?

Unlock the Problem

Every morning, Bobbi's Hot Bagels makes a special claim. All bagels Bobbi's sells will be warm and less than 9 minutes old. What **inequality** can you write to represent in whole minutes how old Bobbi's bagels are?

An inequality is a number sentence that compares two unequal quantities and uses the symbols $<$, $>$, $\leq$, or $\geq$.

- What clue words tell you that this problem involves an inequality?

_____

Write an inequality using a variable.

STEP 1 Write the inequality in words.

time ⟶ is less than ⟶ 9

STEP 2 Replace *time* with the variable *t*.

t ⟶ less than ⟶ 9

STEP 3 Replace the words *less than* with a *less than* ($<$) symbol.

$t < 9$

Try This! **Graph the solutions on the number line. Of 3, 6, 9, and 12, which numbers are solutions for $t < 9$?**

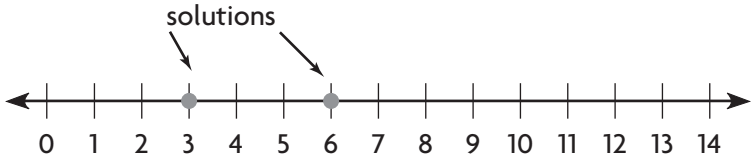
STEP 1 In $t < 9$, replace t with 3.
Repeat the process for $t = 6, 9, 12$.

$t < 9$
$3 < 9$ ⟵ true

STEP 2 Identify the values that make $t < 9$ true.
True values are solutions: $t = 3, 6$.
False values are not solutions: $t \neq 9, 12$.

$6 < 9$ ⟵ true
$9 < 9$ ⟵ false
$12 < 9$ ⟵ false

STEP 3 Graph the solutions on a number line.
Graph true values with filled circles.



Math Talk **Mathematical Practices**

How does the answer for the problem change if the inequality is "t is less than or equal to 9"?

Share and Show

MATH BOARD

Of 2, 5, and 8, which numbers are solutions for the inequality $x \geq 5$?
Graph the solutions on the number line.

1a. Replace x with 2. True or false?

_____

1b. Replace x with 5. True or false?

_____

1c. Replace x with 8. True or false?

_____

Show two solutions for the inequality on a number line.

2. $a < 6$

_____

On Your Own

Of 7, 10, and 13, which numbers are solutions for the inequality?

3. $m > 8$

_____

4. $b \leq 10$

_____

5. $c < 15$

_____

Of 0, 4, 6, and 11, which numbers are solutions for the inequality?

6. $d \geq 8$

_____

7. $r < 1$

_____

8. $s > 4$

_____

Show two solutions for the inequality on a number line.

9. $n \leq 6$

10. $x > 2$

Problem Solving

Real World

11. For her birthday party, Dina wants to invite at least 8 guests but not more than 12 guests. How many guests might she have? Name all of the possibilities.

_____

Name _____

Checkpoint

Concepts and Skills

Write an integer to represent the situation.

1. a shark 125 feet below sea level _____

2. a bank deposit of 300 dollars _____

Write an integer to represent the situation. Then, tell what 0 represents.

Situation	Integer	What Does 0 Represent?
3. a gain of 13 yards by a football team	_____	
4. a temperature of 25 degrees below zero	_____	

Write an expression. Then evaluate the expression for the value given.

5. Miki has n dollars. Dora has 3 more dollars than Miki. How many dollars does Dora have? Evaluate for $n = 14$.

_____

6. Chip has s shells. Gina has 4 times as many shells as Chip. How many shells does Gina have? Evaluate for $s = 6$.

_____

Of 1, 3, 4, and 8, which numbers are solutions for the inequality?

7. $a < 7$ _____

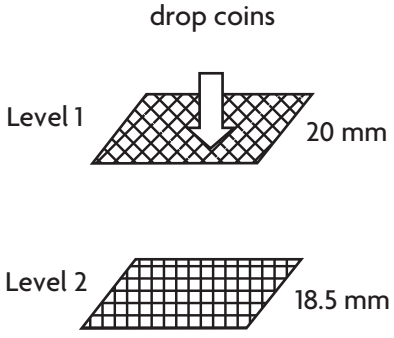
8. $b \geq 3$ _____

9. $c > 4$ _____

10. $d \leq 8$ _____

Problem Solving Real World

Filters are set up to sort pennies, dimes, and nickels. A penny is 19 mm wide, a dime is 17.9 mm wide, and a nickel is 21 mm wide. Coins less than 20 mm wide will pass through the first level, and coins less than 18.5 mm wide will pass through the second level.



11. If you drop a large number of all 3 coins from above, which coins will be caught at Level 1? Which coins will pass through?

_____

12. Which coins will be caught at Level 2? Which coins will pass through? _____

Fill in the bubble completely to show your answer.

13. The lowest temperature ever recorded in North Dakota was 60 degrees below zero Fahrenheit. Which integer represents the temperature?

Ⓐ 0

Ⓑ 60

Ⓒ $^{-}60$

Ⓓ $^{-}0$

14. In football, a team receives 3 points for each field goal it makes. Which expression shows the number of points a team will receive for making f field goals?

Ⓐ $3 + f$

Ⓑ $3 \times f$

Ⓒ $f - 3$

Ⓓ $f \div 3$

15. The elevation of Central City is 84 feet above sea level. Which integer is the opposite of 84?

Ⓐ 48

Ⓑ $^{+}84$

Ⓒ $^{-}48$

Ⓓ $^{-}84$

16. Uncle Louie is at least 1 inch shorter than Miriam, and at least 2 inches taller than Jeffrey. Jeffrey's height is 64 inches. Miriam is not more than 5 inches taller than than Jeffrey. Which answer choice could be Uncle Louie's height?

Ⓐ 65 inches

Ⓑ 67 inches

Ⓒ 69 inches

Ⓓ 70 inches

Name _____

Polygons on a Coordinate Grid

Essential Question How can you plot polygons on a coordinate grid?

Connect You have learned to plot points on a coordinate grid. You can use that skill to plot polygons on a coordinate grid.

Unlock the Problem

Real World

Camille is designing an indoor greenhouse on a coordinate grid. The floor of the greenhouse is a polygon. The vertices of the polygon can be graphed using the coordinates shown in the table. Plot and describe the floor of the greenhouse.

x	*y*
10	1
2	6
2	1
6	10
10	6

- What do *x* and *y* represent in the table?

_____

_____

_____

Plot the polygon on a coordinate grid.

STEP 1 Write ordered pairs.

Use each row of the table to write an ordered pair.

(10, 1), (2, _____), (_____ , _____),

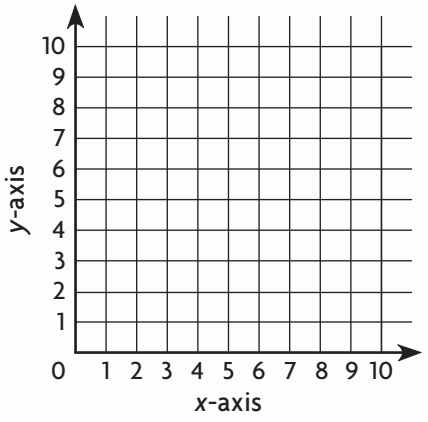
(_____ , _____), (_____ , _____).

STEP 2 Graph a point for each pair on the coordinate grid.

STEP 3 Connect the points.

So, the floor of the greenhouse is a _____.

- **What if** the greenhouse floor had only four of the five vertices given in the table and did not include (6, 10). What would the shape of the floor be? _____



- A parallelogram on a coordinate grid has vertices at (3, 4), (6, 1), and (8, 4). What are the coordinates of the fourth vertex? **Explain** how you found the answer.

_____

_____

_____

_____

_____

Math Talk

Mathematical Practices

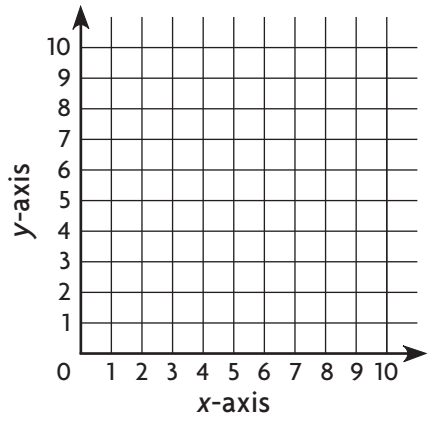
Suppose you know the vertices of a polygon. How can you identify what type of polygon it is without plotting the vertices on a coordinate grid?

Share and Show

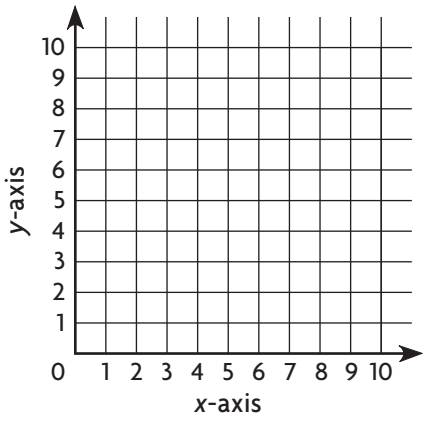
MATH BOARD

Plot the polygon with the given vertices on a coordinate grid. Identify the polygon.

1. (9, 6), (1, 7), (3, 1)



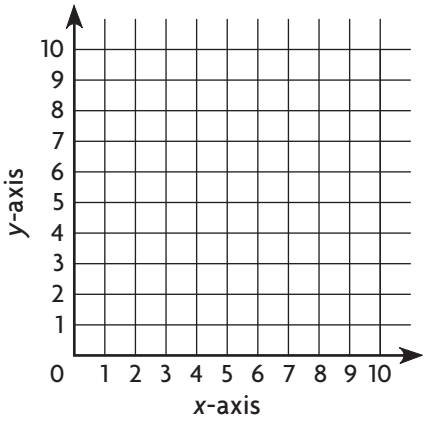
2. (1, 6), (8, 4), (1, 4), (8, 6)



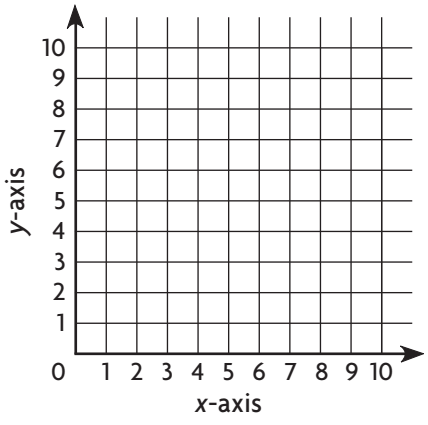
On Your Own

Plot the polygon with the given vertices on a coordinate grid. Identify the polygon.

3. (2, 10), (10, 2), (10, 10), (2, 2)



4. (10, 4), (2, 10), (3, 1), (8, 0), (7, 10), (1, 7)



Problem Solving

Real World

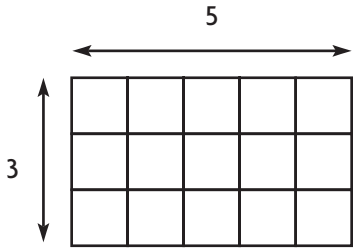
5. A football field is a rectangle measuring 300 ft by 160 ft. Each unit on a coordinate grid represents 1 foot. (0, 0) and (0, 160) are two of the coordinates of a football field drawn on the grid. What are the coordinates of the other two vertices?

Name _____

Area of a Parallelogram

Essential Question How can you find the area of a parallelogram?

Connect You have learned that the area of a rectangle with base b and height h is $A = b \times h$. The rectangle shown has a base of 5 units and a height of 3 units. So, its area is $A = 5 \times 3 = 15$ square units. You can use what you have learned about the area of a rectangle to find the area of a parallelogram.



Unlock the Problem

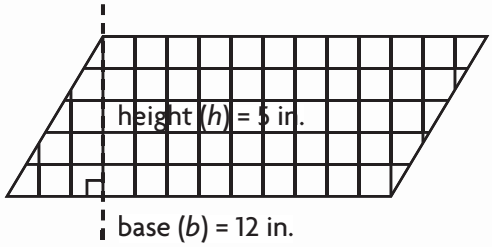
Real World

The souvenir stand at Mighty Grasshopper basketball games sells parallelogram-shaped pennants. Each pennant has a base of 12 inches and a height of 5 inches.

Activity

Find the area of the parallelogram.

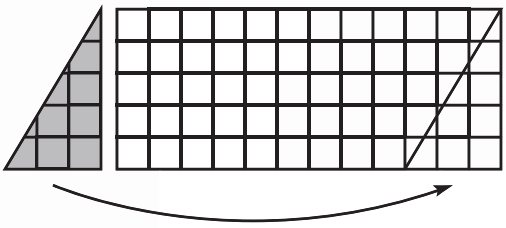
Materials ■ grid paper ■ scissors



STEP 1 Draw the parallelogram on grid paper and cut it out.

STEP 2 Cut along the dashed line to remove a right triangle.

STEP 3 Move the right triangle to the right side of the parallelogram to form a rectangle.



STEP 4 The base of the rectangle measures _____ inches.

The height of the rectangle measures _____ inches.

The area of the rectangle is

12 × _____ = _____ square inches.

- **Explain** why the area of the parallelogram must equal the area of the rectangle.

_____

So, the area of a pennant is

_____ × _____ = _____ square inches.

Math Talk

Mathematical Practices

Explain how to find the area of a parallelogram if you know the base and the height of the figure.

Share and Show

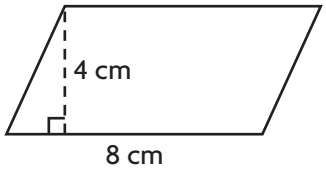
MATH BOARD

Find the area of the parallelogram.

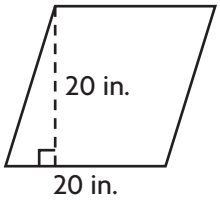
1. $A = b \times h$

$A = 8 \times 4$

$A =$ _____ sq cm

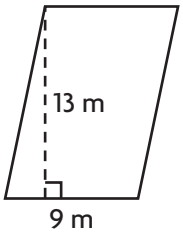


2.



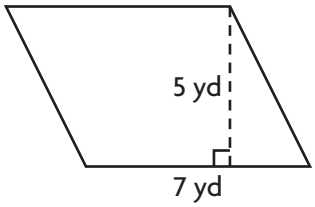
$A =$ _____ sq in.

3.



$A =$ _____ sq m

4.

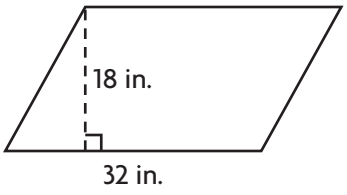


$A =$ _____ sq yd

On Your Own

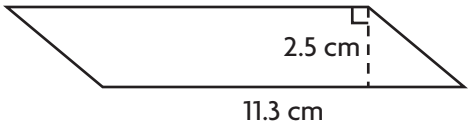
Find the area of the parallelogram.

5.



$A =$ _____ sq in.

6.



$A =$ _____ sq cm

7. base = 0.6 cm

height = 0.15 cm

$A =$ _____ sq cm

8. base = 1.8 m

height = 2.9 m

$A =$ _____ sq m

9. base = $\frac{1}{2}$ft

height = $\frac{3}{8}$ft

$A =$ _____ sq ft

10. base = $4\frac{1}{4}$in.

height = 20 in.

$A =$ _____ sq in.

Problem Solving

Real World

11. Carla made a border for her garden using parallelogram-shaped tiles. Each piece had a base of 4 in. and a height of $2\frac{1}{2}$ in. She used 85 tiles. What was the total area of the border?

_____

Name _____

Median and Mode

Essential Question How can you describe a set of data using median and mode?

The **median** of a set of data is the middle value when the data are written in order. For example, a baseball team scored 6, 2, 6, 0, and 3 runs in five games. The median is 3 runs: 0, 2, (3), 6, 6.

If there is an even number of data items, the median is the sum of the two middle items divided by 2.

The **mode** of a data set is the data value or values that occur most often. A data set may have no mode, one mode, or several modes. The mode of the data set of baseball runs is 6.

Unlock the Problem

Real World

For the Science Fair, Ronni grew 9 sweet pea plants under different conditions. Here are the plants' heights, in centimeters: 11, 13, 6, 9, 15, 7, 9, 17, 12.

What are the median and mode of the data?

- How can you find the median if there is an even number of data items?

_____

Find the median and mode.

STEP 1 Order the heights from least to greatest.

6, 7, _____, _____, _____, _____, _____, _____, _____

STEP 2 Circle the middle value.

So, the median is _____ centimeters.

STEP 3 Identify the data value that occurs most often. _____ occurs two times.

So, the mode is _____ centimeters.

Math Talk Mathematical Practices

Give an example of a data set with two modes.

Try This! **Find the median and mode of the numbers: 8, 11, 13, 6, 4, 3.**

STEP 1 Order the numbers from least to greatest.

_____, _____, _____, _____, _____, 13

STEP 2 There is an even number of data items, so divide the sum of the two middle items by 2. $\frac{6 + \_\_}{2} = \frac{\_\_}{2} = \_\_\_\_$

So, the median is = _____.

STEP 3 _____ data value appears more than once.

So, the data set has _____ mode.

Share and Show

MATH BOARD

Find the median and the mode of the data.

1. puppies' weights (pounds): 8, 3, 5, 3, 2, 6, 3

Order the weights: _____

The median, or middle value, is _____ pounds

The mode, or most common value, is _____ pounds.

2. numbers of students in math classes: 25, 21, 22, 18, 23, 24, 25

median: _____ students

mode: _____ students

3. numbers of 3-point baskets made: 2, 0, 5, 4, 5, 2, 5, 2

median: _____ 3-point baskets

mode: _____ 3-point baskets

4. movie ticket prices ($): 8, 8, 6, 8, 7, 6, 8, 10, 8, 6

median: $_____

mode: $_____

On Your Own

Find the median and the mode of the data.

5. ages of first 10 U.S. presidents when inaugurated: 57, 61, 57, 57, 58, 57, 61, 54, 68, 51

median: _____ years

mode: _____ years

6. weights of rock samples (pounds): 39, 28, 21, 47, 40, 33

median: _____ pounds

mode: _____ pounds

7. lengths of humpback whale songs (minutes): 25, 29, 31, 22, 33, 31, 26, 22

median: _____ minutes

mode: _____ minutes

8. Sascha's test scores: 90, 88, 79, 97, 100, 97, 92, 88, 85, 92

median: _____

mode: _____

Problem Solving

Real World

9. Adrian recorded the daily high temperatures the first two weeks of July. What were the median and mode of her data?

median: _____ °F

mode: _____ °F

Daily High Temperatures (°F)						
101	99	98	96	102	101	98
101	98	95	100	102	98	102

Name _____

Finding the Average

Essential Question How can you find the average of a set of values?

An average of a set of data can be found by finding the sum of the group of numbers from the data and then dividing by the number of addends.

For example, if Anne scores 21 points, 22 points, and 17 points in 3 different basketball games, she scores an average of 20 points per game. This is because $21 + 22 + 17 = 60$, and $60 \div 3$, the total number of points divided by the number of games, is 20.

Unlock the Problem

Real World

Jonathon and Pilar are practicing to be a juggling team. The table shows the number of seconds they were able to keep 4 balls in the air without making a mistake. What was the average number of seconds they were able to juggle?

Trial	Seconds
a	32
b	8
c	62
d	55
e	13

- How many trials did they record?

_____

Find the average of the times.

STEP 1 Find the sum of the seconds. $32 + 8 + 62 + 55 + 13 = 170$

STEP 2 How many numbers did you add? 5 numbers

STEP 3 Divide the sum by the number of addends. $5\overline{)170}$ 34

So, the average time that Jonathon and Pilar kept 4 balls in the air was 34 seconds per trial.

Try This! **Find the average of 61, 99, 106, 3, 44, and 89.**

STEP 1 Find the sum.

$61 + 99 + 106 + 3 + 44 + 89 =$ _____

STEP 2 Divide the sum by the number of addends.

$402 \div 6 =$ _____

So, the average of 61, 99, 106, 3, 44, and 89 is _____.

Math Talk **Mathematical Practices**

Use the jugglers' average time per trial. What might you expect of them in their next trial?

Share and Show

MATH BOARD

Tommy's basketball scoring record is shown for this month. What was the average number of points that Tommy scored per game?

1a. Find the sum of the points Tommy scored.

Game	1	2	3	4	5	6	7	8
Points	24	11	31	14	9	21	18	8

1**b.** How many numbers did you add to find the sum in Exercise 1?

1**c.** Divide the sum by the number of games. What is the average number of points per game?

Find the average of the set of numbers.

2. 6, 9, 14, 4, 12

3. 44, 55, 33, 22, 40, 40

On Your Own

Find the average of the set of numbers.

4. 4, 8, 12, 14, 15, 19

5. 28, 20, 31, 17

6. 100, 140, 60, 120, 180

7. 17, 91, 49, 73, 115, 27

8. 5, 8, 13, 4, 22, 6, 0, 5, 9

9. 637, 492, 88, 743

10. 2,439; 801; 1,508; 0

11. 13, 12, 11, 13, 15, 13, 19, 22, 13, 19

12. 78, 61, 51, 99, 8, 112, 76, 32, 59

13. Find the average temperature.

Day	1	2	3	4	5	6	7
Temperature (°F)	48	59	38	53	61	61	44

Problem Solving

Real World

14. In the temperature table above, suppose the temperature for the next 2 days was 70 degrees. By how much would this change the average temperature over the entire period?

Name _____

Histograms

Essential Question How can you use a histogram to organize data?

Unlock the Problem

Activity The table below shows the ages of the members of a bicycle club. Make a **histogram** of the data. A histogram is a bar graph that shows how often data occur in intervals.

Math Idea
In a histogram, the bars touch because they represent continuous intervals.

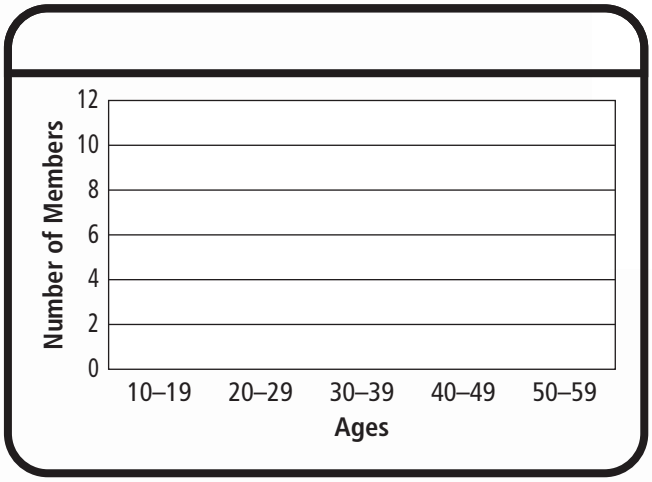
Ages of Members in a Bicycle Club													
34	38	29	41	40	35	50	20	47	22	19	21	18	17
26	30	41	43	52	45	28	25	39	24	23	25	50	59

STEP 1 Make a frequency table with intervals of 10. Fill in the frequencies.

STEP 2 Choose an appropriate scale and interval for the vertical axis, and list the intervals on the horizontal axis. Label each axis.

STEP 3 Draw a bar for each interval. Give the histogram a title.

Ages	Tally	Frequency
10–19	|||	
20–29	𝍸 𝍸	
30–39	𝍸 |	
40–49	𝍸 ||	
50–59	||||	



- **What if** you changed the histogram to show four age groups with 12-year intervals?

  How would the histogram change?

  _____

  _____

  _____

Math Talk **Mathematical Practices**

Explain how a histogram and a bar graph with categories are different.

Share and Show

MATH BOARD

For 1–3, use the data below.
The number of vacation days that each employee of a company took last summer is given below.

2, 5, 6, 11, 3, 5, 7, 8, 10, 1, 4, 6, 10, 5, 12, 15, 6, 8, 7, 14

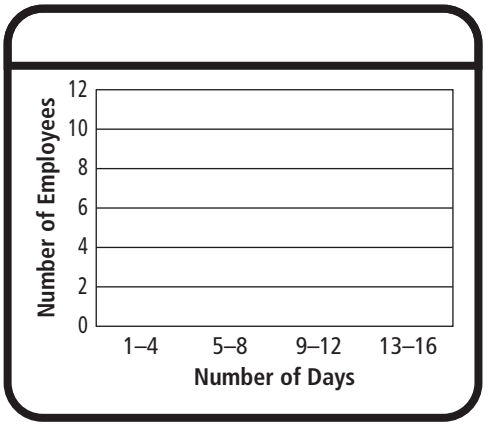
1. Start at 1 day and use 4 days for each interval. List the intervals.

_____

2. Complete the frequency table.

Number of Days	Tally	Frequency
1–4	||||	
5–8	𝍸 𝍸	
9–12	||||	
13–16	||	

3. Complete the histogram.



On Your Own

For 4–6, use the data below.
The number of minutes that each student in Mrs. Green's class spent on homework last night is given below.

45, 30, 55, 35, 50, 48, 60, 38, 47, 56, 40, 39, 55, 65, 49, 34, 35

4. Start at 30 and use 10-minute intervals for the data. List the intervals.

_____

5. Make a frequency table of the data.

6. Make a histogram of the data.

Problem Solving

Real World

7. The number of words per minute that one class of students typed is given below.

30, 45, 28, 35, 48, 37, 41, 44, 34, 29, 25, 32, 40, 45, 39, 49

What are reasonable intervals for the data?

_____

Name _____

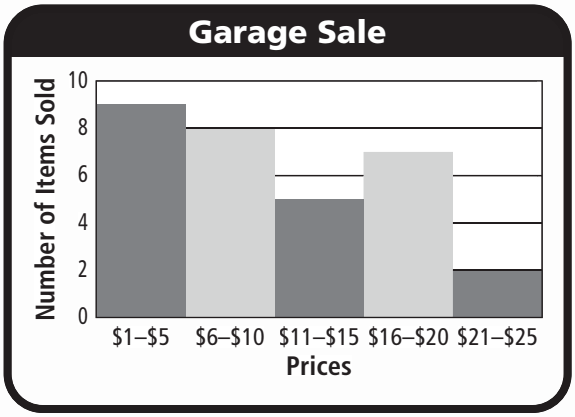
Analyze Histograms

Essential Question How can you analyze data in a histogram?

Unlock the Problem

Real World

The histogram shows the number of items sold at a garage sale within each price range.



ERROR Alert

Remember to read the intervals. For some questions, you may need to combine data from two or more intervals in order to answer the question.

How many of the items sold cost $6 to $10?

- Find the interval labeled $6–$10.
- Find the frequency.
- The bar for $6–$10 shows that _____ items were sold.

So, _____ of the items sold cost $6 to $10.

How many of the items sold cost $16 to $25?

- Find the frequencies for the intervals labeled $16–$20 and $21–$25.
- The bar for $16–$20 shows that _____ items were sold. The bar for $21–$25 shows that _____ items were sold.
- Add the frequencies.

  7 + _____ + _____

So, _____ of the items sold cost $16 to $25.

Math Talk Mathematical Practices

Explain why you cannot tell from the histogram the total amount of money that was made during the garage sale.

Share and Show

MATH BOARD

For 1–3, use the histogram at the right.

1. The histogram shows the number of days in one month whose temperatures were within each temperature range. On how many days was the temperature at or above 70°F?

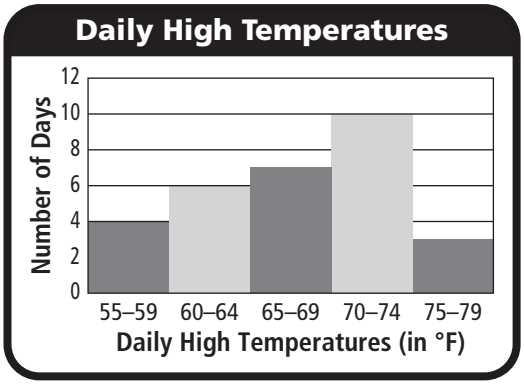
- List the bars that represent temperatures at or above 70°F.

  _____ and _____

- The frequency for interval 70–74 is _____, and the frequency for interval 75–79 is _____.

- Add the frequencies. _____ + _____ + _____

The daily high temperature was at or above 70°F on _____ days.



2. On how many days was the temperature 65°F to 69°F?

_____

3. On how many days was the temperature less than 65°F?

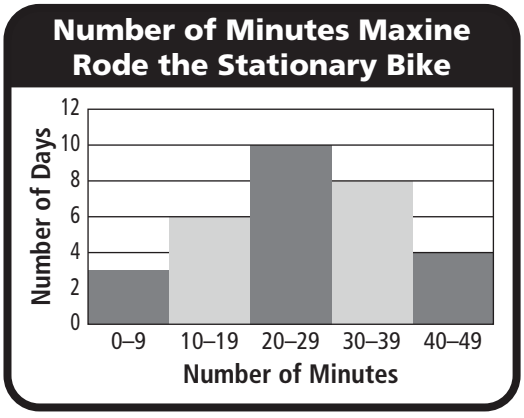
_____

On Your Own

For 4–5, use the histogram at the right.

4. Which interval has the greatest frequency? _____

5. How many days did Maxine ride the stationary bike for 30 or more minutes? _____



Problem Solving

Real World

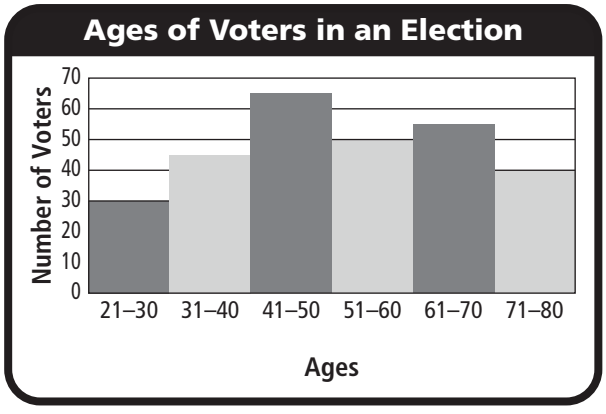
For 6–7, use the histogram at the right.

6. How many people voted in the election?

_____

7. How many more voters were there from ages 41–50 than from ages 21–30?

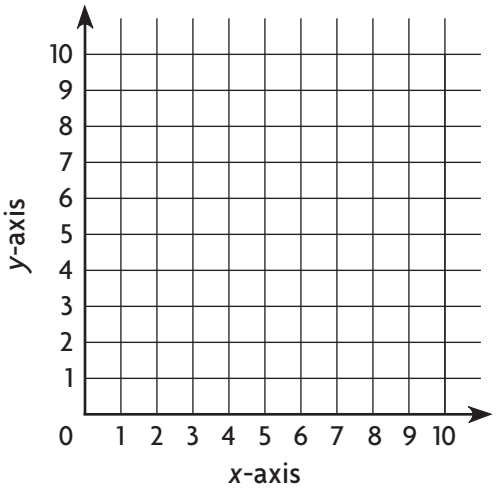
_____



Name _____

Checkpoint

Concepts and Skills



1. Plot and identify the polygon with vertices at (4, 0), (8, 7), (4, 7), and (8, 0).

_____

2. A parallelogram has a base of 8.5 cm and a height of 6 cm. What is the area of the parallelogram?

_____

3. Find the median and mode of Erin's math sores: 93, 88, 85, 93, 100, 94, 85, 89.

median _____ mode _____

4. Find the average of the following temperatures: 59°F, 66°F, 59°F, 67°F, 54°F, 64°F, 72°F.

average _____

For 5–7, use the data below.

The math test scores for Miss Jackson's class are given below.

88, 94, 86, 78, 65, 83, 71, 74, 92, 73,
95, 71, 100, 98, 68, 85, 81, 93, 89, 84

5. Make a histogram for the data using intervals of 10.

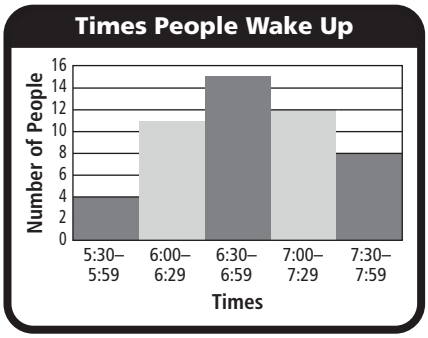
6. Which interval has the greatest frequency?

_____

7. How many students received grades greater than 80? _____

Problem Solving

For 8–9, use the histogram. The histogram shows the times that people wake up in the morning.



8. How many people were surveyed? _____

9. How many more people surveyed wake up between 6:30 and 6:59 than between 7:30 and 7:59?

_____

Fill in the bubble completely to show your answer.

10. On a map of the town of Barton, City Hall Park has three of its four vertices at (15, 0), (5, 0), and (15, 9). City Hall Park is a rectangle. What are the coordinates of the park's fourth vertex?

Ⓐ (5, 9)

Ⓑ (9, 5)

Ⓒ (5, 15)

Ⓓ (9, 15)

11. A window at an art gallery is shaped like a parallelogram. The base measures 1.2 meters and the height measures 0.8 meters. What is the area of the window?

Ⓐ 0.48 sq m

Ⓑ 0.96 sq m

Ⓒ 1.92 sq m

Ⓓ 2.0 sq m

12. The ages of the members of the Chess Club are given below. What is the median age?
13, 9, 10, 9, 14, 13, 8, 9

Ⓐ 9

Ⓑ 9.5

Ⓒ 10

Ⓓ 10.5

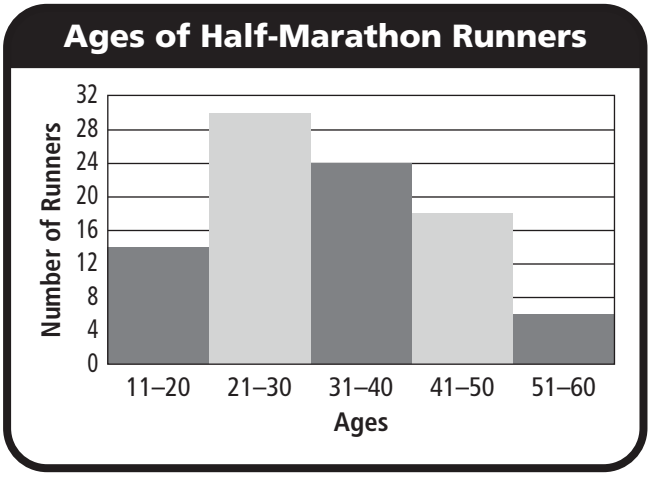
13. The histogram shows the ages of runners in a half-marathon. How many runners are between the ages of 21 and 40?

Ⓐ 24

Ⓑ 30

Ⓒ 42

Ⓓ 54

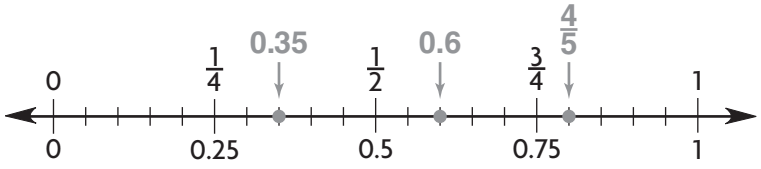


Name _____

Compare Fractions and Decimals

Locate each number on a number line.
Then complete the sentence.

1. $0.6, \frac{4}{5}, 0.35$



The number with the greatest value is $\frac{4}{5}$.

2. $3\frac{1}{4}, 3.45, 3\frac{1}{3}$

The number with the greatest value is _____.

3. $2\frac{4}{5}, 2.65, 2\frac{3}{4}$

The number with the least value is _____.

4. $4\frac{1}{2}, 4\frac{1}{6}, 4.85$

The number with the greatest value is _____.

5. $3.45, 3\frac{2}{5}, 3\frac{2}{3}$

The number with the least value is _____.

Problem Solving Real World

6. Leonardo correctly answered 0.8 of the questions on his math exam. Liam correctly answered $\frac{9}{10}$ of the questions. Keira correctly answered $\frac{3}{4}$ of the questions. Who correctly answered the greatest number of questions?

_____

7. Lana bought 1.25 pounds of ground beef at the market. Jada bought $1\frac{2}{5}$ pounds of ground beef. Willow bought 1.8 pounds of ground beef. Which person bought the least amount of ground beef?

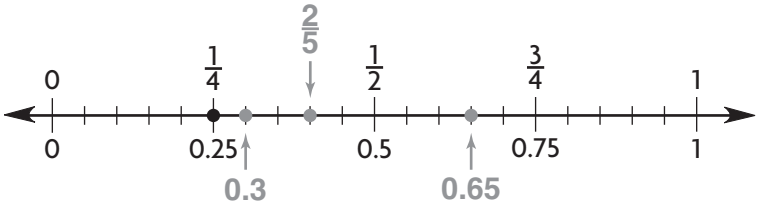
_____

Name _____

Order Fractions and Decimals

For 1–2, locate each number on a number line. Then write the numbers in order from least to greatest.

1. 0.3, $\frac{1}{4}$, $\frac{2}{5}$, 0.65



$\frac{1}{4}$, 0.3, $\frac{2}{5}$, 0.65

2. $8\frac{1}{5}$, 8.5, $8\frac{4}{5}$, 8.44

For 3–6, locate each number on a number line. Then write the numbers in order from greatest to least.

3. $\frac{7}{10}$, 0.888, $\frac{3}{5}$, 0.27

4. $7\frac{9}{10}$, 8.04, $7\frac{1}{6}$, 7.85

5. 4.33, $5\frac{2}{5}$, 5.8, $4\frac{1}{4}$

6. $\frac{5}{8}$, 0.67, 1.2, $\frac{3}{5}$

Problem Solving Real World

7. Judges in a diving competition gave scores of 9.3, $9\frac{1}{2}$, $9\frac{4}{5}$, 9.95, and $9\frac{1}{4}$. Which two scores were closest to one another? Explain.

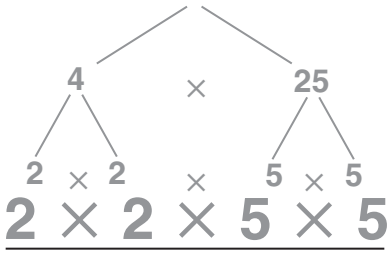
8. In gym class, you run one mile. You finish in $8\frac{9}{10}$ minutes. Ina finishes in 8.45 minutes. Davis finishes in $8\frac{1}{3}$ minutes. Order the finishing times from shortest to longest time.

Name _____

Factor Trees

Use a factor tree to find prime factors.

1. 100



2. 42

_____

3. 54

_____

4. 56

_____

5. 60

_____

6. 90

_____

7. 120

_____

8. 175

_____

9. 300

_____

Problem Solving Real World

10. What is the least number that has 4 odd factors that are all the same? Each factor is greater than 1, and can have only 1 and itself as factors. **Explain** how you found the number.

_____

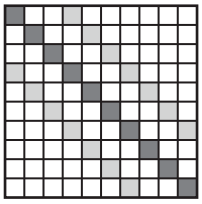
_____

_____

Name _____

Model Percent

Use the diagram to write the percent.



1. dark shading

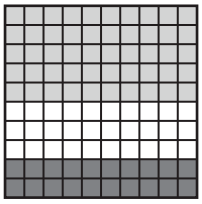
10%

2. light shading

_____

3. not shaded

_____



4. not shaded

_____

5. dark shading

_____

6. light shading

_____

Write the closest benchmark for the percent.

7. 8%

_____

8. 52%

_____

9. 99 percent

_____

10. 87%

_____

11. 12 percent

_____

12. 45%

_____

Problem Solving Real World

13. Out of all the students who auditioned for a play, 43% received a role. About what percent of students who auditioned received roles? Explain.

_____

_____

_____

14. The school cafeteria is holding an election for students to vote on which items they would like to see on the lunch menu. The choices for entrees are grilled chicken and veggie pizza. 36% of students vote for veggie pizza. Which item will be on the lunch menu?

_____

_____

_____

Name _____

Relate Decimals and Percents

Write the decimals as percents.

1. 0.30 — 30%

2. 0.48 _____

3. 0.25 _____

4. 0.87 _____

5. 0.09 _____

6. 0.5 _____

7. 0.02 _____

8. 0.1 _____

9. 0.37 _____

10. 0.3 _____

11. 0.89 _____

12. 0.09 _____

Write the percents as decimals.

13. 18 percent _____

14. 47% _____

15. 98 percent _____

16. 12 percent _____

17. 6 percent _____

18. 21 percent _____

19. 80 percent _____

20. 7% _____

21. 14 percent _____

22. 52 percent _____

23. 60 percent _____

24. 1% _____

Problem Solving Real World

25. In baseball, Anthony hit 0.63 of the pitches thrown at him. What percent of the pitches did Anthony miss?

_____

26. In a theater, 0.85 of the seats are filled. What percent of the seats are empty?

_____

Name _____

Fractions, Decimals, and Percents

Write a decimal, a percent, or a simplified fraction.

1. $\frac{1}{4}$ as a percent

25%

2. $\frac{7}{10}$ as a decimal

3. $\frac{13}{20}$ as a percent

4. 25% as a fraction

5. $\frac{2}{5}$ as a percent

6. $\frac{9}{20}$ as a decimal

7. $\frac{21}{50}$ as a percent

8. $\frac{1}{25}$ as a percent

9. 6% as a fraction

10. $\frac{3}{5}$ as a percent

11. $\frac{12}{25}$ as a decimal

12. $\frac{3}{10}$ as a percent

13. $\frac{3}{4}$ as a percent

14. 65% as a fraction

15. $\frac{1}{5}$ as a percent

16. $\frac{9}{10}$ as a percent

Problem Solving Real World

17. Ashlee has finished $\frac{7}{25}$ of her homework. What percent of the homework does Ashlee still need to finish?

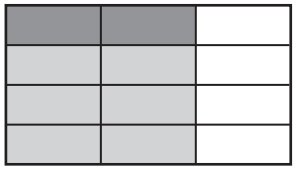
18. Luz catches 83% of the balls in the outfield. What fraction of the balls does she not catch?

Name _____

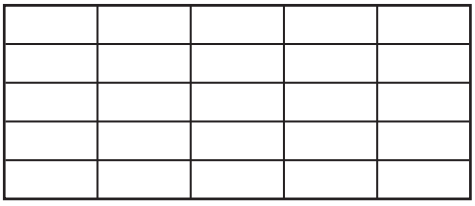
Divide Fractions by a Whole Number

Complete the model to find the quotient. Write the quotient in simplest form.

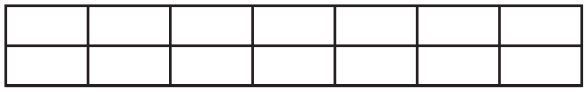
1. $\frac{2}{3} \div 4 =$ $\frac{1}{6}$



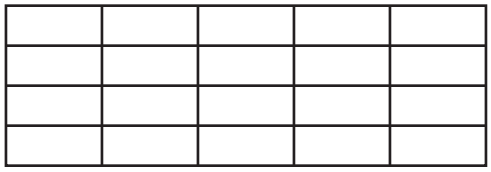
2. $\frac{4}{5} \div 5 =$ _____



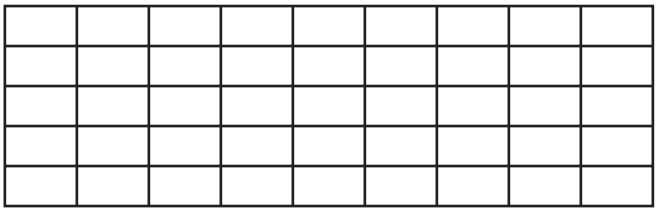
3. $\frac{3}{7} \div 2 =$ _____



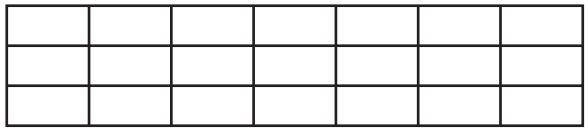
4. $\frac{2}{5} \div 4 =$ _____



5. $\frac{8}{9} \div 5 =$ _____



6. $\frac{6}{7} \div 3 =$ _____



Problem Solving Real World

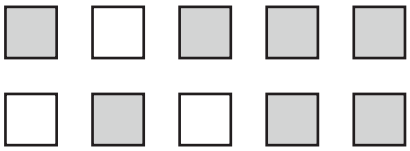
7. Annie, Zane, Erin, and Kenny are each running one leg of a $\frac{1}{2}$-mile relay race. They will divide the distance equally. How far will each person run?

_____

Name _____

Ratios

For 1–3, use the drawing to write the ratio.



1. dark squares to light squares

7 dark squares
3 light squares

7 to 3

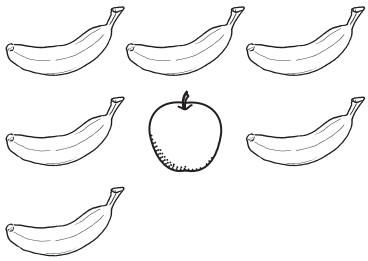
2. light squares to total squares

_____

3. light squares to dark squares

_____

For 4–6, use the drawing to write the ratio.



4. total fruit to bananas

_____

5. apples to bananas

_____

6. apples to total fruit

_____

For 7–12, write the ratio.

7. weekend days to weekdays

_____

8. months in a year to months that start with a vowel

_____

9. months that start with F to months in a year

_____

10. vowels to consonants in *RATIO*

_____

11. vowels to letters in *MATHEMATICS*

_____

12. letters to consonants in *NUMBERS*

_____

Problem Solving Real World

13. Amanda has 15 coins in her pocket. Of these, 8 are quarters. What is the ratio of quarters to coins in Amanda's pocket?

_____

14. Michael has $0.50 in dimes in his pocket. He also has $0.20 in nickels in his pocket. What is the ratio of the number of dimes to nickels in Michael's pocket?

_____

Name _____

Equivalent Ratios

Write the equivalent ratio.

1. 8 to 20 = 4 to 10

$$\frac{8 \div 2}{20 \div 2} = \frac{4}{10}$$

2. 6:5 = _____:35

3. 2 to 3 = 20 to _____

4. 36:24 = 6:_____

5. 6 to 9 = _____ to 27

6. 64:72 = _____:9

7. 11 to 12 = 33 to _____

8. 1:7 = _____:63

9. 21:57 = 7:_____

Write *equivalent* **or** *not equivalent*.

10. 15:10 and 3:2

_____

11. 24 to 16 and 8 to 4

_____

12. 6:9 and 24:45

_____

13. 6:24 and 9:45

_____

14. 15 to 20 and 3 to 4

_____

15. 2:3 and 8:12

_____

Problem Solving Real World

16. Are the ratios of free throws made to free throws attempted by the Rockets and by the Turbos equivalent?

_____

17. In another game, the Rockets attempted only 12 free throws. If the ratio of free throws made to free throws attempted stays the same, how many free throws would you expect the team to make?

_____

Basketball Game Stats		
Team	**Free Throws Made**	**Free Throws Attempted**
Rockets	8	24
Turbos	16	36

Name _____

Rates

Write the rate in fraction form.

1. 80 cars in 20 minutes

$\frac{80}{20}$

2. 20 feet in 4 seconds

3. 250 words per 15 minutes

4. $12 for 6 boxes

5. $96 for 8 DVDs

6. 800 miles in 16 hours

Find the unit rate.

7. $4.80 for 4 markers

8. 60 oz for 10 servings

9. 27 songs on 3 CDs

10. 276 mi on 12 gal of gas

11. $45 for 5 tickets

12. 160 mi in 4 hr

13. 42 tbsp in 7 batches

14. 18 exercises in 6 min

15. $72 for 9 hr

Problem Solving Real World

For 16–18, use the advertisement for the toy store.

16. Find the unit rate for the board games.

17. Tyler has $20. Is this enough to buy one radio-controlled car? Use a unit rate to explain your answer.

18. Building block sets are usually priced at $18 per set. How much can you save by buying one set at the sale price?

This Week's Specials

Radio-Controlled Cars
$80 for 5

Board Games
$36 for 3 games

Miniature Building Blocks
$28 for 2 sets

Name _____

Distance, Rate, and Time

Use the formula $d = r \times t$ to solve. Include the unit in your answer.

1. A truck continuously travels at an average speed of 60 miles per hour. How long does it take the truck to travel 240 miles?

$d = r \times t$
$240 = 60 \times t$
$240 \div 60 = t$
$4 = t$
4 hr

2. A boat travels 3,600 meters in 12 minutes. What is the boat's speed?

_____

3. A cyclist travels 7 hours at a speed of 11 miles per hour. How far does the cyclist travel?

_____

4. $d = 300$ cm

$r = 2$ cm per min

$t =$ _____

5. $d =$ _____

$r = 45$ mi per hr

$t = 6$ hr

6. $d = 400$ yd

$r =$ _____

$t = 20$ min

7. $d =$ _____

$r = 120$ mi per hr

$t = 10$ hr

8. $d = 700$ ft

$r =$ _____

$t = 50$ min

9. $d = 1{,}200$ mi

$r = 600$ mi per hr

$t =$ _____

Problem Solving Real World

Use the road signs and the formula. $d = r \times t$

10. How long will it take a car traveling the speed limit to reach Crestview?

_____

11. A car travels the speed limit. Can it reach Oceanside in 4 hours? Explain.

_____

_____

_____

Name _____

Understand Integers

Write an integer to represent the situation.

1. 5 degrees below zero -5
2. a profit of $37 _____
3. an altitude of 1,384 feet _____
4. a loss of 12 points _____
5. a gain of 15 yards _____
6. $50 in debt _____

Write an integer to represent the situation. Then, tell what 0 represents.

Situation	Integer	What Does 0 Represent?
7. Trisha earned $18 babysitting.		
8. Luis read 5 more books.		
9. The submarine is 2,500 feet below sea level.		
10. Lexi lost $10.		

Problem Solving Real World

11. Zachary deposited $125 into his savings account. What integer can you write to represent the deposit? What does 0 represent?

_____

12. Hannah dives 25 feet below sea level. What integer can you write to represent how far she dives? What does 0 represent?

_____

Name _____

Write and Evaluate Expressions

Write an expression.

1. Rosie has some charms, c, for her charm bracelet. Ray gives Rosie 3 new charms. How many charms does Rosie have now?

_____

2. Grayson has some model cars, m. He loses 2 of them. How many model cars does Grayson have now?

_____

3. Margo has 60 party favors that she wants to share equally with her guests, g. How many party favors will each guest get?

_____

4. Phillip earns $10 each hour he works, h. How much does Phillip earn?

_____

Evaluate each expression for the value given.

5. $t - 14$ for $t = 27$

_____

6. $32 + m$ for $m = 17$

_____

7. $y \times 7$ for $y = 14$

_____

8. $w \times 8$ for $w = 18$

_____

9. $125 \div n$ for $n = 25$

_____

10. $b - 35$ for $b = 93$

_____

11. $c \times 9$ for $c = 13$

_____

12. $d \div 12$ for $d = 72$

_____

13. $f + 0$ for $f = 17$

_____

Problem Solving Real World

14. Kacey is 2 years younger than her sister. If y represents her sister's age, what expression can you write that represents Kacey's age? How old is Kasey if her sister is 14 years old?

_____

15. Greenville gets 3 more inches of snow than Charlotte gets. If s represents the number of inches of snow that Charlotte gets, what expression can you write that represents the amount of snow Greenville gets? How much snow does Greenville get if Charlotte gets 5 inches?

_____

Name _____

Understand Inequalities

Of 2, 10, and 18, which numbers are solutions for the inequality?

1. $b < 15$ — 2, 10

2. $d \geq 8$

3. $r \leq 18$

Of 1, 3, 5, and 11, which numbers are solutions for the inequality?

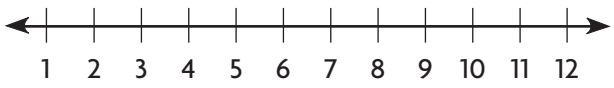
4. $t < 2$

5. $z > 0$

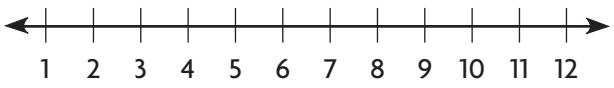
6. $g \geq 4$

Show two solutions for the inequality on a number line.

7. $c > 10$



8. $f \leq 3$



Problem Solving Real World

9. A sign posted at a roller coaster states that all riders must be at least 48 inches tall in order to ride the coaster. Write an inequality using a variable that represents this situation.

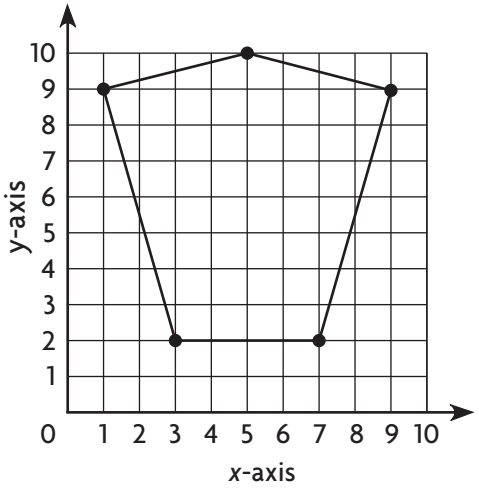
10. Ansley wants to drink at least 64 ounces of water per day, but not more than 72 ounces. How many ounces of water per day might she drink? Name all of the whole number possibilities.

Name _____

Polygons on a Coordinate Grid

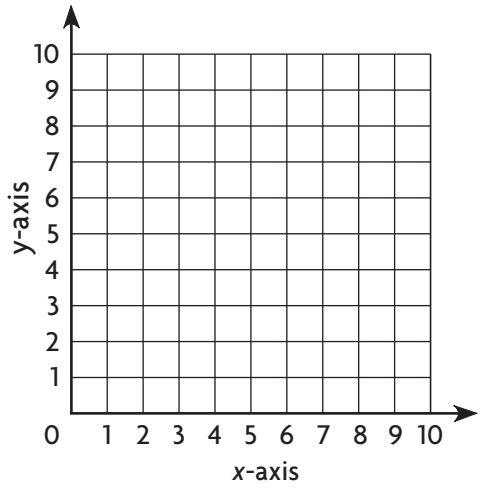
Plot the polygon with the given vertices on a coordinate grid. Identify the polygon.

1. (1, 9), (3, 2), (7, 2), (9, 9), (5, 10)



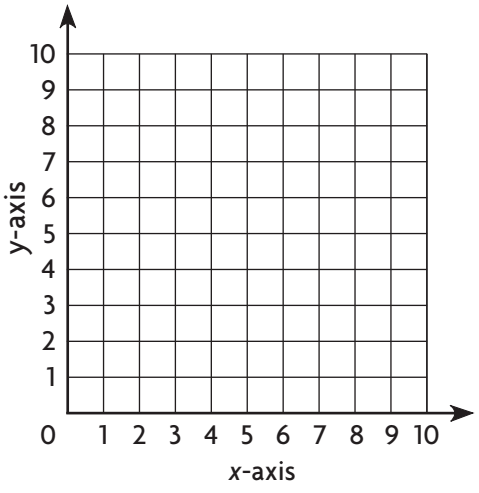
pentagon

2. (1, 6), (6, 1), (8, 9)



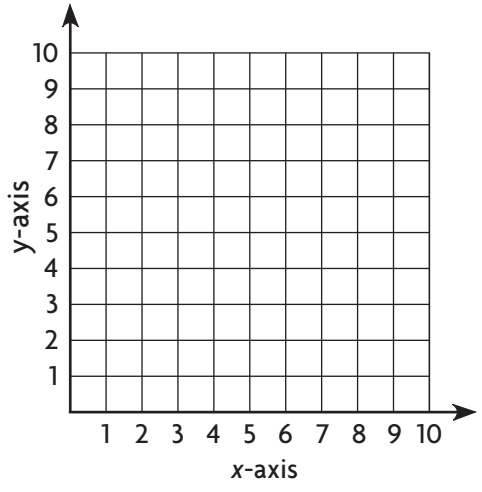
_____

3. (1, 9), (2, 1), (9, 1), (8, 9)



_____

4. (2, 3), (5, 1), (8, 3), (8, 7), (5, 9), (2, 7)



_____

Problem Solving Real World

5. A square tile measures 12 inches by 12 inches. Each unit on a coordinate grid represents 1 inch. (1, 1) and (1, 13) are two of the coordinates of the tile drawn on the grid. What are the coordinates of the other two vertices?

_____

Name _____

Area of a Parallelogram

Find the area of the parallelogram.

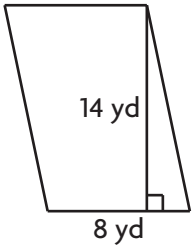
1.

$A = b \times h$

$= 12 \times 6$

$=$ 72 sq ft

2.



_____ sq yd

3. base = 0.4 cm

height = 0.20 cm

Area = _____ sq cm

4. base = 2.4 m

height = 1.7 m

Area = _____ sq m

5. base = $\frac{1}{4}$ ft

height = $\frac{2}{3}$ ft

Area = _____ sq ft

6. base = $3\frac{1}{3}$ in.

height = 9 in.

Area = _____ sq in.

7. base = 0.5 cm

height = 0.08 cm

Area = _____ sq cm

8. base = 7.3 m

height = 2.7 m

Area = _____ sq m

9. base = $\frac{3}{5}$ ft

height = $\frac{1}{4}$ ft

Area = _____ sq ft

10. base = $2\frac{3}{4}$ in.

height = 6 in.

Area = _____ sq in.

Problem Solving Real World

11. The windows of a certain building are in the shape of a parallelogram. The windows have a base of 30 in. and a height of 24 in. The building has a total of 11 windows. What is the total area of all 11 windows?

_____

Name _____

Median and Mode

Find the median and the mode of the data.

1. daily low temperatures the first 7 days of February (°F): 25, 24, 25, 27, 25, 23, 15

median: _____

mode: _____

2. lengths of 8 songs played on the radio (minutes): 2, 3, 3, 5, 4, 3, 4, 3

median: _____

mode: _____

3. ages of 9 children at a dentist's office: 9, 10, 10, 8, 7, 9, 5, 12, 10

median: _____

mode: _____

4. number of touchdowns scored per game: 1, 0, 3, 4, 2, 2, 3, 4, 1, 3

median: _____

mode: _____

5. number of exercises on math homework for one week: 12, 25, 15, 18, 13

median: _____

mode: _____

6. number of tacos eaten per person: 2, 3, 3, 4, 4, 4, 2, 5, 1, 3, 1

median: _____

mode: _____

7. amount earned per hour for babysitting ($): 10, 10, 6, 9, 8, 12

median: $_____

mode: $_____

8. number of days per month: 31, 28, 31, 30, 31, 30, 31, 31, 30, 31, 30, 31

median: _____

mode: _____

Problem Solving Real World

9. Jasmine surveys her classmates and records the number of siblings each person has. What are the median and mode of her data?

median: _____

mode: _____

Number of Siblings Per Classmate

2—0—2—2—3—1—4—2—2—5

4—1—0—1—1—2—1—3—1—1

Name _____

Finding the Average

Find the average of the set of numbers.

1. 1, 3, 9, 7

$1 + 3 + 9 + 7 = 20$

$20 \div 4 = 5$

5

_____

2. 10, 18, 20, 8, 11, 17

_____

3. 100, 120, 105, 115, 110

_____

4. 18, 28, 50, 92, 116, 74

_____

5. 737, 843, 188, 592

_____

6. 8, 11, 16, 7, 25, 9, 3, 8, 12

_____

7. 2,639; 1,001; 1,708; 200

_____

8. 24, 23, 22, 24, 26, 24, 30, 33, 34, 30

_____

9. 70, 53, 43, 91, 0, 104, 68, 24, 51

_____

10. 16, 32, 48, 56, 60, 76

_____

11. 10, 9, 8, 10, 12, 11, 16, 19, 10, 15

_____

12. 278, 261, 251, 299, 208, 312, 276, 232, 259

_____

13. Find the average amount of snowfall.

Month	1	2	3	4	5	6	7
Amount of Snowfall (in.)	44	28	23	15	2	0	0

_____

Problem Solving Real World

14. In the snowfall table above, suppose the amount of snowfall for each of the next three months was 6 inches. By how much would this change the average amount of snowfall over the entire period?

_____

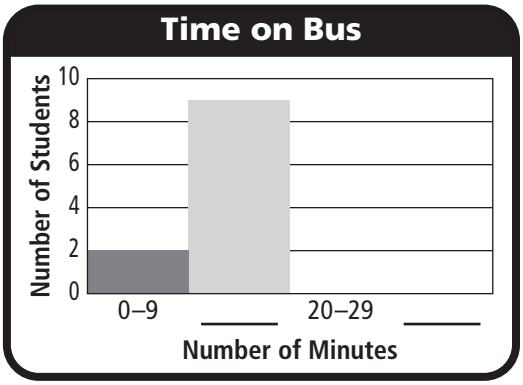
Name _____

Histograms

For 1–3, use the histogram at the right.

The amount of time, in minutes, that it takes students in Lacey's class to get to school by bus is shown below.

10, 25, 12, 20, 15, 8, 27, 13, 22, 30, 19, 9, 11, 17, 26, 21, 18, 20, 28, 16



1. Use 10-minute intervals starting at 0. List the intervals.

_____

2. Make a frequency table of the data.

3. Complete the histogram of the data.

For 4–6, use the data below to make a histogram.

The heights, in inches, of the saplings in the nursery are shown below.

60, 48, 52, 64, 56, 59, 63, 58, 62, 65, 50, 57, 49, 60, 61, 67, 55, 58, 62, 63, 59, 56, 64, 65, 54, 51, 62, 57, 58, 64

4. Use 10-inch intervals for the data. List the intervals.

_____

5. Make a frequency table of the data.

6. Make a histogram of the data.

Problem Solving Real World

7. Use a smaller interval for the heights in Exercises 4–6. List the intervals.

_____

8. How does the histogram change?

_____

Name _____

Analyze Histograms

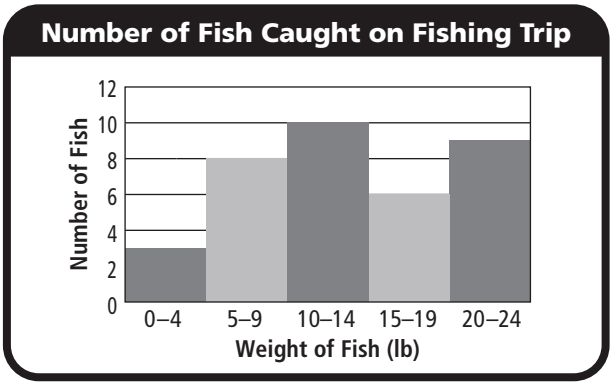
For 1–2, use the histogram at the right.

1. Which interval has the greatest frequency?

_____

2. How many fish weighing less than 10 pounds were caught?

_____



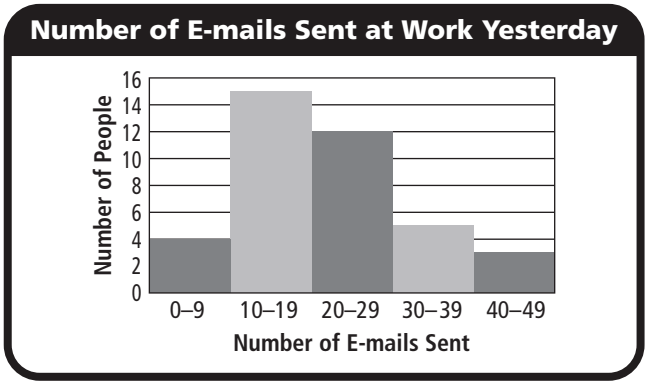
For 3–4, use the histogram at the right.

3. Which interval has the least frequency?

_____

4. How many people sent 30 or more e-mails at work yesterday?

_____



Problem Solving Real World

For 5–7, use the histogram at the right.

5. How many students sold tickets to the talent show?

_____

6. How many more students sold 10–19 tickets than sold 30–39 tickets?

_____

7. Can you tell from the histogram how many tickets were sold in all? Explain.

_____

_____