6th Grade Math
Week 1

Name: _____

Show Equivalent Ratios

Study the example problem showing how to find equivalent ratios. Then solve problems 1–7.

Example

Elena uses 12 red beads to make 4 bracelets. How many red beads will Elena need to make 12 bracelets? How many red beads will Elena need to make 20 bracelets?

You can make a table showing the number of bracelets that can be made with different numbers of red beads. The pairs of numbers in each column show the ratio of red beads to bracelets. Notice the ratios are all equivalent.

Number of Red Beads	3	6	12	24	36	48	60	72
Number of Bracelets	1	2	4	8	12	16	20	24

The table shows Elena will need 36 red beads to make 12 bracelets. Elena will need 60 red beads to make 20 bracelets.

1 How many red beads will Elena need to make 16 bracelets?

_____

2 How many bracelets can Elena make with 24 red beads?

_____

3 Find the rate of red beads per bracelet. Explain how you found your answer.

_____

_____

4 James said that he would need 25 red beads to make 75 bracelets. Is he correct? How did he get that answer?

_____

_____

_____

Solve.

Use the following information to solve problems 5–7.

The list below shows how many servings of different breakfast items that a restaurant expects to sell every 15 minutes:

Cups of coffee	25
Glasses of orange juice	10
Omelets	6

5 How many glasses of orange juice does the restaurant expect to sell in 1 hour?

Show your work.

Solution: _____

6 At this rate, how long will it take to sell 200 cups of coffee?

Show your work.

Solution: _____

7 The restaurant serves breakfast from 6:00 AM until 10:30 AM. They sell 6 omelets every 15 minutes. Should the restaurant expect to sell more than or fewer than 100 omelets? Explain your answer.

_____

_____

_____

_____

_____

Name: _____

Graph Equivalent Ratios

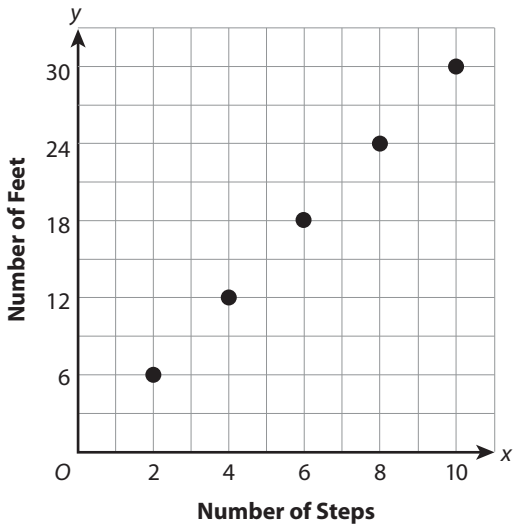
Study the example problem showing how to graph equivalent ratios. Then solve problems 1–10.

Example

The graph compares how far Jorge walks to how many steps he takes. How many feet does he walk in 6 steps? How many steps does Jorge take to walk 30 feet?

Each point on the graph can be represented by an ordered pair. The point represented by (6, 18) shows that Jorge takes 6 steps to walk 18 feet.

The ordered pair for 30 feet is (10, 30), which means that Jorge walks 30 feet in 10 steps.



1 What ordered pair represents the number of steps Jorge takes to walk 24 feet?

_____

2 Choose another point on the graph. Write the ordered pair and tell what it represents.

_____

3 What ordered pair represents the number of feet Jorge walks in 3 steps?

_____

4 Joan looks at the graph and says the number of steps is always 3 times the number of feet. Is she correct? Explain your answer.

_____

_____

Solve.

Use the following situation for problems 5–8.

To make a scarf, Jenny uses blue yarn and white yarn. The number of yards of blue yarn she uses is 4 times the number of yards of white yarn in each scarf.

5 Write four ratios to show the number of yards of white yarn to blue yarn for each scarf.

6 Are the ratios in problem 5 equivalent? Explain how you know.

_____

_____

7 Jenny wants to make a scarf that uses 24 yards of blue yarn. How many yards of white yarn will she need?

_____

8 If Jenny wants to keep the ratio of blue yarn to white yarn the same, can she make a scarf using 42 yards of blue yarn? If so, how much white yarn will she need? If not, why not?

_____

_____

_____

9 Adrianna can read 7 pages in 10 minutes. At this rate, how many pages can she read in 25 minutes?

_____

10 Max calculated that he could read at a rate of 2 pages per minute. Is he reading at a faster rate than Adrianna? Explain.

_____

_____

_____

_____

Name: _____

Equivalent Ratios

Solve the problems.

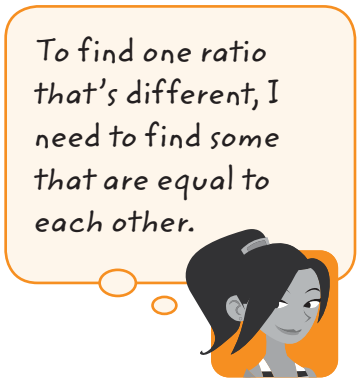
1 Kate, Mario, Sato, and Den each use a different recipe to make trail mix. Which recipe uses a different ratio of cups of raisins to cereal than the rest?

A Kate uses 3 cups of raisins for every 8 cups of cereal.

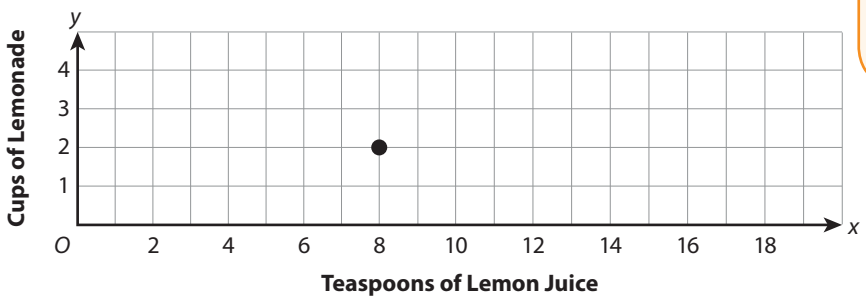
B Mario uses 4 cups of raisins for every 12 cups of cereal.

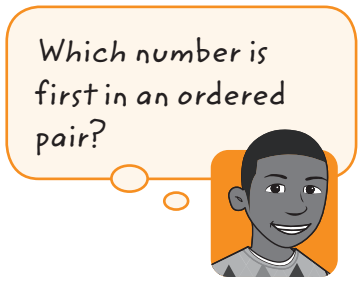
C Sato uses 6 cups of raisins for every 16 cups of cereal.

D Den uses 9 cups of raisins for every 24 cups of cereal.



2 The graph shows the number of teaspoons of lemon juice in cups of lemonade.





Which ordered pair represents a ratio equivalent to the ratio of teaspoons of lemon juice to cups of lemonade shown by the point on the graph?

A (4, 16)

B (6, 1)

C (9, 3)

D (16, 4)

Oscar chose **A** as the correct answer. How did he get that answer?

_____

_____

Solve.

3 Rey buys 4 cards for $10. He plots the point (4, 10) on a graph. All cards are the same price. He wants to see how much it would cost to buy more cards. Tell whether each statement is *True* or *False*.

a. The point (6, 15) will be on the graph. ☐ True ☐ False

b. Rey buys 1 card for $3.50. ☐ True ☐ False

c. Rey buys 100 cards for less than $40. ☐ True ☐ False

d. The point (14, 35) will be on the graph. ☐ True ☐ False

Be sure that you understand what Rey's ordered pair means.

4 Each table shows four ratios of boys to girls at different sporting events. Which tables show four equivalent ratios of boys to girls? Select all that apply.

What makes two ratios equivalent?

A

3	5	9	12
5	7	15	20

B

3	4	7	11
12	16	28	44

C

45	25	10	5
18	10	4	2

D

200	150	100	50
50	40	30	20

5 Rosa earns $10 for every 3 hours that she works. Ralph earns $7 for every 2 hours that he works. Who earns more per hour? How much *more* does this person earn after 12 hours of work?

Show your work.

Solution: _____

_____

Be careful not to compare $10 to $7—these represent earnings for different numbers of hours.

Name: _____

Unit Price

Study the example problem showing how to solve a problem about unit price. Then solve problems 1–7.

Example

All the comic books in a store are the same price. Vera buys 3 comic books for $7.50. How much do 5 comic books cost? How much do 8 comic books cost?

Divide 7.50 by 3 to find the unit price.

$7.50 \div 3 = 2.50$

The price per book is $2.50. You can use the unit price to make a table of equivalent ratios.

Cost ($)	2.50	5.00	7.50	10.00	12.50	15.00	17.50	20.00
Comic Books	1	2	3	4	5	6	7	8

The cost of 5 comic books is $12.50.

The cost of 8 comic books is $20.00.

1 How can you use multiplication to find the cost of 5 comic books?

_____

2 How can you use addition to find the cost of 8 comic books?

_____

3 Explain how to find the number of comic books you could buy with $25.00.

_____

_____

_____

_____

Solve.

Use the following situation to solve problems 4–7.

All of the used hardcover books at a yard sale are the same price. Hugo paid $4.50 for 6 books.

4 Explain how to find the unit price of the books.

_____

5 Hugo's friends bought used books at the yard sale. Sonia paid $2.25, John paid $6.00, and Keisha paid $3.75. How many books did each friend buy?

Show your work.

Solution: _____

6 Kim bought 10 used books at the yard sale. How much did she pay? Did you use addition or multiplication to solve this problem? Why?

_____

7 The price for the used paperback books at the yard sale was $0.25 less than for the hardcover books. How many more paperback books than hardcover books could someone buy with $3.00?

Show your work.

Solution: _____

Name: _____

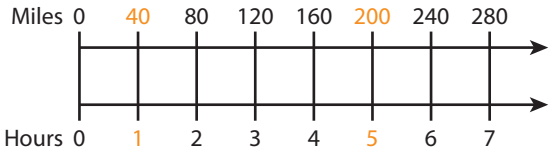
Constant Speed

Study the example problem showing how to solve a problem about constant speed. Then solve problems 1–7.

Example

Kenja traveled 120 miles in 3 hours on a train. At this speed, how long will it take her to travel 200 miles?

The unit rate for miles per hour is 120 ÷ 3, or 40. Use the unit rate to make a double number line.



Divide 200 by 40.
200 ÷ 40 = 5

It will take Kenja 5 hours to travel 200 miles.

1 How many miles could Kenja travel in 1 hour. Is this the same number of hours it takes Kenja to travel 1 mile? Explain your answer.

_____

_____

_____

2 Explain how to use the unit rate for miles per hour to find how many miles Kenja can travel in 8 hours.

_____

3 Explain how to use the double number line to find how many hours it will take Kenja to travel 220 miles.

_____

_____

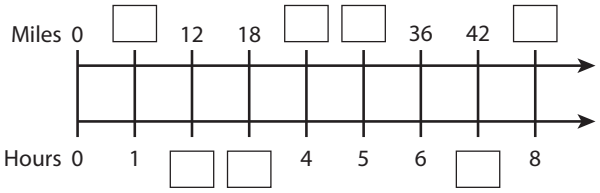
_____

Solve.

Use the following situation to solve problems 4–6.

Zachary exercises by jogging at a constant speed. During one week, he jogged 36 miles in 6 hours.

4 Complete the double number line to show the relationship between the number of miles and the hours that Zachary jogs.



5 Explain how you found the number of hours it takes Zachary to jog 18 miles.

_____

_____

6 How many miles does Zachary jog in 4.5 hours? Explain how to use the double number line to find the answer.

_____

_____

7 Alyssa and Caleb both drove 210 miles to the beach in separate cars. They left at the same time. They both drove at a constant speed. Alyssa drove 105 miles in 3.5 hours. Caleb drove 168 miles in 4 hours. Who arrived earlier? How much earlier?

Show your work.

Solution: _____

Name: _____

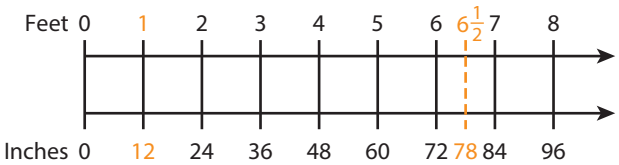
Converting Measurement Units

Study the example problem showing how to solve a problem involving conversion of measurement units. Then solve problems 1–6.

Example

Hannah needs 78 inches of ribbon to make a picture frame. She knows that there are 60 inches in 5 feet. How many feet of ribbon are in 78 inches?

You can find the unit rate and make a double number line. There are 60 inches in 5 feet, so there are 60 ÷ 5 = 12 inches in 1 foot. The unit rate is 12.



Because the number of inches, 78, is halfway between 72 and 84, the number of feet must be halfway between 6 and 7 feet. There are $6\frac{1}{2}$ feet of ribbon in 78 inches.

1 Explain how to use the unit rate without the number lines to find how many feet of ribbon are in 48 inches.

_____

2 How many inches of ribbon are in 3 feet? Explain how to find the answer without using the number lines.

_____

3 What is the difference between using the unit rate to find how many feet are in a given number of inches and using the unit rate to find how many inches are in a given number of feet?

_____

_____

_____

Solve.
Use the following situation to solve problems 4–5.

Antonio measures items in his pocket. He knows there are 50 millimeters in 5 centimeters. His key chain is 3.5 centimeters long. His library card is 80 millimeters long.

4 How many centimeters long is his library card? Explain how to use the unit rate to find the answer.

_____

_____

_____

5 How many millimeters long is his key chain? Draw a double number line to find the answer.

Show your work.

Solution: _____

6 Claire is measuring ingredients for recipes. She knows that there are 12 cups in 6 pints. She also knows that 4 quarts equals 16 cups. Which has more cups, 5 pints or 3 quarts? How many more cups?

Show your work.

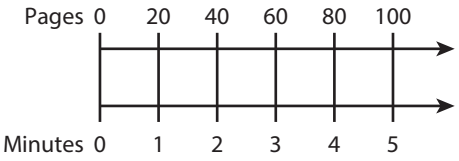
Solution: _____

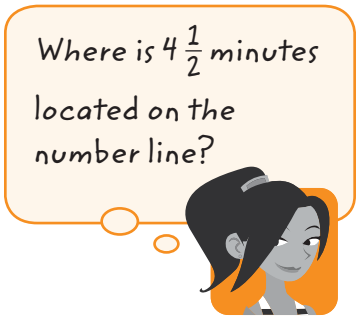
Name: _____

Solve Problems with Unit Rate

Solve the problems.

1 The double number line shows the relationship between the number of minutes and the number of pages that a printer prints. How many pages does the printer print in $4\frac{1}{2}$ minutes?

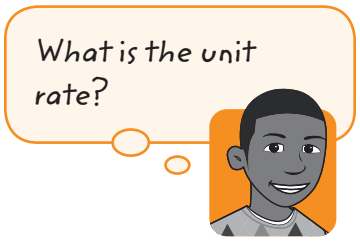




A 80 pages **B** 85 pages **C** 90 pages **D** 100 pages

2 A carpenter uses 65 shelves to make 13 bookcases. She uses the same number of shelves for each bookcase. Are 32 shelves enough to build 6 more bookcases?

Show your work.

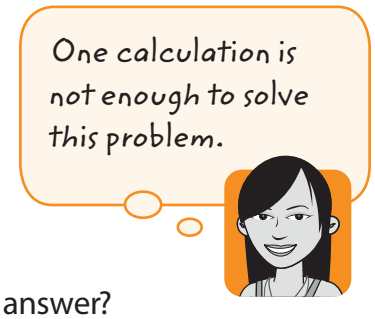


Solution: _____

3 The price of 6 pretzels is \$5.10. Simon and Sofia bought 8 pretzels and shared the cost equally. How much did each person pay?

A \$0.85 **C** \$6.80

B \$3.40 **D** \$20.40



Jacob chose **C** as the correct answer. How did he get that answer?

_____

_____

Solve.

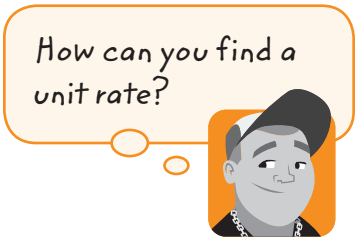
4 Michael drove 350 miles in 7 hours at a constant speed. Tell whether each statement is *True* or *False*.

a. The unit rate for miles to hours is 50. ☐ True ☐ False

b. Michael drove 250 miles in 4 hours. ☐ True ☐ False

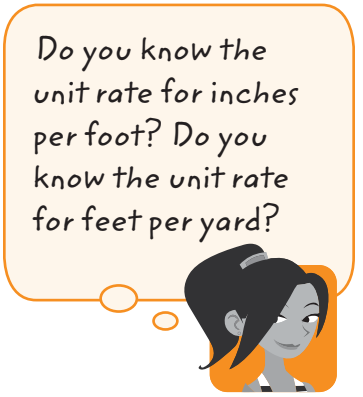
c. To find the number of miles Michael drove in 3 hours, multiply 3 by 50. ☐ True ☐ False

d. To find the number of hours it took Michael to drive 300 miles, divide 300 by 50. ☐ True ☐ False



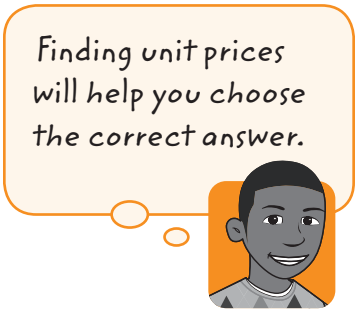
5 Jorge says there are 198 inches in 5.5 yards. Is he correct? Explain your answer.

Show your work.



Solution: _____

6 At Teen Tops, a package of 5 T-shirts costs $38. At Bargain City, a package of 4 T-shirts costs $34. Which statement is the most accurate?



A Bargain City is the better buy because it sells T-shirts at $8.50 per T-shirt.

B Teen Tops is the better buy because the package has more T-shirts.

C Bargain City is the better buy because $34 is less than $38.

D Teen Tops is the better buy because it sells T-shirts at $7.60 per T-shirt.

Name: _____

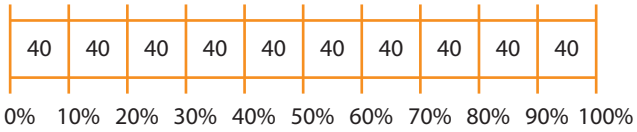
Percent of a Number

Study the example problem showing how to find the percent of a number. Then solve problems 1–6.

Example

In an after-school sports program, 70% of 400 students play soccer. How many students play soccer?

You can use a model to find 70% of 400.



The model shows 400 divided into groups of 40. Each group of 40 represents 10% of 400, so 7 groups of 40 represent 70% of 400. This means that 70% of 400 is 7 • 40, or 280.

There are 280 students who play soccer.

1 What is 70% written as a fraction? _____

2 Use the fraction to write and evaluate a multiplication expression that represents 70% of 400. Compare the answer to the one you got using the model.

Show your work.

Solution: _____

3 What is 75% of 400? Write and evaluate an expression to find the answer. Then explain how to use the model to justify the answer.

_____

_____

Solve.

Use the following situation to solve problems 4–5.

The results of a survey show that 40% of 300 students chose conserving natural resources as the top priority for their generation.

4 How many students chose conserving natural resources? Make a model to find the answer.

Show your work.

Solution: _____

5 Suppose only 24% of 300 students chose conserving natural resources. How many students chose conserving natural resources? Explain how you found your answer. How can the model help you justify the answer?

_____

_____

_____

6 There are 50 puzzles in Maggie's puzzle book. Maggie finished 30% of the puzzles. How many puzzles does she have left to do?

Show your work.

Solution: _____

Name: _____

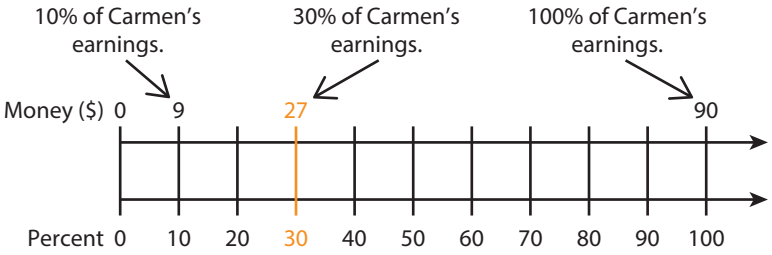
Finding the Whole

Study the example problem showing how to find the whole when a part and the percent are given. Then solve problems 1–6.

Example

Carmen saved $27, which was 30% of the money she earned. How much did Carmen earn?

You can use a double number line to find the whole when a part and the percent are given.



Carmen earned $90.

1 How can you find 10% of Carmen's earnings using the ratio 27 to 30? What is 10% of Carmen's earnings?

_____

_____

_____

2 How many times as great as 10% is 100%?

_____

3 How can you find 100% of Carmen's earnings using the ratio of her earnings to 10%? What is 100% of Carmen's earnings?

_____

_____

_____

Solve.

4 Diane received 300 votes in the election for student council president. That was 60% of the students who voted in the election. How many students voted in the election? Use a double number line in your explanation.

5 Students sold 80% of the books donated to the used book sale. They sold 48 books in all. How many books were donated to the used book sale? Use a table in your explanation.

6 Omar spends $63 on souvenirs during his vacation. That is 35% of the money he brought with him. How much money does Omar have left to spend?

Show your work.

Solution: _____

Name: _____

Solve Problems with Percent

Solve the problems.

1 Jamil traveled 210 miles, which is 70% of the total distance to his grandfather's house. How many more miles does he need to travel to reach his grandfather's house?

A 90 miles

B 147 miles

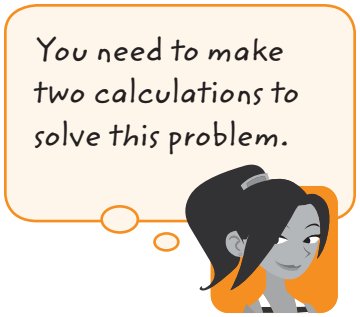
C 300 miles

D 390 miles

Kate chose **B** as the correct answer. How did she get that answer?

_____

_____



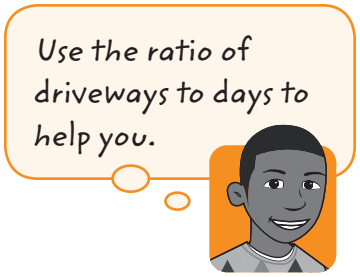
2 Brandon plowed snow from 84 driveways in 7 days. He plowed the same number of driveways each day. Tell whether each statement is *True* or *False*.

a. The rate is 84 driveways to 1 day. ☐ True ☐ False

b. The unit rate for driveways per day is 12. ☐ True ☐ False

c. The rate in fraction form is $\frac{12}{1}$. ☐ True ☐ False

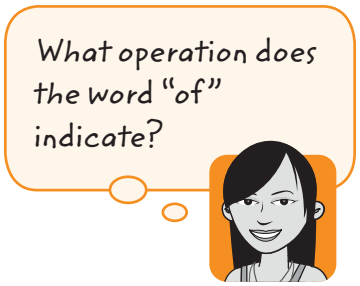
d. If Brandon continues at the same rate, he will plow 120 driveways in 12 days. ☐ True ☐ False



3 A meteorologist said that it rained during 20% of the past 60 days. On how many days did it not rain?

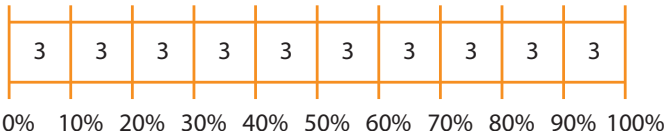
Show your work.

Solution: _____



Solve.

4 At tryouts for the school talent show, 60% of 30 performers played a musical instrument. How many performers played a musical instrument? Use the model to find the answer.

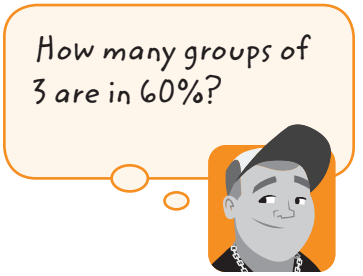


A 3 performers

B 18 performers

C 30 performers

D 60 performers



5 Students collected 600 cans for the canned food drive. That was 80% of their goal. How many more cans do they need to collect to reach their goal?

Show your work.

Solution: _____

6 Megan correctly spelled 45 out of 50 words in a spelling competition. Justin spelled 27 out of 30 words correctly. Fernando spelled 84 out of 120 words correctly. Which statements are true? Select all that apply.

A Fernando spelled the greatest percent of words correctly.

B Megan and Justin spelled the same percent of words correctly.

C Justin spelled the least percent of words correctly.

D The percent of words that Megan spelled correctly is greater than the percent of words that Fernando spelled correctly.