Solve Problems with Percent

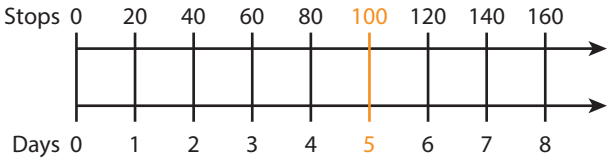
Name: _____

Prerequisite: Unit Rate

Study the example showing how to find the unit rate. Then solve problems 1–7.

Example

A bus driver made 100 stops on his route in 5 days. The double number line shows the relationship between the number of stops and the number of days.



In the diagram, 100 and 5 represent the ratio of 100 stops to 5 days.

You can write a multiplication equation to show how 5 days and 100 stops are related.

$5 \times 20 = 100$

1 Look at the corresponding pairs of numbers on the number lines. Write a multiplication equation to show how 3 days and 60 stops are related. Repeat for two other corresponding pairs of numbers.

_____

2 What is the relationship between the number of stops and each corresponding number of days?

_____

_____

3 What is the rate of stops per day? What is the unit rate?

rate: _____ unit rate: _____

Vocabulary

rate a ratio that compares the first quantity to only one of the second quantity.

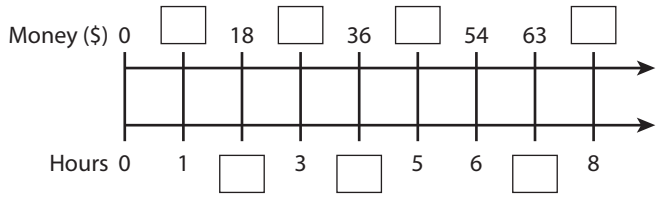
unit rate the number in a rate that is being compared to 1.

Solve.

Use the following situation to solve problems 4–5.

Caroline earns $54 babysitting for 6 hours.

4 Fill in the blanks on the double number line to show the relationship between the amount of money Caroline earns and the number of hours she works.



5 What is Caroline's rate, in dollars per hour? What is her unit rate?

6 Ling uses 21 bananas to make 7 fruit smoothies. What is the rate that Ling uses for bananas per each smoothie? What is the unit rate? Explain how to use equivalent fractions to find the answer.

7 Kelly drove 440 miles in 8 hours. Alberto drove 468 miles in 9 hours. Both drove at a constant speed. Who drove farther in 1 hour? How many miles farther?

Show your work.

Solution:

Name: _____

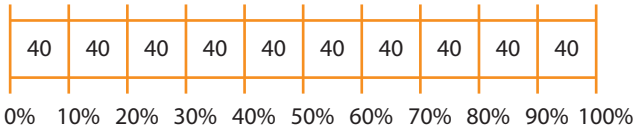
Percent of a Number

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: _____

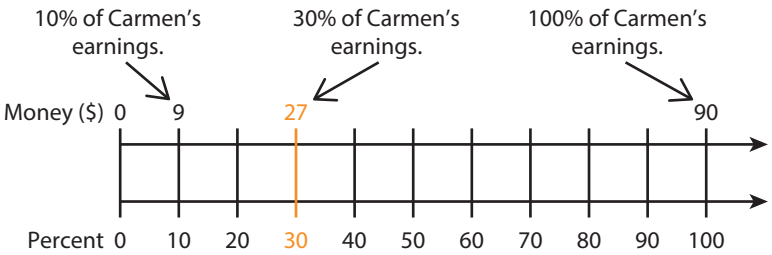
Finding the Whole

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

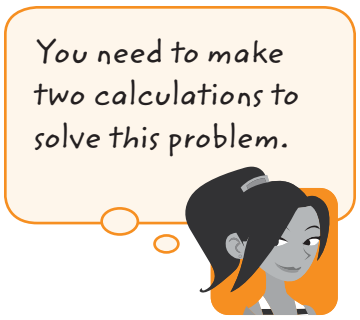
C 300 miles

D 390 miles

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

_____

_____



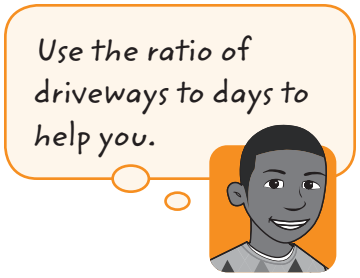
2 Brandon plowed snow from 84 driveways in 7 days. He plowed the same number of driveways each day. Tell whether each statement is *True* or *False*.

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

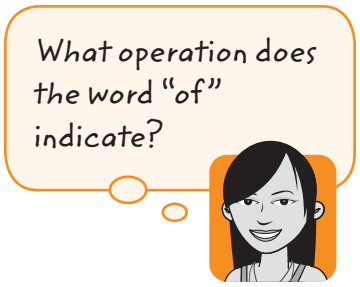
d. If Brandon continues at the same rate, he will plow 120 driveways in 12 days. ☐ True ☐ False



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

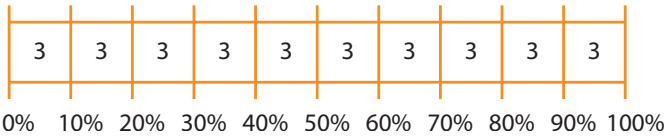
Show your work.

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

How many groups of 3 are in 60%?

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: _____

Do you need to find the part or the whole?

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.

How can you find a percent using a ratio?