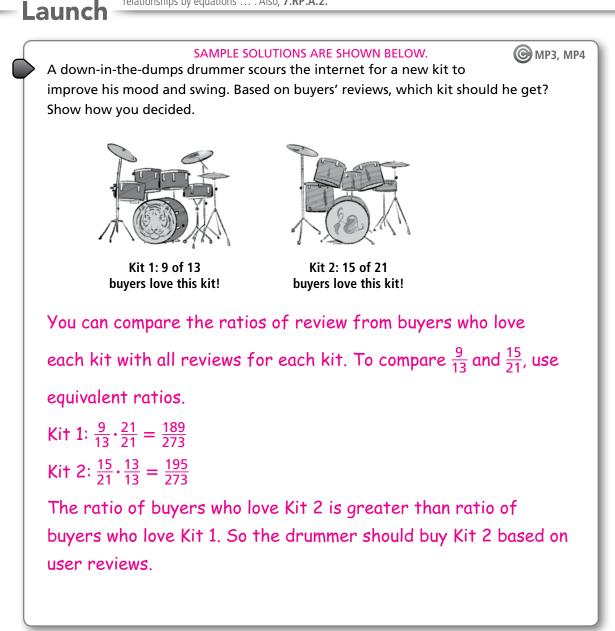# The Percent Equation

CCSS: 7.RP.A.2b: Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. **7.RP.A.2c:** Represent proportional relationships by equations … . Also, **7.RP.A.2.**

Launch

SAMPLE SOLUTIONS ARE SHOWN BELOW.   Ⓒ **MP3, MP4**

A down-in-the-dumps drummer scours the internet for a new kit to improve his mood and swing. Based on buyers' reviews, which kit should he get? Show how you decided.

Kit 1: 9 of 13
buyers love this kit!

Kit 2: 15 of 21
buyers love this kit!

You can compare the ratios of review from buyers who love each kit with all reviews for each kit. To compare $\frac{9}{13}$ and $\frac{15}{21}$, use equivalent ratios.

Kit 1: $\frac{9}{13} \cdot \frac{21}{21} = \frac{189}{273}$

Kit 2: $\frac{15}{21} \cdot \frac{13}{13} = \frac{195}{273}$

The ratio of buyers who love Kit 2 is greater than ratio of buyers who love Kit 1. So the drummer should buy Kit 2 based on user reviews.

Reflect Do you like the method of showing buyers' reviews (e.g., 9 of 13)? Explain.

Sample: Showing how many of all buyers love each drum kit has pluses and minuses. On the plus side, you see the total number of buyers. On the minus side, it's hard to compare different drum kits.

Got It?

PART 1 Got It mc

Is the question "190 is 10% of what number?" looking for the *part*, the *percent*, or the *whole*?

whole

PART 2 Got It mc

Which of the following is/are true?

I. 7 is 50% of 14.
II. 28 is 14% of 200.
III. 6 is 40% of 14.
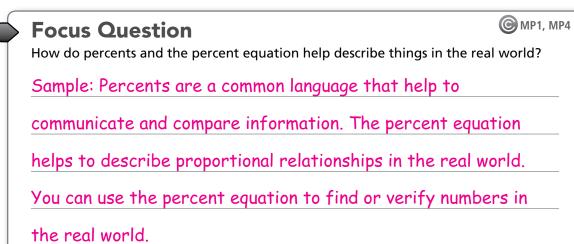**IV.** 40% of 35 is 14.

I, II, and IV

PART 3 Got It mc

Suppose your friend has given you a gift certificate for a haircut. After the haircut, you want to leave an appropriate tip for the hairdresser. The receptionist says you should leave exactly $3 if you want to tip 20% of the price of the haircut. What was the price of the haircut?

$15

Discuss with a classmate

What are gift certificates and how do they work?
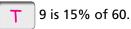What are tips and how do they work?

Close and Check

Focus Question

How do percents and the percent equation help describe things in the real world?

Sample: Percents are a common language that help to communicate and compare information. The percent equation helps to describe proportional relationships in the real world. You can use the percent equation to find or verify numbers in the real world.

Do you know HOW?

1. Is the question "What percent of 8 is 5?" looking for the *part*, the *percent*, or the *whole*?

   percent

2. Read each statement. Write **T** if it is true or **F** if it is false.

   T 9 is 15% of 60.

   F 12% of 120 is 10.

   T 32 is 40% of 80.

   T 90% of 180 is 162.

3. A shoe store is having a closeout sale. All the prices are 80% of the original price. The shoes you want originally cost $40. Find the sale price of the shoes.

   $32

Do you UNDERSTAND?

4. **Writing** The total bill at a restaurant equals $65.38. The waiter typically receives a tip equal to 15% of the total bill. He is given a $13 tip. Should he be happy with the amount of the tip? Explain.

   Yes. He would typically receive a tip of about $9.80. The amount he received is about 20% of the total bill.

5. **Vocabulary** Explain how to solve "72 is 18% of what number?" by using the terms *part*, *percent*, and *whole*.

   The whole is unknown. The part of the whole is 72. Convert the percent, 18%, to a fraction and then multiply 72 by its reciprocal, $\frac{100}{18}$.