LESSON MAKER PRO

Rates in Action

Find the amount for one unit, then use it to make decisions.

GRADE 7 · 7.RP.A.1

7.RP.A.1 "Calculate unit rates of length, area, and other quantities measured in like or different units that include ratios or fractions."

NAME _____ DATE _____

FIND ONE UNIT

A unit rate tells how much of one quantity there is for 1 unit of another quantity. Divide the first quantity by the second, even when the numbers are fractions. Include both units in your answer.

WORKED EXAMPLE

A bottle fills with 7/10 liter of water in 2/5 minute. What is the fill rate in liters per minute?

1. Divide liters by minutes: 7/10 ÷ 2/5.
2. Multiply by the reciprocal: 7/10 × 5/2 = 35/20.
3. Simplify: 35/20 = 7/4.

Answer: 7/4 liters per minute

PRACTICE 6 problems

1 A hiker walks 5/6 mile in 2/3 hour. Find the speed in miles per hour.

ANSWER _____

2 A recipe uses 3/8 cup of oats for 1/4 batch. How many cups of oats does it use per batch?

ANSWER _____

3 A small robot moves 4/9 meter in 2/3 second. Find its speed in meters per second.

ANSWER _____

4 A paint pen covers 2 1/4 square feet using 3/4 ounce of ink. How many square feet does it cover per ounce?

ANSWER _____

5 A skateboard rolls 12 feet in 4 seconds. Find its speed in feet per second.

ANSWER _____

6 A piece of ribbon that is 3/5 yard long costs 9/10 dollar. Find the cost per yard.

ANSWER _____

APPLY IT Show your work

1 A game file downloads at two different places. Wi-Fi A downloads 3/4 gigabyte in 1/6 minute. Wi-Fi B downloads 5/6 gigabyte in 1/4 minute. Find both rates in gigabytes per minute. Which Wi-Fi is faster?

WORK SPACE

ANSWER _____

2 A mural team covers 4 1/2 square meters with 3/4 liter of paint. At the same rate, how many square meters can the team cover with 2 1/2 liters?

WORK SPACE

ANSWER _____

CHALLENGE One step up

Ari streams 3/5 gigabyte of video in 1/4 hour. Bo streams 3/4 gigabyte in 1/6 hour. Who uses less data per minute, and how much less? Use 1 gigabyte = 1,000 megabytes and 1 hour = 60 minutes. Show both unit rates.

WORK SPACE AND ANSWER

ANSWER KEY # Rates in Action

GRADE 7 · 7.RP.A.1

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A hiker walks 5/6 mile in 2/3 hour. Find the speed in miles per hour.	**5/4 miles per hour**
2	A recipe uses 3/8 cup of oats for 1/4 batch. How many cups of oats does it use per batch?	**3/2 cups per batch**
3	A small robot moves 4/9 meter in 2/3 second. Find its speed in meters per second.	**2/3 meter per second**
4	A paint pen covers 2 1/4 square feet using 3/4 ounce of ink. How many square feet does it cover per ounce?	**3 square feet per ounce**
5	A skateboard rolls 12 feet in 4 seconds. Find its speed in feet per second.	**3 feet per second**
6	A piece of ribbon that is 3/5 yard long costs 9/10 dollar. Find the cost per yard.	**3/2 dollars per yard**

PART 2 · APPLY IT

1. **Wi-Fi A: 9/2 gigabytes per minute. Wi-Fi B: 10/3 gigabytes per minute. Wi-Fi A is faster.** Divide each file size by its download time: (3/4) ÷ (1/6) = 9/2 and (5/6) ÷ (1/4) = 10/3. Since 9/2 > 10/3, Wi-Fi A is faster.
2. **15 square meters** The team covers (4 1/2) ÷ (3/4) = 6 square meters per liter. Multiply 6 by 2 1/2 to get 15 square meters.

CHALLENGE

Ari uses 40 megabytes per minute, and Bo uses 75 megabytes per minute. Ari uses 35 megabytes less per minute.

Accept equivalent fractions or decimals for unit rates when the units are correct. For the challenge, students may convert the data amounts and times before dividing or convert their unit rates afterward.