LESSON MAKER PRO

Rate Detectives

Find the amount for one unit.

GRADE 7 · 7A.PR.A.1

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

NAME _____ DATE _____

FINDING A UNIT RATE

A unit rate tells how much of one quantity there is for 1 unit of another. Divide the first quantity by the second, even when the quantities are fractions. If the question asks for different units, convert before you divide.

WORKED EXAMPLE

A toy car travels 7/12 meter in 5/18 second. What is its speed in meters per second?

1. Divide distance by time: 7/12 ÷ 5/18.
2. Multiply by the reciprocal: 7/12 × 18/5.
3. Simplify: 126/60 = 21/10.

Answer: 21/10 meters per second

PRACTICE 6 problems

1 A cyclist travels 3/8 kilometer in 1/2 minute. What is the rate in kilometers per minute?

ANSWER _____

2 A painter covers 9/16 square meter in 3/8 hour. What is the rate in square meters per hour?

ANSWER _____

3 A toy train travels 2 1/4 feet in 3/4 second. What is its speed in feet per second?

ANSWER _____

4 A recipe uses 48 ounces of juice to make 6 cups of punch. How many ounces of juice are used per cup?

ANSWER _____

5 A printer covers 24 square feet of paper in 8 minutes. What is the rate in square feet per minute?

ANSWER _____

6 A small robot travels 30 inches in 1/2 minute. What is its speed in feet per minute? Use 12 inches = 1 foot.

ANSWER _____

APPLY IT Show your work

1 A game downloads 3/8 gigabyte in 1/4 minute at a constant rate. How many gigabytes download per minute?

WORK SPACE

ANSWER _____

2 An art club paints 3/4 square meter of a mural in 1/8 hour at a constant rate. How many square meters does the club paint per hour?

WORK SPACE

ANSWER _____

CHALLENGE One step up

Robot A travels 42 inches in 1/4 minute. Robot B travels 6 feet in 1/2 minute. Which robot is faster, and by how many feet per minute? Show both unit rates. Use 12 inches = 1 foot.

WORK SPACE AND ANSWER

ANSWER KEY # Rate Detectives

GRADE 7 · 7A.PR.A.1

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A cyclist travels 3/8 kilometer in 1/2 minute. What is the rate in kilometers per minute?	**3/4 kilometer per minute**
2	A painter covers 9/16 square meter in 3/8 hour. What is the rate in square meters per hour?	**3/2 square meters per hour**
3	A toy train travels 2 1/4 feet in 3/4 second. What is its speed in feet per second?	**3 feet per second**
4	A recipe uses 48 ounces of juice to make 6 cups of punch. How many ounces of juice are used per cup?	**8 ounces per cup**
5	A printer covers 24 square feet of paper in 8 minutes. What is the rate in square feet per minute?	**3 square feet per minute**
6	A small robot travels 30 inches in 1/2 minute. What is its speed in feet per minute? Use 12 inches = 1 foot.	**5 feet per minute**

PART 2 · APPLY IT

1. **3/2 gigabytes per minute** Divide 3/8 by 1/4 to get 3/2.
2. **6 square meters per hour** Divide 3/4 by 1/8 to get 6.

CHALLENGE

Robot A: 42 inches = 7/2 feet, so (7/2) ÷ (1/4) = 14 feet per minute. Robot B: 6 ÷ (1/2) = 12 feet per minute. Robot A is faster by 2 feet per minute.

Accept equivalent fractions or mixed numbers with correct units. For the challenge, check that both rates are in feet per minute before students compare them.