LESSON MAKER PRO

# Fraction Rate Quest

*Find the amount for one unit by dividing fractions.*

**GRADE 7 · NY-7.RP.1**

**NY-7.RP.1** "Compute unit rates associated with ratios of fractions."

NAME _____ DATE _____

## FIND THE UNIT RATE

A unit rate tells how much of one quantity goes with 1 unit of another quantity. To divide the first quantity by the second, multiply the first fraction by the reciprocal of the second. This multiplication is the division method, not an additional operation after dividing.

## WORKED EXAMPLE

A 3/4-pound bag of trail mix costs 5/8 dollar. What is the cost per pound?

1. Unit cost = cost ÷ pounds.
2. 5/8 ÷ 3/4 = 5/8 × 4/3.
3. 20/24 = 5/6.

**Answer: 5/6 dollar per pound**

## PRACTICE 6 problems

**1** A runner travels 2/3 mile in 1/4 hour. What is the runner's speed in miles per hour?

**ANSWER** _____

**2** A machine packages 7/10 kilogram of granola in 2/5 minute. How many kilograms does it package per minute?

**ANSWER** _____

**3** A 9/10-liter bottle of paint covers 3/5 square meter. How many liters of paint are used per square meter?

**ANSWER** _____

**4** A 4/7-pound packet of seeds costs 6/7 dollar. What is the cost per pound?

**ANSWER** _____

**5** A robot travels 11/12 kilometer in 2/3 hour. What is its speed in kilometers per hour?

**ANSWER** _____

**6** A phone uses 5/6 gigabyte of data in 1/3 hour. How many gigabytes of data does it use per hour?

**ANSWER** _____

## APPLY IT Show your work

**1** A music app downloads 7/12 gigabyte of songs in 1/8 minute. At this rate, how many gigabytes does it download per minute?

WORK SPACE

**ANSWER** _____

**2** During art club, Mia uses 5/6 yard of fabric in 2/9 hour while making a costume. At this rate, how many yards of fabric does she use per hour?

WORK SPACE

**ANSWER** _____

## CHALLENGE One step up

Two players are testing a new game. Player A completes 4/5 of a level in 2/3 hour. Player B completes 7/9 of a level in 1/2 hour. Who completes levels faster? Find how many more levels per hour that player completes, and explain your reasoning.

WORK SPACE AND ANSWER

**ANSWER KEY**

# Fraction Rate Quest

**GRADE 7 · NY-7.RP.1**

## PART 1 · PRACTICE

| # | PROBLEM | ANSWER |
|---|---|---|
| 1 | A runner travels 2/3 mile in 1/4 hour. What is the runner's speed in miles per hour? | **8/3 miles per hour** |
| 2 | A machine packages 7/10 kilogram of granola in 2/5 minute. How many kilograms does it package per minute? | **7/4 kilograms per minute** |
| 3 | A 9/10-liter bottle of paint covers 3/5 square meter. How many liters of paint are used per square meter? | **3/2 liters per square meter** |
| 4 | A 4/7-pound packet of seeds costs 6/7 dollar. What is the cost per pound? | **3/2 dollars per pound** |
| 5 | A robot travels 11/12 kilometer in 2/3 hour. What is its speed in kilometers per hour? | **11/8 kilometers per hour** |
| 6 | A phone uses 5/6 gigabyte of data in 1/3 hour. How many gigabytes of data does it use per hour? | **5/2 gigabytes per hour** |

## PART 2 · APPLY IT

1. **14/3 gigabytes per minute** Divide 7/12 by 1/8. Multiply 7/12 by 8/1 to get 56/12, which simplifies to 14/3.
2. **15/4 yards per hour** Divide 5/6 by 2/9. Multiply 5/6 by 9/2 to get 45/12, which simplifies to 15/4.

## CHALLENGE

**Player B completes levels faster. Player A's rate is 6/5 levels per hour, and Player B's rate is 14/9 levels per hour. The difference is 14/9 - 6/5 = 16/45 level per hour.**

Accept equivalent simplified or unsimplified fraction forms if the value is correct. Require appropriate units for all unit-rate answers.