

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. Divide the first quantity by the second quantity, then multiply by the reciprocal of the divisor.

WORKED EXAMPLE

A $\frac{3}{4}$ -pound bag of trail mix costs $\frac{5}{8}$ dollar. What is the cost per pound?

1. Unit cost = cost $\div$ pounds.

2. $\frac{5}{8} \div \frac{3}{4} = \frac{5}{8} \times \frac{4}{3}$.

3. $\frac{20}{24} = \frac{5}{6}$.

Answer: $\frac{5}{6}$ dollar per pound

PRACTICE 6 problems

- 1** A runner travels $\frac{2}{3}$ mile in $\frac{1}{4}$ hour. What is the runner's speed in miles per hour?

ANSWER _____

- 2** A machine packages $\frac{7}{10}$ kilogram of granola in $\frac{2}{5}$ minute. How many kilograms does it package per minute?

ANSWER _____

- 3** A $\frac{9}{10}$ -liter bottle of paint covers $\frac{3}{5}$ square meter. How many liters of paint are used per square meter?

ANSWER _____

- 4** A $\frac{4}{7}$ -pound packet of seeds costs $\frac{6}{7}$ dollar. What is the cost per pound?

ANSWER _____

- 5** A robot travels $\frac{11}{12}$ kilometer in $\frac{2}{3}$ hour. What is its speed in kilometers per hour?

ANSWER _____

- 6** A phone uses $\frac{5}{6}$ gigabyte of data in $\frac{1}{3}$ hour. How many gigabytes of data does it use per hour?

ANSWER _____

APPLY IT Show your work

- 1** A music app downloads $\frac{7}{12}$ gigabyte of songs in $\frac{1}{8}$ minute. At this rate, how many gigabytes does it download per minute?

WORK SPACE

ANSWER _____

- 2** During art club, Mia uses $\frac{5}{6}$ yard of fabric in $\frac{2}{9}$ 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 $\frac{4}{5}$ of a level in $\frac{2}{3}$ hour. Player B completes $\frac{7}{9}$ of a level in $\frac{1}{2}$ hour. Who completes levels faster? Find how many more levels per hour that player completes, and explain your reasoning.

WORK SPACE AND ANSWER

PART 1 • PRACTICE

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

PART 2 • APPLY IT

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

CHALLENGE

Player B completes levels faster. Player A's rate is $\frac{6}{5}$ levels per hour, and Player B's rate is $\frac{14}{9}$ levels per hour. The difference is $\frac{14}{9} - \frac{6}{5} = \frac{16}{45}$ level per hour.

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