

Finding Unit Rates When Quantities Are Fractions

Grade 7 math · Worksheet · Standards: 7.RP.A.1

Name: _____ Date: _____ Class: _____

These 20 problems train the skill in standard 7.RP.A.1: computing unit rates from ratios of fractions. They start with a single complex fraction and move to rates with mixed units, areas, tables and comparisons.

Work in order. Write each division as a fraction first, multiply by the reciprocal, simplify, and always attach the unit to the answer.

Standards: 7.RP.A.1 · **Level:** Grade 7

Problem 1 Reading a Complex Fraction (easy)

A cyclist rides $\frac{4}{5}$ mile in $\frac{1}{6}$ hour.

- Write the rate as a complex fraction.
- Find the unit rate in miles per hour.

Problem 2 Hose Filling a Bucket (easy)

A watering can pours out $\frac{5}{6}$ gallon in $\frac{2}{9}$ minute. How many gallons is that per minute?

Problem 3 Sugar per Batch (easy)

A bakery uses $\frac{5}{8}$ cup of sugar for $\frac{1}{4}$ of a batch of muffins. How many cups of sugar go into 1 whole batch?

Problem 4 Hiking Speed (easy)

Dario hikes $\frac{9}{10}$ mile in $\frac{3}{5}$ hour. What is his speed in miles per hour?

Problem 5 Price of Cashews (easy)

A store sells $\frac{3}{4}$ pound of cashews for \$6.75. Find the price per pound.

Problem 6 Toy Car Both Ways (easy)

A toy car rolls $\frac{3}{5}$ foot in $\frac{1}{10}$ second.

- Find the speed in feet per second.
- Find the pace in seconds per foot.

Time (seconds)	1/10	1
Distance (feet)	3/5	?

The toy car's distance for 1 second is the unknown value.

Problem 7 Which Hiker Is Faster (medium)

Hiker A walks $\frac{3}{4}$ mile in $\frac{1}{3}$ hour. Hiker B walks $\frac{2}{3}$ mile in $\frac{1}{4}$ hour. Compare the unit rates and tell who is faster.

Problem 8 Better Paint Buy (medium)

Brand X sells $\frac{2}{3}$ gallon of paint for \$12.00. Brand Y sells $\frac{3}{4}$ gallon for \$14.25. Which brand costs less per gallon, and by how much?

Problem 9 Conveyor Belt Units (medium)

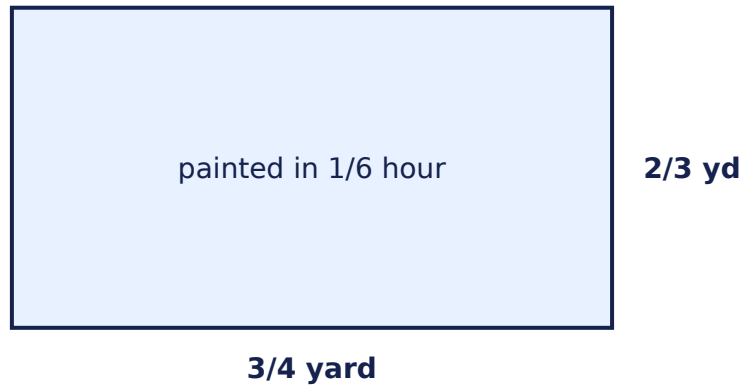
A belt in a warehouse moves a crate $\frac{5}{6}$ yard in $\frac{3}{7}$ minute. What is the crate's speed in feet per minute?

Problem 10 Minutes to Hours (medium)

A skater glides $\frac{3}{8}$ mile in $2\frac{1}{2}$ minutes. How fast is that in miles per hour?

Problem 11 Painting a Panel (medium)

A painter covers a rectangular panel that is $\frac{3}{4}$ yard long and $\frac{2}{3}$ yard wide in $\frac{1}{6}$ hour. How many square yards does the painter cover per hour?

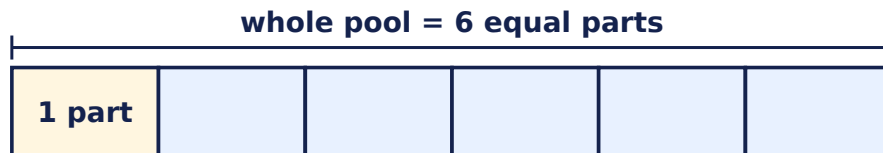


Panel dimensions for Problem 11.

Problem 12 Filling a Pool (medium)

A pump fills $\frac{1}{6}$ of a pool in $\frac{3}{4}$ hour.

- Find the unit rate in pools per hour.
- How many hours would it take to fill the entire pool?



One of six equal parts of the pool is filled in $\frac{3}{4}$ hour.

Problem 13 Distance at a Steady Pace (medium)

A runner covers $\frac{5}{6}$ mile every $\frac{1}{4}$ hour. At that pace, how far does the runner go in $1\frac{1}{2}$ hours?

Problem 14 Rate Table for a Model Train (medium)

A model train travels $\frac{7}{8}$ foot in $\frac{1}{4}$ minute at a constant speed. Find the unit rate, then complete the missing distances in the table.

Time (min)	$\frac{1}{4}$	$\frac{1}{2}$	1	$2\frac{1}{2}$
Distance (ft)	$\frac{7}{8}$	?	?	?

Constant-rate table for Problem 14.

Problem 15 Mural Painting Time (hard)

A rectangular mural is $2\frac{1}{2}$ feet long and $1\frac{1}{5}$ feet wide. An artist paints $\frac{3}{8}$ of it in $1\frac{1}{2}$ hours.

- a. How many square feet per hour does the artist paint?
- b. How many more hours are needed to finish the mural at the same rate?

Problem 16 Trail Schedule (hard)

A hiking group covers $2\frac{1}{4}$ miles in $\frac{3}{4}$ hour. The trail is $6\frac{3}{4}$ miles long, and the group plans a $\frac{1}{2}$ -hour lunch stop. If they start at 8:15 AM, when do they finish?

Problem 17 Printer Race (hard)

Printer A prints $\frac{3}{4}$ page in $\frac{1}{8}$ minute. Printer B prints $2\frac{1}{2}$ pages in $\frac{1}{2}$ minute. How many minutes does each printer need for a 45-page report, and how much sooner does the faster one finish?

Problem 18 Storm Rainfall (hard)

During a storm, $\frac{5}{8}$ inch of rain falls in $\frac{1}{2}$ hour.

- a. Find the rate in inches per hour.
- b. At that rate, how many hours until $3\frac{3}{4}$ inches have fallen?
- c. Express the rate in feet per hour.

Problem 19 Mixing Paint Tint (hard)

A shop mixes $\frac{2}{3}$ cup of blue tint into every $\frac{3}{4}$ gallon of white base paint. How many cups of tint go into 1 gallon? How many cups are needed for $4\frac{1}{2}$ gallons?

Problem 20 Three Athletes Compared (hard)

Leo bikes $1\frac{1}{2}$ miles in $\frac{1}{4}$ hour. Nia skates $\frac{3}{10}$ mile in 3 minutes. Omar jogs $\frac{5}{8}$ mile in 6 minutes. Convert all speeds to miles per hour and rank the athletes from fastest to slowest.