

Finding Unit Rates When Quantities Are Fractions

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

Name: _____ Date: _____ Class: _____

This test has 8 questions worth 20 points and fits 45 minutes. No calculators are needed because the fractions are friendly. Show each step: the division, the simplification and the final answer with its unit.

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

Time: 45 minutes · 8 questions · Total: 20 points · Calculator: as allowed by your teacher

Question 1 Complex Fraction and Unit Rate (2 points)

A drone flies $\frac{3}{8}$ mile in $\frac{1}{12}$ hour.

- Write the rate as a complex fraction. (1 point)
- Find the speed in miles per hour. (1 point)

Question 2 Leaky Pipe (2 points)

A leaky pipe loses $\frac{7}{10}$ quart of water in $\frac{3}{8}$ hour. How many quarts does it lose per hour?

Question 3 Skater or Runner (3 points)

A skater travels $\frac{7}{10}$ mile in $\frac{1}{6}$ hour. A runner travels $\frac{1}{2}$ mile in 7 minutes. Who is faster? Justify with unit rates in miles per hour.

Question 4 Cleaning a Floor Section (2 points)

A worker cleans the rectangular floor section shown in $\frac{1}{4}$ hour. How many square yards does the worker clean per hour?

cleaned in $\frac{1}{4}$ hour

$\frac{3}{5}$ yd

$\frac{5}{6}$ yard

Floor section for Question 4.

Question 5 Walnut Prices (3 points)

A market sells $\frac{3}{4}$ pound of walnuts for \$8.40.

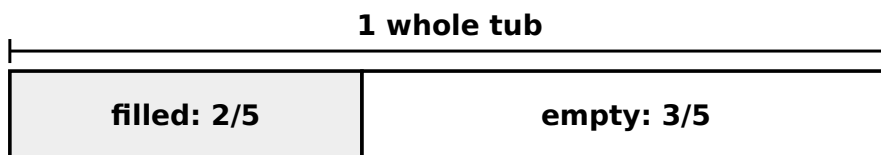
- Find the price per pound. (1.5 points)
- Find the cost of $2\frac{1}{2}$ pounds. (1.5 points)

Question 6 Robot Speed Conversion (2 points)

A robot rolls $\frac{9}{10}$ foot in $\frac{1}{3}$ second. Find its speed in feet per minute.

Question 7 Filling a Tub (3 points)

A hose fills $\frac{2}{5}$ of a tub in $\frac{3}{4}$ minute.



The shaded part is the fraction of the tub already filled.

- Find the unit rate in tubs per minute. (1 point)
- How long to fill the whole tub from empty? (1 point)
- How much longer is needed to finish filling it now? (1 point)

Question 8 Constant Rate Table (3 points)

The table shows a bicycle's distance at a constant speed.

Time (h)	$\frac{1}{3}$	1	$2\frac{1}{2}$
Distance (mi)	$\frac{5}{8}$	?	?

Constant-rate table for Question 8.

- a. Find the unit rate. (1 point)
- b. Find the missing distances. (1 point)
- c. How long to travel $3\frac{3}{4}$ miles? (1 point)