

Writing and Using $y = kx$ Equations

Grade 7 math · Test · Standards: 7.RP.A.2c

Name: _____ Date: _____ Class: _____

This test has 8 questions worth 20 points and fits 45 minutes. Show how you find the constant of proportionality, write each equation in full, and include units in word problems.

Standards: 7.RP.A.2c · **Level:** Grade 7

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

Question 1 Equation from a Table (2 points)

Write an equation relating y to x .

x	4	10	15
y	34	85	127.5

Question 2 Equation from a Graph (3 points)

Use the graph.



Graph for Question 2.

- Find the constant of proportionality. (1 point)
- Write an equation. (1 point)
- Find y when $x = 14$. (1 point)

Question 3 Smoothie Bar (2 points)

A smoothie costs \$5.25. Write an equation for the total cost t of n smoothies, then find the cost of 13 smoothies.

Question 4 Leaking Tank (3 points)

A tank leaks $\frac{3}{5}$ gallon every 4 hours at a constant rate.

- Write an equation for gallons g leaked in h hours. (1 point)
- How many gallons leak in 14 hours? (1 point)
- After how many hours have 3 gallons leaked? (1 point)

Question 5 Comparing Gym Plans (3 points)

Gym A charges according to $y = 9.5x$ for x visits. Gym B charges as shown.

Visits	3	5	8
Cost (dollars)	30	50	80

- Find each gym's cost per visit. (1 point)
- Which gym is cheaper per visit? (1 point)
- How much more does the other gym cost for 20 visits? (1 point)

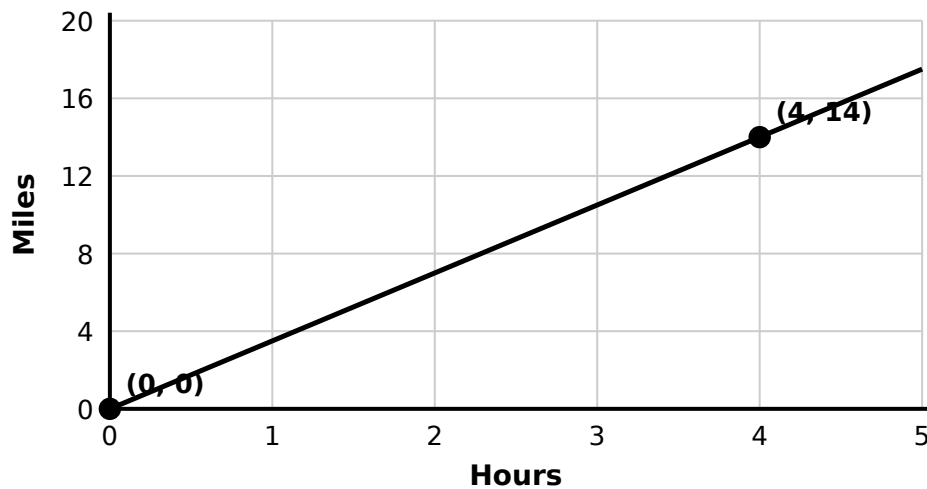
Question 6 Proportional Equations (2 points)

Select every equation that models a proportional relationship, and state k for each one you select.

- $y = 9x$
- $y = x + 9$
- $y = x \div 9$
- $y = 9 - x$

Question 7 Graph Versus Equation (3 points)

Jada's bike trip is shown in the graph. Eli's distance follows $d = 3.2t$.



Jada's distance for Question 7.

- Write Jada's equation. (1 point)
- Who is faster? (1 point)
- How many miles ahead is the faster rider after 10 hours? (1 point)

Question 8 County Sales Tax (2 points)

The county sales tax is 6.5% of the price. Write an equation for the tax t on price p . Find the tax on an \$84 item and the price of an item with \$9.75 tax.