

Spotting Proportional Relationships in Tables and Graphs

Grade 7 math · Test Answer Key · Standards: 7.RP.A.2a, 7.RP.A.2b, 7.RP.A.2d

Use the scoring notes under each solution. Award partial credit when the ratios are computed correctly but the conclusion is incomplete, or when the idea is right but the units are missing.

Standards: 7.RP.A.2a, 7.RP.A.2b, 7.RP.A.2d · **Level:** Grade 7

Question 1 Is the Table Proportional (2 points)

$12 \div 5 = 2.4$, $19.2 \div 8 = 2.4$, $28.8 \div 12 = 2.4$.

Proportional; $k = 2.4$

Scoring: 1 point for computing all three ratios, 1 point for the conclusion and k .

Question 2 Not Proportional Table (2 points)

$6 \div 1 = 6$, $11 \div 2 = 5.5$, $16 \div 3 \approx 5.33$, $26 \div 5 = 5.2$.

Not proportional, because the ratios are not equal

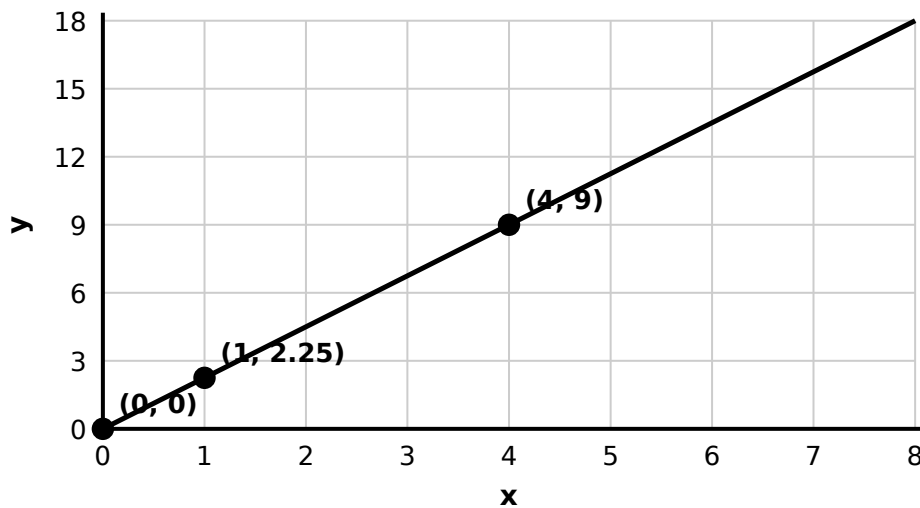
Scoring: 1 point for computing at least two different ratios, 1 point for the conclusion.

Question 3 Reading a Graph (3 points)

(a) The graph is a straight line through (0, 0), so it is proportional.

(b) $9 \div 4 = 2.25$ and $18 \div 8 = 2.25$, so $k = 2.25$.

(c) Working 0 hours earns \$0.



The point (1, 2.25) gives the constant of proportionality.

Proportional; $k = 2.25$; 0 hours earn \$0

Scoring: 1 point per part.

Question 4 Explain the Error (2 points)

The line crosses the y-axis at (0, 2), so it does not contain (0, 0).

Ratios: $5 \div 3 \approx 1.67$ and $8 \div 6 \approx 1.33$ are not equal.

Liam is wrong: the line does not pass through the origin

Scoring: 1 point for noting it misses (0, 0), 1 point for supporting evidence.

Question 5 Copy Shop (3 points)

(a) $k = 0.09$ dollars per page, the cost of 1 page.

(b) $250 \times 0.09 = 22.50$.

(c) Yes: 0 pages cost \$0.

$k = 0.09$; \$22.50; yes

Scoring: 1 point per part.

Question 6 Three Situations (3 points)

(a) Proportional: cost = $12 \times$ hours, so 0 hours cost \$0.

(b) Not proportional: at 0 weeks the height is 5 inches, not 0.

(c) Proportional: distance = $48 \times$ hours, a constant ratio.

(a) yes, (b) no, (c) yes

Scoring: 1 point per part (0.5 for the answer, 0.5 for the reason).

Question 7 Hours and Miles with Fractions (3 points)

(a) $\frac{9}{4} \div \frac{3}{4} = 3$, $\frac{9}{2} \div \frac{3}{2} = 3$, $12 \div 4 = 3$, so $k = 3$ miles per hour.

(b) $3 \times 6 \frac{1}{2} = 19 \frac{1}{2}$ miles.

(c) $15 \div 3 = 5$ hours.

Proportional; $19 \frac{1}{2}$ miles; 5 hours

Scoring: 1 point per part.

Question 8 Finding Missing Values (2 points)

$k = 15 \div 6 = 2.5$.

$y = 2.5 \times 10 = 25$.

$k = 2.5$; $y = 25$

Scoring: 1 point for k , 1 point for y .