

Grade 7 · Proportional Relationships · Test Answer Key

Common Core 7.RP.A.2a, 7.RP.A.2b, 7.RP.A.2d · mathovore.fr

Use this key and the scoring notes to grade the test out of 20 points. Award the method points for correct ratios and clear reasoning, and the answer points for correct conclusions and constants with units.

Grade 7 Common Core: 7.RP.A.2a · 7.RP.A.2b · 7.RP.A.2d

Question 1: Table A (2 points)

The pairs are (2, 5), (3, 7.5), (5, 12.5) and (8, 20). $\frac{5}{2} = 2.5$, $\frac{7.5}{3} = 2.5$, $\frac{12.5}{5} = 2.5$, $\frac{20}{8} = 2.5$.

Proportional, $k = 2.5$.

Scoring: 1 point for checking all the ratios; 1 point for the conclusion with $k = 2.5$.

x	2	3	5	8
y	5	7.5	12.5	20
y/x	2.5	2.5	2.5	2.5

Every ratio equals 2.5.

Question 2: Table B (2 points)

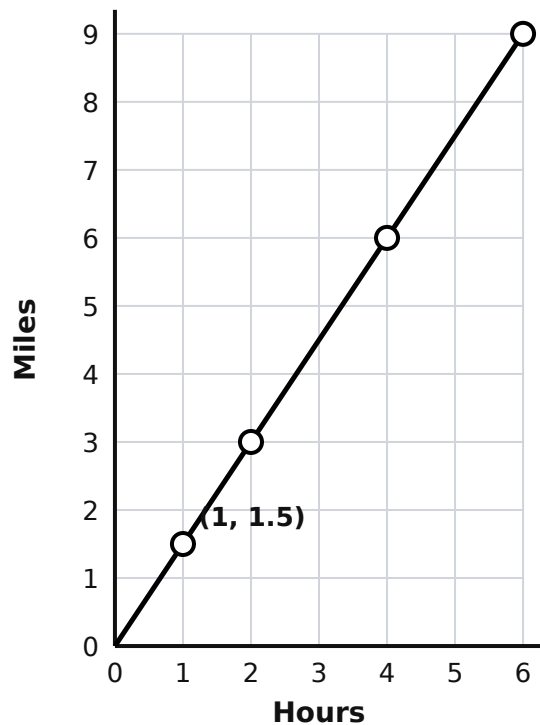
$\frac{2}{1} = 2$, $\frac{5}{2} = 2.5$, $\frac{8}{3} \approx 2.67$, $\frac{11}{4} = 2.75$. The ratios are not equal. **Not proportional**.

Scoring: 1 point for computing at least three ratios correctly; 1 point for the correct conclusion.

Question 3: Distance and time (2 points)

The line passes through the origin and the ratios are equal: $\frac{3}{2} = \frac{6}{4} = \frac{9}{6} = 1.5$. **Proportional**, $k = 1.5$ miles per hour.

Scoring: 1 point for recognizing a line through the origin or equal ratios; 1 point for $k = 1.5$ with units.



The point (1, 1.5) shows k .

Question 4: Graph B (2 points)

The line is straight, but it crosses the y -axis at (0,1), not at (0,0). Also $\frac{3}{1} = 3$ and $\frac{5}{2} = 2.5$ are different. **It is not proportional.**

Scoring: 1 point for the conclusion; 1 point for a correct reason (misses the origin or unequal ratios).

Question 5: Printer (2 points)

(a) $k = \frac{45}{9} = 5$. **5 pages per minute**

(b) The point (1,5) means that the printer prints 5 pages in 1 minute.

Scoring: 1 point for each part.

Question 6: Gym membership (2 points)

$\frac{30}{1} = 30$, $\frac{40}{2} = 20$, $\frac{50}{3} \approx 16.67$. The ratios are different, and 0 months would cost \$20 rather than \$0. **Not proportional.**

Scoring: 1 point for correct ratios or noting the starting fee; 1 point for the conclusion.

Question 7: Flour and loaves (2 points)

Loaves per cup: $\frac{3}{2} = 1.5$, so $k = 1.5$. Cups per loaf: $\frac{2}{3}$, so $k = \frac{2}{3}$.

1.5 loaves per cup; $\frac{2}{3}$ cup per loaf.

Scoring: 1 point for each constant.

$$6 \text{ loaves} \div 4 \text{ cups} = 1.5$$



$$4 \text{ cups} \div 6 \text{ loaves} = 2/3$$

Two constants of proportionality.

Question 8: Missing values (2 points)

$k = \frac{14}{4} = 3.5$. Check: $\frac{21}{6} = 3.5$. Missing x : $28 \div 3.5 = 8$. Missing y : $3.5 \times 10 = 35$.

$x = 8$ and $y = 35$

Scoring: 1 point for each missing value.

x	4	6	8	10
y	14	21	28	35

The completed table.

Question 9: Reading a point (2 points)

(a) $k = \frac{10}{4} = 2.5$. **\$2.50 per ounce**

(b) $2.5 \times 6 = 15$. **\$15**

Scoring: 1 point for each part.

Question 10: Who is faster? (2 points)

Ethan: $\frac{6}{2} = 3$ mph. Noah: $\frac{12}{5} = 2.4$ mph. $3 - 2.4 = 0.6$.

Ethan is faster, by 0.6 mile per hour.

Scoring: 1 point for both speeds; 1 point for the correct comparison and difference.

Total

20 points