

Ratio Reality Check

Test tables and graphs for proportional relationships.

GRADE 7 • 7.RP.A.2a

CCSS.Math.Content.7.RP.A.2a "Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin."

NAME _____

DATE _____

THE BIG IDEA

A relationship is proportional if y/x is the same for every pair with a nonzero x -value, and any pair with $x = 0$ has $y = 0$. On a graph, a proportional relationship makes a straight line that passes through the origin, $(0, 0)$.

WORKED EXAMPLE

Is this table proportional? x : 9, 18, 27 y : 15, 30, 45

1. For $x = 9$, $y/x = 15/9 = 5/3$.
2. For $x = 18$, $y/x = 30/18 = 5/3$.
3. For $x = 27$, $y/x = 45/27 = 5/3$.

Answer: Yes. The relationship is $y = (5/3)x$.

PRACTICE 6 problems

- 1** Is this table proportional? x : 2, 4, 6 y : 7, 14, 21

ANSWER _____

- 2** Is this table proportional? x : 4, 8, 12 y : 6, 12, 17

ANSWER _____

- 3** Is this table proportional? x : 0, 8, 16 y : 1, 4, 8

ANSWER _____

- 4** The points $(0, 0)$, $(10, 25)$, and $(20, 50)$ are on a graph. Is the relationship proportional?

ANSWER _____

- 5** A graph is a straight line through $(0, 0)$, $(14, 8)$, and $(21, 12)$. Is the relationship proportional?

ANSWER _____

- 6** Is this table proportional? x : 11, 22, 33 y : 4, 8, 13

ANSWER _____

APPLY IT Show your work

- 1** The art club prints custom stickers. Four sheets make 28 stickers, six sheets make 42 stickers, and 10 sheets make 70 stickers. Is the number of stickers proportional to the number of sheets?

WORK SPACE

ANSWER _____

- 2** Jay tracks data used while watching video clips. Two minutes uses 16 MB, seven minutes uses 56 MB, and 12 minutes uses 100 MB. Is data use proportional to minutes watched?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

A table has the pairs (0, 7), (4, 14), (8, 28), and (16, 56). Kai says the relationship is proportional because $y/x = 7/2$ for every nonzero x-value. Is Kai correct? Explain.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Is this table proportional? x: 2, 4, 6 y: 7, 14, 21	Yes. Each ratio y/x is $7/2$.
2	Is this table proportional? x: 4, 8, 12 y: 6, 12, 17	No. The first two ratios are $3/2$, but $17/12$ is different.
3	Is this table proportional? x: 0, 8, 16 y: 1, 4, 8	No. When $x = 0$, y must equal 0.
4	The points (0, 0), (10, 25), and (20, 50) are on a graph. Is the relationship proportional?	Yes. The points form a line through the origin, and $y/x = 5/2$ for the nonzero x-values.
5	A graph is a straight line through (0, 0), (14, 8), and (21, 12). Is the relationship proportional?	Yes. The line passes through the origin.
6	Is this table proportional? x: 11, 22, 33 y: 4, 8, 13	No. The first two ratios are $4/11$, but $13/33$ is different.

PART 2 • APPLY IT

- Yes. The relationship is proportional at 7 stickers per sheet.** $28/4 = 7$, $42/6 = 7$, and $70/10 = 7$. The ratios are equivalent.
- No. The first two rates are 8 MB per minute, but $100/12$ is not 8.** $16/2 = 8$ and $56/7 = 8$, but $100/12 = 25/3$. The rates are not all equal.

CHALLENGE

No. Although the nonzero ratios are $7/2$, the pair (0, 7) does not have $y = 0$. A proportional relationship must pass through (0, 0).

Accept equivalent ratio statements and equations that show the correct constant of proportionality. For nonproportional tables with $x = 0$, students must identify that y must also equal 0.