

Ratio Reality Check

Use tables, contexts, and graphs to spot proportional relationships.

GRADE 6 • 6.PFA.2.c

6.PFA.2.c "Determine whether a proportional relationship exists between two quantities, when given a table of values, context, or graph."

NAME _____

DATE _____

THE BIG IDEA

For a proportional relationship, y/x is the same for every nonzero x -value. When x is 0, y must also be 0, and the graph is a straight line through $(0,0)$.

WORKED EXAMPLE

Is this table proportional? x : 4, 8, 12; y : 18, 36, 54

1. Find the first ratio: $18/4 = 9/2$.
2. Check another ratio: $36/8 = 9/2$.
3. Check the last ratio: $54/12 = 9/2$.

Answer: Yes. The relationship is proportional, $y = 9/2x$.

PRACTICE 6 problems

- 1** Is this table proportional? x : 3, 5, 10; y : 21, 35, 70

ANSWER _____

- 2** Is this table proportional? x : 1, 6, 11; y : 5, 30, 60

ANSWER _____

- 3** A game club charges \$7 to join and \$3 for each meeting you attend. Is the total cost proportional to the number of meetings?

ANSWER _____

- 4** A straight line on a graph passes through $(0,0)$, $(5,20)$, and $(7,28)$. Does the graph show a proportional relationship?

ANSWER _____

- 5** A straight line on a graph passes through $(0,6)$ and $(5,21)$. Does the graph show a proportional relationship?

ANSWER _____

- 6** Is this table proportional? x : 1, 7, 11; y : 6, 42, 66

ANSWER _____

APPLY IT Show your work

- 1** Jalen saves \$5 each week for a new game. His savings are \$0 after 0 weeks, \$15 after 3 weeks, and \$35 after 7 weeks. Is Jalen's savings proportional to the number of weeks? Explain.

WORK SPACE

ANSWER _____

- 2** A skating rink charges \$7 for admission and \$3 for each game token. Is the total amount paid proportional to the number of game tokens? Explain.

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

A table shows these pairs: (0,1), (3,33), (5,55), and (7,77). A student says the relationship is proportional because each nonzero y/x ratio equals 11. Is the student correct? Explain your reasoning.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Is this table proportional? x: 3, 5, 10; y: 21, 35, 70	Yes. The relationship is proportional, $y = 7x$.
2	Is this table proportional? x: 1, 6, 11; y: 5, 30, 60	No. The ratios are not all equal.
3	A game club charges \$7 to join and \$3 for each meeting you attend. Is the total cost proportional to the number of meetings?	No. At 0 meetings, the total cost is \$7, not \$0.
4	A straight line on a graph passes through (0,0), (5,20), and (7,28). Does the graph show a proportional relationship?	Yes. It is a straight line through (0,0).
5	A straight line on a graph passes through (0,6) and (5,21). Does the graph show a proportional relationship?	No. The line does not pass through (0,0).
6	Is this table proportional? x: 1, 7, 11; y: 6, 42, 66	Yes. The relationship is proportional, $y = 6x$.

PART 2 • APPLY IT

- Yes. Jalen's savings are proportional to the number of weeks, $y = 5x$.** Each week adds \$5, and the savings amount is \$0 at 0 weeks. The ratio of savings to weeks is always 5.
- No. The total amount paid is not proportional because 0 tokens still costs \$7.** A proportional relationship must have a total of \$0 when there are 0 tokens. The admission fee makes the starting total \$7.

CHALLENGE

No. Although the nonzero ratios are 11, the pair (0,1) is not (0,0), so the relationship is not proportional.

Accept equivalent ratio reasoning or equations for proportional relationships. For graph and table explanations, require that a proportional relationship includes (0,0) as well as a constant ratio for nonzero x-values.