LESSON MAKER PRO

Spot the Constant

Test ratios, equations, and graphs.

GRADE 7 · 7.AT.A.2

7.AT.A.2 "Identify proportional relationships between quantities. Determine whether two quantities are in a proportional relationship, for example..."

NAME _____ DATE _____

THE BIG IDEA

In a proportional relationship, y/x has the same value for every pair when x is not 0. This value is the constant of proportionality, k. On a graph, a proportional relationship is a straight line through (0, 0).

WORKED EXAMPLE

Does the table show a proportional relationship? If so, find k.

x	y
3	33
9	99

1. 33/3 = 11.
2. 99/9 = 11.
3. The unit rates match.

Answer: Yes, the relationship is proportional; k = 11.

PRACTICE 4 problems

1 For x: 1, 4, 6 and y: 5, 20, 30, is the relationship proportional? If so, find k.

ANSWER _____

2 For x: 1, 2, 4 and y: 6, 12, 25, is the relationship proportional? Explain briefly.

ANSWER _____

3 Find the constant of proportionality in y = 8x.

ANSWER _____

4 Is y = x/2 + 4 proportional? Explain briefly.

ANSWER _____

APPLY IT Show your work

1 A game gives tokens for completed rounds. Does the table show a proportional relationship? If so, find the tokens per round and the tokens for 6 rounds.

GAME REWARDS

Rounds	Tokens
1	12
2	24
4	48

ANSWER _____

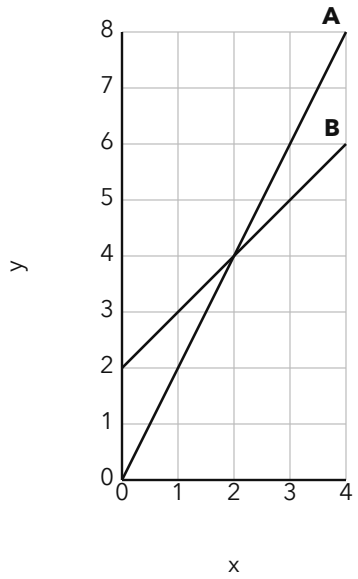
2 A club charges $5 to join, then $2 for each event. Is the total cost proportional to the number of events? Explain.

WORK SPACE

ANSWER _____

CHALLENGE One step up

Which line shows a proportional relationship? Find its k and explain why the other line is not proportional.



WORK SPACE AND ANSWER

ANSWER KEY

Spot the Constant

GRADE 7 · 7.AT.A.2

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	For x: 1, 4, 6 and y: 5, 20, 30, is the relationship proportional? If so, find k.	**Yes; k = 5.**
2	For x: 1, 2, 4 and y: 6, 12, 25, is the relationship proportional? Explain briefly.	**No. The unit rates are 6, 6, and 25/4, which do not all match.**
3	Find the constant of proportionality in y = 8x.	**8**
4	Is y = x/2 + 4 proportional? Explain briefly.	**No. When x = 0, y = 4, not 0.**

PART 2 · APPLY IT

1. **Yes; 12 tokens per round and 72 tokens for 6 rounds.** Each row shows 12 tokens per round. Multiply 6 by 12 to get 72 tokens.
2. **No. The cost is $5 when there are 0 events.** A proportional relationship must have a total cost of $0 for 0 events. The joining fee makes the starting cost $5.

CHALLENGE

Line A; k = 2. Line B is not proportional because it does not pass through (0, 0).

Accept equivalent ratio calculations or a correct explanation using the origin. In the challenge, line A passes through (0, 0) and rises 2 units for each 1 unit across.