LESSON MAKER PRO

Same Rate or Not?

Test tables, equations, graphs, and everyday costs.

GRADE 8 · 8.AF.B.7

8.AF.B.7 "Determine whether a relationship between two variables is proportional or non-proportional."

NAME _____ DATE _____

THE BIG IDEA

A relationship is proportional when y/x is the same for every pair with x not equal to 0. You can write it as y = kx. Its graph is a straight line through (0, 0).

WORKED EXAMPLE

Is the relationship in the table proportional? If so, write an equation.

x	y
11	77
13	91

1. 77/11 = 7.
2. 91/13 = 7.
3. The quotients match, so y = 7x.

Answer: Yes, the relationship is proportional. Its equation is y = 7x.

PRACTICE 6 problems

1 Is the relationship in the table proportional? Show the quotients you checked.

x	y
1	4
3	12
6	24

ANSWER _____

2 Is the relationship in the table proportional? Explain using one pair.

x	y
0	3
2	9
5	18

ANSWER _____

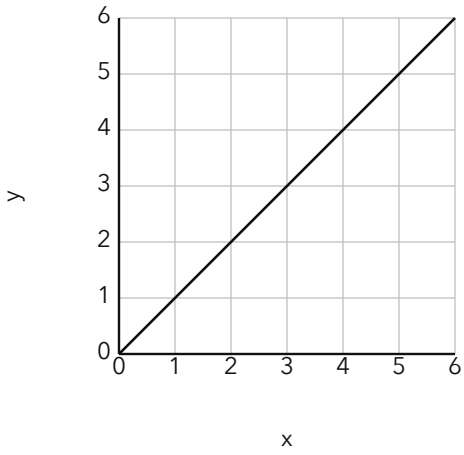
3 Is y = 9x + 2 proportional or non-proportional?

ANSWER _____

4 Is y = 3/4x proportional or non-proportional?

ANSWER _____

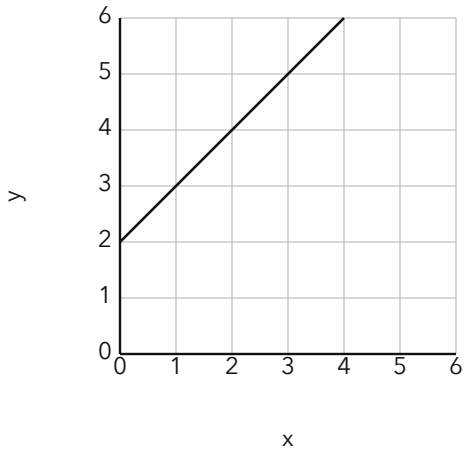
5 Is the relationship shown by the line proportional? Explain using the graph.



ANSWER _____

_____

6 Is the relationship shown by the line proportional? State where the line crosses the y-axis.



ANSWER _____

_____

APPLY IT Show your work

1 A music app charges a $4 sign-up fee and $2 for each month. Is the total cost proportional to the number of months? Explain.

WORK SPACE

ANSWER _____

2 A school esports club earns $6 for each ticket it sells and earns nothing before selling a ticket. Is the money earned proportional to the number of tickets sold? Write an equation using x for tickets and y for dollars.

WORK SPACE

ANSWER _____

CHALLENGE One step up

A student says this table is proportional because the first two rows have the same quotient y/x. Check all three rows. Is the student correct? What would y need to be when x = 6 to make the table proportional?

x	y
2	6
4	12
6	19

WORK SPACE AND ANSWER

ANSWER KEY

Same Rate or Not?

GRADE 8 · 8.AF.B.7

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Is the relationship in the table proportional? Show the quotients you checked.	**Proportional. The quotients are 4/1 = 4, 12/3 = 4, and 24/6 = 4.**
2	Is the relationship in the table proportional? Explain using one pair.	**Non-proportional. The pair (0, 3) shows that y is not 0 when x is 0.**
3	Is y = 9x + 2 proportional or non-proportional?	**Non-proportional.**
4	Is y = 3/4x proportional or non-proportional?	**Proportional.**
5	Is the relationship shown by the line proportional? Explain using the graph.	**Proportional. The line passes through (0, 0).**
6	Is the relationship shown by the line proportional? State where the line crosses the y-axis.	**Non-proportional. The line crosses the y-axis at (0, 2).**

PART 2 · APPLY IT

1. **No. The cost is $4 even when the number of months is 0.** The total cost is y = 2x + 4, where x is the number of months. Since the starting cost is not 0, the relationship is non-proportional.
2. **Yes. The equation is y = 6x.** Each ticket adds $6, and the earnings start at $0. The dollars per ticket stay constant at 6.

CHALLENGE

No. The first two quotients are 6/2 = 3 and 12/4 = 3, but 19/6 is not 3. When x = 6, y would need to be 18.

Accept any correct comparison of quotients or equivalent explanation using y = kx. For graph items, accept a correct statement about whether the line passes through the origin.