LESSON MAKER PRO

Rate Rule Rally

Use unit rates to spot, write, and solve proportional relationships.

GRADE 7 · 7.PAR.4.4

7.PAR.4.4 "Identify, represent, and use proportional relationships."

NAME _____ DATE _____

THE BIG IDEA

A relationship is proportional when every pair with x not equal to 0 has the same ratio y/x, and the graph includes (0, 0). You can represent a proportional relationship with y = kx, where k is the constant of proportionality. Find k by dividing y by x for any pair with x not equal to 0.

WORKED EXAMPLE

A band earns $5 for each song it plays. Let x be the number of songs and y be the dollars earned. Write an equation and find y when x = 8.

1. The unit rate is $5 per song, so y = 5x.
2. Substitute x = 8: y = 5(8).
3. Multiply: y = 40.

Answer: y = 5x; $40

PRACTICE 6 problems

1 Does this table show a proportional relationship? If it does, write an equation. x: 1, 2, 6 y: 7, 14, 42

ANSWER _____

2 A proportional relationship has x = 9 and y = 54. Find k and write the equation.

ANSWER _____

3 For the proportional relationship y = 2x, find y when x = 11.

ANSWER _____

4 A proportional relationship passes through (7, 63). Write its equation.

ANSWER _____

5 Does this table show a proportional relationship? If it does, write an equation. x: 0, 6, 10 y: 0, 18, 30

ANSWER _____

6 Which equation represents a proportional relationship? A. y = 4x + 1 B. y = 11x C. y = x + 9

ANSWER _____

APPLY IT Show your work

1 The school esports club buys 7 matching controller grips for $42. Each grip costs the same amount. What is the cost of 11 grips? Write an equation using x for grips and y for cost.

WORK SPACE

ANSWER _____

2 A student earns $9 for each hour spent walking dogs. How much will the student earn for 14 hours? Write an equation using x for hours and y for earnings.

WORK SPACE

ANSWER _____

CHALLENGE One step up

A bike rental costs $14 for 7 hours. The cost is proportional to the number of hours. Write an equation using x for hours and y for cost. Then find how many hours cost $38.

WORK SPACE AND ANSWER

ANSWER KEY

Rate Rule Rally

GRADE 7 · 7.PAR.4.4

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Does this table show a proportional relationship? If it does, write an equation. x: 1, 2, 6 y: 7, 14, 42	**Yes; y = 7x**
2	A proportional relationship has x = 9 and y = 54. Find k and write the equation.	**k = 6; y = 6x**
3	For the proportional relationship y = 2x, find y when x = 11.	**y = 22**
4	A proportional relationship passes through (7, 63). Write its equation.	**y = 9x**
5	Does this table show a proportional relationship? If it does, write an equation. x: 0, 6, 10 y: 0, 18, 30	**Yes; y = 3x**
6	Which equation represents a proportional relationship? A. y = 4x + 1 B. y = 11x C. y = x + 9	**B. y = 11x**

PART 2 · APPLY IT

1. **y = 6x; $66** Divide $42 by 7 to find a unit rate of $6 per grip. Multiply 11 by $6.
2. **y = 9x; $126** The constant of proportionality is 9 dollars per hour. Substitute x = 14 into y = 9x.

CHALLENGE

y = 2x; 19 hours

Accept equivalent equation forms that clearly show the same constant of proportionality, such as 6x = y. For proportional-relationship questions, students should identify both a constant rate and an origin value of (0, 0).