LESSON MAKER PRO

Rate Match Mission

Connect tables, equations, graphs, and real situations.

GRADE 7 · 7.PFA.1.e

7.PFA.1.e "Make connections between and among representations of a proportional relationship between two quantities using problems in context, tables, equations, and graphs..."

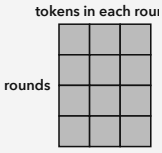
NAME _____ DATE _____

ONE RELATIONSHIP, MANY FORMS

In a proportional relationship, y/x stays the same for every pair where x is not 0. That constant is the unit rate, so the equation is y = kx and the graph passes through (0, 0).

WORKED EXAMPLE

The array shows game tokens earned in equal rounds. Let x be the number of rounds and y be the number of tokens. Use the array to write an equation and find y when x = 4.



1. Count 4 rows, so x = 4.
2. Count 3 tokens in each row, so the unit rate is 3 tokens per round.
3. Write y = 3x.
4. Substitute x = 4: y = 3(4) = 12.

Answer: y = 3x, and y = 12.

PRACTICE 6 problems

1 For y = 7x, find y when x = 6.

ANSWER _____

2 For y = 9x, find x when y = 63.

ANSWER _____

3 The ordered pairs (2, 14), (6, 42), and (8, 56) are in a proportional relationship. Write its equation.

ANSWER _____

4 Which equation represents a proportional relationship that contains the point (5, 40)? A. y = 8x B. y = 5x

ANSWER _____

5 The points (2, 18), (7, 63), and (9, 81) are in a proportional relationship. Write the equation and state the unit rate.

ANSWER _____

6 Is y = 2x + 5 a proportional relationship? Explain your reasoning.

ANSWER _____

APPLY IT Show your work

1 At a game club, the table shows the cost of sticker sheets. Let x be the number of sheets and y be the cost in dollars. State the unit rate and write an equation for the relationship.

STICKER SHEET COSTS

Sheets, x	Cost ($), y
1	5
2	10
5	25

ANSWER _____

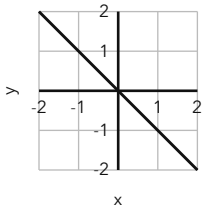
2 At an esports club, a team earns 8 points for each completed challenge. Let x be the number of challenges and y be the total points. Write an equation, then find the total for 11 challenges.

WORK SPACE

ANSWER _____

CHALLENGE One step up

Use the graph. Write the equation of the line. Then explain why the relationship is proportional even though its slope is negative.



WORK SPACE AND ANSWER

ANSWER KEY

Rate Match Mission

GRADE 7 · 7.PFA.1.e

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	For y = 7x, find y when x = 6.	**42**
2	For y = 9x, find x when y = 63.	**7**
3	The ordered pairs (2, 14), (6, 42), and (8, 56) are in a proportional relationship. Write its equation.	**y = 7x**
4	Which equation represents a proportional relationship that contains the point (5, 40)? A. y = 8x B. y = 5x	**A. y = 8x**
5	The points (2, 18), (7, 63), and (9, 81) are in a proportional relationship. Write the equation and state the unit rate.	**y = 9x; unit rate = 9**
6	Is y = 2x + 5 a proportional relationship? Explain your reasoning.	**No. When x = 0, y = 5, so the relationship does not pass through (0, 0).**

PART 2 · APPLY IT

1. **Unit rate: $5 per sheet; y = 5x** Divide cost by sheets, such as 10/2 = 5. The cost is 5 times the number of sheets.
2. **y = 8x; 88 points** The unit rate is 8 points per challenge, so y = 8x. Substitute 11 for x to get y = 8(11) = 88.

CHALLENGE

y = -x. The relationship is proportional because the line passes through (0, 0), and y/x is always -1 for points where x is not 0.

Accept equivalent wording for unit rates and explanations. For equations, accept forms equivalent to the listed equation, such as x = y/7 for y = 7x.