

Rate Representation Relay

Connect words, tables, graphs, and equations.

GRADE 6 • 6.PFA.2.e

6.PFA.2.e "Make connections between and among multiple representations of the same proportional relationship using verbal descriptions, ratio tables, and graphs."

NAME _____

DATE _____

ONE RATE, MANY VIEWS

A proportional relationship has the same amount for each group or unit. A verbal rate, a ratio table, graph points that start at (0,0), and an equation such as $y = kx$ can all show the same relationship.

WORKED EXAMPLE

A nature club earns 13 badges for each hike. Show the relationship for 5 hikes.

1. The unit rate is 13 badges for each hike.
2. Multiply $13 \times 5 = 65$.
3. The table pair and graph point are (5, 65), and the equation is $y = 13x$.

Answer: 5 hikes earn 65 badges. The matching point is (5, 65), and $y = 13x$.

PRACTICE 6 problems

- 1** Each art print costs \$3. Complete the ratio table. Prints: 4, 8, 12 Cost in dollars: __, __, __

ANSWER _____

- 2** Use this ratio table to list the points you would graph. x: 3, 6, 9 y: 15, 30, 45

ANSWER _____

- 3** A graph includes the points (0, 0), (4, 28), and (7, 49). Write a verbal description and an equation for the relationship.

ANSWER _____

- 4** A phone game gives 9 gems for each level completed. Which table matches the relationship? A. Levels: 3, 6, 9; Gems: 18, 36, 54 B. Levels: 3, 6, 9; Gems: 27, 54, 81 C. Levels: 3, 6, 9; Gems: 12, 24, 36

ANSWER _____

- 5** The equation $y = 4x$ shows a proportional relationship. Complete the table, then tell what the 4 means. x: 8, 11 y: __, __

ANSWER _____

- 6** A digital artist earns 6 tokens for every design. A graph of the relationship includes the point (9, 54). Which equation matches? A. $y = 6x$ B. $y = x + 6$ C. $y = 9x$

ANSWER _____

APPLY IT Show your work

- 1** A skateboard park charges \$8 for each hour of skating. Make a ratio table for 3, 6, and 9 hours. Then list the graph points for your table.

WORK SPACE

ANSWER _____

- 2** For a robotics team, 6 battery packs cost \$72. The cost is proportional to the number of packs. Complete a table for 3, 6, and 9 packs, write an equation, and list the graph points.

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

A mural team says it paints 14 tiles per hour. Its table shows (3, 42), (6, 82), and (8, 112). Its graph shows (4, 56) and (7, 98), and its equation is $y = 14x$. Exactly one part has an error. Identify the error and correct it.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Each art print costs \$3. Complete the ratio table. Prints: 4, 8, 12 Cost in dollars: __, __, __	Cost in dollars: 12, 24, 36
2	Use this ratio table to list the points you would graph. x: 3, 6, 9 y: 15, 30, 45	(3, 15), (6, 30), (9, 45)
3	A graph includes the points (0, 0), (4, 28), and (7, 49). Write a verbal description and an equation for the relationship.	The relationship is 7 units for each 1 unit of x. $y = 7x$.
4	A phone game gives 9 gems for each level completed. Which table matches the relationship? A. Levels: 3, 6, 9; Gems: 18, 36, 54 B. Levels: 3, 6, 9; Gems: 27, 54, 81 C. Levels: 3, 6, 9; Gems: 12, 24, 36	B
5	The equation $y = 4x$ shows a proportional relationship. Complete the table, then tell what the 4 means. x: 8, 11 y: __, __	y: 32, 44. The 4 means y increases by 4 for every 1 increase in x.
6	A digital artist earns 6 tokens for every design. A graph of the relationship includes the point (9, 54). Which equation matches? A. $y = 6x$ B. $y = x + 6$ C. $y = 9x$	A. $y = 6x$

PART 2 • APPLY IT

- Hours: 3, 6, 9. Cost in dollars: 24, 48, 72. Graph points: (3, 24), (6, 48), (9, 72).** Multiply each number of hours by 8. Use hours as x and cost as y when writing each coordinate.
- Packs: 3, 6, 9. Cost in dollars: 36, 72, 108. $y = 12x$. Graph points: (3, 36), (6, 72), (9, 108).** Divide 72 by 6 to find the unit rate of 12 dollars per pack. Multiply each number of packs by 12.

CHALLENGE

The table pair (6, 82) is incorrect. It should be (6, 84) because $6 \times 14 = 84$.

Accept equivalent verbal descriptions of each unit rate and correctly ordered coordinate pairs. Equations written without spaces, such as $y=12x$, are equivalent.