LESSON MAKER PRO

Switch the Form

Translate proportional relationships between words, tables, and equations.

GRADE 7 · MA.7.AR.4.4

MA.7.AR.4.4 "Given any representation of a proportional relationship, translate the representation to a written description, table or equation."

NAME _____ DATE _____

ONE RELATIONSHIP, MANY FORMS

A proportional relationship can be written as y = kx, where k is the constant of proportionality. To find k from a table or pair, divide y by any nonzero x-value. A proportional relationship also includes the pair (0, 0).

WORKED EXAMPLE

A craft club uses 9 beads for each bracelet. Let x be the number of bracelets and y be the number of beads. Write an equation.

1. Each bracelet uses 9 beads, so k = 9.
2. Use the proportional equation y = kx.
3. Substitute 9 for k: y = 9x.

Answer: y = 9x

PRACTICE 6 problems

1 The equation y = 7x represents a proportional relationship. Write a sentence that describes the relationship between x and y.

ANSWER _____

2 A dance app gives 6 badges for each completed challenge. Let x be the number of challenges and y be the number of badges. Write an equation.

ANSWER _____

3 A proportional relationship has the ordered pairs (0, 0), (3, 15), and (5, 25). Write an equation for the relationship.

ANSWER _____

4 The equation y = 3/2x represents a proportional relationship. Make a table by finding y when x is 0, 2, and 8.

ANSWER _____

5 A pet shelter receives $8 for each bag of food donated. Let x be the number of bags and y be the total dollars received. Write an equation.

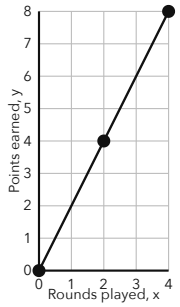
ANSWER _____

6 A proportional relationship has the ordered pairs (0, 0), (2, 14), and (4, 28). Write a sentence that describes the relationship.

ANSWER _____

APPLY IT Show your work

1 The graph shows points earned in a game. Let x be the number of rounds played and y be the total points earned. Write an equation and a sentence that describes the relationship.



ANSWER _____

2 A student sells art prints at a school fair. The table shows the total money earned, y, for x prints sold. Write an equation and a sentence that describes the relationship.

ART PRINT SALES

Prints sold, x	Money earned, y
0	0
3	15
6	30

ANSWER _____

CHALLENGE One step up

Relationship A: A video editor exports 3 clips every 4 minutes. Relationship B has the ordered pairs (0, 0), (4, 3), (8, 6), and (12, 9), where x is minutes and y is clips. Do the relationships match? Write an equation for both relationships and explain your reasoning.

WORK SPACE AND ANSWER

ANSWER KEY

Switch the Form

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	The equation y = 7x represents a proportional relationship. Write a sentence that describes the relationship between x and y.	**y is 7 times x.**
2	A dance app gives 6 badges for each completed challenge. Let x be the number of challenges and y be the number of badges. Write an equation.	**y = 6x**
3	A proportional relationship has the ordered pairs (0, 0), (3, 15), and (5, 25). Write an equation for the relationship.	**y = 5x**
4	The equation y = 3/2x represents a proportional relationship. Make a table by finding y when x is 0, 2, and 8.	**(0, 0), (2, 3), (8, 12)**
5	A pet shelter receives $8 for each bag of food donated. Let x be the number of bags and y be the total dollars received. Write an equation.	**y = 8x**
6	A proportional relationship has the ordered pairs (0, 0), (2, 14), and (4, 28). Write a sentence that describes the relationship.	**y is 7 times x.**

PART 2 · APPLY IT

1. **y = 2x. The player earns 2 points for each round played.** Use a nonzero point on the graph, such as (2, 4), and divide 4 by 2 to find k = 2. Substitute k into y = kx.
2. **y = 5x. The student earns $5 for each art print sold.** Divide a nonzero y-value by its matching x-value, such as 15 / 3, to find k = 5. The total money is 5 times the number of prints.

CHALLENGE

Yes. Both relationships are y = 3/4x. Relationship A has 3 clips for every 4 minutes, and each nonzero pair in Relationship B has y / x = 3 / 4.

Accept equivalent wording that clearly states the unit rate and identifies what x and y represent. Accept y = (3/4)x for the challenge, with or without parentheses.