

Show the Rate

Use equations, points, tables, and words to communicate a proportional relationship.

GRADE 7 • TEKS 7.1.D

7.1.D “communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate;”

NAME _____

DATE _____

ONE RATE, MANY FORMS

A proportional relationship has a constant unit rate and can be written as $y = kx$. Show the same relationship with an equation, a table or ordered pairs, and a rate sentence, then check that each form has the same rate.

WORKED EXAMPLE

A game earns 4 points per win. Let x be wins and y be points. Write an equation and give points for 3 and 5 wins.

1. Let x = wins and y = points.
2. The rate is 4 points per win, so $y = 4x$.
3. For $x = 3$, $y = 12$. For $x = 5$, $y = 20$.

Answer: $y = 4x$; (3, 12) and (5, 20); 4 points per win

PRACTICE 5 problems

- 1** A bike rental costs \$7 per hour. Let x be hours and y be cost. Write an equation.

ANSWER _____

- 2** For $y = 6x$, list the points when $x = 2$ and $x = 8$.

ANSWER _____

- 3** A printer makes posters. The table has x : 1, 6 and y : 9, 54, where y is minutes. Write an equation and a rate sentence.

ANSWER _____

- 4** A charity earns \$14 for every 2 bracelets sold. Let x be bracelets and y be dollars. Write an equation and a rate sentence.

ANSWER _____

- 5** For $y = 8x$, list the ordered pairs for $x = 1$ and $x = 7$.

ANSWER _____

APPLY IT Show your work

- 1** A gaming tournament awards 11 tokens for each challenge completed. Lin completes 6 challenges. Make a table for $x = 1$ and $x = 6$, write an equation, and state Lin's total.

WORK SPACE

ANSWER _____

- 2** A student saves \$12 each week for headphones. After 7 weeks, show the relationship with an equation, an ordered pair, and a sentence.

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

Two reward clubs give points for orders. Club A has $y = 7x$. Club B has the table x : 2, 6 and y : 18, 54. Write Club B's equation. Which club earns more points after 8 orders? Show both totals and explain in one sentence.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	A bike rental costs \$7 per hour. Let x be hours and y be cost. Write an equation.	$y = 7x$
2	For $y = 6x$, list the points when $x = 2$ and $x = 8$.	(2, 12) and (8, 48)
3	A printer makes posters. The table has x : 1, 6 and y : 9, 54, where y is minutes. Write an equation and a rate sentence.	$y = 9x$; It takes 9 minutes per poster.
4	A charity earns \$14 for every 2 bracelets sold. Let x be bracelets and y be dollars. Write an equation and a rate sentence.	$y = 7x$; The charity earns \$7 per bracelet.
5	For $y = 8x$, list the ordered pairs for $x = 1$ and $x = 7$.	(1, 8) and (7, 56)

PART 2 • APPLY IT

- Table: x : 1, 6; y : 11, 66. Equation: $y = 11x$. Lin earns 66 tokens.** Use the unit rate of 11 tokens per challenge. Multiply 11 by 6 to find the total.
- $y = 12x$; (7, 84); The student saves \$84 after 7 weeks.** Let x be weeks and y be dollars saved. Multiply 12 by 7 to find the y -value.

CHALLENGE

Club B: $y = 9x$. Club A: 56 points. Club B: 72 points. Club B earns more because it gives 9 points per order, which is more than 7 points per order.

Accept equivalent rate sentences and correctly labeled tables. Accept ordered pairs written in either order when the prompt does not assign a specific order.