LESSON MAKER PRO

Slope Tells the Rate

Read a graph, find the unit rate.

GRADE 7 · 7A.PR.B.5

7A.PR.B.5 "Graph proportional relationships. a. Interpret the unit rate of a proportional relationship, describing the constant of proportionality as the slope of the graph which goes through the origin and has the equation y = mx where m is the..."

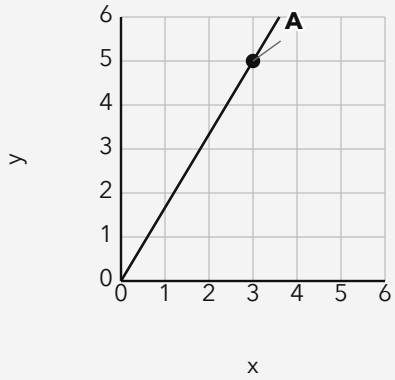
NAME _____ DATE _____

THE BIG IDEA

A proportional relationship graphs as a straight line through (0,0). Its unit rate is its slope, m. Find m by dividing y by x at any other point on the line, then write y = mx.

WORKED EXAMPLE

Use point A on the graph to find the slope and write the equation.



1. Point A is (3,5).
2. Divide y by x: m = 5/3.
3. The line passes through (0,0), so use y = mx.

Answer: Slope: 5/3. Equation: y = 5/3x.

PRACTICE 4 problems

1 A proportional graph passes through (1,7). Find its slope and equation.

ANSWER _____

2 A proportional graph passes through (4,1). Find its slope.

ANSWER _____

3 For y = 9x, find the unit rate and the point where x = 1.

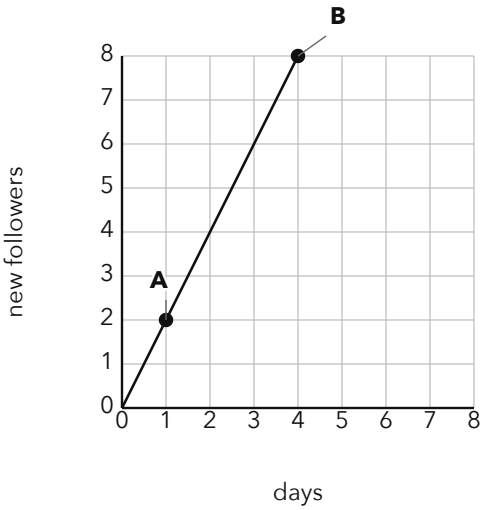
ANSWER _____

4 A proportional graph passes through (7,2). Write its equation.

ANSWER _____

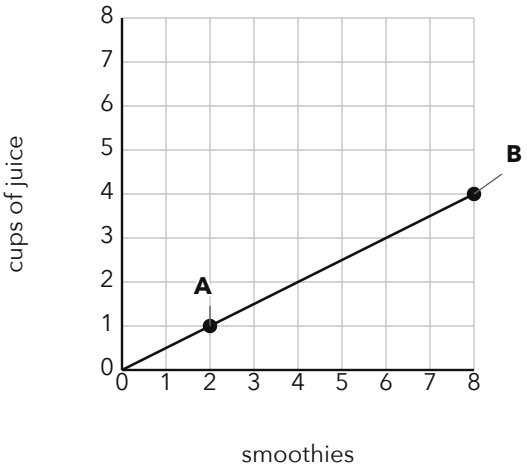
APPLY IT Show your work

1 A gaming channel gains followers as shown. Let x be days and y be new followers. What is the unit rate? Write the equation.



ANSWER _____

2 A smoothie recipe uses juice as shown. Let x be smoothies and y be cups of juice. How many cups are needed for 8 smoothies?



ANSWER _____

CHALLENGE One step up

Game A gives 7 points for every 8 tasks. Game B gives 2 points for every 4 tasks. Which game's points-versus-tasks graph is steeper? Explain.

WORK SPACE AND ANSWER

ANSWER KEY

Slope Tells the Rate

GRADE 7 · 7A.PR.B.5

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A proportional graph passes through (1,7). Find its slope and equation.	**Slope: 7. Equation: y = 7x.**
2	A proportional graph passes through (4,1). Find its slope.	**1/4**
3	For y = 9x, find the unit rate and the point where x = 1.	**Unit rate: 9 units of y per unit of x. Point: (1,9).**
4	A proportional graph passes through (7,2). Write its equation.	**y = 2/7x**

PART 2 · APPLY IT

1. **2 followers per day; y = 2x** At point A, y/x = 2/1 = 2. The graph passes through (0,0), so y = 2x.
2. **4 cups** The slope is 1/2 cup per smoothie. For 8 smoothies, y = 1/2 × 8 = 4 cups.

CHALLENGE

Game A. Its slope is 7/8 point per task, while Game B's slope is 2/4 = 1/2 point per task. Since 7/8 > 1/2, Game A's graph is steeper.

Accept equivalent fractions and equations with a space between the coefficient and x. For the challenge, accept any correct comparison of the two unit rates.