LESSON MAKER PRO

Rates on Graphs

Find the unit rate from a proportional relationship.

GRADE 8 · 8.AF.B.8

8.AF.B.8 "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..."

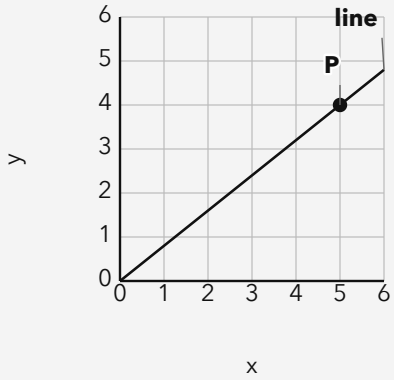
NAME _____ DATE _____

SLOPE IS THE UNIT RATE

A proportional relationship graphs as a line through (0, 0). For any other point on the line, divide y by x to find the slope, m. This is the unit rate, and the equation is y = mx.

WORKED EXAMPLE

Find the slope and equation of the graphed line.



1. Read point P: (5, 4).
2. Divide y by x: m = 4/5.
3. Write the equation: y = 4/5x.

Answer: Slope: 4/5; equation: y = 4/5x

PRACTICE 4 problems

1 A proportional graph passes through (2, 6). What is its slope?

ANSWER _____

2 A proportional graph passes through (6, 3). Write its equation.

ANSWER _____

3 In a proportional relationship, x = 8 when y = 16. What is the unit rate of y per x?

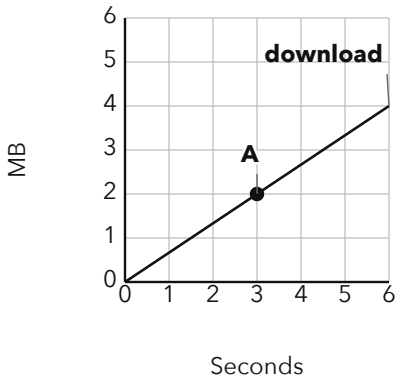
ANSWER _____

4 The equation is y = 7/2x. What point is on the graph when x = 2?

ANSWER _____

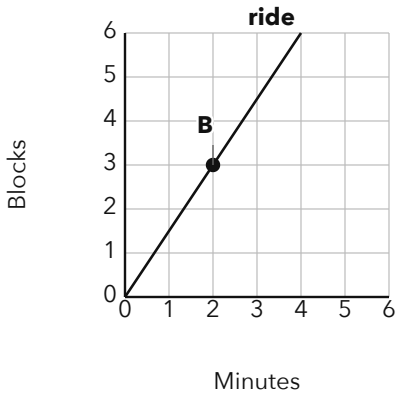
APPLY IT Show your work

1 A song downloads at a steady rate. Use the graph to find the rate in MB per second and write the equation.



ANSWER _____

2 A bike rider travels at a steady speed. Use the graph to find the rate in blocks per minute and write the equation.



ANSWER _____

CHALLENGE One step up

Line A passes through (3, 9) and (6, 18). Line B passes through (3, 11) and (6, 20). Which line could graph a proportional relationship? Give its equation and explain why the other line could not.

WORK SPACE AND ANSWER

ANSWER KEY

Rates on Graphs

GRADE 8 · 8.AF.B.8

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A proportional graph passes through (2, 6). What is its slope?	**3**
2	A proportional graph passes through (6, 3). Write its equation.	**y = 1/2x**
3	In a proportional relationship, x = 8 when y = 16. What is the unit rate of y per x?	**2**
4	The equation is y = 7/2x. What point is on the graph when x = 2?	**(2, 7)**

PART 2 · APPLY IT

1. **2/3 MB per second; y = 2/3x** Point A gives 2 MB in 3 seconds. Divide 2 by 3 to find the unit rate.
2. **3/2 blocks per minute; y = 3/2x** Point B gives 3 blocks in 2 minutes. Divide 3 by 2 to find the unit rate.

CHALLENGE

Line A; y = 3x. Both of its points have y/x = 3. Line B is not proportional because its points have different y/x values.

Accept equivalent forms of a rate, such as 1.5 for 3/2. In the challenge, also accept an explanation that Line B crosses the y-axis at 2 rather than 0.