LESSON MAKER PRO

Slope Stays Steady

Find the slope between points and explain what it means.

GRADE 7 · 7A.PR.B.6.b

7A.PR.B.6.b "Given two distinct points in a coordinate plane, find the slope of the line containing the two points and explain why it will be the same for any two distinct points on the line."

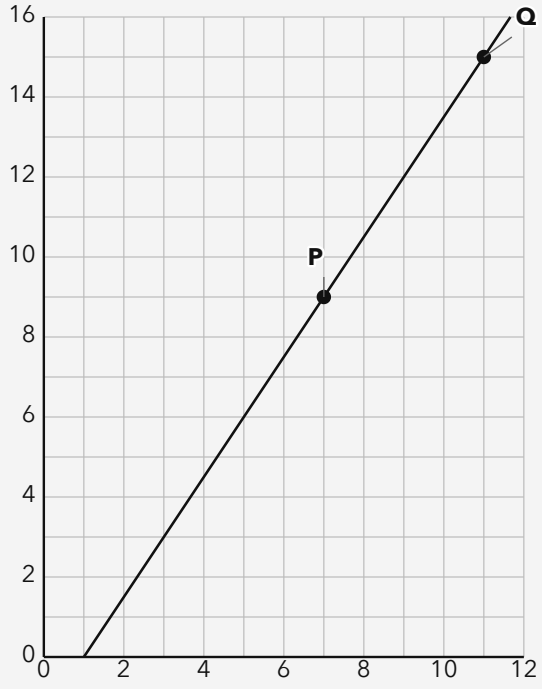
NAME _____ DATE _____

THE BIG IDEA

Slope is vertical change divided by horizontal change, or rise/run. Subtract coordinates in the same order. Every pair of points on a nonvertical straight line gives the same slope because its steepness stays constant. A vertical line has a run of 0, so its slope is undefined.

WORKED EXAMPLE

Find the slope of the line through P and Q on the graph.

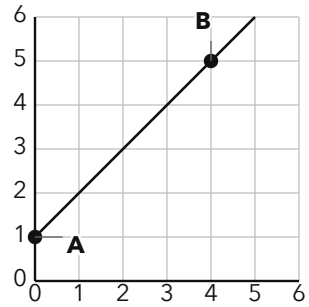


1. Read the points: P = (7, 9) and Q = (11, 15).
2. Find the rise: 15 - 9 = 6.
3. Find the run: 11 - 7 = 4.

Answer: Slope = 6/4 = 3/2.

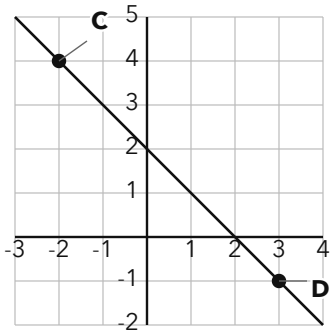
PRACTICE 6 problems

1 Find the slope of the line through A and B on the graph.



ANSWER _____

2 Find the slope of the line through C and D on the graph.



ANSWER _____

3 Find the slope of the line through (1, 2) and (5, 4).

ANSWER _____

4 Find the slope of the line through (1, 6) and (5, 0).

ANSWER _____

5 Find the slope of the line through (3, -1) and (3, 5). Explain your answer.

ANSWER _____

6 Find the slope of the line through (-3, 2) and (4, 2). What does the slope tell you about the line?

ANSWER _____

APPLY IT Show your work

1 In a video game, your total score is 14 points after 2 minutes and 34 points after 6 minutes. Treat time as x and score as y. What is the slope between these points, and what does it mean?

WORK SPACE

ANSWER _____

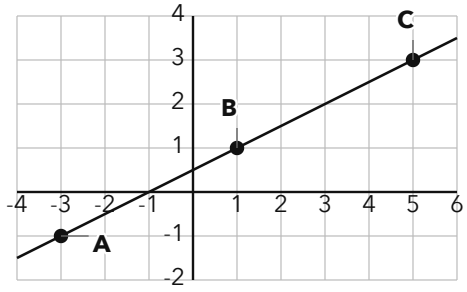
2 At a school fair, you have $18 left after buying 1 sticker and $12 left after buying 4 stickers. Treat stickers bought as x and dollars left as y. What is the slope between these points, and what does it mean?

WORK SPACE

ANSWER _____

CHALLENGE One step up

Points A, B, and C lie on the line shown. Find the slope using A and B, then using A and C. Explain why any two distinct points on this line give the same slope.



WORK SPACE AND ANSWER

ANSWER KEY

Slope Stays Steady

GRADE 7 · 7A.PR.B.6.b

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Find the slope of the line through A and B on the graph.	**1**
2	Find the slope of the line through C and D on the graph.	**-1**
3	Find the slope of the line through (1, 2) and (5, 4).	**1/2**
4	Find the slope of the line through (1, 6) and (5, 0).	**-3/2**
5	Find the slope of the line through (3, -1) and (3, 5). Explain your answer.	**Undefined. The horizontal change is 3 - 3 = 0, and division by 0 is undefined.**
6	Find the slope of the line through (-3, 2) and (4, 2). What does the slope tell you about the line?	**0. The line is horizontal because its vertical change is 0.**

PART 2 · APPLY IT

1. **5 points per minute. The score increased by an average of 5 points per minute between the two times.** Divide the score change by the time change: (34 - 14)/(6 - 2) = 20/4 = 5.
2. **-2 dollars per sticker. The money left decreased by $2 for each additional sticker.** Divide the change in dollars left by the change in stickers bought: (12 - 18)/(4 - 1) = -6/3 = -2.

CHALLENGE

Using A and B: (1 - (-1))/(1 - (-3)) = 2/4 = 1/2. Using A and C: (3 - (-1))/(5 - (-3)) = 4/8 = 1/2. The line rises 1 unit for every 2 units to the right, so any segment between two distinct points has the same rise/run ratio.

Accept equivalent fractions and clear explanations of constant rise/run. For the game problem, the slope describes the average rate between the two recorded times.