

PART I GET STARTED**Today's Mathematics**

We will calculate and interpret slope from graphs, points, and tables.

Essential Question

How can slope describe a line?

DO NOW

1. For $y = -x + 2$, find y when $x = -1, 0, 1$. Organize your results in a table.

2. Plot the three points on graph paper and draw the line.

3. As x increases by 1, how does y change?

SEE IT

Compare the movement from $(-3, -1)$ to $(1, 5)$. Find the horizontal change, vertical change, and their ratio.

QUICK WRITE | 2 MINUTES

What does the ratio of vertical change to horizontal change tell you? Predict whether it changes along a straight line.

PART II INVESTIGATE**BUILD THE IDEA**

1. Plot $A(-4, -2)$ and $B(2, 1)$ on graph paper. Find the slope; label rise and run.
2. Choose two other points on that line. Does the slope change? Explain.
3. Classify the slopes: (a) $y = 2x - 1$; (b) $y = -3x + 2$; (c) $y = 4$; (d) $x = -2$.
4. Find the slope from consecutive columns: $x = -3, 0, 3, 6$ and $y = 7, 3, -1, -5$.

COMPARE AND EXPLAIN

Compare slope from a graph, two points, and a table. Why do they measure the same relationship?

APPLY

1. Find the slope through $(6, -3)$ and $(-2, 9)$.
2. A table changes x by 3 and y by -12 . Find the slope.

PART III MAKE SENSE AND PRACTICE**WHAT WE CAN CONCLUDE**

Slope is $m = \frac{\Delta y}{\Delta x} = \frac{y_2 - y_1}{x_2 - x_1}$. Keep subtraction order consistent. Positive lines rise; negative lines fall; horizontal slope is 0; vertical slope is undefined. Parallel nonvertical lines have equal slopes. Perpendicular nonvertical lines have slopes whose product is -1 ; horizontal and vertical lines are perpendicular.

WORKED MODEL

Through $(-2, 5)$ and $(4, -1)$: $m = \frac{-1 - 5}{4 - (-2)} = \frac{-6}{6} = -1$.

FOCUSED PRACTICE

1. Find the slope through $(-5, 2)$ and $(3, 6)$.
2. Find the slope for $x = 0, 2, 4$ and $y = 7, 1, -5$.
3. Explain why horizontal slope is 0 and vertical slope is undefined.
4. A trail rises 18 feet over 30 horizontal feet. Find and interpret its slope.
5. State slopes parallel and perpendicular to a line of slope $3/4$.

MATH WRITE | 5 MINUTES

Explain why any two points on the same nonvertical line produce the same slope.

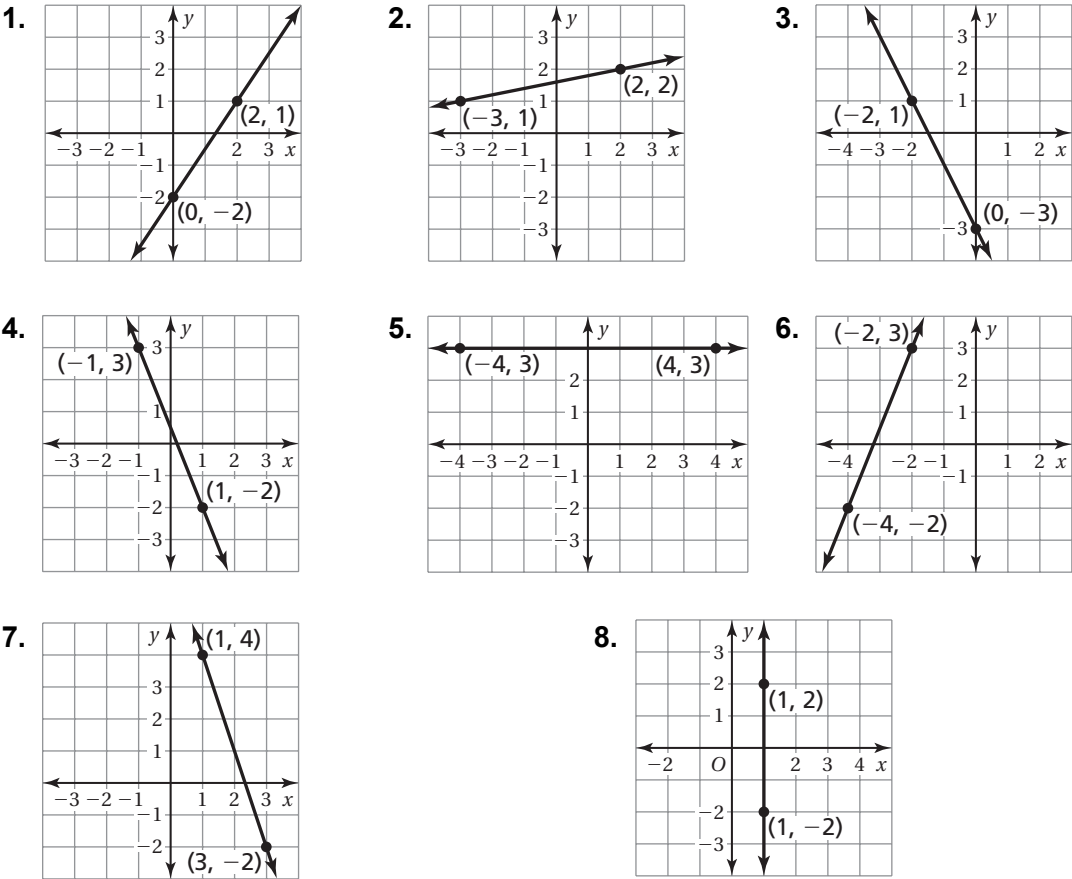
PART IV PUZZLE PRACTICE

Homework

What Did One Poppy Seed Say To The Other?

Circle the letter of each correct answer in the boxes below. The circled letters will spell out the answer to the riddle.

Find the slope of the line.



9. The slope of a ramp from the sidewalk to the street has to be $\frac{1}{20}$. The height of a ramp is 2.5 inches. What is the horizontal length (in inches) of the ramp?

I	T	M	S	A	O	N	H	A	P	L	R	O	M	E	L	S	L
-2	$\frac{2}{5}$	0	$\frac{1}{6}$	$\frac{4}{3}$	$\frac{1}{5}$	-3	$\frac{1}{4}$	$\frac{3}{2}$	$\frac{1}{50}$	1	50	$\frac{5}{2}$	$-\frac{1}{3}$	2	$-\frac{5}{2}$	5	und.