

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

We will connect $y = mx + b$ to slope and the y -intercept.

Essential Question

How can you describe the graph of $y = mx + b$?

DO NOW

1. Find the slope through $(-1, 4)$ and $(2, -2)$.
2. Does this line rise or fall from left to right?
3. What does the point $(0, 5)$ tell you about a graph?

SEE IT

For $y = 2x - 3$, predict where the graph crosses the y -axis and how it changes when x increases by 1.

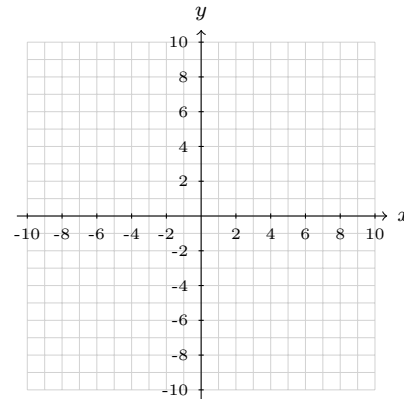
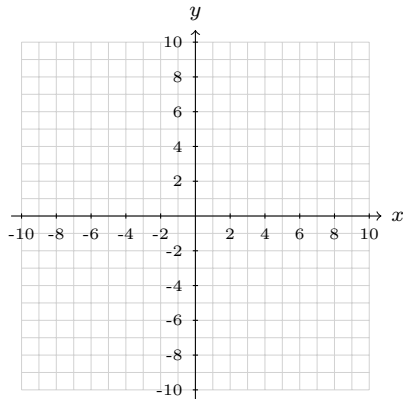
QUICK WRITE | 2 MINUTES

Describe the different information supplied by 2 and -3 in $y = 2x - 3$.

PART II INVESTIGATE

BUILD THE IDEA

- Graph $y = 2x + 1$ from a table. Identify its slope and y -intercept.
- Graph $y = -x + 3$ by plotting b first and then using m .



- Compare $y = \frac{1}{2}x - 2$ and $y = \frac{1}{2}x + 3$ on graph paper.
- A taxi charges \$4 initially and \$1.75 per mile. Write its equation and interpret m and b .

COMPARE AND EXPLAIN

Compare table graphing with slope-intercept graphing. Which is more efficient here, and why do both give the same line?

APPLY

- On graph paper, graph $y = -\frac{2}{3}x + 4$.
- Compare $y = 2x - 1$ and $y = 2x + 5$.

PART III MAKE SENSE AND PRACTICE

WHAT WE CAN CONCLUDE

In $y = mx + b$, m is slope and $(0, b)$ is the y -intercept. Plot $(0, b)$, then use rise/run to find another point.

WORKED MODEL

For $y = -\frac{3}{2}x + 4$, plot $(0, 4)$. Move right 2 and down 3 to reach $(2, 1)$, then $(4, -2)$. Draw the line.

FOCUSED PRACTICE

1. On graph paper, graph $y = 3x - 2$.
2. Identify m and b in $y = -0.5x + 6$.
3. Write an equation with slope 4 and y -intercept -1 .

MATH WRITE | 5 MINUTES

Explain how m and b each control a different feature of the graph.

PART IV PUZZLE PRACTICE**Homework****Did You Hear About...**

A	B	C	D	E	F
G	H	I	J	K	L
M	N	O	P		

Complete each exercise. Find the answer in the answer column. Write the word under the answer in the box containing the exercise letter.

$\frac{3}{2}$ MANY	Find the slope of the graph of the linear equation. A. $3y = 2x + 3$ B. $y = -x - 2$	-4 STOPPED
$-\frac{1}{2}$ WHO	C. $4y = -2x + 12$ D. $5y - 10 = x$	5 HAD
-12 THAT	Find the y-intercept of the graph of the linear equation. E. $y = 4x - 4$ F. $2y = x - 4$	$-\frac{9}{4}$ POLICE
-7 SO	G. $y - 12 = -9x$ H. $7 + y = 4.3x$	-1 LADY
0.25 SEASON	Find the x-intercept of the graph of the linear equation. I. $y = 6x - 9$ J. $3y = 2x + 36$	22 CAR
-5 GAVE	K. $2y = -5x + 7$ L. $3y - 9 = 4x$	$\frac{7}{5}$ THE
-2 FOR	M. $y = 1.6x + 8$ N. $y + 15 = 12.5x$	-18 TIMES
16 TICKETS	O. Shannon's hair is 12 inches long and grows 0.25 inch per month. In an equation that represents the length y of her hair after x months, what number represents the slope?	$\frac{1}{5}$ GOT
$\frac{2}{3}$ THE	P. You have a \$20 gift card to a coffee shop. Each time you go there, you get chai tea for \$1.25. The equation $y = -1.25x + 20$ represents how much you have left on the gift card after x visits. How many chai teas can you purchase before the balance on your card runs out?	1.2 HER
-8 DRIVING		12 SPEEDING