

# 5-3

## Slope-Intercept Form

### Content Standards

F.IF.7.a Graph linear and quadratic functions and show intercepts, maxima, and minima.

Also A.SSE.1.a, A.SSE.2, A.CED.2, F.IF.4, F.BF.1.a, F.BF.3, F.LE.2, F.LE.5

**I can write linear equations using slope intercept form.**

**I can graph linear equations in slope intercept form.**

**linear equation** – an equation that models a linear function (the variables cannot be raised to a power other than 1)

**y-intercept** – the  $y$ -coordinate of a point where the graph crosses the  $y$ -axis

**slope-intercept form** – the equation of a linear line using the format  $y = mx + b$

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I can graph linear equations in slope intercept form.



## Problem 1 Identifying Slope and y-Intercept

What are the slope and y-intercept of the graph of  $y = 5x - 2$ ?

$$y = mx + b \quad \text{Use slope-intercept form.}$$

slope

y-intercept

$y =$

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**I can graph linear equations in slope intercept form.**

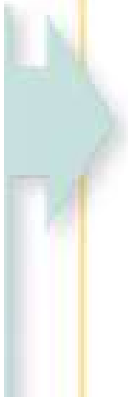
1. a. What are the slope and  $y$ -intercept of the graph of  $y = -\frac{1}{2}x + \frac{2}{3}$ ?

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## **Problem 2** Writing an Equation in Slope-Intercept Form

What is an equation of the line with slope  $-\frac{4}{5}$  and  $y$ -intercept 7?



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2. What is an equation of the line with slope  $\frac{3}{2}$  and y-intercept  $-1$ ?

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I can graph linear equations in slope intercept form.



### Problem 3 Writing an Equation From a Graph

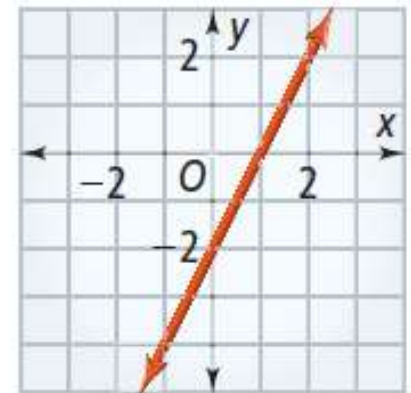
**Multiple Choice** Which equation represents the line shown?

(A)  $y = -2x + 1$

(B)  $y = 2x + 1$

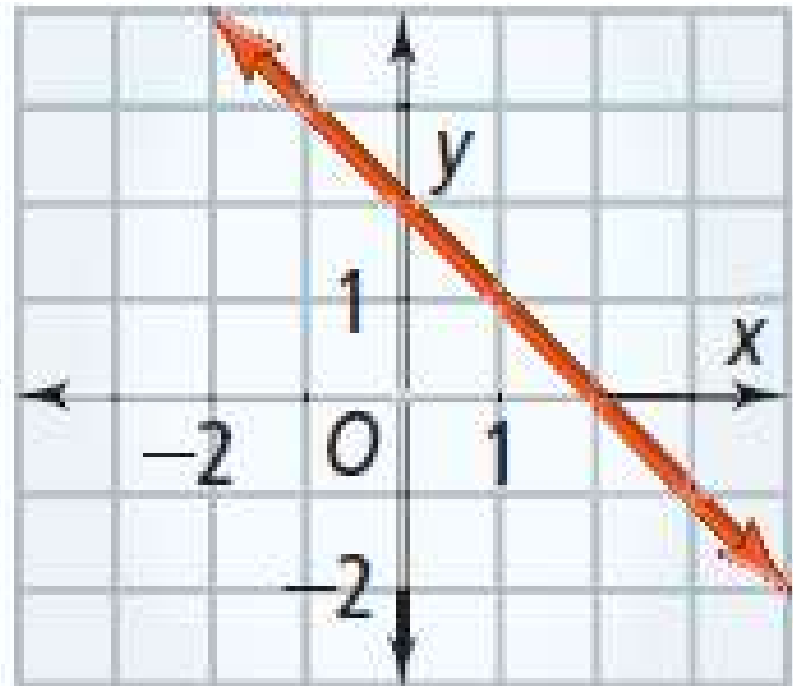
(C)  $y = \frac{1}{2}x - 2$

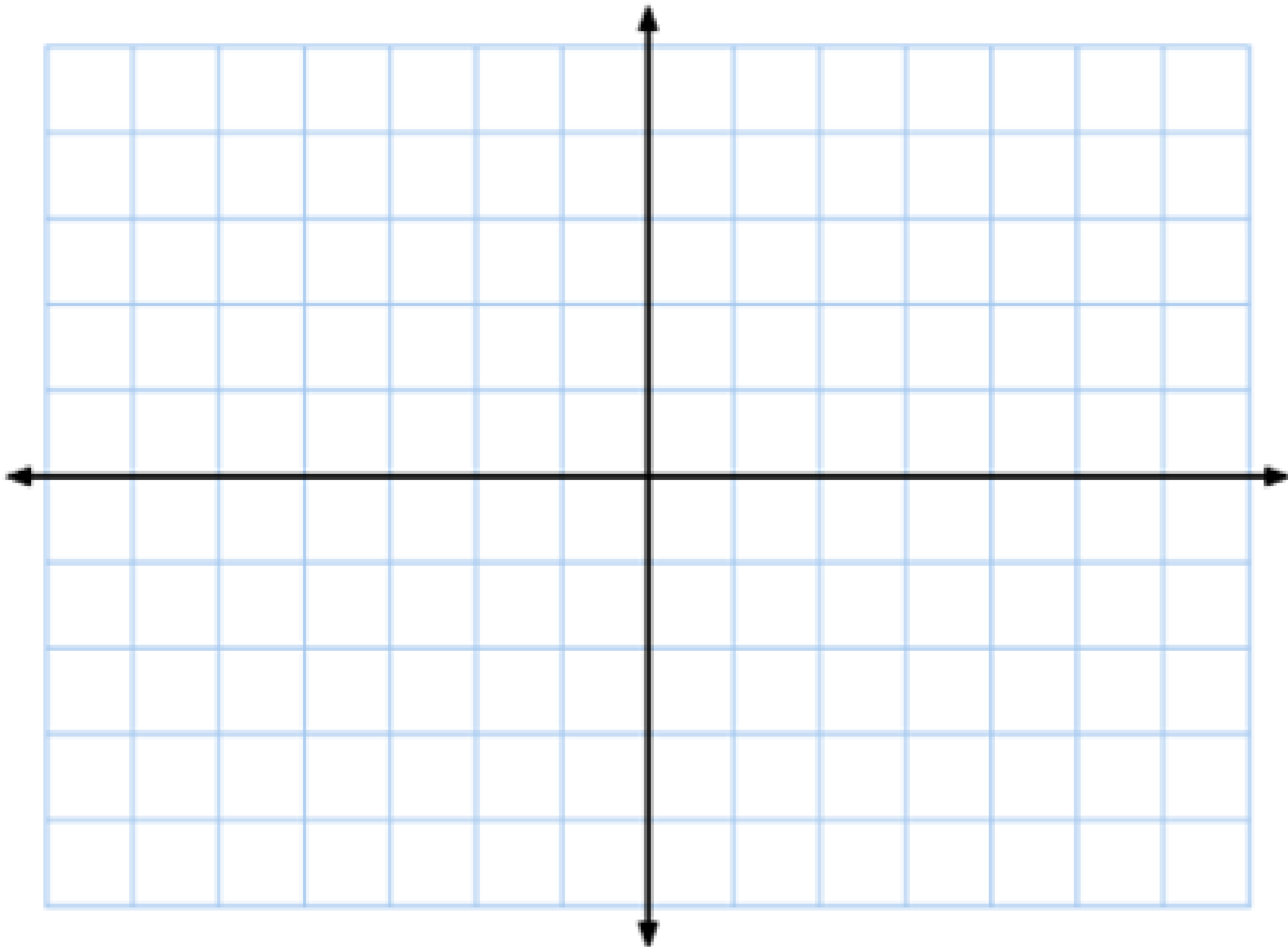
(D)  $y = 2x - 2$



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b. What is an equation of the line shown at the right?







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$$(4, -2) (6, -1)$$

First find slope...



## Problem 4 Writing an Equation From Two Points

What equation in slope-intercept form represents the line that passes through the points  $(2, 1)$  and  $(5, -8)$ ?

### Know

The line passes through  $(2, 1)$  and  $(5, -8)$ .

### Need

An equation of the line

### Plan

Use the two points to find the slope. Then use the slope and one point to solve for the  $y$ -intercept.

**Step 1** Use the two points to find the slope.

**Step 2** Use the slope and the coordinates of one of the points to find  $b$ .

**Step 3** Substitute the slope and  $y$ -intercept into the slope-intercept form.

**I can write linear equations using slope intercept form.**

**I can graph linear equations in slope intercept form.**

4. What equation in slope-intercept form represents the line that passes through the points  $(3, -2)$  and  $(1, -3)$ ?

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I can graph linear equations in slope intercept form.



### Problem 5 Graphing a Linear Equation

What is the graph of  $y = 2x - 1$ ?

**Step 1** The  $y$ -intercept is  $-1$ . So plot a point at  $(0, -1)$ .

**Step 2** The slope is 2, or  $\frac{2}{1}$ . Move up 2 units and right 1 unit. Plot another point.

**Step 3** Draw a line through the two points.

I can write linear equations using slope intercept form.  
I can graph linear equations in slope intercept form.

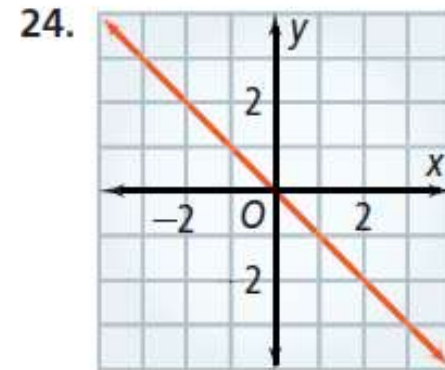
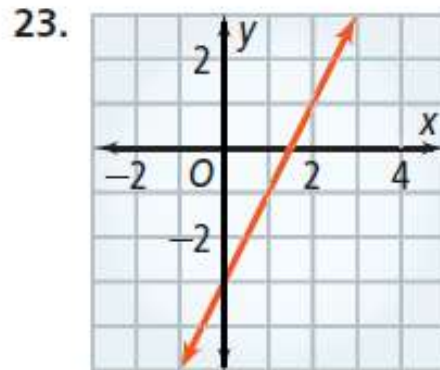
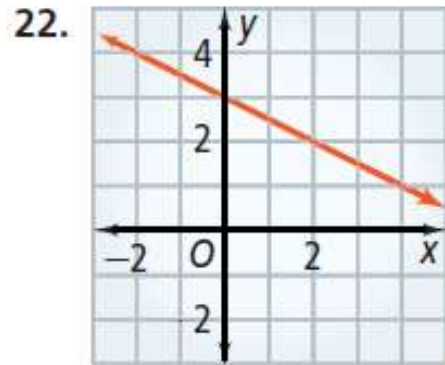
5. What is the graph of each linear equation?

a.  $y = -3x + 4$

# Exit Questions

Write an equation in slope-intercept form of each line.

← See Problem 3.



Write an equation in slope-intercept form of the line that passes through the given points.

← See Problem 4.

28.  $(0, 3)$  and  $(2, 5)$

29.  $(-2, 4)$  and  $(3, -1)$

30.  $(-3, 3)$  and  $(1, 2)$