

## T1-3 Number Properties Retake Problems

Label each equation with the proper property

1.  $(a \cdot b) \cdot c = a \cdot (b \cdot c)$

2.  $3 \cdot 5 = 5 \cdot 3$

3.  $4 \cdot \frac{1}{4} = 1$

4.  $2^2 = b$  and  $b = 4$ , then  $2^2 = 4$ .

5.  $a + 0 = a$

6.  $(7 + 1) + 2 = 7 + (1 + 2)$

7.  $a + (-a) = 0$

8.  $6(2b + 4) = 6(b) + 6(4)$

9.  $a \cdot 1 = a$

10.  $a + b = b + a$

11.  $54 + 3 = 54 + 3$

12.  $a \cdot 0 = 0$

13.  $a + 0 = a$

14. *If  $3 + 5 = x$  then  $x = 3 + 5$*

Rewrite the right side of the equation given the property.

1. Reflexive

$7 + x = \underline{\hspace{2cm}}$

2. Distributive Property

$9(7 + 4) = \underline{\hspace{2cm}}$

3. Commutative Property

$3(7 + 5) = \underline{\hspace{2cm}}$

4. Associative Property

$(3 + 5) + 4 = \underline{\hspace{2cm}}$

5. Additive Identity

$6 = \underline{\hspace{2cm}}$

6. Symmetric Property

$17 = x$  then  $\underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

7. Multiplicative Inverse

$1 = \underline{\hspace{2cm}}$

8. Commutative Property

$(7 + 4) + 9 = \underline{\hspace{2cm}}$

9. Associative Property

$(7 \cdot 8) \cdot 6 = \underline{\hspace{2cm}}$

# T3-2 GRAPHING RETAKE WS

First, plug in the x-values to complete the coordinate point.

Second plot points on the graphs below. There will be two lines graphed on each grid.

Third connect the points and describe the type of slope.

1.  $y = 3x$

X	$y = 3x$	Y

2.  $y = x - 6$

X	$y = x - 6$	Y

3.  $y = -3x$

X	$y = -3x$	Y

4.  $y = x - 2$

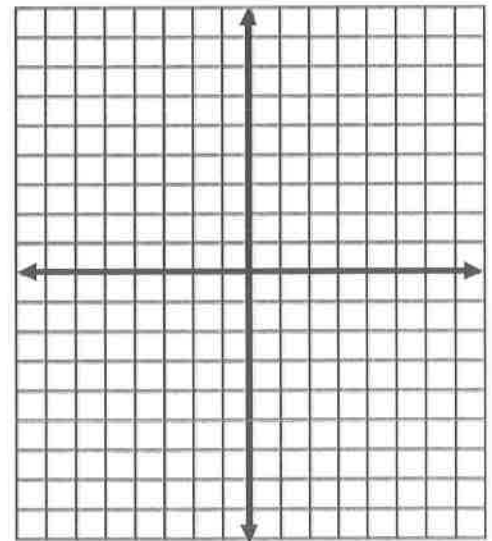
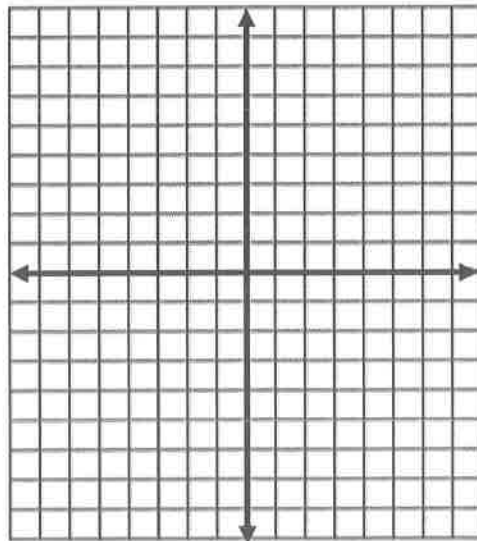
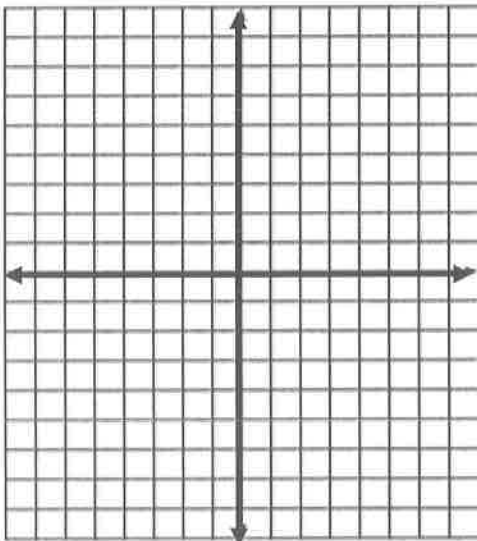
X	$y = x - 2$	Y

5.  $y = x + 4$

X	$y = x + 4$	Y

6.  $y = 2x + 5$

X	$y = 2x + 5$	Y



# T3-2 GRAPHING RETAKE WS

First, plug in the x-values to complete the coordinate point.

Second plot points on the graphs below. There will be two lines graphed on each grid.

Third connect the points and describe the type of slope.

7.  $y = -4x + 4$

X	$y = -4x + 4$	Y

8.  $y = -x - 2$

X	$y = -x - 2$	Y

9.  $y = -\frac{1}{4}x + 4$

X	$y = -\frac{1}{4}x + 4$	Y

10.  $2x + 6y = 12$

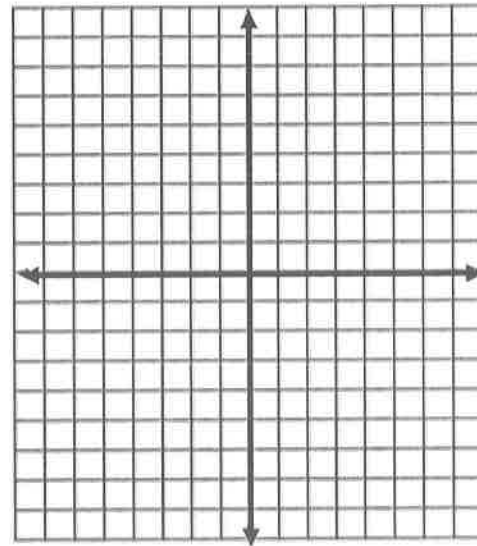
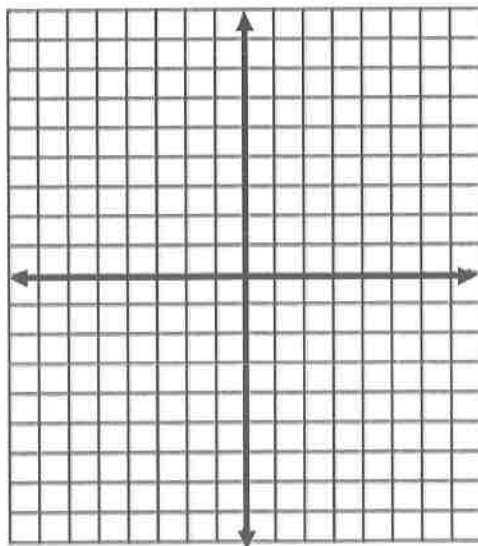
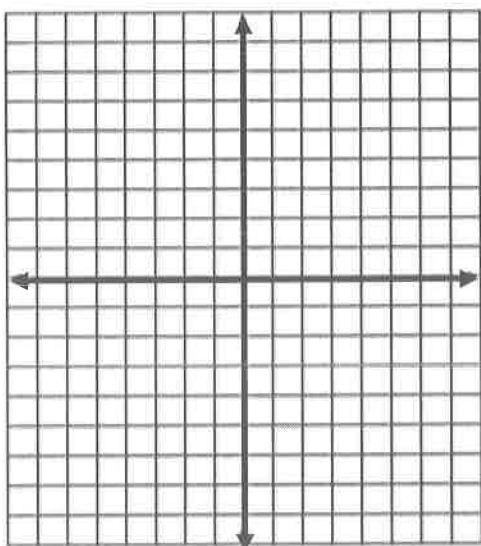
X	$y =$	Y

11.  $x + 3y = 15$

X	$y =$	Y

12.  $3y - 4 = x + 6$

X	$y =$	Y



Point-Slope Form Practice  $y - y_1 = m(x - x_1)$ 

Identify the point and the slope you can SEE in each equation.

1.  $y + 2 = 2(x + 3)$

$m = \underline{\hspace{2cm}}$  Point  $(x, y): ( \quad , \quad )$

2.  $y - 3 = \frac{4}{5}(x - 5)$

$m = \underline{\hspace{2cm}}$  Point  $(x, y): ( \quad , \quad )$

3.  $y - 5 = \frac{3}{5}(x - 2)$

$m = \underline{\hspace{2cm}}$  Point  $(x, y): ( \quad , \quad )$

4.  $y - 2 = -\frac{1}{5}(x + 1)$

$m = \underline{\hspace{2cm}}$  Point  $(x, y): ( \quad , \quad )$

5.  $y + 7 = \frac{-2}{3}(x + 27)$

$m = \underline{\hspace{2cm}}$  Point  $(x, y): ( \quad , \quad )$

6.  $y + 4 = x + 2$

$m = \underline{\hspace{2cm}}$  Point  $(x, y): ( \quad , \quad )$

7.  $y - 0 = -3(x + 7)$

$m = \underline{\hspace{2cm}}$  Point  $(x, y): ( \quad , \quad )$

8.  $y - 3 = \frac{4}{5}(x - 5)$

$m = \underline{\hspace{2cm}}$  Point  $(x, y): ( \quad , \quad )$

### Slope-Intercept Form Practice $y = mx + b$

Identify the slope and the y-intercept ( $b$ ) you can SEE in each equation. Write the y-intercept ( $b$ ) as an ordered pair,  $(0, b)$ .

9.  $y = -\frac{1}{7}x + 2$

$m = -\frac{1}{7}$     $b = 2$    *Point:*  $( 0 , 2 )$

A diagram consisting of a horizontal line with two vertical arrows pointing upwards from its ends. The left arrow points to the 'b = 2' part of the equation, and the right arrow points to the '2' in the point notation '( 0 , 2 )'. This indicates that the y-intercept value '2' is used to determine the y-coordinate of the y-intercept point.

10.  $y = 4x + 23$

$m = \underline{\hspace{2cm}}$     $b = \underline{\hspace{1cm}}$    *Point:*  $( \quad , \quad )$

11.  $y + 5 = -\frac{1}{3}x + 3$

$m = \underline{\hspace{2cm}}$     $b = \underline{\hspace{1cm}}$    *Point:*  $( \quad , \quad )$

12.  $y - 10 = 0$

$m = \underline{\hspace{2cm}}$     $b = \underline{\hspace{1cm}}$    *Point :*  $( \quad , \quad )$

13.  $y = \frac{2}{5}x$

$m = \underline{\hspace{2cm}}$     $b = \underline{\hspace{1cm}}$    *Point :*  $( \quad , \quad )$

**Be sure to get  $y$  alone first on 14 & 15!**

14.  $9y - 4x = 36$

$m = \underline{\hspace{2cm}}$     $b = \underline{\hspace{1cm}}$    *Point :*  $( \quad , \quad )$

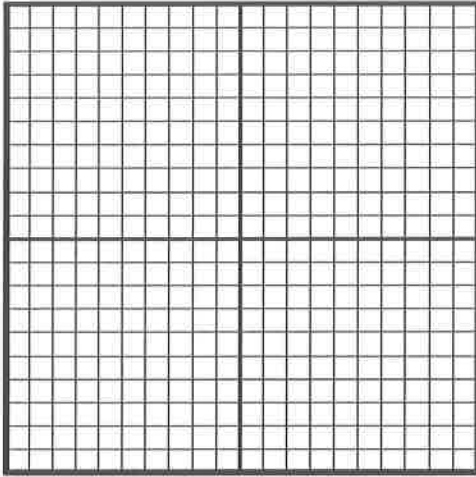
15.  $x + y = -2$

$m = \underline{\hspace{2cm}}$     $b = \underline{\hspace{1cm}}$    *Point :*  $( \quad , \quad )$

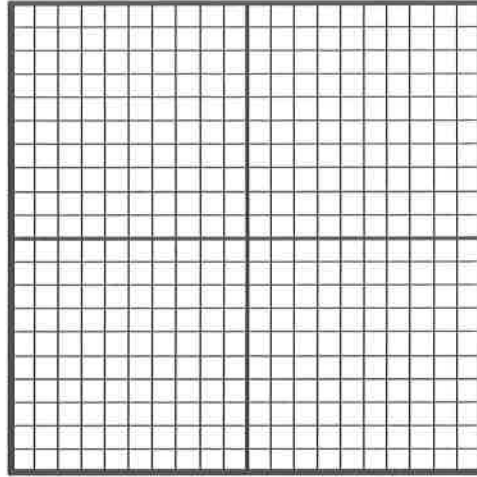
Graphing in Point-Slope Form Practice  $y - y_1 = m(x - x_1)$

Graph each of the following lines by first giving the point and the slope.

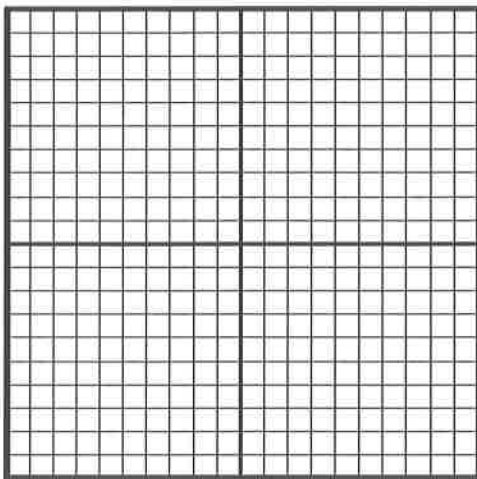
1.  $y + 2 = \frac{1}{3}(x + 1)$   
Slope = \_\_\_\_\_ Point: ( \_\_\_\_\_ , \_\_\_\_\_ )



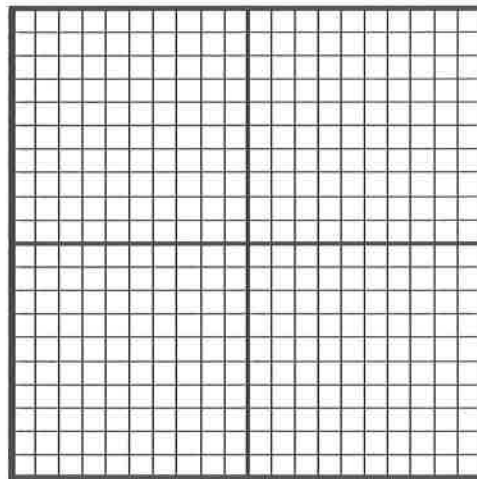
2.  $y + 1 = -\frac{1}{2}(x - 3)$   
Slope = \_\_\_\_\_ Point: ( \_\_\_\_\_ , \_\_\_\_\_ )



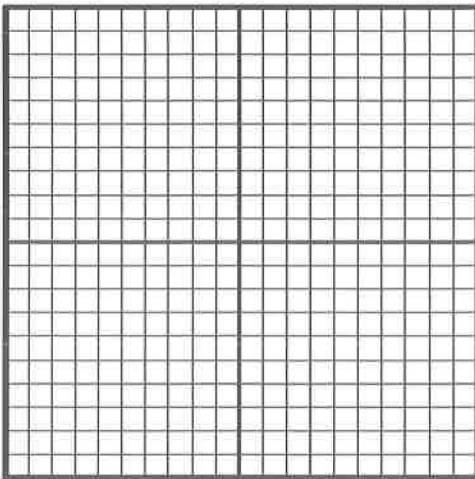
3.  $y - 3 = -2(x - 4)$   
Slope = \_\_\_\_\_ Point: ( \_\_\_\_\_ , \_\_\_\_\_ )



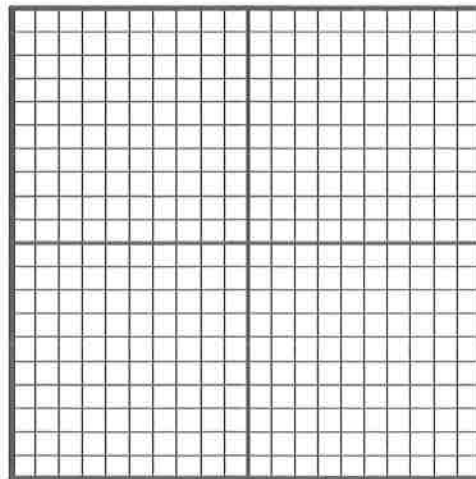
4.  $y - 5 = 3x$   
Slope = \_\_\_\_\_ Point: ( \_\_\_\_\_ , \_\_\_\_\_ )



5.  $y + 3 = 0(x - 3)$   
Slope = \_\_\_\_\_ Point: ( \_\_\_\_\_ , \_\_\_\_\_ )



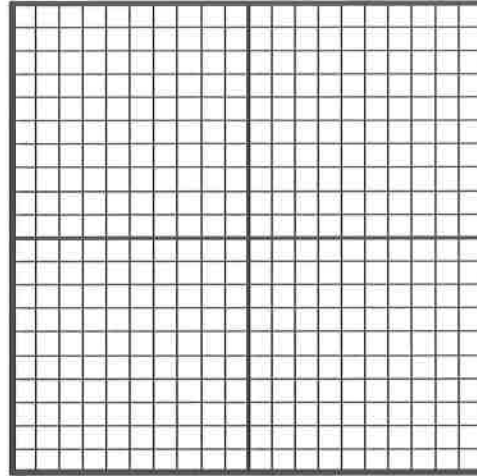
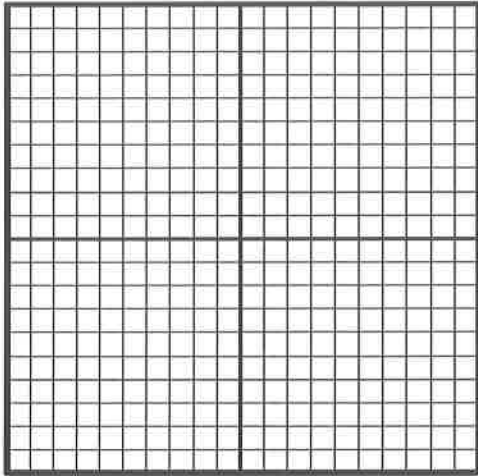
6.  $y - 1 = -\frac{5}{2}(x + 2)$   
Slope = \_\_\_\_\_ Point: ( \_\_\_\_\_ , \_\_\_\_\_ )



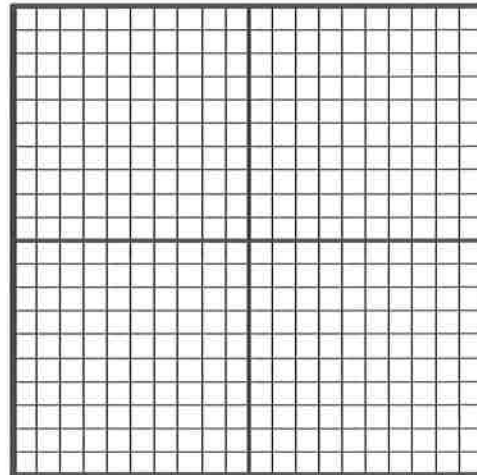
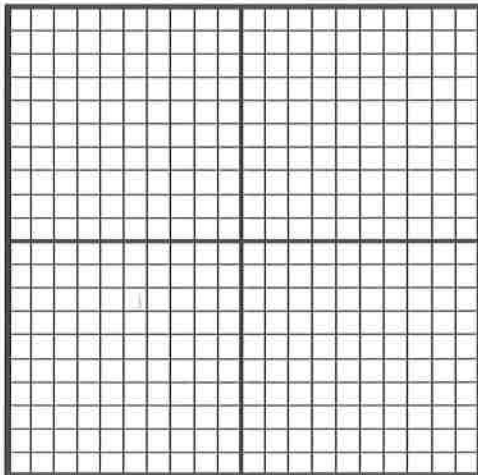
# Graphing Slope-Intercept Form Practice $y = mx + b$

Graph each of the following lines by first giving the y-intercept (b) and the slope. Solve for y first if needed

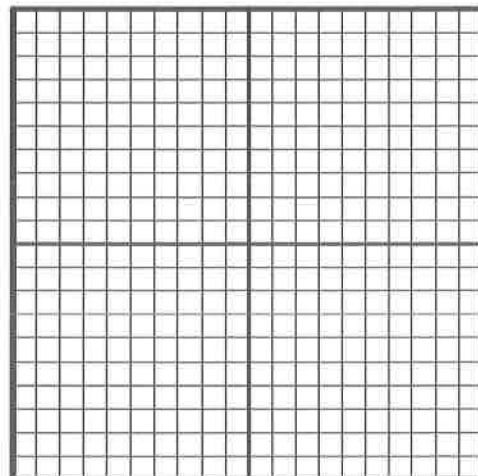
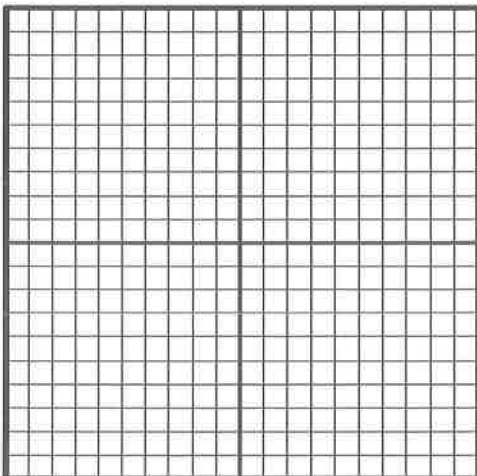
1. $y = 2x - 5$ Slope = _____ Point: ( _____ , _____ )	2. $y = 3x - 2$ Slope = _____ Point: ( _____ , _____ )
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3. $7x + 2y = 10$ Slope = _____ Point: ( _____ , _____ )	4. $3x + 5y = 10$ Slope = _____ Point: ( _____ , _____ )
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5. $y + 3 = 0$ Slope = _____ Point: ( _____ , _____ )	6. $y - 1 = -\frac{5}{2}x + 2$ Slope = _____ Point: ( _____ , _____ )
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# T4-2 RETAKE WORKSHEET

## Writing Equations in Slope-Intercept Form

### Write an Equation Given the Slope and a Point

**Example 1:** Write an equation of the line that passes through  $(-4, 2)$  with a slope of 3.

The line has slope 3. To find the  $y$ -intercept, replace  $m$  with 3 and  $(x, y)$  with  $(-4, 2)$  in the slope-intercept form. Then solve for  $b$ .

$$y = mx + b \quad \text{Slope-intercept form}$$

$$2 = 3(-4) + b \quad m = 3, y = 2, \text{ and } x = -4$$

$$2 = -12 + b \quad \text{Multiply.}$$

$$14 = b \quad \text{Add 12 to each side.}$$

Therefore, the equation is  $y = 3x + 14$ .

**Example 2:** Write an equation of the line that passes through  $(-2, -1)$  with a slope of  $\frac{1}{4}$ .

The line has slope  $\frac{1}{4}$ . Replace  $m$  with  $\frac{1}{4}$  and  $(x, y)$  with  $(-2, -1)$  in the slope-intercept form.

$$y = mx + b \quad \text{Slope-intercept form}$$

$$-1 = \frac{1}{4}(-2) + b \quad m = \frac{1}{4}, y = -1, \text{ and } x = -2$$

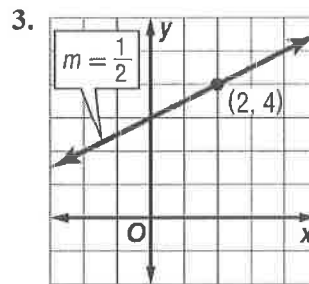
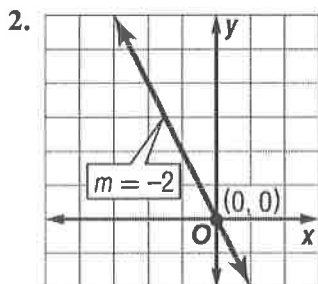
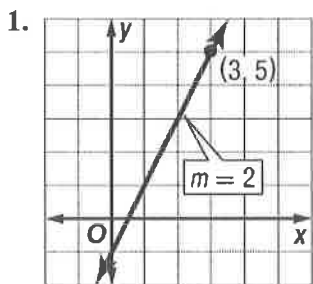
$$-1 = -\frac{1}{2} + b \quad \text{Multiply.}$$

$$-\frac{1}{2} = b \quad \text{Add } \frac{1}{2} \text{ to each side.}$$

Therefore, the equation is  $y = \frac{1}{4}x - \frac{1}{2}$ .

### Exercises

Write an equation of the line that passes through the given point and has the given slope.



- 4.  $(8, 2)$ ; slope  $-\frac{3}{4}$
- 5.  $(-1, -3)$ ; slope 5
- 6.  $(4, -5)$ ; slope  $-\frac{1}{2}$
- 7.  $(-5, 4)$ ; slope 0
- 8.  $(2, 2)$ ; slope  $\frac{1}{2}$
- 9.  $(1, -4)$ ; slope  $-6$
- 10.  $(-3, 0)$ ,  $m = 2$
- 11.  $(0, 4)$ ,  $m = -3$
- 12.  $(0, 350)$ ,  $m = \frac{1}{5}$



# T4-2 RETAKE WORKSHEET (continued)

## Writing Equations in Slope-Intercept Form

### Write an Equation Given Two Points

**Example:** Write an equation of the line that passes through (1, 2) and (3, -2).

Find the slope  $m$ . To find the  $y$ -intercept, replace  $m$  with its computed value and  $(x, y)$  with (1, 2) in the slope-intercept form. Then solve for  $b$ .

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

Slope formula

$$m = \frac{-2 - 2}{3 - 1}$$

$$y_2 = -2, y_1 = 2, x_2 = 3, x_1 = 1$$

$$m = -2$$

Simplify.

$$y = mx + b$$

Slope-intercept form

$$2 = -2(1) + b$$

Replace  $m$  with  $-2$ ,  $y$  with  $2$ , and  $x$  with  $1$ .

$$2 = -2 + b$$

Multiply.

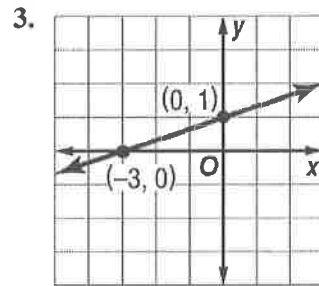
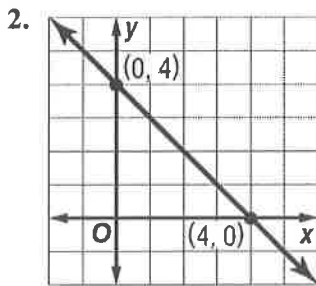
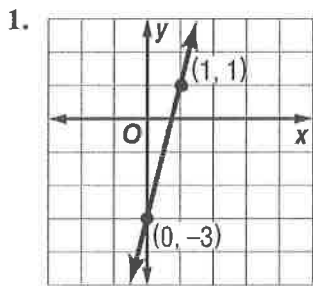
$$4 = b$$

Add 2 to each side.

Therefore, the equation is  $y = -2x + 4$ .

### Exercises

Write an equation of the line that passes through each pair of points.



4.  $(-1, 6), (7, -10)$

5.  $(0, 2), (1, 7)$

6.  $(6, -25), (-1, 3)$

7.  $(-2, -1), (2, 11)$

8.  $(10, -1), (4, 2)$

9.  $(-14, -2), (7, 7)$

10.  $(4, 0), (0, 2)$

11.  $(-3, 0), (0, 5)$

12.  $(0, 16), (-10, 0)$

# 4-3 RETAKE WORKSHEET

## Writing Equations in Point-Slope Form

### Point-Slope Form

<b>Point-Slope Form</b>	$y - y_1 = m(x - x_1)$ , where $(x_1, y_1)$ is a given point on a nonvertical line and $m$ is the slope of the line
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**Example 1:** Write an equation in point-slope form for the line that passes through  $(6, 1)$  with a slope of  $-\frac{5}{2}$ .

$$y - y_1 = m(x - x_1) \quad \text{Point-slope form}$$

$$y - 1 = -\frac{5}{2}(x - 6) \quad m = -\frac{5}{2}; (x_1, y_1) = (6, 1)$$

Therefore, the equation is  $y - 1 = -\frac{5}{2}(x - 6)$ .

**Example 2:** Write an equation in point-slope form for a horizontal line that passes through  $(4, -1)$ .

$$y - y_1 = m(x - x_1) \quad \text{Point-slope form}$$

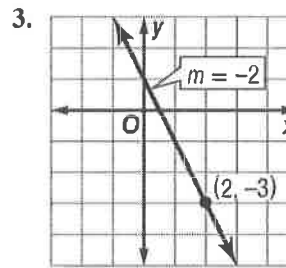
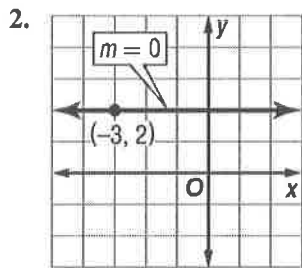
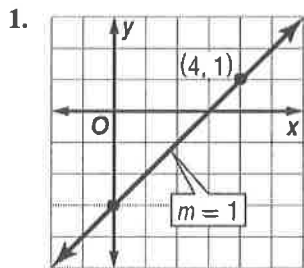
$$y - (-1) = 0(x - 4) \quad m = 0; (x_1, y_1) = (4, -1)$$

$$y + 1 = 0 \quad \text{Simplify.}$$

Therefore, the equation is  $y + 1 = 0$ .

### Exercises

Write an equation in point-slope form for the line that passes through each point with the given slope.



4.  $(2, 1), m = 4$

5.  $(-7, 2), m = 6$

6.  $(8, 3), m = 1$

7.  $(-6, 7), m = 0$

8.  $(4, 9), m = \frac{3}{4}$

9.  $(-4, -5), m = -\frac{1}{2}$

10. Write an equation in point-slope form for a horizontal line that passes through  $(4, -2)$ .

11. Write an equation in point-slope form for a horizontal line that passes through  $(-5, 6)$ .

12. Write an equation in point-slope form for a horizontal line that passes through  $(5, 0)$ .

# 4-3 RETAKE WORKSHEET (continued)

## Writing Equations in Point-Slope Form

### Forms of Linear Equations

<b>Slope-Intercept Form</b>	$y = mx + b$	$m = \text{slope}; b = \text{y-intercept}$
<b>Point-Slope Form</b>	$y - y_1 = m(x - x_1)$	$m = \text{slope}; (x_1, y_1) \text{ is a given point}$
<b>Standard Form</b>	$Ax + By = C$	$A \text{ and } B \text{ are not both zero. Usually } A \text{ is nonnegative and } A, B, \text{ and } C \text{ are integers whose greatest common factor is } 1.$

**Example 1:** Write  $y + 5 = \frac{2}{3}(x - 6)$  in standard form.

$$\begin{aligned}
 y + 5 &= \frac{2}{3}(x - 6) && \text{Original equation} \\
 3(y + 5) &= 3\left(\frac{2}{3}\right)(x - 6) && \text{Multiply each side by 3.} \\
 3y + 15 &= 2(x - 6) && \text{Distributive Property} \\
 3y + 15 &= 2x - 12 && \text{Distributive Property} \\
 3y &= 2x - 27 && \text{Subtract 15 from each side.} \\
 -2x + 3y &= -27 && \text{Add } -2x \text{ to each side.} \\
 2x - 3y &= 27 && \text{Multiply each side by } -1.
 \end{aligned}$$

Therefore, the standard form of the equation is  $2x - 3y = 27$ .

**Example 2:** Write  $y - 2 = -\frac{1}{4}(x - 8)$  in slope-intercept form.

$$\begin{aligned}
 y - 2 &= -\frac{1}{4}(x - 8) && \text{Original equation} \\
 y - 2 &= -\frac{1}{4}x + 2 && \text{Distributive Property} \\
 y &= -\frac{1}{4}x + 4 && \text{Add 2 to each side.}
 \end{aligned}$$

Therefore, the slope-intercept form of the equation is  $y = -\frac{1}{4}x + 4$ .

### Exercises

Write each equation in standard form.

1.  $y + 2 = -3(x - 1)$

2.  $y - 1 = -\frac{1}{3}(x - 6)$

3.  $y + 2 = \frac{2}{3}(x - 9)$

4.  $y + 3 = -(x - 5)$

5.  $y - 4 = \frac{5}{3}(x + 3)$

6.  $y + 4 = -\frac{2}{5}(x - 1)$

Write each equation in slope-intercept form.

7.  $y + 4 = 4(x - 2)$

8.  $y - 5 = \frac{1}{3}(x - 6)$

9.  $y - 8 = -\frac{1}{4}(x + 8)$

10.  $y - 6 = 3\left(x - \frac{1}{3}\right)$

11.  $y + 4 = -2(x + 5)$

12.  $y + \frac{5}{3} = \frac{1}{2}(x - 2)$