

5-4

Practice

Form K

Point-Slope Form

$$y - y_1 = m(x - x_1)$$

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

1. $(1, 3); m = 5$

$$y - y_1 = m(x - x_1)$$

$$y - 3 = 5(x - 1)$$

2. $(-2, -1); m = -3$

$$y - y_1 = m(x - x_1)$$

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

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

3. $(4, -7); m = -\frac{1}{4}$

$$y - y_1 = m(x - x_1)$$

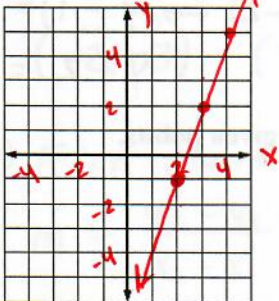
$$y - (-7) = -\frac{1}{4}(x - 4)$$

$$y + 7 = -\frac{1}{4}(x - 4)$$

Graph each equation.

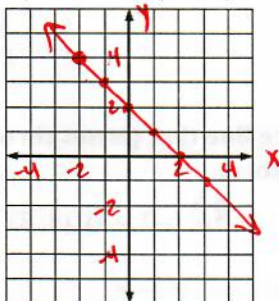
4. $(2, -1)$
 $m = 3$

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



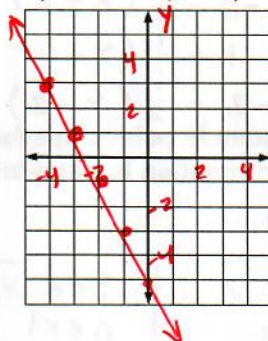
5. $(-2, 4), m = -1$

5. $y - 4 = -1(x + 2)$



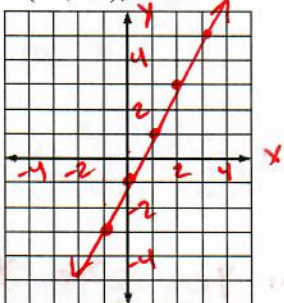
6. $(-4, 3), m = -2$

6. $y - 3 = -2(x + 4)$

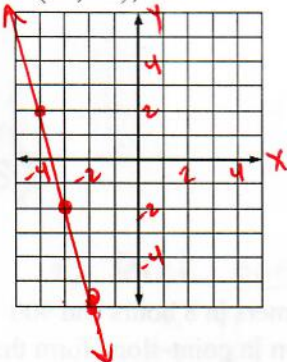


Graph the line that passes through the given point and has the given slope m.

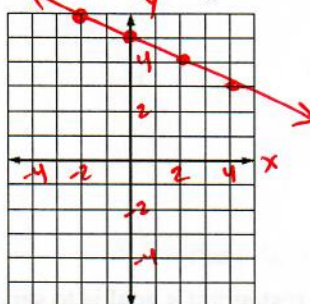
7. $(-1, -3); m = 2$



8. $(-3, -2); m = -4$



9. $(-2, 6); m = -\frac{1}{2}$



10. Write an equation in each of the following forms that has a slope of $-\frac{2}{3}$

a. point-slope form

$$y - y_1 = m(x - x_1)$$

$$y - y_1 = -\frac{2}{3}(x - x_1)$$

b. slope-intercept form

$$y = mx + b$$

$$y = -\frac{2}{3}x + b$$

5-4

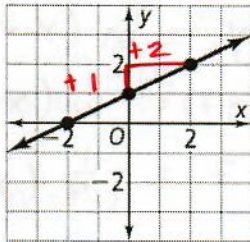
Practice (continued)

Form _____

Point-Slope Form

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

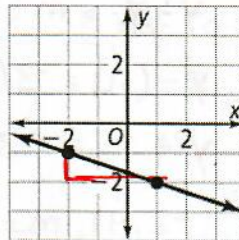
11.



$m = \frac{1}{2}$
pick any of the 3 points

$(-2, 0) \rightarrow y - 0 = \frac{1}{2}(x + 2)$
 $(0, 1) \rightarrow y - 1 = \frac{1}{2}(x - 0)$
 $(2, 2) \rightarrow y - 2 = \frac{1}{2}(x - 2)$

12.



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

pick either point

$(-2, -1) \rightarrow y - (-1) = -\frac{1}{3}(x - (-2))$
 $y + 1 = -\frac{1}{3}(x + 2)$

$(1, -2) \rightarrow y - (-2) = -\frac{1}{3}(x - 1)$
 $y + 2 = -\frac{1}{3}(x - 1)$

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

13. (5, 1), (0, 2)

14. (-2, -3), (4, 3)

[See next page]

15. (-3, -2), (2, 3)

16. (2, 5), (8, -7)

17. A restaurant's goal is to serve 600 customers in 8 hours and 900 customers in 12 hours. Write an equation in point-slope form that represents the number of customers served per hour. What is the graph of the equation?

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

$m = \frac{900 - 600}{12 - 8}$

$m = \frac{300}{4}$

$m = 75$

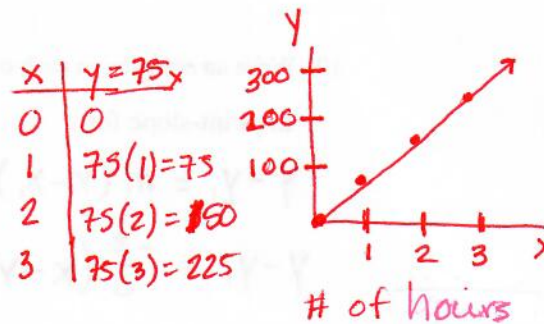
$y - y_1 = m(x - x_1)$

$y - 600 = 75(x - 8)$

$y - 600 = 75x - 600$

$y = 75x$

$x_1 \quad y_1 \quad x_2 \quad y_2$
 $(8, 600) \quad (12, 900)$



WS 5-4 Practice

⑬ $\begin{matrix} x_1 & y_1 & x_2 & y_2 \\ (5, 1) & & (0, 2) & \end{matrix}$

1) Find slope

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

$$m = \frac{2 - 1}{0 - 5}$$

$$m = -\frac{1}{5}$$

2) Pick one point.

$$(x_1, y_1)$$

$$y - y_1 = m(x - x_1)$$

$$y - 2 = -\frac{1}{5}(x - 0)$$

3) Rewrite as $y = mx + b$

$$y - 2 = -\frac{1}{5}(x - 0)$$

$$y - 2 = -\frac{1}{5}x$$

$$y = -\frac{1}{5}x + 2$$

⑭ $\begin{matrix} x_1 & y_1 & x_2 & y_2 \\ (-2, -3) & & (4, 3) & \end{matrix}$

1) Find slope

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

$$m = \frac{3 - (-3)}{4 - (-2)}$$

$$m = \frac{6}{6}$$

$$m = 1$$

2) Pick one point.

$$(x_1, y_1)$$

$$y - y_1 = m(x - x_1)$$

$$y - 3 = 1(x - 4)$$

$$y - 3 = (x - 4)$$

3) Rewrite as $y = mx + b$

$$y - 3 = 1(x - 4)$$

$$y - 3 = x - 4$$

$$y = x - 1$$

⑮ $\begin{matrix} x_1 & y_1 & x_2 & y_2 \\ (-3, -2) & & (2, 3) & \end{matrix}$

1) Find slope

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

$$m = \frac{3 - (-2)}{2 - (-3)}$$

$$m = \frac{5}{5}$$

$$m = 1$$

2) Pick one point

$$(x_1, y_1)$$

$$y - y_1 = m(x - x_1)$$

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

$$y - 3 = (x - 2)$$

3) Rewrite as $y = mx + b$

$$y - 3 = (x - 2)$$

$$y = x + 1$$

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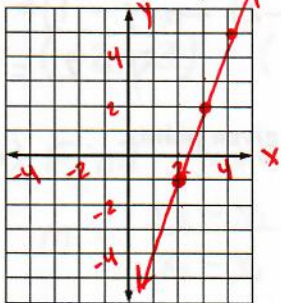
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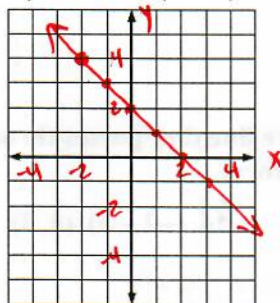
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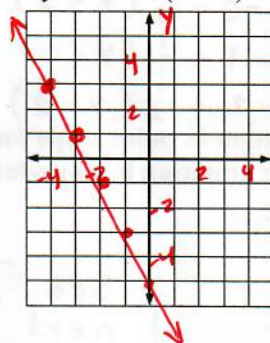
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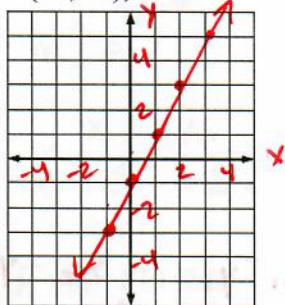
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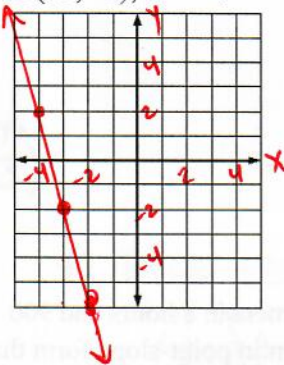
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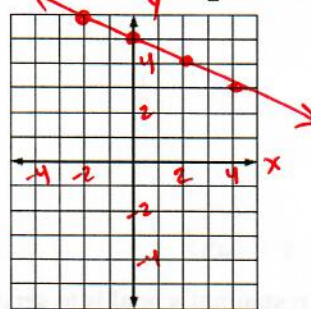
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