

Lesson 6 Reteach

Write Linear Equations

Point-slope form is when an equation is written in the form $y - y_1 = m(x - x_1)$, where (x_1, y_1) is a given point on a nonvertical line and m is the slope of the line.

Example

Write an equation in point-slope form and slope-intercept form for a line that passes through $(2, -5)$ and has a slope of 4.

Step 1

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

Point-slope form

$$y - (-5) = 4(x - 2)$$

$$(x_1, y_1) = (2, -5), m = 4$$

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

Simplify.

Step 2

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

Write the equation.

$$y + 5 = 4x - 8$$

Distributive Property

$$\begin{array}{r} -5 = -5 \\ \hline \end{array}$$

Addition Property of Equality

$$y = 4x - 13$$

Simplify.

Check: Substitute the coordinates of the given point in the equation.

$$y = 4x - 13$$

$$-5 \stackrel{?}{=} 4(2) - 13$$

$$-5 = -5 \checkmark$$

Exercises

Write an equation in point-slope form and slope-intercept form for each line.

1. passes through $(-4, 0)$, slope = 2

$$y - 0 = 2(x + 4)$$

2. passes through $(-2, -1)$, slope = $\frac{1}{2}$

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

3. passes through $(3, -6)$, slope = 2 - 3

$$m = -1$$

$$y + 6 = -1(x - 3)$$

4. passes through $(-4, -3)$, slope = -2

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

Lesson 4 Homework Practice

Slope-Intercept Form

State the slope and the y-intercept for the graph of each equation.

1. $y = 4x + 1$ $m = 4, b = 1$

2. $y = -3x + 5$ $m = -3, b = 5$

3. $-x + y = 4$ $y = x + 4$ $m = 1, b = 4$

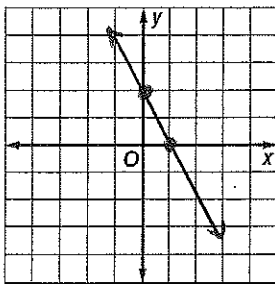
4. $y = \frac{5}{6}x - 3$ $m = \frac{5}{6}, b = -3$

5. $y + 3x = -7$
 $y = -3x - 7$ $m = -3, b = -7$

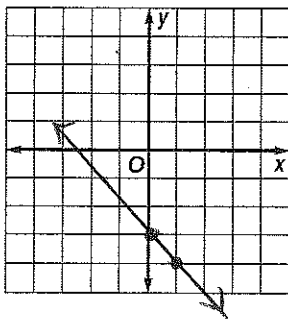
6. $y = \frac{1}{5}x + 2$ $m = \frac{1}{5}, b = 2$

Graph each equation using the slope and the y-intercept.

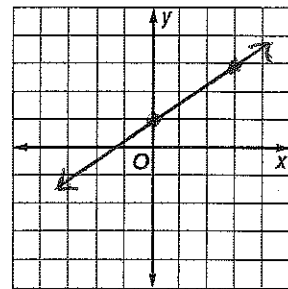
7. $y = -2x + 2$



8. $y + x = -3$ $y = -x - 3$



9. $1 = y - \frac{2}{3}x$ $y = \frac{2}{3}x + 1$



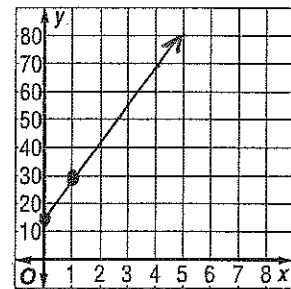
10. **CAMPING** The entrance fee to the national park is \$15. A campsite fee is \$15 per night. The total cost y for a camping trip for x nights can be represented by the equation $y = 15x + 15$.

a. Graph the equation. $m = 15, b = 15$

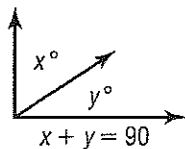
b. Use the graph to find the total cost for 4 nights. $\approx \$70$

c. Interpret the slope and the y-intercept.

Slope is the cost of \$15 per night; the y-intercept is the entrance fee of \$15 also.



11. **GEOMETRY** Use the diagram shown.



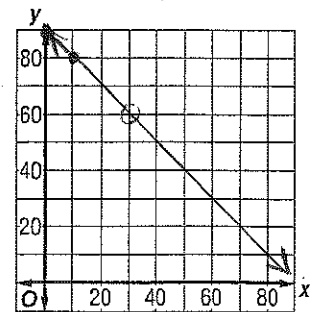
a. Write the equation in slope-intercept form.

$y = -x + 90$

b. Graph the equation.

c. Use the graph to find the value of y if $x = 30$.

$y = 60$



Lesson 2 Skills Practice

Slope

Find the slope of the line that passes through each pair of points.

1. $A(-2, -4), B(2, 4)$

$$x_1, y_1, x_2, y_2$$

$$m = \frac{4 - (-4)}{2 - (-2)} = \frac{8}{4} = 2$$

4. $G(-3, -1), H(-2, -2)$

$$m = -1$$

7. $O(1, -3), P(2, 5)$

$$m = 8$$

10. $U(1, 3), V(1, 5)$

$$m = \text{undefined}$$

13. $A(2, -1), B(-4, -4)$

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

16. $G(7, 4), H(2, 0)$

$$m = \frac{4}{5}$$

19. $O(5, -3), P(-3, 4)$

$$m = -\frac{7}{8}$$

22. $Y(2, 2), Z(-5, -4)$

$$m = \frac{6}{7}$$

2. $C(0, 2), D(-2, 0)$

$$x_1, y_1, x_2, y_2$$

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

5. $K(0, 6), J(-1, 1)$

$$m = 5$$

8. $Q(1, 0), R(3, 0)$

$$m = 0$$

11. $W(2, -2), X(-1, 1)$

$$m = -1$$

14. $C(-2, 2), D(-4, 2)$

$$m = 0$$

17. $K(2, -2), L(2, -3)$

$$m = \text{undefined}$$

20. $Q(-1, -3), R(1, 2)$

$$m = \frac{5}{2}$$

23. $C(0, -2), D(3, -2)$

$$m = 0$$

3. $E(3, 4), F(4, -2)$

$$m = -6$$

6. $K(0, -2), L(2, 4)$

$$m = 3$$

9. $S(0, 4), T(1, 0)$

$$m = -4$$

12. $Y(-5, 0), Z(-2, -4)$

$$m = -\frac{4}{3}$$

15. $E(-1, -4), F(-3, 0)$

$$m = -2$$

18. $M(-1, -1), N(-4, -5)$

$$m = \frac{4}{3}$$

21. $W(3, 25), X(1, 1)$

$$m = 12$$

24. $G(-3, 5), H(-3, 2)$

$$m = \text{undefined}$$