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Study Guide

Student Edition
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Writing Linear Equations in Slope-Intercept Form

The x-coordinate of the point where a line crosses the x-axis is called the ***x*-intercept.** Similarly, the y-coordinate of the point where the line crosses the y-axis is called the ***y*-intercept.**

Slope-Intercept Form of a Linear Equation
Given the slope m and the y-intercept b of a line, the slope-intercept form of an equation of the line is $y = mx + b$.

If an equation is given in standard form $Ax + By = C$ and B is not zero, the slope of the line is $-\frac{A}{B}$ and the y-intercept is $\frac{C}{B}$. The x-intercept is $\frac{C}{A}$ where $A \neq 0$.

Example: Find the x- and y-intercepts of the graph of $5x - 2y = 10$. Then write the equation in slope-intercept form.

Since $A = 5, B = -2$, and $C = 10$,

$\frac{C}{A} = \frac{10}{5}$ $\quad = 2$ $\qquad$ $\frac{C}{B} = \frac{10}{-2}$ $\quad = -5$ $\qquad$ $m = -\frac{A}{B}$ $\quad = \frac{5}{2}$

Thus, the x-intercept is 2, and the y-intercept is -5. The equation of the line in slope-intercept form is $y = \frac{5}{2}x - 5$.

Find the x- and y-intercepts of the graph of each equation.

1. $5x + 4y = 20$

2. $2x - 5y = -7$

3. $4x - 8y = 10$

4. $9x + y = -1$

Write an equation in slope-intercept form of a line with the given slope and y-intercept. Then write the equation in standard form.

5. $m = 6, b = 10$

6. $m = 4, b = 0$

7. $m = -1, b = 3$

8. $m = 2, b = -3$

Find the slope and y-intercept of the graph of each equation. Then write each equation in slope-intercept form.

9. $0.2x + 0.5y = 1.6$

10. $3x + 7y = 10$

11. $6x - y = 9$

12. $14x - 21y = 7$