RECAP 3

Name _____ Date _____

Creating Linear Equations in Two Variables

In this lesson, we

- reviewed the standard, point-slope, and slope-intercept forms of linear equations.
- examined how the information provided can help us decide which form to use to write a linear equation.

Examples

For problems 1–4, write a linear equation to represent the description.

1. A line with slope $\frac{3}{4}$ and y-intercept -5

   $y = \frac{3}{4}x - 5$

2. A line with slope $\frac{1}{2}$ that passes through the point $(6, -4)$

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

3. A line that passes through the points $(-2, 5)$ and $(4, -3)$

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

4. A line with intercept points $(5, 0)$ and $(0, -2)$

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

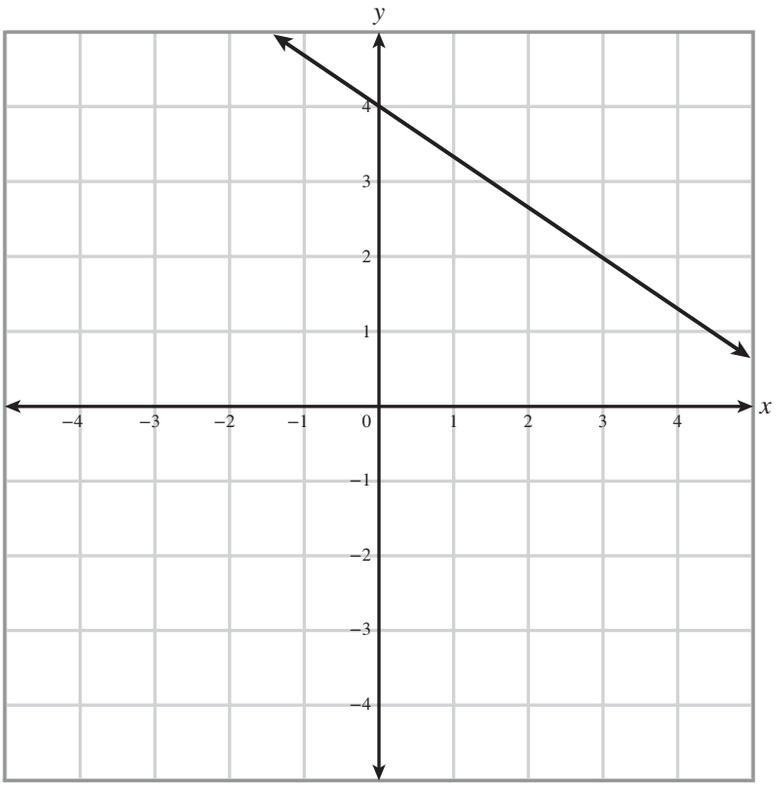
When given the slope and y-intercept, we can write an equation in slope-intercept form by substituting the slope for m and the y-intercept for b in the equation $y = mx + b$.

When given the slope and a point that is not the y-intercept point, we can write an equation in point-slope form by substituting the slope for m, the x-coordinate for x_1, and the y-coordinate for y_1 in the equation $y - y_1 = m(x - x_1)$.

When given two points, we can find the slope by calculating the change in the y-coordinates divided by the change in the x-coordinates.

If one of the points is the y-intercept point, we can write the equation in slope-intercept form. If neither of the points is the y-intercept point, we can write the equation in point-slope form.

For problems 5–7, use the graph to write an equation for the line in the form requested.



5. Slope-intercept form

   $y = -\frac{2}{3}x + 4$

6. Point-slope form

   Sample: $y - 2 = -\frac{2}{3}(x - 3)$

7. Standard form

   Sample: $2x + 3y = 12$

When given a graph, we can write the equation in slope-intercept form by identifying the slope and y-intercept from the graph.

We can also write the equation in point-slope form by identifying the slope and the coordinates of a point from the graph.

To write an equation in standard form from a graph, we can first write the equation in slope-intercept form or point-slope form. Then we rewrite the equation in the form $Ax + By = C$.