

## 3.6 Worksheet

Name \_\_\_\_\_

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

1.  $(1, 9), m = 2$

$$y - 9 = 2(x - 1)$$

$$y - 9 = 2x - 2$$

$$\begin{array}{r} +9 \\ y = 2x + 7 \\ -2x \quad -2x \end{array}$$

$$-1(-2x + y = 7)$$

Point-Slope:  $y - 9 = 2(x - 1)$

Slope-Intercept:  $y = 2x + 7$

Standard:  $2x - y = -7$

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

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

$$y + 1 = -3x + 12$$

$$\begin{array}{r} -1 \\ y = -3x + 11 \\ +3x \quad +3x \end{array}$$

$$3x + y = 11$$

Point-Slope:  $y + 1 = -3(x - 4)$

Slope-Intercept:  $y = -3x + 11$

Standard:  $3x + y = 11$

3.  $(-4, -5), m = \frac{3}{4}$

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

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

$$\begin{array}{r} -5 \\ y = \frac{3}{4}x - 2 \\ -\frac{3}{4}x \quad -\frac{3}{4}x \end{array}$$

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

Point-Slope:  $y + 5 = \frac{3}{4}(x + 4)$

Slope-Intercept:  $y = \frac{3}{4}x - 2$

Standard:  $3x - 4y = 8$

4.  $(3, -6), (-1, 2)$

$$\frac{-6 - 2}{3 - (-1)} = \frac{-8}{4} = -2$$

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

$$y - 2 = -2x - 2$$

$$\begin{array}{r} +2 \\ y = -2x + 0 \\ +2x \quad +2x \end{array}$$

$$2x + y = 0$$

Point-Slope:  $y + 6 = -2(x - 3)$

Slope-Intercept:  $y = -2x + 0$

Standard:  $2x + y = 0$

5.  $(4, -4), (8, -10)$

$$\frac{-4 + 10}{4 - 8} = \frac{6}{-4} = -\frac{3}{2}$$

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

$$y + 4 = -\frac{3}{2}x + 6$$

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

$$2\left(\frac{3}{2}x + y = 2\right)$$

$$y + 10 = -\frac{3}{2}(x - 8)$$

Point-Slope:  $y + 4 = -\frac{3}{2}(x - 4)$

Slope-Intercept:  $y = -\frac{3}{2}x + 2$

Standard:  $3x + 2y = 4$

6.  $(3, 4), (5, -4)$

$$\frac{4 + 4}{3 - 5} = \frac{8}{-2} = -4$$

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

$$y - 4 = -4x + 12$$

$$y = -4x + 16$$

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

Point-Slope:  $y - 4 = -4(x - 3)$

Slope-Intercept:  $y = -4x + 16$

Standard:  $4x + y = 16$

7. For a science experiment, Mala measured the height of a plant every week. She recorded the information in the table. Assuming the growth is linear, write an equation in point-slope form to represent the height  $y$  of the plant after  $x$  weeks.

Weeks	Height (in)
5	13
10	14

8. After 2 seconds on a penalty kick in soccer, the ball travels 160 feet. After 2.75 seconds on the same kick, the ball travels 220 feet. Write an equation in point-slope form to represent the distance  $y$  of the ball after  $x$  seconds.

Write each equation in standard form.

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

$$\begin{aligned} y - 4 &= -3x + 9 \\ +4 &\quad +4 \\ y &= -3x + 13 \\ +3x &\quad +3x \end{aligned}$$

10.  $y + 9 = 2(x + 5)$

$$\begin{aligned} y + 9 &= 2x + 10 \\ -9 &\quad -9 \\ y &= 2x + 1 \\ -2x &\quad -2x \\ -1(-2x + y = 1) \end{aligned}$$

Standard:  $3x + y = 13$

Standard:  $2x - y = -1$

11. Draw a line connecting the form of the equation to the correct equations.

