

Chapter 2.4

Write an equation in slope-intercept form for the line that satisfies each set of conditions.

30) slope  $\frac{3}{4}$ , passes through  $(-6, 9)$

$$y = mx + b$$

$$9 = \frac{3}{4}(-6) + b$$

$$9 = \frac{-18}{4} + b$$

$$9 = \frac{-18}{4} + b$$

$$9 = -4\frac{1}{2} + b$$

$$\begin{array}{r} +4\frac{1}{2} \\ +4\frac{1}{2} \\ \hline 13\frac{1}{2} = b \end{array}$$

$$y = \frac{3}{4}x + 13\frac{1}{2}$$

31) passes through  $(-1, 2)$ , parallel to the graph

of  $x - 3y = 14$

use  $y = mx + b$   
to find slope  
(solve for y)

$$\begin{array}{r} x - 3y = 14 \\ -x \quad \quad -x \\ \hline -3y = \frac{-x}{-3} + \frac{14}{-3} \\ \frac{-3y}{-3} = \frac{-x}{-3} - \frac{14}{3} \end{array}$$

$$y = \frac{1}{3}x - \frac{14}{3}$$

There is the slope

same slope

Find b (y-intercept)

$$y = mx + b$$

$$2 = \frac{1}{3}(-1) + b$$

$$2 = -\frac{1}{3} + b$$

$$\begin{array}{r} +\frac{1}{3} \\ +\frac{1}{3} \\ \hline 2\frac{1}{3} = b \end{array}$$

$$2\frac{1}{3} = b$$

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

Chapter 2.4 continued

32) passes through  $(3, -8)$  and  $(-3, 2)$

need slope...  $m = \frac{y_2 - y_1}{x_2 - x_1}$   $(3, -8)$ ,  $(-3, 2)$   
 $x_1, y_1$ ,  $x_2, y_2$

$$m = \frac{2 - (-8)}{-3 - 3} = \frac{2 + 8}{-6} = \frac{10}{-6} = -\frac{5}{3}$$

$$m = -\frac{5}{3}$$

choose a point...  $(3, -8)$

$$y = mx + b$$

$$-8 = -\frac{5}{3}(3) + b$$

$$-8 = -5 + b$$

$$\begin{array}{r} +5 \\ -8 = -5 + b \\ \hline -3 = b \end{array}$$

$$-3 = b$$

$$y = mx + b$$

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

33) passes through  $(3, 2)$ , perpendicular to the graph of  $4x - 3y = 12$

need slope...  $4x - 3y = 12$

$$\begin{array}{r} -4x \\ -3y = -4x + 12 \\ \hline -3 \end{array}$$

$$\begin{array}{r} -4x \\ -3y = -4x + 12 \\ \hline -3 \end{array}$$

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

$$y = mx + b$$

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

slopes are opposite reciprocals

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

$$y = mx + b$$

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

$$2 = -4 + b$$

$$\begin{array}{r} +4 \\ 2 = -4 + b \\ \hline 6 = b \end{array}$$

$$6 = b$$

Assignment 2.4  
Writing Linear Equations

Write an equation in slope-intercept form for the line that satisfies each set of conditions.

slope  $\frac{3}{4}$ , passes through  $(-6, 9)$

$$y = mx + b$$

$$\begin{array}{r} 9 = -4\frac{1}{2} + b \\ +4\frac{1}{2} \quad +4\frac{1}{2} \\ \hline \square = b \end{array}$$

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

$$9 + 4\frac{1}{2} = \square$$

- A) 13.5  
B) 3

passes through  $(-1, 2)$ , parallel to the graph of  $x - 3y = 14$

of  $x - 3y = 14$   
use  $y = mx + b$   
to find slope  
(solve for y)

$$\begin{array}{r} x - 3y = 14 \\ -x \quad -x \\ \hline -3y = -x + 14 \\ -3 \quad -3 \quad -3 \end{array}$$

$$y = \frac{1}{3}x - \frac{14}{3}$$

slope

Find b (y-intercept)

$$\begin{array}{r} y = mx + b \\ 2 = \frac{1}{3}(-1) + b \\ 2 = -\frac{1}{3} + b \\ +\frac{1}{3} = +\frac{1}{3} \\ \hline \square = b \end{array}$$

$$y = \frac{1}{3}x + \square$$

$$2 + \frac{1}{3} = \square$$

- A)  $2\frac{1}{3}$   
B) 23

Assignment 2.4  
Writing Linear Equations

passes through(3, -8) and (-3, 2)

need slope...  $m = \frac{y_2 - y_1}{x_2 - x_1}$       (3, -8), (-3, 2)  
 $x_1$   $y_1$   $x_2$   $y_2$

$$m = \frac{2 - (-8)}{-3 - 3} = \frac{2 + 8}{-6} = \frac{10}{-6} = \frac{\text{green}}{\text{red}}$$

$$m = \frac{\text{green}}{\text{red}}$$

$$10 \div 2 = \text{green}$$

$$-6 \div 2 = \text{red}$$

A) 12  
B) 5

A) 3  
B) -3

Chose a point... (3, -8)

$$y = mx + b$$

$$y = mx + b$$

$$-8 = -\frac{5}{3}(3) + b$$

$$\begin{array}{r} -8 = -5 + b \\ +5 = +5 \\ \hline \text{blue} = b \end{array}$$

$$-8 + 5 = \text{blue}$$

A) -3  
B) 13

$$y = -\frac{5}{3}x + \text{blue}$$

Assignment 2.4  
Writing Linear Equations

**passes through (3, 2), perpendicular to the graph of  $4x - 3y = 12$**

need slope...  $4x - 3y = 12$

$$\frac{-4x}{-3} = \frac{-4x + 12}{-3}$$

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

slopes are opposite reciprocals

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

$$y = mx + b$$

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

$$2 = -4 + b$$

$$\frac{+4}{+4} = \frac{+4}{+4}$$
$$\square = b$$

$$y = mx + b$$

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

$$2 + 4 = \square$$

- A) 6  
B) 8

Assignment 2.4  
Writing Linear Equations

Write an equation in slope-intercept form for the line that satisfies each set of conditions.

slope  $\frac{3}{4}$ , passes through (-6, 9)

$$y = mx + b$$

$$9 = \frac{3}{4}(-6) + b$$

$$9 = \frac{\boxed{\phantom{000}}}{4} + b$$

$$9 = \boxed{\phantom{000}} + b$$

$$\begin{array}{r} +4\frac{1}{2} \\ \hline \boxed{\phantom{000}} = b \end{array}$$

$$y = \boxed{\phantom{000}}x + \boxed{\phantom{000}}$$

$$\begin{array}{l} \frac{3}{4} \cdot -6 = \boxed{\phantom{000}} \\ \boxed{\phantom{000}} \div 4 = \boxed{\phantom{000}} \\ 9 + \boxed{\phantom{000}} = \boxed{\phantom{000}} \end{array}$$

passes through (-1, 2), parallel to the graph of  $x - 3y = 14$

of  $x - 3y = 14$

use  $y = mx + b$   
to find slope  
(solve for y)

$$\begin{array}{r} x - 3y = 14 \\ -x \quad -x \\ \hline -3y = -x + 14 \\ -3 \quad -3 \quad -3 \end{array}$$

$$y = \frac{1}{3}x - \frac{14}{3}$$

slope

Find b (y-intercept)

$$y = mx + b$$

$$2 = \frac{1}{3}(-1) + b$$

$$\begin{array}{r} 2 = \boxed{\phantom{000}} + b \\ +\frac{1}{3} = +\frac{1}{3} \\ \hline = b \end{array}$$

$$\boxed{\phantom{000}}$$

$$y = \boxed{\phantom{000}}x + \boxed{\phantom{000}}$$

$$\begin{array}{l} \frac{1}{3} \cdot -1 = \boxed{\phantom{000}} \\ 2 + \boxed{\phantom{000}} = \boxed{\phantom{000}} \end{array}$$

Assignment 2.4  
Writing Linear Equations

passes through(3, -8) and (-3, 2)

need slope...  $m = \frac{y_2 - y_1}{x_2 - x_1}$       (3, -8), (-3, 2)  
 $x_1 \quad y_1 \quad x_2 \quad y_2$

$$m = \frac{2 - (-8)}{-3 - 3} = \frac{2 + 8}{-6} = \frac{\square}{\square} = \frac{\square}{\square}$$

$$m = \frac{\square}{\square}$$

$$\begin{aligned} 2 + 8 &= \square \\ -3 - 3 &= \square \\ \square \div 2 &= \square \\ \square \div 2 &= \square \end{aligned}$$

Chose a point... (3, -8)

$$y = mx + b$$

$$y = mx + b$$

$$-8 = -\frac{5}{3}(3) + b$$

$$-8 = -5 + b$$

$$\square = \frac{+5}{+5} = b$$

$$-8 + 5 = \square$$

$$y = \frac{\square}{\square} x + \square$$

Assignment 2.4  
Writing Linear Equations

passes through (3, 2), perpendicular to the graph of  $4x - 3y = 12$

need slope...  $4x - 3y = 12$

$$\frac{-4x}{-3} = \frac{-4x + 12}{-3}$$

$$y = \frac{4}{3}x \quad \square$$

slopes are opposite reciprocals

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

$$y = mx + b$$

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

$$2 = \square + b$$

$$\frac{+4}{\square} = \frac{+4}{\square}$$

$$12 \div -3 = \square$$

$$-4/3 \bullet 3 = \square$$

$$2 + 4 = \square$$

$$y = mx + b$$

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

**LANDSCAPING**

Mr. Ryan is planning to plant rows of roses in a garden he is designing for a client. Before planting, he sketches out his plan on a coordinate grid. A row of white roses will be planted along the line with equation  $y = 2x + 1$ . A row of red roses will pass through the point (3, 5). What equation would represent the line for the row of red roses?



Assignment 2.4  
Writing Linear Equations

Write an equation in slope-intercept form for the line that satisfies each set of conditions.

slope  $\frac{3}{4}$ , passes through  $(-6, 9)$

$$y = mx + b$$

$$9 = -4\frac{1}{2} + b$$

$$+4\frac{1}{2} \quad +4\frac{1}{2}$$

$$\boxed{\phantom{00}} = b$$

$$y = \frac{3}{4}x + \boxed{\phantom{00}}$$

$$9 + 4\frac{1}{2} = \boxed{\phantom{00}}$$

passes through  $(-1, 2)$ , parallel to the graph of  $x - 3y = 14$

of  $x - 3y = 14$   
use  $y = mx + b$   
to find slope  
(solve for y)

$$x - 3y = 14$$

$$\frac{-x}{-3} = \frac{-x}{-3} + \frac{14}{-3}$$

$$y = \frac{1}{3}x - \frac{14}{3}$$

slope

Find b (y-intercept)

$$y = mx + b$$

$$2 = \frac{1}{3}(-1) + b$$

$$2 = -\frac{1}{3} + b$$

$$+\frac{1}{3} = +\frac{1}{3}$$

$$\boxed{\phantom{00}} = b$$

$$2 + \frac{1}{3} = \boxed{\phantom{00}}$$

$$y = \frac{1}{3}x + \boxed{\phantom{00}}$$

Assignment 2.4  
Writing Linear Equations

passes through(3, -8) and (-3, 2)

need slope...  $m = \frac{y_2 - y_1}{x_2 - x_1}$       (3, -8), (-3, 2)  
 $x_1 \quad y_1 \quad x_2 \quad y_2$

$$m = \frac{2 - (-8)}{-3 - 3} = \frac{2 + 8}{-6} = \frac{10}{-6} = \frac{\text{green}}{\text{red}}$$

$$m = \frac{\text{green}}{\text{red}}$$

$$\begin{aligned} 10 \div 2 &= \text{green} \\ -6 \div 2 &= \text{red} \end{aligned}$$

Chose a point... (3, -8)

$$y = mx + b$$

$$y = mx + b$$

$$-8 = -\frac{5}{3}(3) + b$$

$$-8 = -5 + b$$

$$\boxed{\text{blue}} = \frac{+5 = +5}{b}$$

$$-8 + 5 = \boxed{\text{blue}}$$

$$y = \frac{\text{green}}{\text{red}} x + \boxed{\text{blue}}$$

Assignment 2.4  
Writing Linear Equations

**passes through (3, 2), perpendicular to the graph of  $4x - 3y = 12$**

need slope...  $4x - 3y = 12$

$$\begin{array}{r} \frac{-4x}{-3} = \frac{-4x + 12}{-3} \end{array}$$

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

slopes are opposite reciprocals

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

$$y = mx + b$$

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

$$2 = -4 + b$$

$$\frac{+4}{+4} = \frac{+4}{+4}$$
$$\square = b$$

$$y = mx + b$$

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

$$2 + 4 = \square$$

Assignment 2.4  
Writing Linear Equations

**Write an equation in slope-intercept form for the line that satisfies each set of conditions.**

slope  $\frac{3}{4}$ , passes through  $(-6, 9)$

passes through  $(-1, 2)$ , parallel to the graph of  $x - 3y = 14$

passes through  $(3, -8)$  and  $(-3, 2)$

passes through  $(3, 2)$ , perpendicular to the graph of  $4x - 3y = 12$

**LANDSCAPING**

**Mr. Ryan is planning to plant rows of roses in a garden he is designing for a client. Before planting, he sketches out his plan on a coordinate grid. A row of white roses will be planted along the line with equation  $y = 2x + 1$ . A row of red roses and pass through the point  $(3, 5)$ . What equation would represent the line for the row of red roses?**

Assignment 2.4  
Writing Linear Equations

Write an equation in **slope-intercept form** for the line that satisfies each set of conditions.  **$y=mx+b$**

slope  $\frac{3}{4}$ , passes through  $(-6, 9)$

passes through  $(-1, 2)$ , parallel to the graph of  $x - 3y = 14$

passes through  $(3, -8)$  and  $(-3, 2)$

passes through  $(3, 2)$ , perpendicular to the graph of  $4x - 3y = 12$

#### LANDSCAPING

Mr. Ryan is planning to plant rows of roses in a garden he is designing for a client.

Before planting, he sketches out his plan on a coordinate grid.

A row of white roses will be planted along the **line with equation  $y = 2x + 1$** .

A row of red roses and pass through the **point  $(3, 5)$** .

**What equation** would represent the line for the row of red roses?