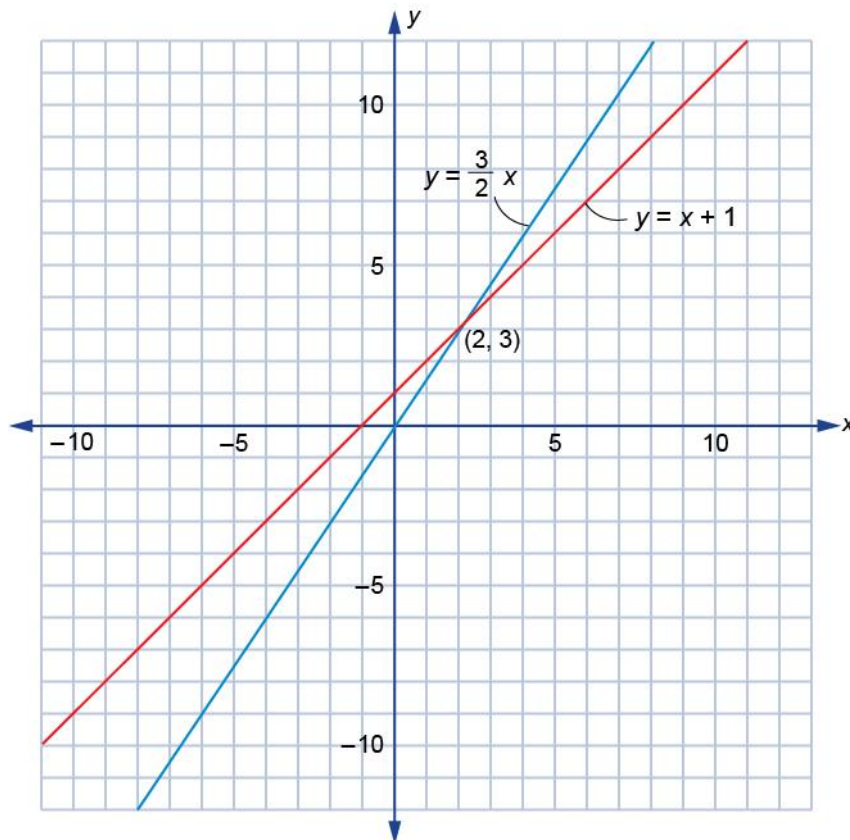


Module 7 Lesson 5

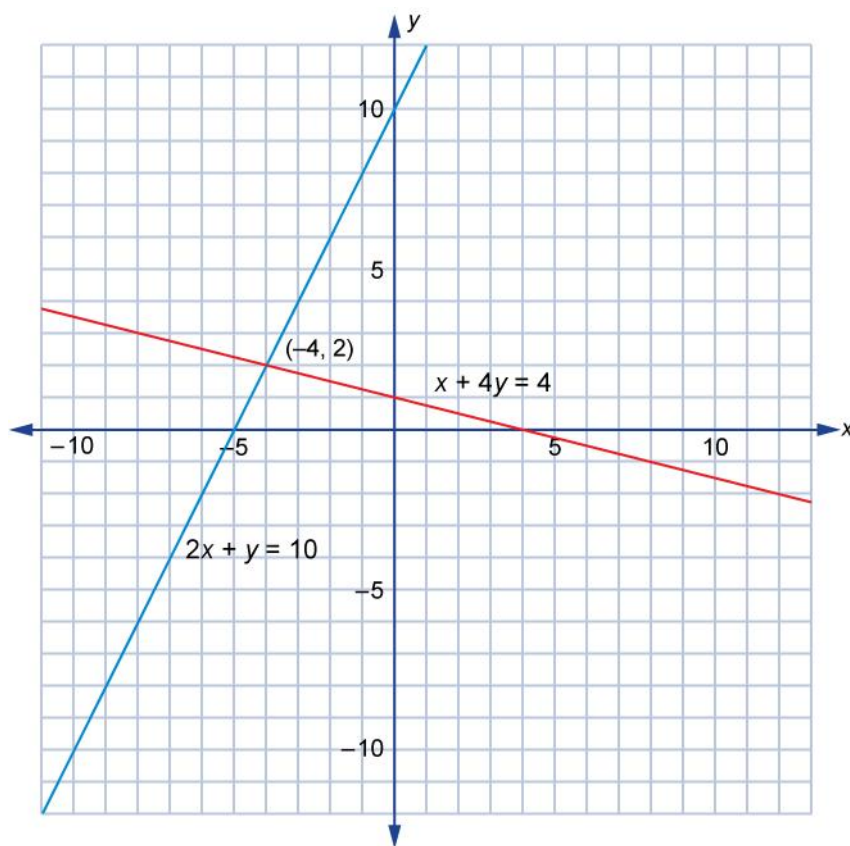
Are You Ready? Possible Solutions

1. The solution is the point where the lines intersect.
2. a. The graph should look like the following.



The solution to the linear system is $(2, 3)$.

b. The graph should look like the following.



The solution to the linear system is $(-4, 3)$.

3. a. Parallel lines are lines that do not **intersect**.
b. The slopes of parallel lines are **equal**.
4. Lines A, B, and D are parallel. They each have a slope of $\frac{1}{2}$.

5. a. $x - 4y = 4$ (1)
 $3x + 2y = -16$ (2)

Solve equation (1) for x
 $x = 4 + 4y$ (1)

Sub this expression into x in equation (2)

$$\begin{aligned} 3(4 + 4y) + 2y &= -16 \\ 12 + 12y + 2y &= -16 \\ 12 + 14y &= -16 \\ 14y &= -16 - 12 \\ 14y &= -28 \\ y &= -2 \end{aligned}$$

Sub $y = -2$ into equation (1) to find x

$$\begin{aligned} x - 4(-2) &= 4 \\ x + 8 &= 4 \\ x &= 4 - 8 \\ x &= -4 \end{aligned}$$

Verify in equation (2)

$$\begin{aligned} 3(-4) + 2(-2) &= -16 \\ -12 + -4 &= -16 \\ -16 &= -16 \end{aligned}$$

The solution of the system is $(-4, -2)$.

b. Multiply the first equation by 3.

$$\begin{array}{rclcl} 2 & 4x + 3y = 16 & \rightarrow & 8x + 6y = 32 & \leftarrow \text{Equation 1} \\ 3 & 5x - 2y = 43 & \rightarrow & 15x - 6y = 129 & \leftarrow \text{Equation 2} \end{array}$$

Add the equations, and solve for x.

$$\begin{array}{r} 8x + 6y = 32 \\ + (15x - 6y = 129) \\ \hline 23x = 161 \\ \frac{23x}{23} = \frac{161}{23} \\ x = 7 \end{array}$$

Solve for y by subbing $x = 7$ into equation (1)

$$4x + 3y = 16$$

$$4(7) + 3y = 16$$

$$28 + 3y = 16$$

$$3y = -12$$

$$\frac{3y}{3} = \frac{-12}{3}$$

$$y = -4$$

Verify in equation (2)

$$5x - 2y = 43$$

$$5(7) - 2(-4) = 43$$

$$35 + 8 = 43$$

$$43 = 43$$

The solution of this system is $(7, -4)$.