What you will learn about:
Use the Rectangular Coordinate System

Ordered Pair

\((x, y)\)

\(x\) = left/right
\(y\) = up/down

Plot each point in the rectangular coordinate system and identify the quadrant in which the point is located:

\(a\) \((-5, 4)\)  
\(b\) \((-3, -4)\)  
\(c\) \((2, -3)\)  
\(d\) \((-2, 3)\)  
\(e\) \((3, 5)\).
Name the ordered pair of each point shown in the rectangular coordinate system.

A \((-3, 3)\)  
B \((-1, -3)\)  
C \((2, 4)\)  
D \((4, -4)\)  
E \((0, -2)\)  
F \((-3, 0)\)  

Determine which ordered pairs are solutions to the equation \(x + 4y = 8\):

a) \((0, 2)\)  
\[0 + 4(2) = 8\]  
\[8 = 8\]  
\(\text{Yes}\)  

b) \((2, -4)\)  
\[2 + 4(-4) = 8\]  
\[-14 < 8\]  
\(\text{No}\)  

c) \((-4, 3)\)  
\[-4 + 4(3) = 8\]  
\[-4 + 12 = 8\]  
\[8 = 8\]  
\(\text{Yes}\)

Complete the table to find three solutions to the equation \(y = 4x - 2\):

<table>
<thead>
<tr>
<th>(x)</th>
<th>(y)</th>
<th>((x, y))</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>-2</td>
<td>((0, -2))</td>
</tr>
<tr>
<td>-1</td>
<td>-6</td>
<td>((-1, -6))</td>
</tr>
<tr>
<td>2</td>
<td>6</td>
<td>((2, 6))</td>
</tr>
</tbody>
</table>

\(y(2) = 2\)
Complete the table to find three solutions to this equation: $3x - 4y = 12$.

<table>
<thead>
<tr>
<th>$x$</th>
<th>$y$</th>
<th>$(x, y)$</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>-3</td>
<td>$(0, -3)$</td>
</tr>
<tr>
<td>4</td>
<td>0</td>
<td>$(4, 0)$</td>
</tr>
<tr>
<td>-4</td>
<td>6</td>
<td>$(4, -4)$</td>
</tr>
</tbody>
</table>

Find three solutions to this equation $y = -3x + 2$.

<table>
<thead>
<tr>
<th>$x$</th>
<th>$y$</th>
</tr>
</thead>
<tbody>
<tr>
<td>-1</td>
<td>5</td>
</tr>
<tr>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Find three solutions to this equation $4x + 2y = 8$.

- $(0, 4)$  
  $4(0) + 2(4) = 8$

- $(2, 0)$  
  $4(2) + 2(0) = 8$

- $(1, 2)$  
  $4(1) + 2(2) = 8$

$4 + 4y = 8$
What you will learn about:
Graph Linear Equations in Two Variables

Find three solutions to the equation: $3x + 2y = 6$
$(0,3) (2,0) (4,-3)$

Graph the solutions on a coordinate grid.

Draw a line through the points.

Graph the equation by plotting points:
$y = -2x + 4$

<table>
<thead>
<tr>
<th>$x$</th>
<th>$y$</th>
</tr>
</thead>
<tbody>
<tr>
<td>-1</td>
<td>6</td>
</tr>
<tr>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>
Graph the equation by plotting points:

\[
y = \frac{1}{4}x + 2
\]

Vertical Line

Graph the equation by plotting points:

\[
x = 3
\]

Graph the equation by plotting points:

\[
y = -2
\]

Horizontal Line
Graph \( y = 3x \) and \( y = 3 \) on the same rectangular coordinate system

\[
\begin{array}{c|c|c}
X & 3x & (x, 3) \\
-1 & -3 & (-1, -3) \\
0 & 0 & (0, 0) \\
1 & 3 & (1, 3)
\end{array}
\]

Graph \( y = 5x \) and \( x = 5 \) on the same rectangular coordinate system

\[
\begin{array}{c|c|c}
X & 5x & (5, x) \\
-1 & -5 & (-1, -5) \\
0 & 0 & (0, 0) \\
1 & 5 & (1, 5)
\end{array}
\]

\[
\begin{array}{c|c}
X & Y \\
-1 & -5 \\
0 & 5 \\
1 & 1
\end{array}
\]
What you will learn about:
Graph with Intercepts

Intercepts of a graph

Finding the x and y intercepts of the graph

Find the intercepts of \(2x + y = 6\)

- **x-intercept**: \(2y + 0 = 6\)
  - \(y = 3\)
  - \((3,0)\)

- **y-intercept**: \(2(0) + y = 6\)
  - \(y = 6\)
  - \((0,6)\)

Find the intercepts of \(3x + 6y = 24\)

- **x-intercept**: \(3y = 0\)
  - \((8,0)\)

- **y-intercept**: \(6y = 0\)
  - \((0,4)\)

Find the intercepts of \(4x - 3y = 12\)

- **x-intercept**: \(4x - 3(0) = 12\)
  - \((3,0)\)

- **y-intercept**: \(4(0) - 3y = 12\)
  - \((0,-4)\)

Graph using the intercepts

\(-x + 2y = 6\)