Example: Graph \(6x - 3y = 15\).

We'll show three methods.

**Plot Points Method**

Pick x's, such as negative integers, zero, and positive integers. We can choose \(x = -2, 0, 3\).

Place the values in the column of a table.

<table>
<thead>
<tr>
<th>(x)</th>
<th>(y)</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

To find the y's that go with x's, we do some substitutions of the x-values.

\[
\begin{array}{ccc}
6(-2) - 3y &= 15 \\
-12 - 3y &= 15 \\
-3y &= 27 \\
y &= -9 \\
\hline
6(0) - 3y &= 15 \\
0 - 3y &= 15 \\
-3y &= 15 \\
y &= -5 \\
\hline
6(3) - 3y &= 15 \\
18 - 3y &= 15 \\
-3y &= -3 \\
y &= 1 \\
\end{array}
\]

Fill in the table:

<table>
<thead>
<tr>
<th>(x)</th>
<th>(y)</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2</td>
<td>-9</td>
</tr>
<tr>
<td>0</td>
<td>-5</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
</tr>
</tbody>
</table>

S. Smith, Pierce/El Camino/Santa Monica Colleges.
Plot the points and draw the line.

**x & y-Intercepts Method**

Pick \( x = 0 \) and find \( y \).

\[
\begin{align*}
6(0) - 3y &= 15 \\
0 - 3y &= 15 \\
-3y &= 15 \\
y &= -5
\end{align*}
\]

Pick \( y = 0 \) and find \( x \).

\[
\begin{align*}
6x - 3(0) &= 15 \\
6x &= 15 \\
x &= 5/2
\end{align*}
\]

Place values in a table.

<table>
<thead>
<tr>
<th>( x )</th>
<th>( y )</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>-5</td>
</tr>
<tr>
<td>5/2</td>
<td>0</td>
</tr>
</tbody>
</table>

Plot points and draw line.
Slope-Intercept Method

Put equation into $y = mx + b$ form.

$6x - 3y = 15$

$-3y = -6x + 15$

$y = \frac{-6x + 15}{-3}$

$y = 2x - 5$

$y = mx + b$

Identify slope $m = 2$

$y$-intercept $= (0, b) = (0, -5)$

Write slope as a fraction. $m = 2 = \frac{+2}{+1} = \frac{\text{rise}}{\text{run}}$

Multiply slope by $\frac{-1}{1}$ to get a second version of slope. $\frac{-1 \cdot 2}{-1 \cdot 1} = \frac{-2}{-1}$

Graph the $y$-intercept and use slope to get more points.