Name: _____ Date: _____

3.4 Graphing Linear Equations in Standard Form

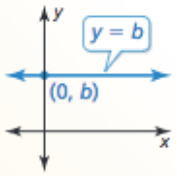
Essential Question: _____

The standard form of a _____ equation is _____ where A, B and C are real numbers and A and B are not both _____.

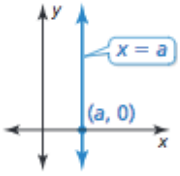
Consider what happens when A=0 or when B=0. When A=0, the equation becomes _____ or _____. Because _____ is a constant, you can write _____. Similarly, when B=0, the equation becomes Ax=C, or _____ and you can write x=a.

Core Concept

Horizontal and Vertical Lines



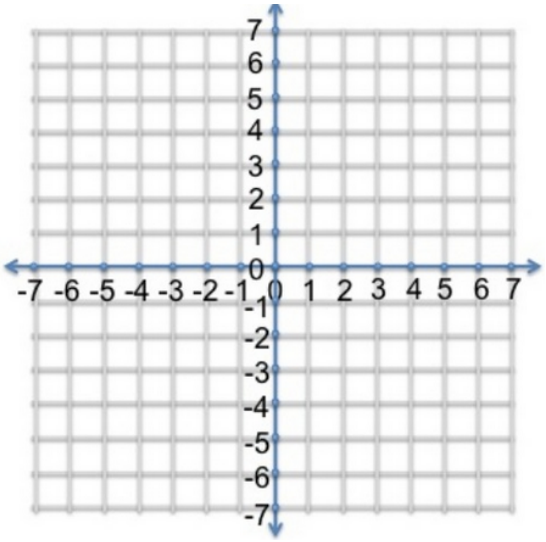
The graph of $y = b$ is a horizontal line. The line passes through the point $(0, b)$.



The graph of $x = a$ is a vertical line. The line passes through the point $(a, 0)$.

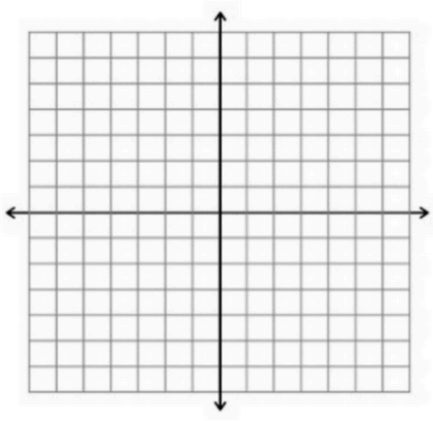
EXAMPLE 1 Horizontal and Vertical Lines

Graph (a) $y = 4$ and (b) $x = -2$.



Extra Examples

***graph y = -1.5**



*** graph x = 1**

Using Intercepts to Graph Linear Equations

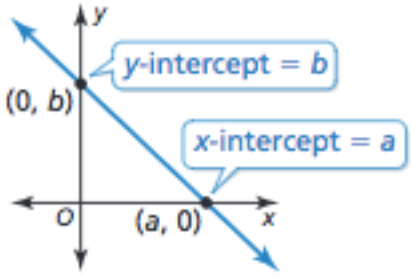
You can use the fact that two points determine a line to graph a linear equation. Two convenient points are the points where the graph crosses the axes.

Core Concept

Using Intercepts to Graph Equations

The **x-intercept** of a graph is the x-coordinate of a point where the graph crosses the x-axis. It occurs when $y = 0$.

The **y-intercept** of a graph is the y-coordinate of a point where the graph crosses the y-axis. It occurs when $x = 0$.



To graph the linear equation $Ax + By = C$, find the intercepts and draw the line that passes through the two intercepts.

- To find the x-intercept, let $y = 0$ and solve for x.
- To find the y-intercept, let $x = 0$ and solve for y.

EXAMPLE 2 Using Intercepts to Graph a Linear Equation

Use intercepts to graph the equation $3x + 4y = 12$.