Section 2.4: Graphing Lines
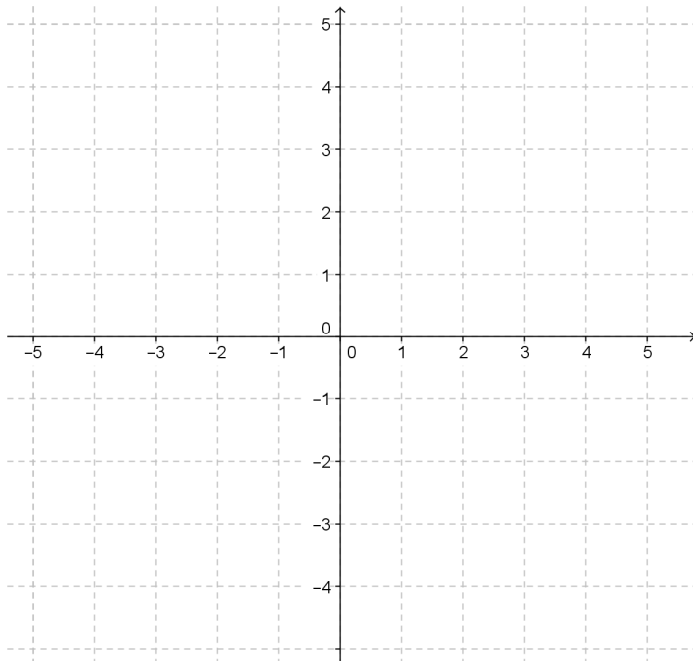
The graph of an equation of the form $y = Ax + B$ is a line.
If A > 0, then the graph will RISE as we move from left to the right.
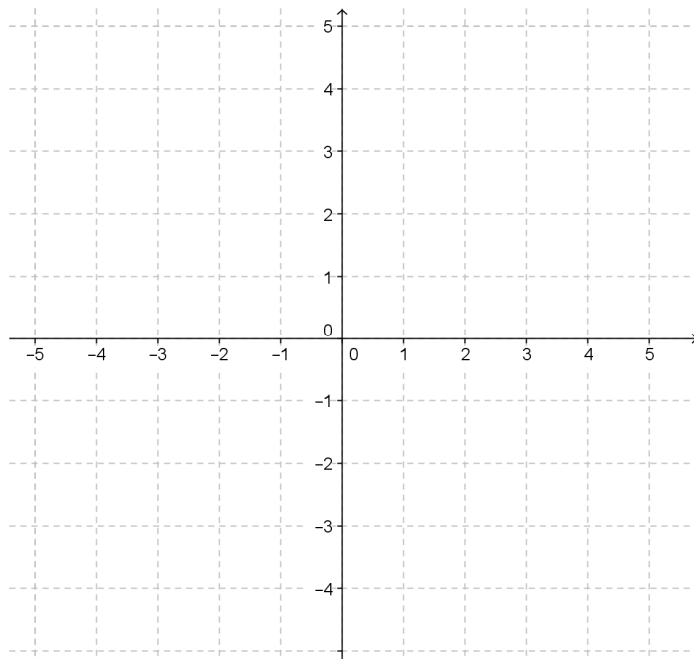If A < 0, then the graph will FALL as we move from left to the right.

Example 1: Graph the line $y = x - 1$
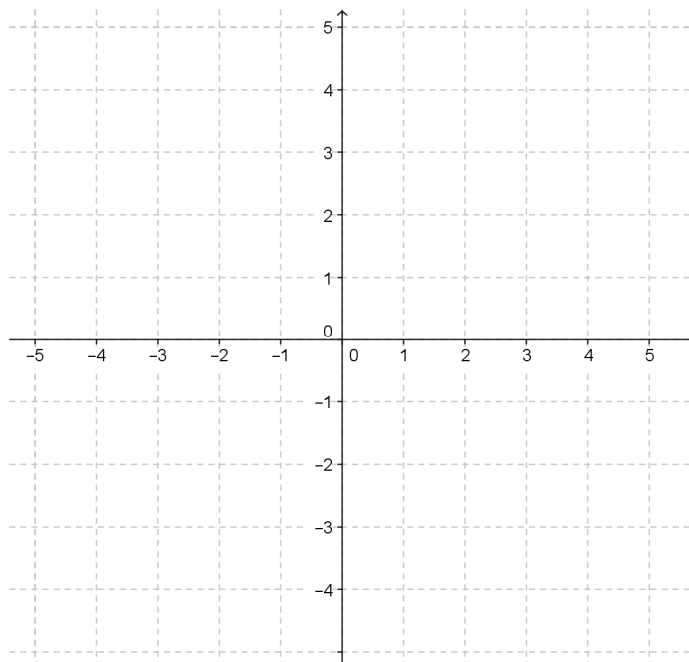
Start by filling in the missing values

x	y
-2	
1	
3	

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Example 2: Graph the line $y = -2x + 2$

Start by filling in the missing values

x	y
-1	
0	
1	
	-4
	6

Example 3: Fill in the table for $y = 3x - 6$

x	Y
-2	
0	
1	
	9
	0

Equations of a Line

Forms of Equations:

1. The **standard form** of a linear equation is given by $Ax + By = C$ where A and B cannot both be equal to zero.
   Example: $2x - 4y = 12$

2. The **point-slope form** of a linear equation is given by $y - y_1 = m(x - x_1)$ where m is the slope and the line passes through the point (x_1, y_1).
   Example: $y + 3 = -2(x - 5)$

3. The **slope-intercept form** of a linear equation is given by $y = mx + b$ where m is the slope and b is the y-intercept.
   Example: $y = 2x + 1$

Example 4: Find an equation for the line with a slope of 4 and a y-intercept of 1.

Example 5: Find an equation for the line with a slope of -3 and a y-intercept of -2.

Example 6: Find an equation for the line with a slope of -5 and passing through the point (2, 8).

Example 7: Find an equation for the line with a slope of 4/3 and passing through the point (6, 26).

Example 8: Find an equation in slope-intercept form for the line that passes through the points (-6, 2) and (0, -4).

Example 9: Find an equation in slope-intercept form for the line that passes through the points (-2, 2) and (4, -2).