Lesson 1.6.1: Describing Graphs of Linear Equations Using the Slope and Intercepts

How to Describe a Graph Using the Slope?
1. Change the equation to the form $y = mx + b$. m is the slope and b is the y-intercept.
2. Describe the graph using the slope.

Value/Sign of m	Trend of Graph
Positive	Rises from left to right
Negative	Falls from left to right
Zero	Horizontal line
Undefined	Vertical line

How to Describe a Graph Using the Intercepts?
1. Let $y = 0$ and solve for x to get the x-intercept a.
2. Let $x = 0$ and solve for y to get the y-intercept b.
3. Describe the graph using the intercepts.

Signs/Values of a and b	Trend of Graph
Same signs	Falls from left to right
Different signs	Rises from left to right
$a = $ undefined, $b \in \mathbb{R}$	Horizontal line
$a \in \mathbb{R}, b = $ undefined	Vertical line

Practice Exercises 1.6.1
A. Determine the slope of each linear equation and describe the graph.

1. $y = 2x - 5$
2. $4x + 2y = 6$
3. $-3y - 9 = 0$
4. $x = 4$
5. $y = 2x - 6$

B. Determine the intercepts of each linear equation and describe the graph.

1. $4x + 2y = 8$
2. $-3y - 9 = 0$
3. $x = 4$
4. $2y - 6 = 0$
5. $y = 3x - 4$

Activity 1.6.1
A. Determine the slope of each linear equation and describe the graph.

1. $y = -3x - 5$
2. $6x + 3y = 9$
3. $-4y - 8 = 0$
4. $x = -3$
5. $y = 3x - 2$

B. Determine the intercepts of each linear equation and describe the graph.

1. $6x + 3y = 12$
2. $-5y - 10 = 0$
3. $x = 7$
4. $4y - 16 = 0$
5. $y = 4x - 12$