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

How to Describe a Graph Using the Slope when the Equation is Given?

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 when the Equation is Given?

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. $y = 3x - 4$

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

How to Describe a Graph Using the Slope when the Equation is Given?

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 when the Equation is Given?

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. $y = 3x - 4$

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

How to Describe a Graph Using the Slope when the Equation is Given?

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 when the Equation is Given?

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. $y = 3x - 4$

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

How to Describe a Graph Using the Slope when the Equation is Given?

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 when the Equation is Given?

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. $y = 3x - 4$