Chapter 2 Functions and Their Graphs

Course Number

Instructor

Date

Section 2.1 Linear Equations in Two Variables

Objective: In this lesson you learned how to find and use the slopes of lines to write and graph linear equations in two variables.

Important Vocabulary	Define each term or concept.
Slope	
Ratio	
Rate of change	
Parallel lines	
Perpendicular lines	

What you should learn
How to use slope to graph linear equations in two variables

I. Using Slope (Pages 172–174)

The equation $y = mx + b$ is called a **linear equation in two variables** because . . .

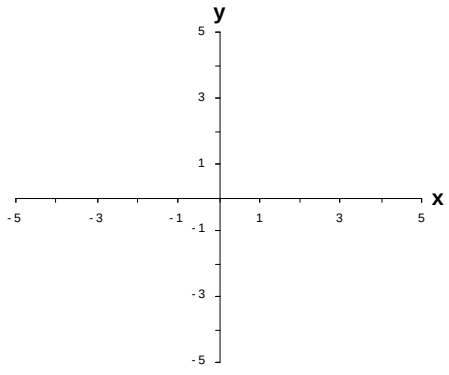
A line whose slope is positive _____ from left to right.

A line whose slope is negative _____ from left to right.

The **slope-intercept form** of the equation of a line is _____ , where m is the _____ and the y-intercept is (____, ____).

To graph the line $y = mx + b$ on the coordinate plane, . . .

Example 1: Explain how to graph the linear equation $y = -2/3x - 4$. Then sketch its graph.



The equation of a **horizontal line** is _____. The slope of a horizontal line is _____. To graph a horizontal line, . . .

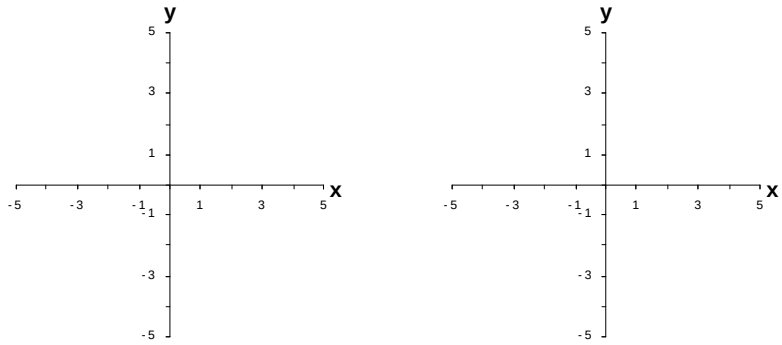
The *y*-coordinate of every point on the graph of a horizontal line is _____.

The equation of a **vertical line** is _____. The slope of a vertical line is _____. To graph a vertical line, . . .

The *x*-coordinate of every point on the graph of a vertical line is _____.

Example 2: Sketch and label the graph of (a) $y = -1$ and (b) $x = 3$.

(a) (b)



II. Finding the Slope of a Line (Pages 175–176)

What you should learn
How to find slopes of lines

The formula for the **slope** of a line passing through the points (x_1, y_1) and (x_2, y_2) is $m =$ _____ .

To find the slope of the line through the points $(-2, 5)$ and $(4, -2)$, . . .

III. Writing Equations of Lines (Pages 177–178)

What you should learn
How to write linear equations in two variables

The **point-slope form** of the equation of a line is

_____.

The **two-point form** of the equation of a line is

_____ .

The **general form** of the equation of a line is

_____.

All equations of lines can be written in general form.

Which form of the equation of a line is most convenient when given:

(a) the slope m and the y-intercept $(0, b)$?

(b) the slope m and a point (x_1, y_1) on the graph of the line?

(c) two points (x_1, y_1) and (x_2, y_2) that are on the graph of the line?

For the conditions in (a), (b), and (c) above, is it possible to use only the slope-intercept form to find an equation? Explain.

Is it possible to use only the point-slope form to find an equation? Explain.

Example 3: Find an equation of the line that passes through the points (1, 5) and (– 3, 7) using (a) the slope-intercept form and (b) the point-slope form.

IV. Parallel and Perpendicular Lines (Page 179)

What you should learn
How to use slope to identify parallel and perpendicular lines

Two lines are _____ if they do not intersect.

Two lines are _____ if they intersect at right angles.

The relationship between the slopes of two lines that are parallel is . . .

The relationship between the slopes of two lines that are perpendicular is . . .

A line that is parallel to a line whose slope is 2 has slope _____.
A line that is perpendicular to a line whose slope is 2 has slope _____.

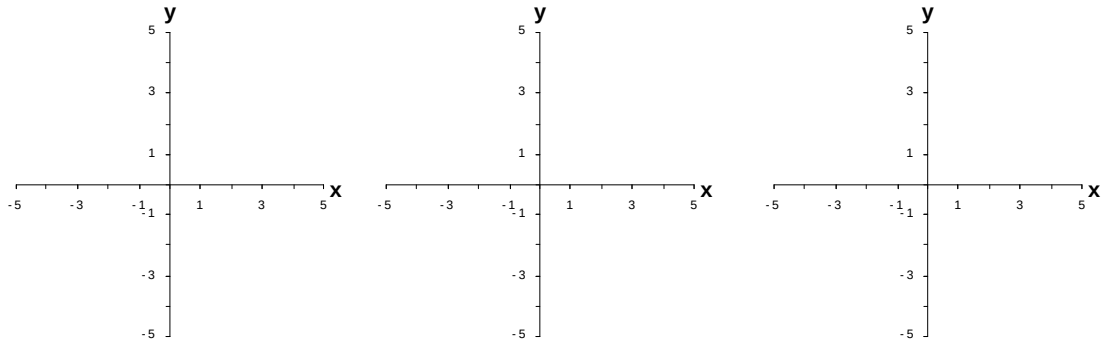
V. Applications of Slope (Pages 174 and 180)

What you should learn
How to use linear equations in two variables to model and solve real-life problems

Describe a real-life situation in which slope is a ratio.

Describe a real-life situation in which slope is a rate of change.

Additional notes



Homework Assignment

Page(s)

Exercises