Course Number

Instructor

Date

## Section 1.2 Lines in the Plane

**Objective:** In this lesson you learned how to find and use the slope of a line to write and graph linear equations.

**Important Vocabulary** Define each term or concept.

**Slope**

**Parallel**

**Perpendicular**

### I. The Slope of a Line (Pages 79–80)

***What you should learn***
How to find the 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 $(4, -3)$, . . .

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

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

A line with zero slope is _____.

A line with undefined slope is _____.

### II. The Point-Slope Form of the Equation of a Line (Pages 81–82)

***What you should learn***
How to write linear equations given points on lines and their slopes

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

_____.

This form of equation is best used to find the equation of a line when . . .

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

_____.

The two-point form of equation is best used to find the equation of a line when . . .

**Example 1:** Find an equation of the line having slope $-2$ that passes through the point $(1, 5)$.

The approximation method used to estimate a point between two given points is called _____. The approximation method used to estimate a point lying outside the given points is called _____.

### III. Sketching Graphs of Lines (Pages 83–84)

***What you should learn***
How to use slope-intercept forms of linear equations to sketch graphs of lines

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

**Example 2:** Determine the slope and $y$-intercept of the linear equation $2x - y = 4$.

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

The **general form** of the equation of a line is _____.
Every line has an equation that can be written in _____ _____.

When a graphing utility is used to sketch a straight line, the graph of the line may not visually appear to have the slope indicated by its equation because . . .

In general, two graphs of the same equation can appear to be quite different depending on . . .

**Example 3:** Use a graphing utility to graph the linear equation $2x - y = 4$ using (a) a standard viewing window, and (b) a square window.

**IV. Parallel and Perpendicular Lines** (Pages 85–86)

***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 . . .

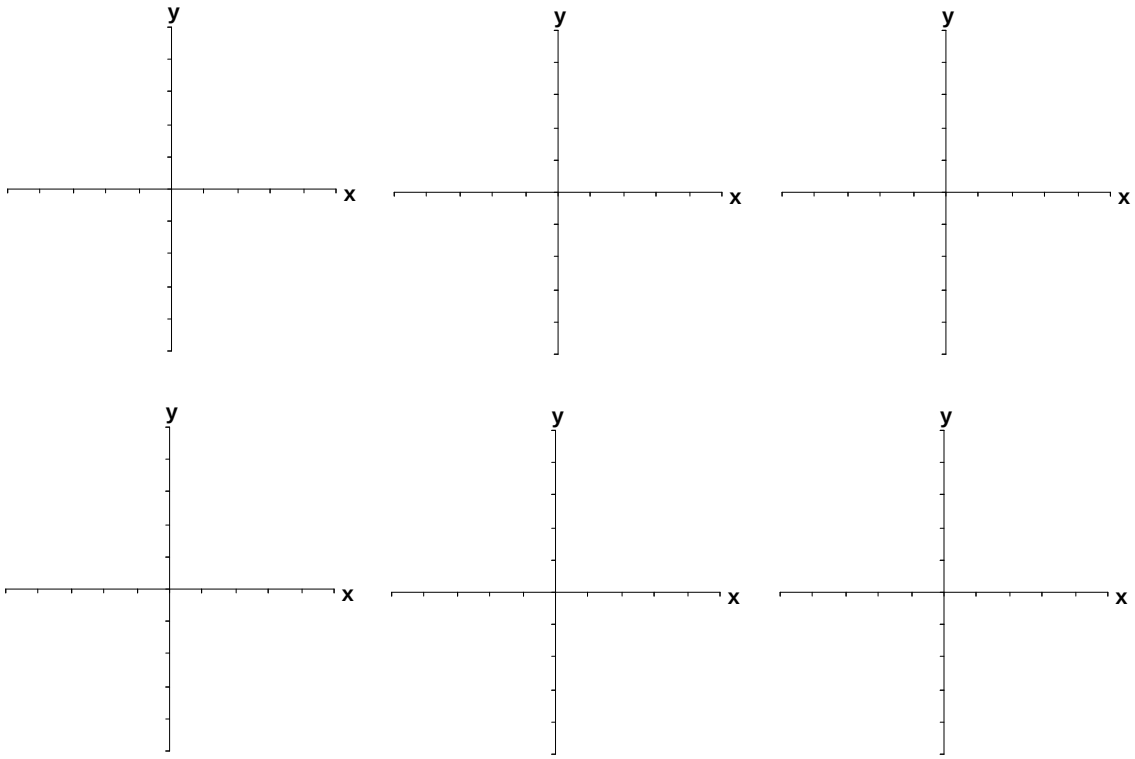
The relationship between the slopes of two lines that are perpendicular is . . .

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 _____.

**Example 4:** Use a graphing utility to graph the perpendicular lines $y = 2x - 3$ and $y = -0.5x + 5$ using (a) a standard viewing window, and (b) a square window.

**Additional notes**




**Homework Assignment**

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Exercises