College Algebra Fundamentals

Section P-4 (Part 4): Lines in the Plane and Slope

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Objectives**:

* Students will be able to write equations parallel and perpendicular to another equation.

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| **Main Idea** | **Notes** |
| **Vocabulary:**  **Example 1: Parallel Lines**  **Example 2: Writing Equations for Parallel Lines**  **Vocabulary:** | Two distinct nonvertical lines are **parallel** if and only if \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.  Are the two lines parallel? L1: through (-2, 1) and (4, 5) and  L2: through (3, 0) and (0, -2)  Write an equation for the line through (5, 7) parallel to 2x – 5y = 15.    Two nonvertical lines are **perpendicular** if and only if \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.  Examples of perpendicular slopes:  2/3 and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 1/5 and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ -2 and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  2.4 and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ -7/2 and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Notice: The product of perpendicular slopes is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| **Example 3: Parallel, Perpendicular, or Neither?** | Write parallel, perpendicular or neither for the pair of lines that passes through (5, -9) and (3, 7) and the line through (0, 2) and (8, 3).  What is the slope of the line perpendicular to a horizontal line?  Horizontal lines are perpendicular to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ lines.  Write an equation for the line through (-8, 3) perpendicular to 2x – 3y = 10. |
| **Vocabulary:**  **Example 4: Writing Equations for Perpendicular Lines** |
| **Vocabulary:** | Summary of Special Slopes:   1. Horizontal lines: 2. Vertical lines: 3. Parallel lines: 4. Intersecting lines: 5. Perpendicular lines: |
| **Homework:** |  |