Name: Date:

Advanced Algebra

* 1. Lines in the Plane and Slope

The simplest mathematics model for relating two variables in the **linear equation** . The equation is called linear because its graph is a line and has a constant rate of change called slope.

What does the *m* represent in the equation ?

What does the *b* represent in the equation ?

The slope of a non vertical line is the number of units the line rises (or falls) vertically for each unit of horizontal change from left to right.

 Slope Slope



WAYS TO FIND SLOPE

 *On the Graph In an equation Using the formula*

 (6, 5) and (-1, 3)

**Practice:** Find the slope of the line for the following set of linear representations

1) Two points:

2) Equation:

3) On a graph:



4) On a graph:



OTHER TYPES OF SLOPE

 **Zero Slope Undefined (No) Slope**

 **Parallel Lines Perpendicular Lines**

GRAPHING LINEAR EQUATION ON A COORDINATE PALNE

**Example 1:** On the graph below sketch the graph of the equation.

Use the table of values below to help create the graph. You may use arithmetic or your calculator.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

With this method, you construct a table of values that consists of several solutions of this equation.

What about the equation helps you determine the look of the graph?

**Example 2:** On the graph below sketch the graph of the equation.

Use the table of values below to help create the graph. You may use arithmetic or your calculator.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

The graph of this equation is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

What about the equation helps you determine the look of the graph?

**Example 3:** On the graph below sketch the graph of the equation without the use of a calculator.



Determine what you need to know to graph a line?

Find the information needed and list it below.

**Practice:** Graph the linear equations below on the given set of axes.

1)

2)

3)

4)