**6.1 – Slope of a Line**

The slope of a line segment is a measure of its rate of change.

Rate of Change = $\frac{change in dependent variable}{change in independent variable} = \frac{Δy}{Δx} = \frac{y2 - y1}{x2 - x1} = \frac{rise}{run}$ = Slope



There are 4 types of possible slopes:

1. Positive – **both** *x* and *y* increase or decrease; also known as increasing

2. Negative – **either** *x* or *y* decrease; also known as decreasing

3. 0 – any horizontal line segment

4. Undefined – any vertical line segment



The slopes of all segments on a line are equal – the lengths of the legs of the triangles would have the same ratio and hence are similar.



**Example 1: Determining the Slope of a Line Segment**

Determine the slope of the line segment.



**Example 2: Drawing a Line Segment with a Given Slope**

Draw a line segment with a slope of -1.



**Example 3: Determining Slope Given Two Points on a Line**

Determine the slope of the line that passes through A(-2, 1) and B(4, 8).

**Example 4: Interpreting the Slope of a Line**

Construction workers are paving a road. The road must drop 4-cm for every 650-cm moved horizontally.

a) What is the slope of the line?

b) Suppose a section of the road drops 24.5-cm. How long is this section of the road measured horizontally?