

Chapter 5

Coordinate plane - a plane containing the two number lines.

x - axis is the horizontal number line and the y - axis is the vertical number line

Origin - the intersection of the two axis. (0,0) represents the **ordered pair** for the origin.

Quadrant - the four regions of the coordinate plane. I, II , III and IV

Function - a rule to use one **input (x)** to produce exactly one **output (y)**

Sequence - an ordered list of numbers.

Term- each number in a sequence.

Arithmetic sequence - the terms differ by the same number (addition or subtraction)

Geometric sequence - each number is multiplied by the same amount.

Common difference – the # which is used when x or +.

Linear equation - an equation whose graph is a straight line.

Nonlinear function - the graph is not a straight line.

X – axis – is the horizontal line

Y – axis – is the vertical line

X – intercept – where the line crosses the x – axis. Ex. The ordered pair is (2, 0)

Y – intercept – where the line crosses the y – axis. Ex. The ordered pair is (0, 4)

Slope - the measure of the steepness of the line. It is written as a ratio.

- a) positive slope goes up and to the right
- b) negative slope goes down and to the left. (will be a negative fraction)
- c) zero slope - is a horizontal line (the numerator will be 0)
- d) undefined slope - is a vertical line (the denominator will be 0)

If $x = 0$, then it is undefined because it is a vertical line.

If $y=0$, it is a horizontal line and has 0 slope

Slope = rise over run a vertical change over a horizontal change. (Rate of Change)

Rate of Change – the ratio of 2 quantities that change.

Slope formula is $\frac{y_2 - y_1}{x_2 - x_1}$

Slope intercept form - $y = mx + b$

m= slope and **b** = the y intercept.

Point slope form - $(y - y_1) = m(x - x_1)$

Direct variation - a linear relationship between two variables. $y = kx$

Constant of variation - the fixed number in the variation (k)