**Math Vocabulary**

**Coefficient:** A number that is multiplied by a variable. For example in the expression $7x$, 7 is the coefficient and $x$ is the variable.

**Degree of polymerization:** The degree of polymerization is the value of the highest exponent in a function. For example $x^7 + 3x^4$ has a degree of 7 while $3x^2 + 4x^2$ has a degree of 3.

**Exponent:** Often referred to as power. It is the value that appears as a superscript above a number or variable and it represents the number of times that value should be multiplied by itself. For example in $7^2$ the number 2 is the exponent and could be re-written as $7*7$. $7^x$ means that $x$ is the exponent and that the exponent is a variable.

**Function:** $f(x) = 7x$ is an example of a function. $X$ is an independent variable or an input value and $f(x)$ is a dependent variable or output value. In a function for every input value there can be only one output. So any number that we choose for $X$ will give us a specific output number for $f(x)$ i.e. $x = 3$ so $7 * 3 = 21$, or $x = 1$ so $7 * 1 = 7$

**Imaginary Numbers:** Imaginary numbers come from taking the square root of a negative number $(\sqrt{-1})$. A square root must give the resulting number when it is squared $(\sqrt{4} = 2 & 2^2 = 4)$, but whenever a negative is squared it becomes a positive $((-1)^2) = 1$ so according to this logic $\sqrt{-1}$ will not result in a real number. The result is an imaginary number ‘$i$’. Here are some examples of imaginary numbers: $\sqrt{2} = 2i, \sqrt{-4} = 2i & \sqrt{-1} = i$.

**Integers:** These are positive and negative numbers that are “whole” i.e. {...-2,-1,0,1,2…}

**Irrational Numbers:** Numbers that cannot be found by dividing two integers. i.e. $\pi$ & $e$. These numbers are generally found through mathematical experimentation.

**Polynomial:** Any function where the degree of polymerization is greater than one and the exponential values are whole numbers, i.e $14x^3 + 7x^2 + x + 3$. Please also note that not every power needs to be represented in order for the function to still be a polynomial. $14x^7 + 3x$ is still a polynomial.

**Quadratic:** When the degree of a polymerization is two then the function is quadratic. $3x^2 = +4x + 2$ and $13x^2 - 42x - 17$ are both quadratics.

**Rational Numbers:** Any number that can be found by dividing two integers. $2/3$ is a rational number and so is $2$. $2$ can be expressed in an infinite number of fractions, i.e. $8/4, 16/8, 14/7, 200/100$.

**Real Numbers:** Any number that is not imaginary.

**Variable:** An unknown number or a value. When we are dealing with unknown number in an equation we will often use a letter or symbol to represent a variable.