Linear & Exponential Sequences

**Formula Sheet**

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| **Name** | **Definition** | **Formula** |
| Arithmetic Sequence | An arithmetic sequence is a list of terms (numbers) that progress by adding or subtracting each term by the same amount each time, called the common difference. | For example, this arithmetic sequence has a common difference of 3.     * Explicit Formula: * Recursive Formula: ,   Where:  *d =* common difference  = first term  = the nth term  *n =* term number |
| Geometric Sequence | A geometric sequence is a list of terms (numbers) that progress by multiplying or dividing each term by the same amount each time, called the common ratio. | For example, this geometric sequence has a common ratio of 2.     * Explicit Formula: * Recursive Formula: ,   Where,  *d =* common difference  = first term  = the nth term  *n =* term number |
| Function Notation | A way in which a function can be represented using symbols and signs read as “*f of x*”. Functions can be named with different letters other than *f*. | For example: |
| Linear Function | An equation of a form in which the variables appear only in the first degree, are multiplied by constants, and are combined only by addition and subtraction. | slope or rate of change  *y-*intercept  independent variable  dependent variable |
| Slope Formula | The slope of a line is defined by the change in *y* coordinate with respect to the change in *x* coordinate of the line. | Where is the first point and is the second point. |
| Exponential Function | Exponential functions are used to model growth and decay such as bacteria, population, interest, and depreciation. | initial value  multiplier/ growth or decay factor  The multiplier is calculated from the rate, *r*.  Growth Factor:  Decay Factor: |
| Key Features of Exponential Graphs | The graph of an exponential function may model growth or decay and shows a quick increase or decrease. | * The y-intercept is at the point , where is the initial value. * The line is the horizontal asymptote. |