Name: Date: Period:

A **sequence** is a function. The set of inputs (the **domain**) is a subset of the natural numbers, i.e. {1, 2, 3, 4, …}. A sequence is often shown as an ordered list of numbers, called the **terms** or **elements** of the sequence.

The input is simply the **number's place in line** and the output is the actual **number in the list**. Sometimes it is helpful to write them as a table of "x/y" values.

Different Types of Notations

Consider the sequence below. If we represent this sequence with the letter a, please note the different notations you may see.

4, 8, 16, 32, 64, 128, 256

Find a(5) = 64

Function Notation … Just means 5th element or place in line

Find $a_7 = 256$

Subscript Notation … Just means 7th element or place in line

Try these:

[1] Find a(3)

[2] Find a(1) + a(7)

[3] Find a_2

[4] Find $(a_1)^2$

[5] Find $a_5 - a_4$

[6] Solve for n: a(n) = 128

A sequence is **finite** if it has a **limited number of terms** and **infinite** if it **does not**. Finite sequence: {4, 8, 12, 16 …, 64} The first of the sequence is 4 and the last term is 64. Since the sequence has a last term, it is a finite sequence

There are two types of Sequences

Arithmetic Sequence

- Each term is obtained by **ADDING** the same number (called a common Difference (**d**)) to the preceding term
- Constant Rate of Change makes it **linear**
- A Discrete **Linear** Function*

Geometric Sequence

- Each term is obtained by **MULTIPLYING** the same number (called the common ratio (**r**)) to the preceding term
- Increasing Rate of Change makes it **exponential**
- A Discrete **Exponential** Curve*

A Discrete Function means you **do not connect the points in the graph

- First Term is a_1
- Any time you see the notation a(n – 1) or $a_{n-1,}$ circle the ENTIRE thing, and replace it with the words "**PREVIOUS TERM**".