**Ch 6 Arithmetic Sequences (Day 5)**

A sequence is simply a list of numbers. In a sequence each number is called a **term.** There is a first term, second term, third term and so on. A sequence can be **finite**, in which it is possible to count the number of terms, or **infinite**, in which the terms continue forever.

For example: 1, 3, 6, 10 is a finite sequence or (1, 2, 3, … n)

 1, 3, 6, 10… is an infinite sequence ( 1, 2, 3, …)

The subscript identifies the terms of the sequence. For example a3 is the third term of the sequence.

**Example: Write the first four terms of the sequence**.

1. 
2. 
3. 

The ***n*th** term of an arithmetic Sequence whose first term is ***a***, with common difference ***d***



A sequence is a list of numbers.

Some lists have patterns.

2, 4, 6, 8, ... 3, 9, 27, 81, 243, …

5, 1, -3, -7, -11, … 2, -4, 8, -16, 32, -64, …

100, 50, 25, 12.5, … 1, 1, 2, 3, 5, 8, 13, 21, …

We will consider two common types of sequences:

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (pattern = adding a number)

2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (pattern = multiplying by a number)

The following is an arithmetic sequence (5 terms are listed):

11, 14, 17, 20, 23, …

Notation: The nth term is \_\_\_\_\_

The amount being added between 2 terms is called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ noted as \_\_\_\_\_\_\_\_

Ex: Given the arithmetic sequence 2, 5, 8, …

a) d?

b) t4, t5, and t6?

c) t30?

Ex: Find t1, t2, and t4, t5, given t3 = 8 and t6 = 17.

**Ex:**

**The following is an arithmetic sequence**:

2, 9, 16, …

Find:

a) t20 b) t137

c) tn

Ex: The following is an arithmetic sequence:

3, 10, 17, 24, …

a) what are d and a? b) what is t12?

c) what is tn? d) which term is 129?

 (ie. How far down the list is 129?)

e) which term is 598?

**Example:**

An arithmetic sequence has a = 15, d = -4

a) what is tn? b) write the first five terms.

c) what is t151? d) what term is -2297?