Arithmetic Sequences

A sequence is **arithmetic** if there exists a number d, called the **common difference**, such that $a_{n+1} = a_n + d$ for any integer $n \geq 1$.

A sequence $a_0, a_1, a_2, \ldots$ is called an **arithmetic sequence** if, and only if, there is a constant d such that

$$a_k = a_{k-1} + d \quad \text{for all integers } k \geq 1$$

It follows that,

$$a_n = a_0 + dn \quad \text{for all integers } n \geq 0$$