

# UNIT 2



# QUADRATICS



**Many real-life situations involve non-linear relationships and functions. Businesses use quadratic functions to describe the parabolic path of projectiles.**

**In this chapter, you will look at ways to solve problems involving non-linear, and in particular, quadratic functions and relationships.**

## **Definitions:**

**Sequence** ➔ **An ordered arrangement of numbers, symbols, or pictures in which each item or term follows another according to a rule.**

**Term** ➔ **Each item in a sequence. The symbol  $t_1$  represents the first term in a sequence,  $t_2$  represents the second term and so on.**

**Infinite Sequence** ➡ A sequence that continues indefinitely and can be written as  $\{t_1, t_2, t_3, \dots\}$

**Finite Sequence** ➡ A sequence that eventually terminates (ends) and can be written as  $\{t_1, t_2, t_3, \dots, t_n\}$ , where  $t_n$  represents the last or  $n^{\text{th}}$  term.

**Sequence of Differences**  $\Rightarrow$  **A sequence created from another sequence by subtracting the value of each term in the original sequence from the next term in that sequence.**

**For Example:** the sequence of differences for  $\{1, 3, 5, 7, 9, \dots\}$  is  $\{3-1, 5-3, 7-5, 9-7, \dots\}$  or  $\{2, 2, 2, 2, \dots\}$

**Arithmetic Sequence** → **A sequence created by adding any real number to each successive term.**

**Remember:** **Adding a negative integer is equivalent to subtracting a positive number.**

**Formula:**

$$\mathbf{t_n = t_1 + (n - 1)d}$$

**$t_1$  = first term**

**$d$  = common difference**