<u>Topic 7:</u> Number Patterns

Notes:

1. A number sequence is a set of numbers that are formed and arranged in a specific manner. Each number in a continuous sequence is called a term.

2. The first number is called the **1st term**, the second number is called the **2nd term**, and then n^{th} number is called the $\boldsymbol{n^{th}}$ **term**. The terms of a number sequence can be represented by T_1, T_2, T_3, T_4, T_5, …, T_n.

3. The $\boldsymbol{n^{th}}$ **term** or T_n is also known as the **general term** and can be represented by an algebraic expression.

4. There are generally 3 types of number patterns:
   (a)   Number Sequence
   (b)   Line Pattern
   (c)   Diagram Pattern

Solving Problems (Only Number Sequence has specific steps):

1. For **number sequence** with same difference, use this step:
   e.g. 4, 10, 16, 22, 28… or 36, 31, 26, 21, 16…

   For the first pattern, the difference of the terms is +6. So, your formula will start with $6n$. Now, find T_0 = 4-6 = -2. Your formula will be $\boldsymbol{6n - 2}$. (1st term = 6x1 – 2 = 4)

   For the second pattern, the difference of the terms is -5. So, your formula will start with $-5n$. Now, find T_0 = 36+5 = 41. Your formula is $\boldsymbol{41 - 5n}$ (1st term = 41 – 5x1 = 36)