

# Sequences Year 7

## Key vocabulary

**Linear or Arithmetic** - A sequence that increases or decreases by the same amount between terms

**Term** - Each number in a sequence

**Common difference** - The equal increase or decrease between every term

**Multiple** - A whole number that features in another's times table

**Factor** - A number that can be divided exactly into another number

**Square number** - The product when a number is multiplied by itself

**Triangular number** - A number sequence where each term can be arranged into a triangle pattern. It also continues by adding the next whole number.

**Fibonacci sequence** - A sequence where each term is obtained by adding the previous two terms

**Term to term rule** - The common difference between terms

**Nth rule or general rule** - The algebraic rule that will generate any term in the sequence

## Finding terms

$$\text{Nth Rule} = 4n + 2$$

$$\text{1}^{\text{st}} \text{ term} - 4 \times 1 + 2 = 6$$

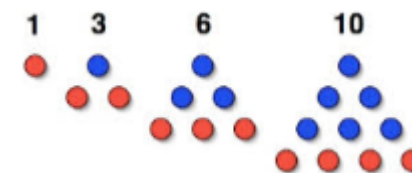
$$\text{2}^{\text{nd}} \text{ term} - 4 \times 2 + 2 = 10$$

$$\text{3}^{\text{rd}} \text{ term} - 4 \times 3 + 2 = 14$$

$$\text{10}^{\text{th}} \text{ term} - 4 \times 10 + 2 = 42$$

N stands for whichever term you are trying to calculate e.g. to find the 1<sup>st</sup> term n would be 1, to find the 2<sup>nd</sup> term n would be 2 etc.

## Triangular Numbers



## Fibonacci Sequence

1, 1, 2, 3, 5, 8, 13, 21, 34

## Finding the term to term rule (common difference)

- 5, 8, 11, 14, 17      Term to term rule = + 3 (common difference)
- 12, 7, 2, -3, -8      Term to term rule = -5 (common difference)

## Finding the Nth term or General rule of a linear sequence

- 6, 10, 14, 18      Common Difference = +4 (so linked to 4 x table)
- **4 times table**
- **4, 8, 12, 16**
- You then need to see what constant you add or subtract to get from the first multiple to the first term in the sequence. In this case it is +2
- **So the Nth term or general rule is:**
- **$4n + 2$**       The difference is always multiplied by n