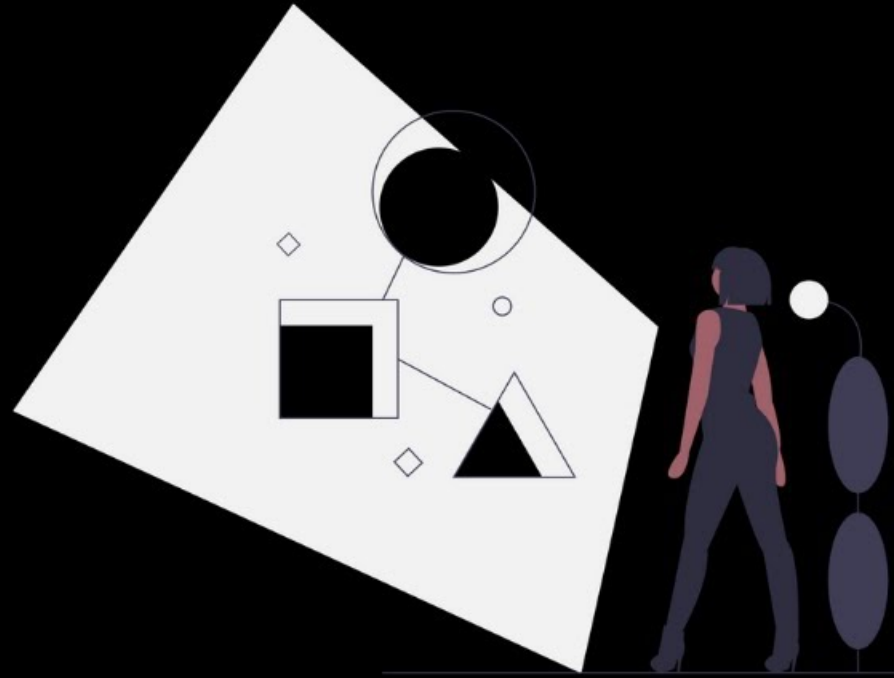
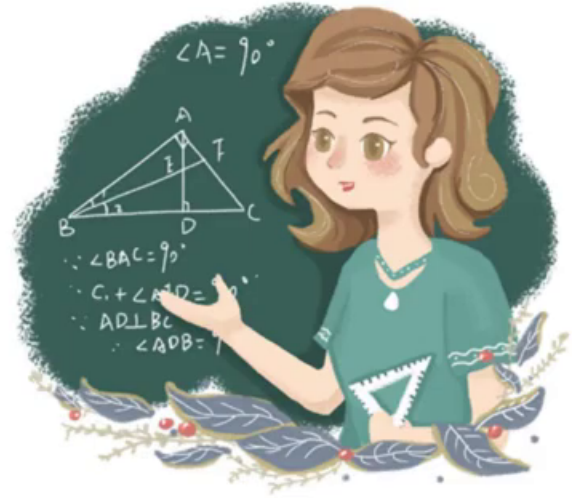


# **Geometric progression c++ coding video**



# Geometric progression

In mathematics, a geometric progression, also known as a geometric sequence, is a sequence of numbers where each term after the first is found by multiplying the previous one by a fixed, non-zero number called the common ratio



# Geometric progression

**EX:**

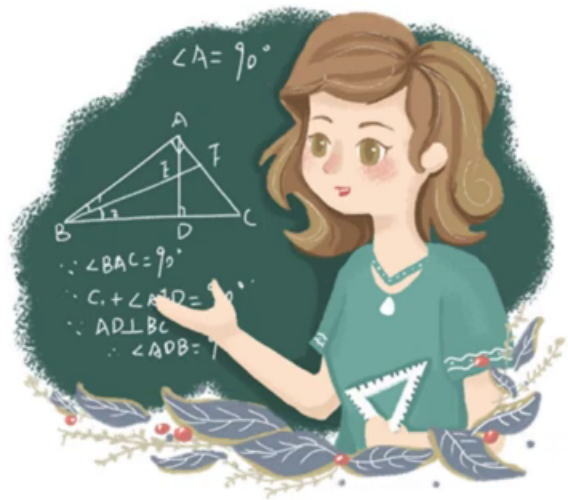
**1 2 4 8**

**ratio = 2**

**EX:**

**3 9 27 81**

**ratio = 3**



# Geometric progression

**EX:** 2 6 18 54

$$a_1 = 2$$

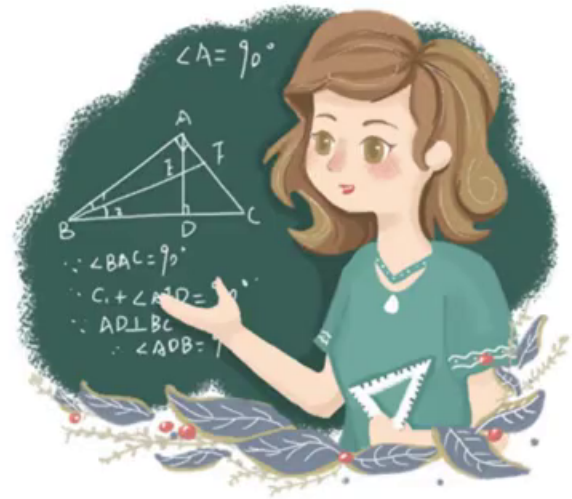
$$a_2 = 2 * 3$$

$$a_3 = 2 * 3^2$$

$$a_4 = 2 * 3^3$$

$$a_n = a_1 * r^{n-1}$$

1



# Geometric progression

2 6 18 54      suppose  
 $a$   $ar$   $ar^2$   $ar^3$        $s_n = \text{sum}$   
     $r = \text{ratio}$

$$S_n = a + ar + ar^2 + \dots + ar^{n-1}$$

$$-rS_n = -ar - ar^2 - ar^3 - \dots - ar^n$$

$$S_n - rS_n = a - ar^n \quad S_n = \frac{a(1-r^n)}{(1-r)} \quad (2)$$

