

'Arithmetic Sequence'

Definition: A list of numbers that increases or decreases by a constant number

Ex. 1, 4, 7, 10,... (increases by +3 every time)

Ex. -7, -9, -11, -13,... (Decreases by -2 every time)

GENERAL FORMULA to find a term value:

$$t_n = a + (n-1)d$$

a: t_1 (The first term in the sequence)

n: the term number

d: increase or decrease value

t_n : the value of term 'n'

'Geometric Sequence'

Definition: A list of numbers that changes by a constant multiple

Ex. 2, 4, 8, 16, 32,... (increases by a multiple of 2 every time)

Ex. -7, 14, -28, 56,... (multiple of -2 every time)

GENERAL FORMULA to find a term value:

$$t_n = a \cdot r^{n-1}$$

a: t_1 (The first term in the sequence)

n: the term number

r: the multiple value

t_n : the value of term 'n'

SEQUENCES

AND

SERIES

'Arithmetic Series'

Definition: Takes an arithmetic sequence and adds each term together

Ex. 1 + 3 + 5 + 7 + ...

Ex. -2 + 0 + 2 + 4 + ...

GENERAL EQUATION to find the sum of a certain number of terms:

$$S_n = \frac{n}{2}[a + t_n]$$

OR

$$S_n = \frac{n}{2}[2a + (n-1)d]$$

S_n : the sum of the terms up to term 'n'

n: the term number

a: t_1 (The value of the first term in the sequence)

d: increase or decrease value

t_n : the value of the last term being added (term 'n')

'Geometric Series'

Definition: Takes a geometric sequence and adds each term together

Ex. 1 + 2 + 4 + 8 + ...

Ex. -2 + 6 + -18 + 54 + ...

GENERAL EQUATION to find the sum of a certain number of terms:

$$S_n = \frac{a(r^n - 1)}{r - 1}$$

S_n : the sum of the terms up to term 'n'

n: the term number

a: t_1 (The value of the first term in the sequence)

r: the multiple value