

TURBO

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SEQUENCE AND SERIES

Class 11 Mathematics • Complete Formula Sheet

Sr.	Concept	Formulas	Other Information
FOUNDATIONS			
1	Sequence	$f_1, f_2, f_3, \dots, f_n$ where $f_n = f(n)$	A function whose domain is a subset of natural numbers.
2	Series	$a_1 + a_2 + a_3 + \dots + a_n$	Sum of the terms of a sequence.
3	Finite Series	—	A series having a finite number of terms.
4	Infinite Series	—	A series having an infinite number of terms.
ARITHMETIC PROGRESSION (A.P.)			
5	n^{th} Term (T_n)	$T_n = a + (n - 1)d$	a : first term, d : common difference.
6	Sum of n terms (S_n)	$S_n = \frac{n}{2}[2a + (n - 1)d]$	Also $S_n = \frac{n}{2}(a + l)$ where l is the last term.
7	Arithmetic Mean (A.M.)	$A = \frac{a+b}{2}$	If a, A, b are in A.P., then $2A = a + b$.
8	Important Result	$\sum (n \text{ A.M.s}) = n \times (\text{Single A.M.})$	Sum of n A.M.s between two quantities.
GEOMETRIC PROGRESSION (G.P.)			
9	Common Ratio (r)	$r = \frac{a_{k+1}}{a_k}$	Constant ratio between consecutive terms.
10	General Term (T_n)	$T_n = ar^{n-1}$ or $l = ar^{n-1}$	l is the last term.
11	Sum of n terms (S_n)	$S_n = \frac{a(1-r^n)}{1-r}$ if $r < 1$ $S_n = \frac{a(r^n-1)}{r-1}$ if $r > 1$	$S_n = na$ if $r = 1$.
12	Infinite Sum (S_∞)	$S_\infty = \frac{a}{1-r}$	Valid only if $-1 < r < 1$.
13	Geometric Mean (G.M.)	$G = \sqrt{ab}$ or $b^2 = ac$	b is G.M. between a and c .
14	Important Results	$G_k = a\left(\frac{b}{a}\right)^{\frac{k}{n+1}}$	Reciprocals of G.P. form a G.P.; ak, bk, ck also in G.P. if a, b, c are in G.P.
15	Relation	$A \geq G$	Valid for positive real numbers a, b .