NOTATION · CHEAT SHEET

Sequence Notation at a Glance

The marks from the notation cards across the sequence pages: how each is read and what it means. Every group links to the full card on its page.

SEQUENCES

a_n	**A SUB N** The term in place n; the subscript is a position.
$a_1, a_2, a_3, \ldots$	**A ONE, A TWO, A THREE, AND SO ON** The terms listed in order; the dots need a stated rule.
$\{a_n\}_{n=1}^{\infty}$	**THE SEQUENCE A SUB N** The whole sequence as one object.

ARITHMETIC SEQUENCES

$a_{n+1} = a_n + d$	**NEXT TERM IS THIS TERM PLUS D** The recurrence; d is the common difference, a_1 the start.
$\sum_{k=1}^{n} a_k$	**SUM OF A SUB K, K FROM 1 TO N** Sigma: the sum S_n of the first n terms.

GEOMETRIC SEQUENCES

r	**R, THE COMMON RATIO** The factor from each term to the next: $a_n = a_1 r^{n-1}$.
S_n	**S SUB N** Sum of the first n terms; n counts terms.
S	**S, THE INFINITE SUM** Equals $a_1/(1-r)$, only when $\lvert r\rvert < 1$.
G	**G, THE GEOMETRIC MEAN** $G = \sqrt{ab}$, the middle value of a, G, b.

FIBONACCI SEQUENCE

F_n	**F SUB N** The n-th Fibonacci number, counted from $F_1 = F_2 = 1$.
$\phi,\ \psi$	**PHI AND PSI** The roots of $x^2 = x + 1$, about 1.618 and -0.618.
L_n	**L SUB N** Lucas numbers: the same rule, started at $1, 3$.

HARMONIC SEQUENCES

$a_n = 1/b_n$	**A SUB N IS ONE OVER B SUB N** b_n is the arithmetic sequence underneath.
H_n	**H SUB N** The harmonic number $1 + \frac{1}{2} + \cdots + \frac{1}{n}$.
H	**H, THE HARMONIC MEAN** For two numbers, $H = \frac{2ab}{a+b}$.

TRIANGULAR NUMBERS

T_n	**T SUB N** The n-th triangular number, $\frac{n(n+1)}{2}$.
$T_n = T_{n-1} + n$	**THE ONE BEFORE PLUS A ROW OF N** The recurrence, from $T_1 = 1$.
$\binom{n+1}{2}$	**N PLUS ONE CHOOSE TWO** The same number, counted as pairs.

SQUARE NUMBERS

$S_n = n^2$	**S SUB N ON THIS PAGE** The n-th square: one term, not a sum.
$S_n = S_{n-1} + 2n - 1$	**THE ONE BEFORE PLUS THE NEXT ODD NUMBER** The recurrence, from $S_1 = 1$.
$\sum_{k=1}^{n} k^2$	**SUM OF K SQUARED** Square each term first, then add.

PRIME NUMBERS

p	**P, A PRIME** The letter promises a prime.
$p_1, \ldots, p_k$	**P SUB ONE TO P SUB K** A list of primes, or the primes of one number.
$\pi(n)$	**PI OF N** How many primes are at most n.

SAME LETTER, DIFFERENT JOB

S_n	A sum of n terms on the arithmetic and geometric pages; a single square on the square numbers page.
H_n vs H	With a subscript, a sum of reciprocals; without one, a mean.
$\pi(n)$ vs π	A count of primes, not the circle constant.
$\{a_n\}$	An ordered sequence, not a set: terms keep their order and may repeat.