How to read numbers, figures and mathematical expressions in English.

Cardinal numbers

Cardinal numbers refer to the size of a group.

0	zero (nought)	10	ten		
1	one	11	eleven		
2	two	12	twelve	20	twenty
3	three	13	thirteen	30	thirty
4	four	14	fourteen	40	forty *(no "u")*
5	five	15	fifteen *(note "f", not "v")*	50	fifty *(note "f", not "v")*
6	six	16	sixteen	60	sixty
7	seven	17	seventeen	70	seventy
8	eight	18	eighteen *(only one "t")*	80	eighty *(only one "t")*
9	nine	19	nineteen	90	ninety *(note the "e")*

If a number is in the range 21 to 99, and the second digit is not zero, one should write the number as two words separated by a hyphen.

21 twenty-one
25 twenty-five
32 thirty-two
58 fifty-eight
64 sixty-four
79 seventy-nine
83 eighty-three
99 ninety-nine

In English, the hundreds are perfectly regular, except that the word *hundred* remains in its singular form regardless of the number preceding it (nevertheless, one may on the other hand say "hundreds of people flew in", or the like)

100 one hundred
200 two hundred
… …
900 nine hundred

So too are the thousands, with the number of thousands followed by the word "thousand"

1,000	one thousand
2,000	two thousand
…	…
10,000	ten thousand
11,000	eleven thousand
…	…
20,000	twenty thousand
21,000	twenty-one thousand
30,000	thirty thousand
85,000	eighty-five thousand
100,000	one hundred thousand
999,000	nine hundred and ninety-nine thousand *(British English)* nine hundred ninety-nine thousand *(American English)*
1,000,000	one million
10,000,000	ten million

Ordinal numbers

Ordinal numbers refer to a position in a series. Common ordinals include:

0th	zeroth or noughth *(see below)*	10th	tenth		
1st	first	11th	eleventh		
2nd	second	12th	twelfth *(note "f", not "v")*	20th	twentieth
3rd	third	13th	thirteenth	30th	thirtieth
4th	fourth	14th	fourteenth	40th	fortieth
5th	fifth	15th	fifteenth	50th	fiftieth
6th	sixth	16th	sixteenth	60th	sixtieth
7th	seventh	17th	seventeenth	70th	seventieth
8th	eighth *(only one "t")*	18th	eighteenth	80th	eightieth
9th	ninth *(no "e")*	19th	nineteenth	90th	ninetieth

Zeroth only has a meaning when counts start with zero, which happens in a mathematical or computer science context.

Ordinal numbers such as 21st, 33rd, etc., are formed by combining a *cardinal* ten with an *ordinal* unit.

21st twenty-first
25th twenty-fifth
32nd thirty-second
58th fifty-eighth
64th sixty-fourth
79th seventy-ninth
83rd eighty-third
99th ninety-ninth

Addition, subtraction, multiplication, division

- x + y — x plus y
- x – y — x minus y
- x ± y — x plus [or] minus y
- $a \times y$ — a times y / a multiplied by y
- x : y — x divided by y
- x/y — x over y
- x (a+b) — x times the sum of a and b
- (a+b) x — open parenthesis a plus b close parenthesis multiplied by x

Decimals

- 4.59 — four point five nine
- 0.73 — zero point seven three
- 0.666… — zero point six recurring

Fractions

- ½ — one (or: a) half
- 1/3 — one (or: a) third
- 2/3 — two thirds
- ¼ — one (or: a) quarter
- ¾ — three quarters
- 1/5 — one(or: a) fifth

For larger numbers we usually say:

- 3/7 — three sevenths or three over seven
- 4/10 — four tenths *or* four over ten
- 121/298 — one hundred and twenty-one over two hundred and ninety-eight

Powers, roots

- 5^2 — 5 squared
- 8^3 — 8 cubed / 8 to the third power
- 6^n — 6 to the nth (power) / 6 to the power n / 6 to the n
- 7^{-n} — 7 to the minus nth power/ 7 to the power minus n/ 7 to the minus n
- $9^{1/2}$ — 9 to (the) half power / the square root of 9
- $\sqrt{2}$ — the square root of two
- $\sqrt[3]{2}$ — the cube root of two
- $\sqrt[n]{2}$ — the *n*th root of two
- $\sqrt{\alpha+b}$ — the square root of the sum of a plus b
- $(x+y)^2$ — x plus y all squared

Equations

- 10+15=25 — ten plus fifteen equals (or: is equal to) twenty-five
- x ≡ y — x is identical with (or: to) y
- $x :\ y$ — x is equivalent to y (set theory)
- x ≈ y — x is nearly/approximately equal to y
- x ≠ y — x is not equal to y
- x >y — x is greater (or: more) than y
- x ≥ y — x is greater (or: more) or than or equal to y
- x <y — x is smaller (or: less) than y
- x ≤ y — x is less (or: smaller) than or equal to y
- $0 < x < 1$ — zero is less than x is less than one
- $0 \le x \le 1$ — zero is less than or equal to x is less than or equal to one

Functions

- $f(x)$ — fx / f of x / the function f of x
- $f : S \to T$ — a function f from S to T
- x' — x prime
- x'' — x double prime
- $f'(x)$ — f prime x / f dash x / the first derivative of f with respect to x
- $f''(x)$ — f double-prime x / f double-dash x / the second derivative of f with respect to x
- $\frac{dy}{dx}$ — the derivative of y with respect to x
- $\frac{\partial f(x)}{\partial x_1}$ — the partial (derivative) of f with respect to x1
- $\frac{\partial^2 f(x)}{\partial x_1^{\,2}}$ — the second partial (derivative) of f with respect to x1

- $\int_0^\infty$ the integral from zero to infinity
- $\lim_{x \to 0}$ the limit as x approaches zero
- $\lim_{x \to 0^+}$ the limit as x approaches zero from above
- $\lim_{x \to 0^-}$ the limit as x approaches zero from below
- $\ln y$ log y to the base e / natural log (of) y
- log x the log of x
- $\log_{10} x$ the common log of *x*
- $\log_2 x$ the binary log of *x*/ the log of *x* to the base two

Linear Algebra

- A^T A transpose / the transpose of A
- A^{-1} A inverse / the inverse of A

Sets

- $x \in A$ x belongs to A / x is an element of A
- $x \notin A$ x does not belong to A / x is not an element of A
- $A \subset B$ A is contained in B / A is a subset of B
- $A \cap B$ A cap B / A meet B / A intersection B
- $A \cup B$ A cup B / A join B / A union B
- $A \times B$ A cross B / the Cartesian product of A and B

Logic

- $\exists x$ there exists x
- $\forall x$ for all x
- $p \Rightarrow q$ p implies q / if p, then q
- $p \Leftrightarrow q$ p if and only if q / p is equivalent to q

Various

- 1….10 one to ten
- -3 minus [negative] 3
- ∞ infinity
- [x] x in brackets
- -x minus [negative] x
- $\overline{x}$ x bar
- x^i x super i
- x_i xi / x subscript i / x suffix i / x sub i
- $\hat{x}$ x hat / x wedge
- $|x|$ mod x / modulus x / absolute value of x
- $n!$ n factorial
- $\sum_{i=1}^{N} X_i$ the sum of X sub i from i equals 1 to N / the sum as i runs from 1 to N of the X sub