

Math Terminology with Latin Roots

Since more than half of English words have Latin roots, it is no surprise that Latin permeates terminology in the natural science fields as well. Many mathematical words have Greek or Arabic origins, but there are also an abundance of terms derived from Latin. Listed below is a selection of mathematical terms with some of the more interesting Latin roots.

Acute: Comes from *acus, acus f.* which translates to needle, or more generally, anything sharp and pointy. [1]

Algebra: In the early 800s, mathematician al-Khowarizmi wrote a book in Arabic whose title translates as *The Book of Restoration and of Coming Together* (i.e. adding terms to one or two sides of an equation). Around 1100 Robert of Chester translated this book into Latin: *Liber algebrae et almucabala*. Though *Algebra* is a corruption of an Arabic word, and not at all rooted in Latin, it was this Latin translation that helped popularize the word. [2]

Calculate: *Calx, calcis f.* means stone. Small rocks or pebbles were used as counters in counting, so *calculo, calculare, calculavi, calculatus* became a verb meaning *to count*. *Calculate* comes from the fourth principal part. [2]

Calculus: In Latin, *Calculus, calculi m.* translates as *a small stone*. See previous entry. [2]

Cardinal: *Cardo, cardinis* means the hinge on a door. It becomes an adjective when the suffix *-alis* is added, and became a description for someone who was ‘important in his profession as a hinge is important to a door’ (Bello). It was used for clergymen in the Roman Catholic Church. Years later the word still had connotations of importance, thus it came to be used for the (arguably) most important type of numbers, positive integers. [2]

Complex: The verb *complector, complecti, complexus sum* means *to braid together, to embrace* and the verb *plico, plicare, plicavi, plicatus* means *to fold*. Out of these words came *complicare, complicavi, complicatus* which translates to *to fold together, to make intricate*. Complex numbers are made of real and imaginary parts, so they are two things in a sense folded together, making something potentially more complicated. [2]

Denominator: *Denomino, denominare, denominavi, denominatus* translates as *to give a name [to someone]*. i.e. (*de + nomen*). [2]

Determinant: *Determino, determinare, determinavi, determinatus* means *to fix limits [of something]*. The determinant of a matrix computes one number. [2]

Explicit: *Plico, plicare, plicavi, plicatus* means *to fold*. Adding *ex-* yields *explico, explicare, explicavi, explicatus* and translates as *to unfold*. i.e. something simple, not convoluted. [2]

Exponent: Formed by *ex + pono, ponere, posui, positus*, altogether meaning *to be placed out of*. [1]

Fraction: *frango, frangere, fregi, fractus* means *to break*. [1]

Normal: The Latin adjective *normalis, normale* means *made according to the square, standard*. A normal vector is perpendicular to a plane, thus it is ‘made according to square’ creating a right angle. [2]

Operator: *opus, operis* means *work*. From this came the verb *operaror, operari, operatus, to work*. [2]

Percent: From the prepositional phrase *per centum. At the rate of one out of a hundred*. [2]

Prime: Comes from *primus, -a, -um*, meaning *first*. Prime numbers are in a multiplicative sense the ‘first’ of numbers because they cannot be formed by taking the product of two smaller natural numbers. [1]

Q.E.D. While this is not an English term, it is an example of Latin used directly in math. Q.E.D. is an abbreviation for *Quod erat demonstrandum* meaning *what was to be shown*. It is standard to write Q.E.D. at the end of a proof. [1]

Radius: The noun *radius, radii m.* means *rod, ray, spoke [of a wheel]*. [2]

Secant: *seco, secare, secavi, secatus: to cut*. A secant line cuts through a circle/curve. [1]

Sequence: Has Latin root *sequi, to follow*. A set of terms where one ‘follows’ after the other. [1]

Sine: The noun *sinus, sinus m.* is a *curve, bent surface*. Similarly, the other trigonometric names are Latin derivatives. [2]

Tangent: *To touch or border*. Comes from the verb *tango, tangere, tetigi, tactus*. [2]

Vector: comes from *veho, vehere, vexi, vectus*, and means ‘to carry’. This is the same root for vehicle. [1]

References

[1] Bello, Anthony Lo. *Origins of Mathematical Words: a Comprehensive Dictionary of Latin, Greek, and Arabic Roots*. Johns Hopkins Univ. Press, 2013.

[2] "Origins of Some Arithmetic Terms." *Law of Cosines*, www.pballew.net/arithmet.html.