

SAT Math Must-Know Vocabulary

This list of math vocabulary words includes math terms that appear repeatedly on the SAT. While there *are* more math words that you need to know besides these (for example: “tangent” and “perpendicular”), the following are some of the most frequently appearing terms. Having a good vocabulary isn’t just for the reading and writing sections!

integers	Integers are numbers without a fractional part (and that is why they are often called the <i>whole</i> numbers). Integers include 1, 2, 3, ... (the <i>counting</i> numbers) along with 0, -1, -2, -3, ...
even integers	Even integers can be divided by two without a remainder. The even integers include 2, 4, 6, 8, 10, 12, ... , 2^{753} , ... along with -2, -4, -6, ... , -37954, ... <i>and</i> 0.
odd integers	Odd integers can not be divided by two without a remainder. The odd integers include 1, 3, 5, 7, 9, 11, ... , $2^{452} + 1$, ... along with -1, -3, -5, ... , -37955, ...
positive, negative	A positive number is greater than zero, and a negative number is less than zero. Zero itself is neither positive nor negative. Note that a negative number raised to an even power is positive, and when raised to an odd power is negative. For example, $(-1)^{374} = 1$ but $(-1)^{373} = -1$.
rational	A rational number is any number that can be written as the ratio of two integers, i.e., a fraction. Rational numbers include $1/2$, $3/4$, 5 (since $5 = 5/1$), $22/7$, $1/3$, and so on. These numbers can always be written as a finite decimal or as a repeating decimal. For example, $2/5 = 0.4$ and $7/11 = 0.63\overline{63}$.
real	The real numbers are all the numbers on the number line, including the integers, the rational numbers, and everything else, which includes for example the <i>irrational</i> numbers such as $\sqrt{2}$ and π . Not to be confused with the <i>fake</i> numbers.
multiple	A multiple of a number is the result of multiplying that number by any integer. For example, the multiples of 15 include 15, 30, 45, 60, ...
factor	A factor of a number is any integer that can divide that number without a remainder. For example, the factors of 12 are 1, 2, 3, 4, 6, and 12; the factors of 29 are just 1 and 29.

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- prime** A prime number is a positive integer that has only two factors: itself and 1. The prime numbers include 2, 3, 5, 7, 11, . . . but do *not* include 1 (by convention). Every integer can be written as a unique product of prime numbers. For example, $84 = 2 \cdot 2 \cdot 3 \cdot 7$ (see if you can get that result by using “factor trees”).
- average (mean)** The average (also called the “mean” or “arithmetic mean”) of a group of numbers is the sum of the numbers divided by the number of numbers. For example, the average of the group of numbers $\{2, 4, 9\}$ is $(2 + 4 + 9)/3 = 5$. A typical SAT question might read: “The average of 2, x , and 4 is 5. What is x ?”
- median** The median of a group of numbers is the number in the middle of the group after the group has been numerically sorted. For example, the median of the numbers $\{9, 2, 4\}$ is 4, since when sorted, the numbers are $\{2, 4, 9\}$, and 4 is in the middle. For groups with an even number of numbers, the median is the average of the two middle numbers. For example, the median of the numbers $\{1, 1, 2, 4, 4, 9\}$ is $(2 + 4)/2 = 3$.
- mode** The mode of a group of numbers is the number or numbers which appear most often (there can be more than one mode for a given group). For example, the mode of the group of numbers $\{1, 2, 3, 3, 3, 4, 5, 6, 6, 6, 7, 8, 8\}$ is both 3 and 6.
- domain** The domain of a function is all of the possible values that can be used as input to the function, so that the function returns a real value. If the function is written as $y = f(x)$, the domain is all possible values of x such that y is a real number. For example, the domain of the function $f(x) = 1/(1 - x)$ is all real numbers except for $x = 1$, since if $x = 1$, the denominator is 0 and the function “blows up”. The domain of $f(x) = \sqrt{x}$ is all positive real numbers, along with zero. (Why?)
- range** The range of a function is all of the possible values that can be generated (output) by the function. If the function is written as $y = f(x)$, then the domain is all possible values of y . For example, the range of the function $f(x) = |x|$ is all positive real numbers along with 0. Occasionally, “range” is applied to a set of numbers, in which case it means the positive difference between the largest member of the set and the smallest member. For example, the range of the set $\{6, 8, 1, 4\}$ is $8 - 1 = 7$.