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 is helpful for math too!

integers

Integers are numbers without a fractional part (and that is why they are often called the *whole* numbers). Integers include 1, 2, 3, ... (the *counting* numbers) along with 0, -1, -2, -3, ...

remainder

When an integer is divided by another, the remainder is the *integer* amount that is left over. For example, when 66 is divided by 7, the remainder is 3, since 7 goes into 66 a total of 9 times, with 3 left over: $66 = 7 \times 9 + 3$.

even integers

Even integers can be divided by two without a remainder. The even integers include 0, 2, 4, 6, 8, 10, 12, ..., 2^{753}, ... along with -2, -4, -6, ..., -37954, ...

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 $(-1)^{373} = -1$.

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, ... but also 0, -15, -30, ...

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.

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 (the number 1 only has one factor, not two). The *prime factors* of a number are the factors of the number that also are prime. For example, the prime factors of 12 are 2 and 3 and the only prime factor of 29 is 29.

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average (arithmetic 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, 6, and 12 is 7. What is x?" In this case, the average is the sum of the numbers divided by 4. We can write: $(2+x+6+12)/4 = 7 \Rightarrow x+20 = 28 \Rightarrow x = 8$.

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.

in terms of

You are often asked on the SAT to solve for some variable "in terms of" another variable or variables. For example, if $6a + 12b = 3a + 6b - 9c + 15$, and you are asked to solve for a in terms of b and c, then simply solve for a with all other variables and numbers on the other side of the equation. Here, you would get $3a = 15 - 6b - 9c$ so that $a = 5 - 2b - 3c$.

less, fewer

A common SAT question type involves translating from words into an algebraic equation that you can solve. When you see "less" or "fewer" you should think *subtraction*. For example, "y is three less than twice x" is equivalent to $y = 2x - 3$. Another example: "Aubrey has 6 fewer cabbages than Bill does" could be written in equation form as $A = B - 6$. Note that the number or expression that comes before "less" or "fewer" appears *after* the minus sign in the equivalent expression.

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The following words are rarely seen; however, they define various concepts that you are expected to know on the SAT.

rational

A rational number is any number that can be written as a fraction: a ratio of two integers. 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 an infinite decimal that repeats. For example, $2/5 = 0.4$, $7/11 = 0.6\overline{36}3$, and $22/7 = 3.\overline{142857}$.

Important rational numbers to know from memory as decimals are: $1/2 = 0.5$, $1/3 = 0.\overline{33}$, $1/4 = 0.25$, $1/5 = 0.2$, $2/3 = 0.\overline{66}$, and $3/4 = 0.75$.

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 *irrational* numbers such as $\sqrt{2}$ and π. Not to be confused with the *fake* numbers.

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 $8 - 1 = 7$.