



Verbal-to-Algebraic Conversions

In algebra, the ability to convert verbal statements into algebraic expressions is an important skill to master. Without this knowledge, solving word problems could be quite difficult. The following table lists some of the more common words that you may encounter in word problems and how they are related to the four basic math operations.

WORDS DENOTING			
ADDITION	SUBTRACTION	MULTIPLICATION	DIVISION
exceed	decrease	double	each
greater than	difference	multiplied by	divide by
higher	diminish	[fraction] of	per
increase	drop	product	quotient
larger than	fewer than	times	ratio
more than	less than	triple	
plus	lower	twice	
sum	minus		
total	smaller than		

NOTES

- The word *and* is usually used as a conjunction: "The product of 4 *and* c " = $4c$. It is less commonly used to represent addition (as in "two *and* two are four").
- "15 more than a number" may be written " $15 + n$ " or " $n + 15$ ", but it is better to write the variable first and the constant last: " $n + 15$ ".
- "A number less 15" is written " $n - 15$ ", not " $15 - n$ ".
 "15 less a number" is " $15 - n$ ", not " $n - 15$ ".
 "The difference of 15 and a number" is " $15 - n$ ", not " $n - 15$ ".
- "The product of 15 and a number" is written as " $15n$ ". If you write " $n15$ ", you would be understood, but it is bad style.
- "The quotient of 15 and n " should be written $\frac{15}{n}$, not $\frac{n}{15}$.
- To treat an expression as a single number, use parentheses: "Twice the sum of b and c " is " $2(b + c)$ ".
- When you use a letter to represent an unknown, choose a letter that suggests what the unknown represents in the problem. For example, use T to represent time or temperature, d to represent distance or depth, and so on.
- Read from the beginning. Write the sentence in math symbols, but if you expect to need a number or a variable, and you get something else, start a new bracket. Close the brackets when the expressions you start are completed.
 Five times the sum of 15 and the quotient of the height and the base:
 $5 \times \dots$ the sum (add) $\rightarrow 5 \times (15 + \dots$ the quotient (divide) $\rightarrow 5 \times (15 + (h + b))$