

Expression	Definition	Key Idea	Example
Numerical	Mathematical phrase that includes <u>numbers & operators</u> but no <u>variables</u> .	represents and specific value for a quantity	$3(2)+10$ $6+10$ 16
Algebraic	Mathematical phrase that includes <u>numbers, operators &</u> one or more <u>variables</u> .	represents a general value for a quantity	$3x+10$

Why are algebraic expressions useful?

County cabs charges \$2 for accepting a ride, plus \$1.50 for every mile the cab travels during the ride. Zion, Krissy, and Fatima all want to know how much their rides will cost, but they are each traveling to different destinations. Is there a general way the cab company can advertise their cost?

General	Zion	Krissy	Fatima
$m = \text{miles}$ $1.50m + 2$	$m = 2$ $1.50(2) + 2$ $3 + 2$ 5	$m = 5$ $1.50(5) + 2$ $7.50 + 2$ 9.50	$m = 10$ $1.50(10) + 2$ $15 + 2$ 17

**When you Substitute a value for the variable, you transform the general, algebraic expression into a specific, numerical expression.

Scenario	Algebraic Expression
Ms. Draper prints five ^{x0} more papers than the number of students she has. Mr. Sellers prints twice ² that many. Write an algebraic expression for how many papers Mr. Sellers prints.	$s = \text{students}$ $2(s + 5)$
The price of boxes of erasers is the sum of three times the number of erasers and fifty cents. Write an algebraic expression for the price of boxes of erasers.	$e = \text{erasers}$ $3e + .50$
Ciara splits her candy into 10 groups, but then adds 3 more pieces to one of the groups. Write an algebraic expression for the number of pieces of candy in this group.	$c = \text{candy}$ $\frac{c}{10} + 3$
A server shares her tips with the kitchen staff, so she keeps \$15 less than the product of 10 and the number of tables she serves. Write an algebraic expression for what she keeps.	$t = \text{tables}$ $10t - 15$

Algebraic Expression	Formal English Expression
$\frac{10}{c+2}$	<ul style="list-style-type: none"> • 10 divided the quantity of C plus 2 • 10 divided by the sum of C and 2
$8(b-2)$	<ul style="list-style-type: none"> • 8 times the difference of b and 2 • 8 times the quantity of b subtract 2
$6x+2$	<ul style="list-style-type: none"> • The product of 6 and x added to 2 • 2 more than the product of 6 and x
$\frac{p}{4}-10$	<ul style="list-style-type: none"> • The quotient of p and 4 less minus 10 • 10 less than p and 4

Matching - Certain algebraic expressions have more than one verbal translation!

1) $4x+3$ a, i
 2) $\frac{c}{5}-9$ d
 3) $5-k$ e, j
 4) $\frac{c-9}{5}$ b
 5) $\frac{c}{9-5}$ g
 6) $4(x+3)$ f, h
 7) $k-5$ c

a) the sum of four times a number x and three
 b) the quotient of c minus nine and five
 c) five less than a number k
 d) nine less than the quotient of c and five
 e) the difference of a number k and five
 f) four times the sum of a number x and three
 g) the quotient of c and the difference of nine and five
 h) the product of four and the sum of x and three
 i) the product of four and a number x plus three
 j) a number k less than five