

The language of Mathematics

Word	Meaning	Example
Variable	An unknown value represented by a letter	$V = \frac{4}{3} \cdot \pi \cdot r^3$ (volume of a sphere) {Variables are V and r}
(Algebraic) Expression	An expression consisting of variables, numbers and operation symbols	$x - 4$, $2a^3b$, $\frac{x-1}{y^2}$
Equation	An algebraic expression which contains an equal (=) sign	$2x - y = 4(x - b)$, $5 = 2x + 1$
Terms	Algebraic forms that are separated by "+" or "-" signs, (signs included)	$-2x + 5y^2 - ac^4b$ terms: $-2x$, $+5y^2$, $-ac^4b$
Like terms	Terms with exactly the same variable part.	In $-2x + 5zy^2 + x - zy^2$ $-2x$, $+x$ are like terms $+5zy^2$, $-zy^2$ are like terms
Constant term	A term that doesn't have any variables.	In $2x - 1 + b$, -1 is a constant term
Coefficient	The number factor of any variable in a term	In $-2x + 5zy^2$ -2 is the coefficient of x $+5$ is the coefficient of zy^2

Symbol	Words
+	Addition, Add, Plus, Increase, total
-	Subtraction, Subtract, Less, Minus, Difference, Decrease
×	Multiplication, Multiply, Product, By, Times
÷	Division, Divide, Quotient

Part I

1. Write down algebraic expressions for:
 - a. a and d divided by 7
 - b. d and e, all divided by 8
 - c. y squared and 5
 - d. 3 and z, all cubed
 - e. Half of the sum of a and b
 - f. Triple the sum of a and b
 - g. The sum of x and y, all cubed
 - h. One fourth of the sum of t and w and p
 - i. Five times a, subtracted from b
 - j. Two times the sum of a and b
 - k. Three less than y
 - l. 10 more than a
 - m. The product of g and f, all squared
 - n. The product of the squares a, b and c
 - o. 5 less than w, all cubed
 - p. Half of the average of b and c
 - q. The product of the square of b and 7

Part II

1. If $k=2$, $t=-1$, $n=-2$ and $m=5$, find the value of:

a. $k - 2(t - 1) =$

b. $1 - 4(n + 1) =$

c. $\frac{10-k}{m} =$

d. $9t - 5 =$

e. $2(2k + 3) =$

f. $10(2m - 5k) =$

g. $3k(2t + 7m) - 5 =$

h. $4(3m - 6) + 35 =$

i. $\frac{10-k}{m} =$

j. $\frac{5m}{n-1} =$

k. $\frac{k+4}{4} - \frac{2m-1}{3n} =$

2. If $w=3$, $q=-4$, $f=-2$ and $r=-5$, find the value of:

a. $w - 2(q - 1) =$

b. $1 - 4(f + 1) =$

c. $(w+q)^2 =$

d. $f^2 - q^2 + 2f =$

e. $(w+r)^2 =$

f. $(3q)^2 =$

g. $3q^2 =$

h. $5f^2 - 2w^3 + (3f)^2 =$

Part III

1. Simplify by collecting like terms:

a. $3x + 5x =$

b. $2x - x + 3 =$

c. $3a + 4a - 15a =$

d. $-3b + 4b - b + 8b =$

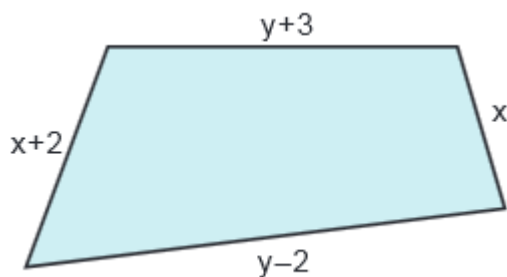
e. $-3b + 4a - b + 8a =$

f. $x + 3b - x + 7 - 2x + b - 2 =$

g. $b - 2b + 3b - 4b =$

h. $-6x + 4 - 4x + 8b - 8 + 2b =$

2. Find an algebraic expression for the perimeter of the following quadrilateral:



3. Connect each expression in the first column with the corresponding expression in the second column:

Column A	Column B
$2x + 5x - 3x$	$2x$
$-2x + 4x - 7x$	$-5x$
$x - 3x + 4x$	$-4x$
$-x + 3x - 6x$	$4x$

4. For each algebraic expression three simplifications are presented (columns A, B, C). Only ONE is correct. Which one is the correct one?

	A	B	C
1. $2x - 4x + 6x$	$12x$	$-2x$	$4x$
2. $3y - 3y + 4y$	$4y$	$10y$	$-5y$
3. $-5b + 3b - b$	$3b$	$-3b$	$9b$
4. $3c - 4b + 4b - 5c$	$8c+8b$	$2c$	$-2c$

5. Connect each algebraic expression in the first column with the corresponding expression in the second column:

Column A	Column B
$(4a + 5) + (a - 6)$	$-5a + 11$
$(-4a + 5) - (a - 6)$	$-5a + 1$
$(-4a + 5) - (a + 6)$	$-5a - 1$
$-(4a + 5) - (a - 6)$	$5a - 1$