

Topic: Algebra

Topic/Skill	Definition/Tips	Example
Term	Either a single number or variable, or numbers and variables multiplied together	$4x$ or 7
Variable	A symbol , usually a letter , which represents a number which is usually unknown.	In the equation $x + 2 = 5$, x is the variable.
Expression	A mathematical statement written using symbols, numbers or letters	$3x + 2$ or $5y^2$
Equation	A statement showing that two expressions are equal	$2y - 17 = 15$
Simplifying Expressions	Collect 'like terms'. Be careful with negatives. x^2 and x are not like terms.	$2x + 3y + 4x - 5y + 3$ $= 6x - 2y + 3$ $3x + 4 - x^2 + 2x - 1$ $= 5x - x^2 + 3$
x times x	The answer is x^2 not $2x$.	Squaring is multiplying by itself, not by 2. If $p=2$, then $p^3=2 \times 2 \times 2=8$, not $2 \times 3=6$ If $p=2$, then $2+2+2=6$, not $2^3 = 8$
$p \times p \times p$	The answer is p^3 not $3p$	
$p + p + p$	The answer is $3p$ not p^3	
Expand	To expand a bracket, multiply each term in the bracket by the expression outside the bracket.	$3(m + 7) = 3m + 21$
Solve	To find the answer /value of something Use inverse operations on both sides of the equation (balancing method) until you find the value for the letter.	Solve $2x - 3 = 7$ Add 3 on both sides $2x = 10$ Divide by 2 on both sides $x = 5$
Inverse	Opposite	The inverse of addition is subtraction. The inverse of multiplication is division.
Identity	An equation that is true for all values of the variables An identity uses the symbol: $\equiv$	$2x \equiv x+x$
Formula	Shows the relationship between two or more variables	Area of a rectangle = length x width $A = L \times W$
Function	A special relationship where each input has a single output . It is often written as " f(x) " where x is the input value.	$f(x) = \frac{x}{2}$ ("f of x equals x divided by 2")
Factorise	The reverse of expanding . Factorising is writing an expression as a product of terms by ' taking out ' a common factor .	$6x - 15 = 3(2x - 5)$, where 3 is the common factor.
Substitution	Replace letters with numbers. Be careful of $5x^2$. You need to square first, then multiply by 5.	$a = 3, b = 2$ and $c = 5$. Find: 1. $2a = 2 \times 3 = 6$ 2. $3a - 2b = 3 \times 3 - 2 \times 2 = 5$ 3. $7b^2 - 5 = 7 \times 2^2 - 5 = 23$

Writing Formulae	Substitute letters for words in the question.	Bob charges £3 per window and a £5 call out charge. $C = 3N + 5$ Where N=number of windows and C=cost
Where else is the Algebra topic used: Graphs Angles Measures Transformations		Links to other subjects: