Keywords

Integer	A **whole number** that can be positive, negative or zero.	$-3, 0, 92$
Decimal	A number with a **decimal point** in it. Can be positive or negative.	$3.7, 0.94, -24.07$
Negative Number	A number that is **less than zero**. Can be decimals.	$-8, -2.5$
Expression	A mathematical statement written using **symbols**, **numbers** or **letters**,	$3x + 2$ or $5y^2$
Equation	A statement showing that **two expressions are equal**	$2y - 17 = 15$
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 or A= LxW
Inverse	**Opposite**	The inverse of addition is subtraction. The inverse of multiplication is division.
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
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. $7b^2 - 5 = 7 \times 2^2 - 5 = 23$

Adding and Subtracting

Addition	To find the **total**, or **sum**, of two or more numbers. 'add', 'plus', 'sum'	$3 + 2 + 7 = 12$
Subtraction	To find the **difference** between two numbers. To find out how many are left when some are taken away. 'minus', 'take away', 'subtract'	$10 - 3 = 7$
Simplifying Expressions	**Collect 'like terms'.** Be careful with negatives. x^2 and x are not like terms.	$2x + 3y + 4x - 5y + 3 = 6x - 2y + 3$ $3x + 4 - x^2 + 2x - 1 = 5x - x^2 + 3$

Multiplying and Dividing

Multiplication	Can be thought of as **repeated addition**. 'multiply', 'times', 'product'	$3 \times 6 = 6 + 6 + 6 = 18$
Division	Splitting into equal parts or groups. The process of calculating the **number of times one number is contained within another one**. 'divide', 'share'	$20 \div 4 = 5$ $$\frac{20}{4} = 5$$
Remainder	The amount '**left over**' after dividing one integer by another.	The remainder of $20 \div 6$ is 2, because 6 divides into 20 exactly 3 times, with 2 left over.
Expand	To expand a bracket, **multiply** each term **in the bracket** by the expression **outside** the bracket.	$3(m + 7) = 3x + 21$

BIDMAS

BIDMAS	An acronym for the **order** you should do calculations in. BIDMAS stands for **'Brackets, Indices, Division, Multiplication, Addition and Subtraction'**. Indices are also known as 'powers' or 'orders'. With strings of division and multiplication, or strings of addition and subtraction, and no brackets, work from left to right.	$6 + 3 \times 5 = 21, not\ 45$ $5^2 = 25$, where the 2 is the index/power. $12 \div 4 \div 2 = 1.5, not\ 6$
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 $\qquad 2x = 10$ Divide by 2 on both sides $\qquad x = 5$
Rearranging Formulae	**Use inverse operations** on both sides of the formula (balancing method) until you find the expression for the letter.	Make x the subject of $y = \frac{2x-1}{z}$ Multiply both sides by z $\qquad yz = 2x - 1$ Add 1 to both sides $\qquad yz + 1 = 2x$ Divide by 2 on both sides $\qquad \frac{yz + 1}{2} = x$ We now have x as the subject.

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