

Algebra is about working with something unknown. The use of a letter is in the place of the missing value. $\square + 5 = 11 \Rightarrow$

Simplifying Algebra

$x + 5 = 11$

1 is not 0
 $a = 1a$

Addition Rule
 $a + a + a = 3a$
 $2a + a = 3a$
 We can only add the same letter together.
 $2b + a = 2b + a$

Multiplication Rule
 $4 \times a = 4a$ Remove the X "Smush" them together.
 $a \times b = ab$
 $a \times a = a^2$

E.g.

$2a + 4b$	$+ 4a - 2b + 5$
$= 2a + 4a$	$+ 4b - 2b + 5$
$= 6a$	$+ 2b + 5$

Hint: colour code if you are struggling.

Expanding Brackets

To remove the brackets, we need to multiply everything on the inside by everything on the outside.

E.g.

$3(a + 5)$
$= 3 \times a + 3 \times 5$
$= 3a + 15$

Vocabulary: Variable - the letter or the unknown
 Expand - get rid of the brackets
 Simplify - make less complex
 Solve - find the answer
 Substitution - replacing something, with something else
 Inequalities - something not equal to something else

Substitution

Wherever there is a letter, we replace it with the value we know. Not in all algebra questions.

E.g.

$a = 5$	$a + 6a$
$= 5$	$+ 6 \times 5$
$= 5 + 30$	$= 35$

Inequalities

< is less than, \leq is less than or equal to, > is greater than and \geq is greater than or equal to.

E.g. i) $x \leq 3$ ii) $x > 1$

"Double chin colour it in"

Solve

Work backwards or do inverse operations

E.g.

$4a + 3 = 23$
$a \rightarrow \times 4 \rightarrow +3 \rightarrow 23$ REVERSE $23 \rightarrow -3 \rightarrow \div 4 \rightarrow a$
$4a = 20$
$a = 5$