

Objectives

Substitute numerical values into formulae and expressions.

Understand and use standard mathematical formulae

<u>Year 7 Knowledge Organiser</u> -

Substitution and formulae



<u>Key Vocabulary</u>

Variable – an unknown value, represented by a letter

Term – a single number or variable, or numbers or variables multiplied or divided by each other (positive or negative)

Expression – two or more terms added and/or subtracted

Equation - an expression that contains an equal symbol

Formula – a relationship or rule

Like Terms - terms that have the same variables and powers

Inverse - reverse or opposite of a function

Expand - to multiply each term in the bracket by the expression outside the bracket

Substitute – swap a variable for a numerical value

Basic substitution

Evaluate 4c, when c*7	Evaluate 2a+5, when a+4
If c = 7, this means the expression is asking for 4 'lots i of' 7, or	lf a = 4, this means the expression is asking for 2 'lots of' 4 plus 5, or
4c - 4(7) - <u>28</u>	20*5 - 2(4) * 5 - 8 * 5 - 13

Harder Substitution

6 ($x^{2_{+}}$ 4) ← remember this means x squared, plus 4, all multiplied by 6 remember If x = 3; 6 ($x^{2_{+}}$ 4) = 6 ((3)^{2_{+}} 4) = 6 (9 + 4) = 6 (13) = 78 = 48

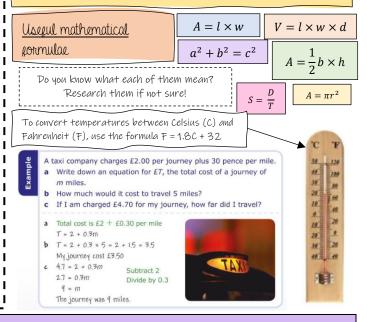
What is a formula?

A formula is a fact or rule that uses mathematical symbols.

It will usually have:

- An equals sign (=)
- Two or more variables (x, y, etc) that stand in for values we don't know yet

It shows us how things are related to each other.



Substitution Examples

If $x = 5$		
4 <i>x</i>	4 x 5	20
3x + 9	(3 x 5) + 9	24
2(6x - 4)	2(6 x 5 - 4) 2(30 - 4)	52
If $x = 10$ and $y = 3$		
2x + y	(2 x 10) + 3	23
xy	10 x 3	30
$\frac{1}{2}xy$	½ x 10 x 3	15
xy^2	10 x 3 ²	90
$4x^2y$	4 x 10 ² x 3	1200