

Key Vocabulary

Product	The result when two numbers are multiplies together
Variable	Varying quantity represented by a letter or symbol
Term	One part of an expression which maybe a number, variable or both
Coefficient	A number which multiplies a variable
Common factor	A whole number, which divides two or more other numbers exactly
Power	The number of times a base number is multiplied by itself
Indices	Is a small number placed to the top of a base number, showing how many times the number is multiplies by itself.
Formula, Formulae	A mathematical rule using symbols, usually as an equation describing a certain relationship between quantities
Subject	What a formula equals
Change the subject	Rearranging the formula so it equals another variable

Key facts / Diagrams

5 = **5x5x5x5** = **625**

4 ← index (exponent, power or order)
 ↻ base expanded value

10^3 10^2 10^1 10^0 10^{-1} 10^{-2} 10^{-3}
 1000 100 10 1 0.1 0.01 0.001

A power may be **positive** or **negative**.

Common misconceptions

- Some pupils may misapply the order of operation when changing the subject of a formula
- Many pupils may think that $a^0 = 0$
- Some pupils may not consider $4ab$ and $3ba$ as 'like terms' and therefore will not 'collect' them when simplifying expressions

Worked examples

If $a = 2$, $b = 3$ and $c = -4$

- $2b = 2 \times 3 = 6$
- $3a - 3b = 3 \times 2 - 3 \times 3 = 6 - 9 = -3$
- $5c = 5 \times -4 = -20$

$ab = ba$

$3a^2b + 4ab^2 + 2a^2 - a^2b = 2a^2 + 2a^2b + 4ab^2$

$3(a+2) = 3a + 6$
 $4a(a - 2) = 4a^2 - 8a$

$5a + 10 = 5(a + 2)$
 $12ab - 3ab^2 = 3ab(4 - b)$

$y = 4x$ rearrange to make x the subject
 $y/4 = x$