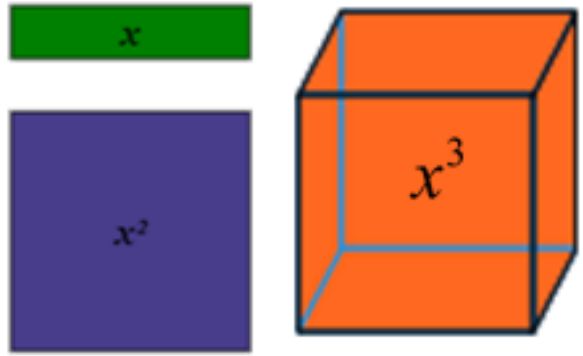
Algebra 3 – Algebraic Proficiency – Knowledge Organiser

Objective
Use and interpret algebraic notation.
Know how to collect like terms and simplify algebraic expressions.
Factorise Linear Expressions.
Simplify expressions using laws of indices for multiplication, division and powers.



Key Facts

a + a =2a

b x b = b^2

c + d does not simplify

e x 2 x f = 2ef

gh + gi = g(h+i)

$$a^b \times a^c = a^{b+c}$$

$$a^b \div a^c = a^{b-c}$$

$$(a^b)^c = a^{bc}$$

$$a^0 = 1$$

Probing Questions to Check

What is wrong with the following:

1) p x p + q = 2p + q
2) 6d – d = 6
3) 3a x 5a = 15a
4) $(5n)^2 = 5n^2$
5) $6a^2 - 9a^3 = a^2(6 - 9a)$
6) $r^3 + r^3 = r^6$

Explain your answers.

Key words used in this unit:

Variable - A quantity that can take on a range of values, often denoted by a letter, x, y, z, t, … etc.

Term - In Algebra a term is either a single number or variable, or numbers and variables multiplied together.

Coefficient - a numerical or constant quantity placed before and multiplying the variable in an algebraic expression (e.g. 4 in 4xy).

Common factor - A number which is a factor of two or more other numbers, for example 3 is a common factor of the numbers 9 and 30

Factorise - To express a number or a polynomial as the product of its factors.

Index notation - The notation in which a product such as a × a × a × a is recorded as a^4. In this example the number 4 is called the index (plural indices) or power and the number represented by a is called the base.