

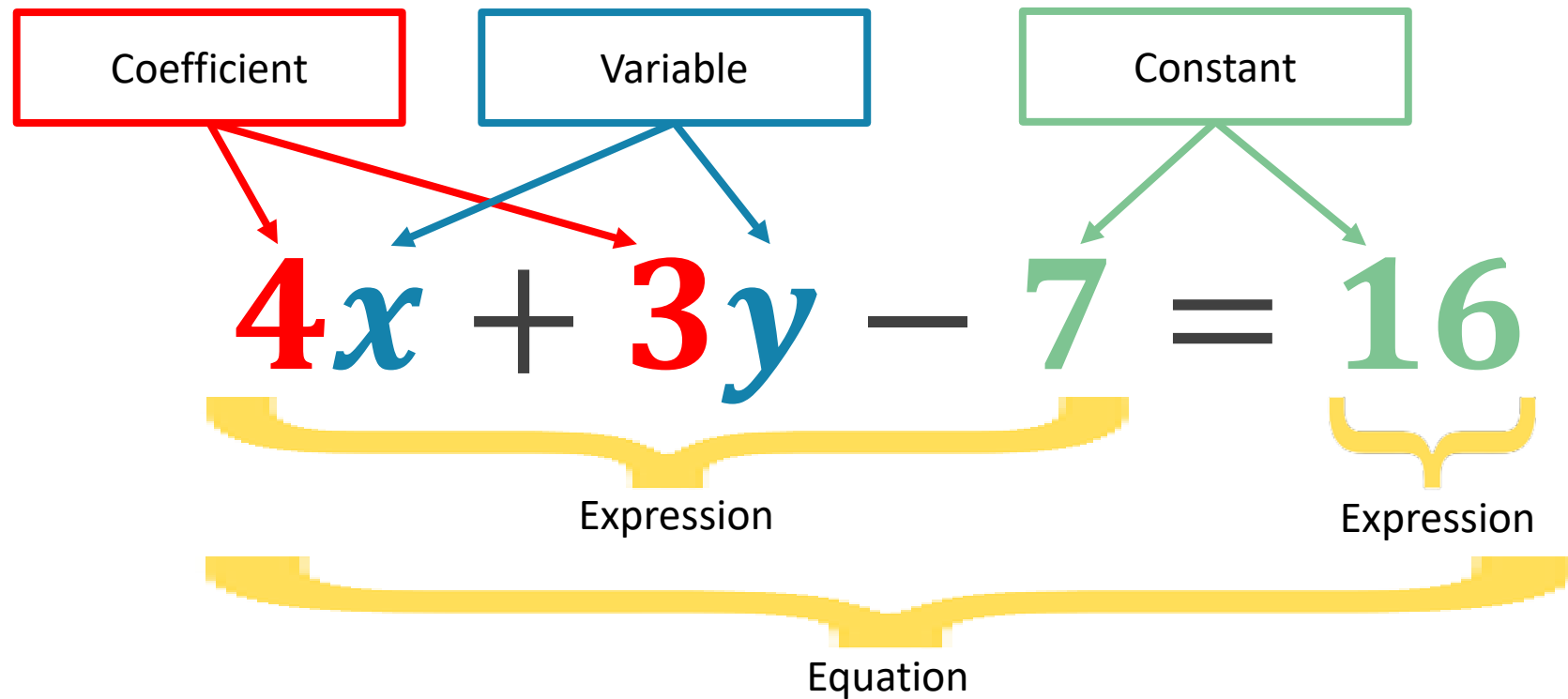
Algebra for Engineering #1



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**UNIVERSITY
CENTRE**

Algebra terminology



Terms: $4x$, $3y$, -7 , 16

Collecting like terms

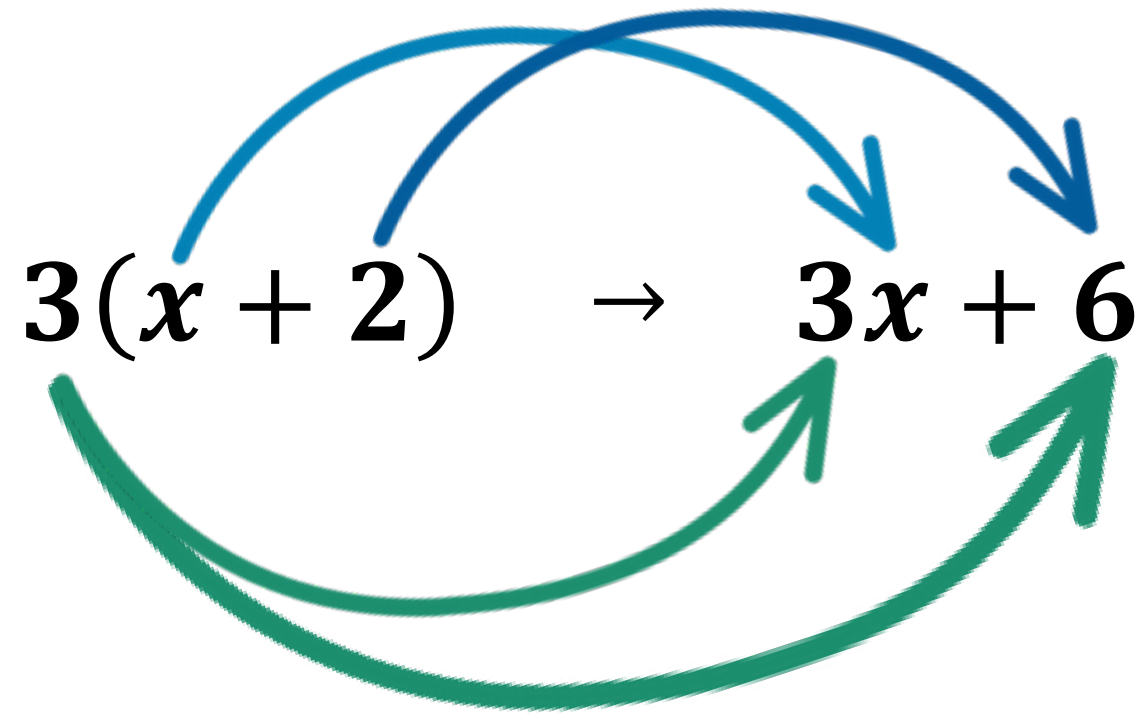
- When there are multiple terms with the same variable in them, we can simplify

$$2x + 5x + 3y = 4 \quad \rightarrow \quad 7x + 3y = 4$$

$$4x + 3 - 2x - 8 \quad \rightarrow \quad 2x - 5$$

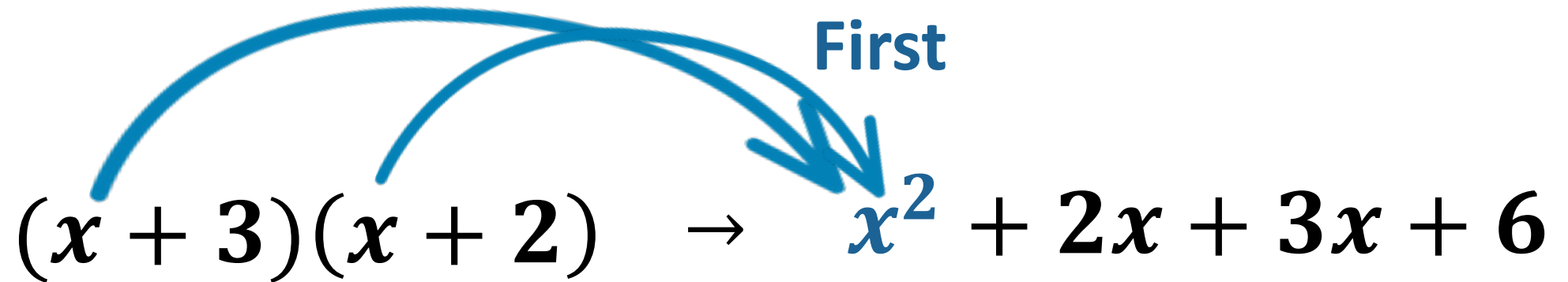
Expanding Brackets

- When working with brackets we have to multiply every term inside the brackets with every term outside the brackets



Expanding Multiple Brackets

- When multiplying brackets together we can use the **FOIL** method – First, Outer, Inner, Last



$(x + 3)(x + 2) \rightarrow x^2 + 2x + 3x + 6$

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Outer

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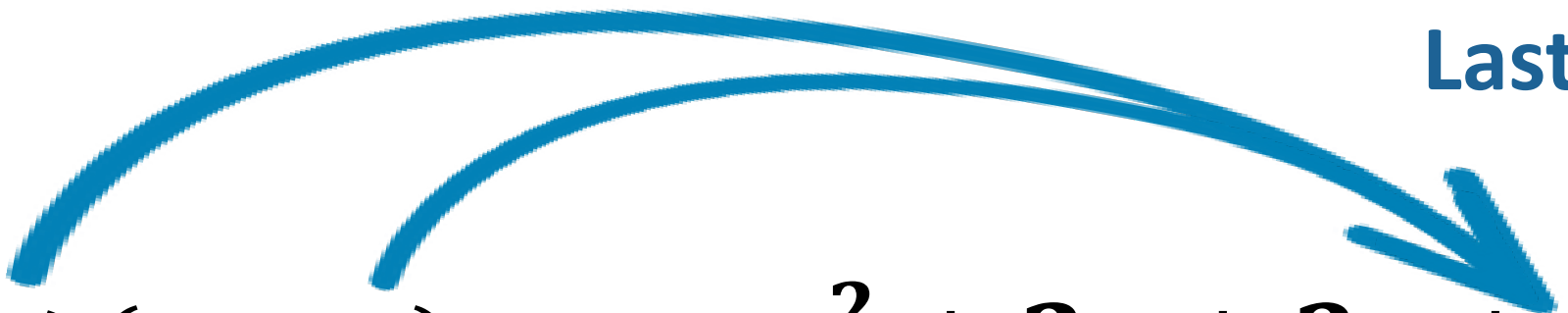

$$(x + 3)(x + 2) \rightarrow x^2 + 2x + 3x + 6$$

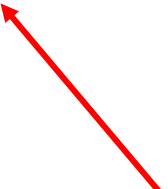
Diagram illustrating the FOIL method for expanding $(x + 3)(x + 2)$. The diagram shows the multiplication of the first terms ($x \cdot x$), the outer terms ($x \cdot 2$), the inner terms ($3 \cdot x$), and the last terms ($3 \cdot 2$). The result is $x^2 + 2x + 3x + 6$. The word "Last" is written above the final term, 6, with an arrow pointing to it.

Factorisation

- When factorising equations we need to find the largest common denominator

We know that: $3(x + 2) \rightarrow 3x + 6$

Therefore, we also know: $3x + 6 \rightarrow 3(x + 2)$



3 is the highest
common factor here,
between both term

Solving Equations

- When solving equations, we need to simplify as much as possible, we also must make sure we are doing the same to both sides of the equation

$$3x + 4 = 19$$

-4 -4

$$3x = 15$$

$\div 3$ $\div 3$

$$x = 5$$

