

Year 10 Maths Learning Journey

Autumn Term 4

Developing Algebra: Simultaneous Equations

Core knowledge	Reference
Understand that equations can have more than one solution "What possible solutions are there? Are there an infinite number of solutions? Why/Why not?"	<u>Worksheet</u>
Determine whether a given (x, y) is a solution to a pair of linear simultaneous equations "Why is there only one solution to two equations containing two variables?"	<u>Worksheet</u>
Solve a pair of linear simultaneous equations by substituting a known variable "What are the steps in solving this equation?"	Worksheet
Solve a pair of linear simultaneous equations by substituting an expression "How can you check your answers?"	<u>Worksheet</u>
Solve a pair of linear simultaneous equations using graphs "What is true about the coordinates of the point where two lines meet? How do they relate to the equations?"	<u>Worksheet</u>
Solve a pair of linear simultaneous equations by subtracting equations "Why is it useful to 'eliminate' one of the variables?"	<u>Worksheet</u>
Solve a pair of linear simultaneous equations by adding equations "Does it matter which equation we substitute into?"	<u>Worksheet</u>
Use a given equation to derive related facts (R) "What happens when we substitute our original solutions into the equivalent equations? Why does this happen?"	<u>Worksheet</u>
Solve a pair of linear simultaneous equations by adjusting one equation "Why do we need the coefficient of one of the variables to be the same in both equations? How does this help us to solve the equations?"	<u>Worksheet</u>
Solve a pair of linear simultaneous equations by adjusting both equations "When making the coefficients the same, which variable should we choose?"	<u>Worksheet</u>
Form a pair of linear simultaneous equations from given information "How could we check whether the equation we have written down is correct?"	<u>Worksheet</u>
Form and solve pair of linear simultaneous equations from given information "When making the coefficients the same, which variable should we choose? How do we know whether to add or subtract the equations?"	<u>Worksheet</u>
Determine whether a given (x, y) is a solution to both a linear and quadratic equation (H) "What's the same and what's different about the equations of a straight line and the equations of a curve?"	<u>Worksheet</u>
Solve a pair of simultaneous equations (one linear, one quadratic) using graphs (H) "Why is it easier to substitute back into the linear equation to find the value of y?"	<u>Worksheet</u>

Solve a pair of simultaneous equations (one linear, one quadratic) algebraically (H) "Which method is most efficient?"	<u>Worksheet</u>
Solve a pair of simultaneous equations involving a third unknown (H) "If I replaced the constant with a number would you be able to solve the pair of equations"	<u>Worksheet</u>

Learning Checkpoints

LC Title	Completed	Dirt
Simultaneous Equations		

Key Vocabulary:

Co-ordinate: In geometry, a coordinate system is a system which uses one or more numbers, or coordinates, to uniquely determine the position of a point in space

Dashed line: Inequalities that use < or > symbols are plotted with a dashed line to show that the line is not included in the region.

Equation: A mathematical statement showing that two expressions are equal.

Expression: A mathematical form expressed symbolically.

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

Inequality: When one number, or quantity, is not equal to another.

Intersect: To have a common point or points.

Inverse operations: Operations that, when they are combined, leave the entity on which they operate unchanged.

Linear: In algebra, describing an expression or equation of degree one.

Number line: A straight, horizontal line with numbers placed at even increments along the length.

Quadratic: Describing a expression of the form ax2 + bx + c where a, b and c are real numbers.

Region: a non-empty connected open set in a topological space, in particular any non-empty connected open subset of the real coordinate space Rⁿ or the complex coordinate space Cⁿ

Roots: A solution to an equation, usually expressed as a number or an algebraic formula.

Satisfy: A value (or values) that solve an equation.

Set notation: Used in mathematics to essentially list numbers, objects or outcomes.

Solid line: Inequalities that use \leq or \geq symbols are plotted with a solid line to show that the line is included in the region.

Solution: A value or values which, when substituted for a variable in an equation, make the equation true. **Solution set:** The set containing all the solutions of an equation

Solve: To find a value (or values) we can put in place of a variable that makes the equation true

Solve graphically: Plot two equations, look for the point where the two graphs cross one another.

Test point: a chosen point to test the inequality not on the line drawn, where the point lies in one of the half-planes formed by the boundary line.

Union: The set made by combining the elements of two sets

Unknown: A number we do not know. Also known as variables and represented by algebraic terms.

Value: refers to the worth of each digit depending on where it lies in the number.

Variable: a symbol (usually a letter) standing in for an unknown numerical value in an equation.

y-intercept: The point where a line or curve crosses the y-axis of a graph. In other words: find the y value when x equals 0.