



Year 10 Maths Learning Journey

Autumn Term 3

Developing Algebra: Representing solutions of equations and inequalities

Core knowledge	Reference
Understand the meaning of a solution "Do solutions to equations have to be integers?"	Worksheet
Form and solve one-step and two-step equations (R) "Does it matter which order the terms in an equation are written?"	Worksheet
Form and solve one-step and two-step inequalities (R) "What's the same and what's different about solving an equation or an inequality?"	Worksheet
Show solutions to inequalities on a number line "What does the circle mean? Which direction will the line go?"	Worksheet
Interpret representation on number lines as inequalities "Do the solution sets contain only integers?"	Worksheet
Represent solutions to inequalities using set notation (H) "Which representation do you think is the easiest/hardest to understand?"	Worksheet
Draw straight line graphs (R) "How do you decide what values of x to choose for a table of values?"	Worksheet
Find solutions to equations using straight line graphs "How do we know which graphs to draw to solve e.g. $5x - 2 = 9$?"	Worksheet
Represent solutions to single inequalities on a graph (H) "What is the significance of the dashed line and solid line when looking at regions of inequalities?"	Worksheet
Represent solutions to multiple inequalities on a graph (H) "How do you decide which side of a line to shade in and which side not to shade in?"	Worksheet
Form and solve equations with unknowns on both sides (R) "How many values of x will satisfy this equation? Why?"	Worksheet
Form and solve inequalities with unknowns on both sides "Explain the difference between $x < 7$ and $7 > x$ "	Worksheet
Form and solve more complex equations and inequalities "Do you always need to expand brackets when they occur in an equation?"	Worksheet
Solve quadratic equations by factorisation (H) "Find some solutions to $ab = 12$ and $ab = 0$ "	Worksheet
Solve quadratic inequalities in one variable (H) "How do we know whether to look above or below the x -axis?"	Worksheet

Learning Checkpoints

LC Title	Completed	Dirt
Representing solutions of equations and inequalities		

Key Vocabulary:

Brackets: Symbols used to group numbers in arithmetic or letters and numbers in algebra and indicating certain operations as having priority.

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.

Plot: The process of marking points.

Quadratic: Describing an expression of the form $ax^2 + bx + c$ 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 $\mathbb{R}^n$ or the complex coordinate space $\mathbb{C}^n$

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

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.