



Year 9 Maths Learning Journey

Autumn Term 1

Reasoning with algebra: Straight line graphs

Core knowledge	Reference
Lines parallel to the axis, $y=x$ and $y=-x$ (R) “Which axis is $y = 4$ parallel to? How do you know?”	Worksheet
Using tables of values (R) “How does the function machine link to the equation?”	Worksheet
Compare gradients “How does changing the coefficient of x in the equation of a line affect the line?”	Worksheet
Compare intercepts “What does it mean if the y -intercept of a straight line is positive/negative?”	Worksheet
Understand and use $y=mx+c$ “In $y = mx + c$, what do m and c represent?”	Worksheet
Write an equation in the form $y=mx+c$ (H) “Are the lines $2y - 4x$ and $y = 2x$ parallel? How do you know?”	Worksheet
Find the equation of a line from a graph “How do you work out the gradient of a line? How can you then find its equation?”	Worksheet
Interpret gradients and intercepts of real-life graphs “Why does the table of values only have positive values?”	Worksheet
Model real-life graphs involving inverse proportion (H) “Why does the graph never meet the axis?”	Worksheet
Explore perpendicular lines (H) “When two lines are perpendicular, why must one gradient be positive and one be negative?”	Worksheet

Learning Checkpoints

LC Title	Completed	Dirt
Straight line graphs		

Key Vocabulary:

Asymptote: a line such that the distance between the curve and the line approaches zero as one or both of the x or y coordinates tends to infinity

Axis: A fixed, reference line along which or from which distances or angles are taken

Coordinate: 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

Curve: A curve is a shape or a line which is smoothly drawn in a plane having a bent or turns in it.

Direct proportion: Two variables x and y are in direct proportion if the algebraic relation between them is of the form $y = kx$, where k is a constant.

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

Function: A function is a relation between a set of inputs and a set of permissible outputs with the property that each input is related to exactly one output.

Gradient: A measure of the slope of a line.

Graph: A diagram showing a relationship between variables. Adjective: graphical.

Horizontal: Parallel to the horizon.

Intercept: To cut a line, curve or surface with another.

Inverse proportion: Two variables x and y are inversely proportional if the algebraic relation between them is of the form $xy = k$

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

Negative: An integer less than 0.

Negative reciprocal: The negative reciprocal of a number is to take negative one, and divide by the value.

Parallel: Parallel lines, curves and planes never meet however far they are produced or extended.

Positive: A number greater than zero.

Real life: Functional maths is activities linking maths to the real world.

Rearrange: To rearrange the equation so that it is written as take each term and move to the other side of the equal sign using the opposite operation until you only have. remaining on the left.

Reciprocal: The multiplicative inverse of any non-zero number.

Slope: The slope of the line is the ratio of the rise to the run, or rise divided by the run. It describes the steepness of line in the coordinate plane.

Steep: The steepness, incline, or grade of a line is measured by the absolute value of the slope.

Straight line: A line that extends to both sides till infinity and has no curves.

Table of values: A table of values is a set of ordered pairs usually resulting from substituting numbers into an equation.

Vertical: The up-down direction on a graph or map.

y-intercept: The point where a line or curve crosses the y-axis of a graph

