



Year 9 Maths Learning Journey

Summer Term 3

Reasoning with proportion: Rates

Core knowledge	
Solve speed, distance and time problems without a calculator “What can you mark onto your double number line?”	WORKSHEET
Solve speed, distance and time problems with a calculator “How do we know where to substitute the values?”	WORKSHEET
Use distance-time graphs “How can we identify speeds that are slower, quicker, equal?”	WORKSHEET
Solve problems with density, mass and volume “What is the difference between mass and volume?”	WORKSHEET
Solve flow problems and their graphs “Compare two cylinders of the same height, but different diameters. Which will fill more quickly?”	WORKSHEET
Rates of change and their units “What units are used in the question? What units do you need for an answer?”	WORKSHEET
Convert compound units “If you know a speed in kilometres per hour, what steps would you take to convert it to metres per second?”	WORKSHEET

Learning Checkpoints

LC Title	Completed	Dirt
Rates		

Key Vocabulary

Accuracy: the degree to which the result of a measurement or calculation, conforms to the correct value or a standard.

Average: calculated "central" value of a set of numbers

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

Constant rate: when the ratio of the output to the input stays the same

Convert: Changing from one quantity or measurement to another.

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

Density: the amount of mass per unit of volume

Distance: A measure of the separation of two points.

Double number line: consist of two single number lines with corresponding pairs of values lined up.

Flow rate: the mass of a substance which passes per unit of time

Gradient: a measure of the slope of a line.

Imperial: units such as the inch and the mile

Mass: Mass is measured in terms of the weight of a body.

Metric unit: Unit of measurement in the metric system

Minutes: a unit of time.

Origin: a fixed point from which measurements are taken. See also Cartesian coordinate system.

Per hour: A frequency rate of occurrences of something within a period of time equal to sixty minutes.

Prism: A solid bounded by two congruent polygons that are parallel (the bases) and parallelograms (lateral faces) formed by joining the corresponding vertices of the polygons.

Rate of change: used to mathematically describe the percentage change in value over a defined period of time

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.

Round: In the context of a number, express to a required degree of accuracy. E.g. 543 rounded to the nearest 10 is 540.

Speed: tells us how fast something or someone is travelling

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

Substitute: Numbers can be substituted into an algebraic expression in x to get a value for that expression for a given value of x.

Time: a point of time as measured in hours and minutes past midnight or noon.

Units: A standard used in measuring e.g. the metre is a unit of length; the degree is a unit of turn/angle, etc.

Volume: the amount of space that a substance or object occupies, or that is enclosed within a container.