



Year 10 Maths Learning Journey

Spring Term 4

Proportion and proportional change: Ratios and fractions

Core knowledge	Reference
Compare quantities using a ratio (R) “Why do units need to be the same in order to write a ratio?”	WORKSHEET
Link ratios and fractions (R) “Can a ratio compare more than two quantities?”	WORKSHEET
Share in a ratio (given total or one part) (R) “Do you always need to add the numbers of parts first when solving a ratio problem? Why or why not?”	WORKSHEET
Use ratios and fractions to make comparisons “If the numerators/denominators of two fractions are the same, how can you identify the greater fraction?”	WORKSHEET
Link ratios and graphs “Can a direct proportion graph have a negative gradient?”	WORKSHEET
Solve problems with currency conversion “How can you find values that cannot be read from the graph?”	WORKSHEET
Link ratios and scales (R) “How do you know whether to divide or multiply when doing calculations involving scales?”	WORKSHEET
Use and interpret ratios of the form 1 : n and n : 1 “How does getting the ratio into the form 1:n help you to compare ratios?”	WORKSHEET
Solve best buy problems “Why might factors or multiples be useful in this problem?” Which one would be the best buy for each item: 4 litres of juice for £1.80 or 3 litres of juice for £1.50	WORKSHEET
Combine a set of ratios “Why are equivalent ratios useful in this question?”	WORKSHEET
Link ratio and algebra “Express a in terms of b if $a : b = 2 : 3$ ”	WORKSHEET
Ratio in area problems (H) “How can we use the ratio of the areas of two similar shapes to find the scale factors of their areas?”	WORKSHEET
Ratio in volume problems (H) “How can you find the ratio of the volumes of two shapes if you only know their surface areas?”	WORKSHEET
Mixed ratio problems “If two shapes are similar, what do we know about the ratios of the side lengths?”	WORKSHEET

Learning Checkpoints

LC Title	Completed	Dirt
Ratios and fractions		

Key Vocabulary:

Bearings: Bearings are angles, measured clockwise from north.

Best value: best value problems involve assessing which item is the best value for money.

Compare: process or method in which one can determine whether a number is smaller, greater, or equal to another number according to their values.

Convert: Changing from one quantity or measurement to another.

Direct proportion: Two variables x and y are in direct proportion if the algebraic relation

Enlarge: a type of transformation where we change the size of the original shape to make it bigger or smaller by multiplying it by a scale factor.

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

Equivalent: equal in value, amount, function, meaning, etc.

Exchange rate: the value of one currency for the purpose of conversion to another.

Express: We write an expression in math by using numbers or variables and mathematical operators which are addition, subtraction, multiplication, and division.

Fraction: the result of dividing one integer by a second integer

Gradient: a measure of the slope of a line.

Integer: Any of the positive or negative whole numbers and zero. Example: 2, -1,

LCM – the common multiple of two or more numbers which has the least value

Map: A diagram of a place, using a scale factor.

Non-integer: Non-integers are any number that is a decimal, fraction, or mixed unit.

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

Part/whole: part whole model is a pictorial representation that shows the relationship between a whole and its parts.

Proportion: if two variables x and y are related by an equation of the form $y = kx$, then y is directly proportional to x ; it may also be said that y varies directly as x . When y is plotted against x this produces a straight line graph through the origin.

Ratio: A part to part comparison.

Represent: a very general relationship that expresses similarities (or equivalences) between mathematical objects or structures.

Scale factor: For two similar geometric figures, the ratio of corresponding edge lengths.

Share: Splitting into equal parts or groups

Similar: Two figures are said to be similar if they are the same shape

Simplest form: A fraction that has been reduced fully.

Unit/Unitary: finding the value of a single unit

Unit cost: tells us the cost per liter, per kilogram, per pound, etc, of what we want to buy.

Unknown: an unknown is a number we do not know

Variable: A quantity that can take on a range of values, often denoted by a letter, x , y , z , t ,