The Sutton Academy

Knowledge Rich Curriculum Plan

Year 11 Higher – Ratio and Proportion

Lesson/Learning Sequence	Intended Knowledge: *Students will know that…*	Tiered Vocabulary	Steps to Success	Prior Knowledge: *In order to know this students, need to already know that…*	Feedback
To learn how to solve problems involving sharing in a ratio	• Students will know how to share an amount in a given ratio • Students will know how to find quantities within a ratio when the value of one part is given. • Students will know how to find quantities within a ratio when the difference between two parts is given. • Students will know how to solve more complex ratio problems including those which involve percentages and fractions	Ratio - in mathematics, a ratio indicates how many times one number contains another. Share – split up between parts	Step 1: Draw out the ratio given to you in the question using boxes Step 2: Identify whether the value you are given in the question represents the whole ratio, one part of the ratio or the difference between the two parts. Show this on your diagram. Step 3: Divide the value given to you by the number of parts that it represents in the diagram Step 4: Write the answer in each box/part within the ratio Step 5: Work out the answer to the question by multiplying the amount in each box by the appropriate number of boxes/parts required for the answer.	• Students should already know how to express a worded situation in the form of a ratio • Students should already know how to simplify ratio to their simplest form and write a ratio in the form 1 : n or n : 1 • Students should already know how to write parts of a ratio as fractions	Exam Prep 4
To learn how to solve more complex problems involving ratio	• Students will know how to combine two ratios in the form a:b, b:c etc. and use them for comparison between three parts. • Students will know how to solve problems involving converting ratio into fractions	Lowest Common Multiple – the smallest number that is in both numbers multiplication tables	•	• Students should already know how to write parts of a ratio as fractions • Students will need to know how to multiply fractions • Students will need to know how to add fractions • Students will need to know how to find the LCM of two numbers	Should we include algebra – doesn't match overview.
To learn how to solve real life problems involving direct and inverse proportn Boost topic	• Students will know how to find the best buy by either finding the value of one item for each option or finding the value of a common multiple of each item. • Students will know how to find the best buy in more complex scenarios where percentage discounts or fractions are also involved • Students will know how to convert between different currencies using multiplication and division. • Students will know how to convert currencies using a conversion graph by drawing lines from a given currency on one axis to the line on the graph and then across/down to convert to the other currency • Students will know the difference between direct and inverse proportion	Proportion – a part, share, or number considered in comparative relation to a whole Direct Proportion – If two things are directly proportional then if one increases, so does the other, if one decreases, then so does the other Value – how much money something is worth Multiple – a number that is in the given number's multiplication tables	•	• Students will know how to calculate fractions of amounts • Students will know how to calculate percentages of amounts	Is a mixture of inverse and direct problems better to do?

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	• Students will know how to solve real life problems involving inverse proportion without using algebra (e.g. number of worker problems etc.)	Factor – a number that will divide into the given number without leaving a remainder. Currency - a system of money in general use in a particular country. Convert – change/ swap to Inverse – Opposite Inverse Proportion – If two things are inversely proportional then as one increases the other decreases or vice versa			
To learn how to solve algebraic direct proportion problems	• Students will know how to solve algebraic direct proportion problems by writing an algebraic statement in the form y = kx before substituting in given values to find the value of k and then using the resultant formula to find further missing values. • Students will know that k is known as the constant of proportionality • Students will know how to solve algebraic direct proportion problems involving powers and roots	Direct Proportion – If two things are directly proportional then if one increases, so does the other, if one decreases, then so does the other Constant – a quantity or parameter that does not change its value whatever the value of the variables	If y is directly proportional to x, this can be written as $y \propto x$ An equation of the form $y = kx$ represents direct proportion, where k is the **constant of proportionality**. **Step 1:** Write out the equation y = kx, attaching the appropriate power to the 'x' and using the **variables** given in the question. **Step 2: Substitute** in the given values. **Step 3: Solve** the resulting **equation** to find k. **Step 4:** Rewrite the equation with the value for k. **Step 5:** Substitute in the given value to find the missing variable the question asks for.	• Students will need to know how to substitute numbers into formulae • Students will need to know how to solve simple step equations in the form a = bx, a = bx^2 etc.	Exam Prep 4
To learn how to solve algebraic inverse proportion problems	• Students will know how to solve algebraic inverse proportion problems by writing an algebraic statement in the form y = k/x before substituting in given values to find the value of k and then using the resultant formula to find further missing values. • Students will know that k is known as the constant of proportionality • Students will know how to solve algebraic inverse proportion problems involving powers and roots.	Inverse Proportion – If two things are inversely proportional then as one increases the other decreases or vice versa Constant – a quantity or parameter that does not change its value whatever the value of the variables	If y is inversely proportional to x, this can be written as $y \propto \frac{1}{x}$ An equation of the form $y = \frac{k}{x}$ represents inverse proportion. **Step 1:** Write out the equation $y = \frac{k}{x}$ attaching the appropriate power to the 'x' and using the **variables** given in the question **Step 2: Substitute** in the given values **Step 3: Solve** the resulting **equation** to find k **Step 4:** Rewrite the equation with the value for k	• Students will need to know how to substitute numbers into formulae • Students will need to know how to solve one step equations involving fractions	Exam Prep 4

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			Step 5: Substitute in the given value to find the missing variable the question asks for		