



The Sutton Academy

Knowledge Rich Curriculum Plan

Year 10 Higher+ Ratio and Proportion

Lesson/Learning Sequence	Intended Knowledge: <i>Students will know that...</i>	Tiered Vocabulary	Steps to Success	Prior Knowledge: <i>In order to know this, students need to already know that...</i>	Feedback
To learn how to solve problems involving sharing in a ratio	<ul style="list-style-type: none"> 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 	<p>Ratio - in mathematics, a ratio indicates how many times one number contains another.</p> <p>Share – split up between parts</p>	<p>Step 1: Draw out the ratio given to you in the question using boxes</p> <p>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.</p> <p>Step 3: Divide the value given to you by the number of parts that it represents in the diagram</p> <p>Step 4: Write the answer in each box/part within the ratio</p> <p>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.</p>	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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 and percentages 	<p>Lowest Common Multiple – the smallest number that is in both numbers multiplication tables</p>	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> Students should already know how to solve problems involving sharing in a ratio 	Exam Prep 4
To learn how to solve real life problems involving direct and indirect proportion	<ul style="list-style-type: none"> 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 	<p>Direct Proportion – If two things are directly proportional then if one increases, so does the other, if one decreases, then so does the other</p> <p>Value – how much money something is worth</p> <p>Multiple – a number that is in the given number's multiplication tables</p> <p>Factor – a number that will divide into the given number without leaving a remainder.</p> <p>Currency - a system of money in general use in a particular country.</p> <p>Convert – change/ swap to</p> <p>Inverse – Opposite</p>	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> Students will know how to calculate fractions of amounts Students will know how to calculate percentages of amounts 	Exam Prep 4

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	<ul style="list-style-type: none"> Students will know how to solve real life problems involving inverse proportion without using algebra (e.g. number of worker problems etc.) 	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	<ul style="list-style-type: none"> 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	<p>If y is directly proportional to x, this can be written as $y \propto x$</p> <p>An equation of the form $y = kx$ represents direct proportion, where k is the constant of proportionality.</p> <p>Step 1: Write out the equation $y = kx$, attaching the appropriate power to the 'x' and using the variables given in the question.</p> <p>Step 2: Substitute in the given values.</p> <p>Step 3: Solve the resulting equation to find k.</p> <p>Step 4: Rewrite the equation with the value for k.</p> <p>Step 5: Substitute in the given value to find the missing variable the question asks for.</p>	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<p>If y is inversely proportional to x, this can be written as $y \propto \frac{1}{x}$</p> <p>An equation of the form $y = \frac{k}{x}$ represents inverse proportion.</p> <p>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</p> <p>Step 2: Substitute in the given values</p> <p>Step 3: Solve the resulting equation to find k</p> <p>Step 4: Rewrite the equation with the value for k</p> <p>Step 5: Substitute in the given value to find the missing variable the question asks for</p>	<ul style="list-style-type: none"> 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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To learn how to solve problems involving direct and inverse proportion	<ul style="list-style-type: none"> Students will know how to solve algebraic direct and inverse proportion problems. Students will know how to combine direct and inverse proportion equations to form expressions 		<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> Students will need to know how to use direct and inverse proportion algebraically to find values 	Exam Prep 4