The Sutton Academy

Knowledge Rich Curriculum Plan

Year 10 Foundation – Ratio and Proportion

Lesson	Intended Knowledge:	Tiered Vocabulary	Prior Knowledge:	Steps to Success:	Feedback
To learn how to write and simplify ratios.	• Students will know how to express a situation in a ratio. • Students will know how to write a ratio in its simplest form. • Students will know how to simplify ratios in the form of 1 : n or n : 1. • Students will know how to convert fractions into ratios and vice versa. • Students will know how to compare ratios by converting to fractions.	**Ratio** - a way of representing the relationship between two amounts **Simplify –** make something simpler or easier to manage	• Students need to know how to find the HCF of two numbers.	**Steps to Success – Expressing as a ratio** **Step 1**: Read the question, it is important to identify which order the ratio needs to be written in. **Step 2:** Express the values in a ratio. **Steps to Success – Simplifying ratio** **Step 1:** Find the highest common factor of the two numbers. **Step 2:** Divide both numbers by the highest common factor. **Step 3:** Always double check that your answer has no common factors left in it. **Step 4:** If you have any commons factors left then repeat steps 1, 2 and 3. **Steps to Success – Simplifying ratios in the form n:1 or 1:n.** **Step 1:** Place the number 1 under the matching side of the ratio you have been given. **Step 2:** What number do you divide your matching value by to get the value of 1? **Step 3:** To keep the ratio equivalent, you must do the same divide to both sides of the ratio. This may come out as a decimal. **Steps to Success – Expressing ratios as fractions** **Step 1**: Identify the part of the ratio that you want – this is the numerator of the fraction. **Step 2:** Add up each part of the ratio – this is the denominator of the fraction. **Steps to Success – Expressing fractions as ratios** **Step 1**: The numerator is one of the values in the ratio. Determine which part of the ratio this is. **Step 2:** Subtract the numerator from the denominator. This will give you the other part of the ratio. Step 3: Double check that your ratio is in the correct order. **Steps to Success – Comparing ratios** **Step 1**: Express each part of the ratios as a fraction. **Step 2**: Find the common denominator of the two fractions by finding the lowest common multiple. **Step 3**: Multiple each numerator by the same value as its denominator. **Step 4**: Compare the fractions.	
To learn how to share an amount into a ratio.	• Students will know how to share a quantity into a two-part given ratio. • Students will know how to share a quantity into a three-part given ratio. • Students will know how to find quantities within a ratio when 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 ratio problems with context.	**Share** – split up between parts	• Students need to know how to divide using short division.	**Steps to Success – Sharing an amount into a ratio** **Step 1:** Represent the parts of the ratio in the form of boxes – remember to assign the ratio in the order of the question. **Step 2:** Count the number of the part. Divide the total amount by the number of parts. This will give you the amount that each part is worth. **Step 3:** Write the value of each part within the box. **Step 4:** Calculate the totals for each section of the ratio. **Step 5:** Check that you have answered the question. You may only need to state one amount rather than every amount. **Steps to success: Ratio - Given one quantity** **Step 1:** Represent the parts of the ratio in the form of boxes – remember to assign the ratio in the order of the question. **Step 2**: If you are given one value divide the amount by the number of parts for the person it is referring to.	

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				Step 3: Write the value of each part within the box **Step 4:** Calculate the totals for each section of the ratio. **Step 5:** Check if the question is asking for one value or for the total amount. **Steps to success: Ratio – Given the difference** **Step 1:** Represent the parts of the ratio in the form of boxes – remember to assign the ratio in the order of the question. **Step 2:** Count the **difference** in the number of the parts. Divide the difference by the difference in the number of parts. This will give you the amount that each part is worth. **Step 3:** Write the value of each part within the box. **Step 4:** Calculate the totals for each section of the ratio. **Step 5:** Check if the question is asking for one value or for the total amount.	
To learn how to scale up recipes.	• Students will know how to scale up simple recipes. E.g. take a recipe for two people and make it for four people or take a recipe for 8 people and make it for 2 people etc. • Students will know how to scale up recipes involving more than 1 step. E.g. take a recipe for 4 people and make it for 10 people. • Students will know how to scale up recipes involving scaling down to 1 and multiplying by the amount needed for the new recipe. **Opportunity for challenge:** • Students will know how to solve problems involving scaling up recipes.	Proportion – the relationship between two things where the change of one will have a direct or inverse change on another Direct Proportion –if one number increases, then so does the other or if one decreases then so does the other	• Students need to know how to multiply and divide integers.	**Steps to Success – Scaling recipes** To begin you need to Identify whether the ingredients in the recipe are being scaled up or down, if the new amount is bigger it is scaling up, if it is smaller, you are scaling down. There are multiple methods that can be carried out to find the ingredients for the new recipe: **Method 1** **Step 1:** Divide each ingredient by the amount the recipe is written for. This will give you the amount for one portion **Step 2:** Multiply the amount for one portion by the amount you need. **Method 2** **Step 1:** How can you get from the amount the recipe is given for to the amount you need? This can be either multiplying, divide or adding amounts together. **Step 2:** Carry out the same calculation you have used to then find each ingredient.	
To learn how to identify the best value for money.	• Students will know how to find the best value for money between 2 or 3 given values. • Students will know how to find the best value for money where a conversion in money is needed. E.g. One given in pounds and one given in pence. **Opportunity for challenge:** • Students will know how to find the best value for money where a conversion in the amount is needed. E.g. One is given in ml and one in litres. • Students will know how to find the best value for money in more complex scenarios where percentage discounts or fractions are also involved.	Value – how much money something is worth	• Students need to know how to find the LCM of two numbers.	**Steps to Success – The best value for money** **Method 1 – Finding the price of one item** **Step 1:** Divide the cost by the amount. You must show all of your working. **Step 2:** Write down the full answers and do not round anything. **Step 3:** Pick the smallest value. **Step 4:** Remember to write the name of the item that is the best value for money. **Method 2 – Finding the LCM of each item** **Step 1:** Find the lowest common multiple of each quantity. Write down all of your working. **Step 2:** Multiply the cost of each item in order to get the LCM quantity of each item, this is so you can compare. **Step 3:** Pick the smallest value. **Step 4:** Remember to write the name of the item that is the best value for money.	

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				Step five: Identify what the question is asking you for, is it asking for the cheapest item? Remember to write the name of the cheapest item and give your reasoning. Do not circle which is cheapest.	
To learn how to convert currencies.	•Students will know how to convert between different currencies.	**Currency** – a system of money in general use in a particular country **Convert –** change a value from one form to another **Cultural capital**	• Students need to know how to multiply decimals. • Students need to know how to divide decimals.	**Steps to Success – Currency conversion** **Step 1:** Highlight the exchange rate given in the question. **Step 2:** Establish which way you are using the exchange rate. Are you going to multiply or divide? **Step 3:** Carry out the calculation.	
To learn how to draw and interpret real life graphs.	•Students will know how to draw real-life situations including conversion graphs. •Students will know how to interpret real-life graphs involving estimating values, fixed costs and costs per unit. •Students will know how to draw line graphs. •Students will know how to interpret line graphs.	**Cultural capital**	• Students need to know how to plot coordinates.		
Exam Preparation 9					