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**Knowledge Rich Curriculum Plan**

Year 10 Higher+ Ratio and Proportion



| **Lesson/Learning Sequence** | **Intended Knowledge:**  *Students will know that…* | **Tiered Vocabulary** | **Prior Knowledge:**  *In order to know this, students need to already know that…* | **Assessment** |
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| **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 | * 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 and percentages * Students will know how to solve more complex ratio problems including algebraic problems | **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 | Exam Prep 4 |
| **To learn how to solve real life problems involving direct proportion** | * 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 | **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  **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 | * Students will know how to calculate fractions of amounts * Students will know how to calculate percentages of amounts | Exam Prep 4 |
| **To learn how to solve real life problems involving inverse proportion** | * Students will know the difference between direct and inverse proportion * Students will know how to solve real life problems involving inverse proportion without using algebra (e.g. number of worker problems etc.) | **Inverse** – Opposite  **Inverse Proportion** – If two things are inversely proportional then as one increases the other decreases or vice versa |  | Exam Prep 4 |
| **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 | * 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 = bx2 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 | * 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 |
| **To learn how to solve problems involving direct and inverse proportion** | * 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 |  | * Students will need to know how to use direct and inverse proportion algebraically to find values | Exam Prep 4 |