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**Knowledge Rich Curriculum Plan**

Year 11 Foundation – 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** |
| --- | --- | --- | --- | --- |
| **To learn how to calculate speed, distance and time** | * Students will know that * Students will know that * Students will know that * Students will know the formula triangle for speed, distance and time * Students will know how to solve basic SDT problems where the time is an integer number of hours and all units correspond * Students will know how to make simple conversions for minutes to decimal hours - they will know that 30 minutes is 0.5 hours and 15 minutes is 0.25 hours * Students will know how to calculate speed, distance or time given the two other variables including where the time needs to be converted into a decimal number of minutes or hours * Students will know how to calculate speed, distance or time using two variables where they need to convert time written in hours and minutes to a decimal * Students will know how to calculate average speed given distance and time for multi-stage journeys * Students will need to know how to solve more complex problems involving speed, distance and time | **Speed** – the rate at which someone or something moves or operates or is able to move or operate. | * Students should already know how to convert from minutes to hours and minutes |  |
| **To learn how to draw and interpret distance-time graphs** | * Students will know how to draw distance–time graphs. * Students will know how to work out time intervals for graph scales. * Students will know how to find the total time taken of individual sections of a distance-time graph. * Students will know how to find the speed of individual sections of a distance-time graph. * Students will know how to find the total distance in individual sections of a distance-time graph. * Students will know how to interpret information presented in a range of linear and non-linear graphs; * Students will know how to interpret graphs with negative values on axes; * Students will know how to interpret gradient as the rate of change in distance–time and speed–time graphs, graphs of containers filling and emptying, and unit price graphs. | Gradient – the change in height divided by the horizontal distance. | * Students need to know how to find the difference between two times |  |
| **To learn how to share in 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. |  | * Students need to know how to use the bus stop method |  |
| **To learn how to convert between different currencies** | * Students will know how to convert between different currencies. | **Currency** – a system of money in general use in a particular country.  **Convert** –change/ swap to | * Students will need to know how to multiply decimals * Students will need to know how to divide decimals |  |
| **To learn how to solve real life problems involving direct and inverse proportion** | * Students will know the difference between direct and inverse proportion * Students will know how to solve real life problems involving direct 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 | * Students will need to know how to multiply and divide |  |
| **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 | **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 one step equations in the form a = bx |  |
| **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 | **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 |  |