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**Knowledge Rich Curriculum Plan**

Year 11 Foundation+ Compound Measures and 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 calculate speed, distance and time** | * Students will know that $Speed=\frac{distance}{time}$
* Students will know that $Time= \frac{distance}{speed}$
* Students will know that $Distance=Speed×Time$
* 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
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| **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.
 |  | * Students need to know how to find the difference between two times
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| **To learn how to write, simplify and share in a ratio**  | * 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 understand and express the multiplicative relationship between two quantities as a ratio or a fraction.
* 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.
 | **Ratio** - in mathematics, a ratio indicates how many times one number contains another. **Simplify –** make (something) simpler or easier to do or understand.**Share** – split up between parts | * Students should already know how to write and simplify ratio
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| **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 the difference between two parts is given.
* Students will know how to solve sharing in ratio problems within context.
 |  | * Students should already know how to share in a ratio
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| **To learn how to solve problems involving 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
* 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 need to know how to find the lowest common multiple of two numbers
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| **To learn how to identify the best buy** | * 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
 | **Value** – how much money something is worth | * Students will need to know how to find the lowest common multiple of two numbers
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| **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
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| **To learn how to solve problems involving real life graphs** | * Students will know how to draw straight line graphs for real-life situations, including ready reckoner graphs for example; conversion graphs, fuel bills graphs, fixed charge and cost per unit etc...
* Students will know how to use and interpret ready reckoner graphs.
 |  | * Students will need to know how to calculate gradient and identify the y-intercept of a given graph
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| **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 | * Students will need to know how to multiply and divide
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| **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
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| **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
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