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| **H Unit 11: Multiplicative Reasoning** | **Road Map** | | | | | |
| In this unit you will learn about number and measures. The aims are as follows:  **LG1**: Knowledge  **LG2**: Application  **LG3**: Skills | Assessment Grades |  |  | | | |
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| **Themes** | **Learning Goals/Outcomes/Content** | | |  |  |  |
| 11 Multiplicative reasoning: direct and inverse proportion, relating to graph form for direct, compound measures, repeated proportional change | Express a multiplicative relationship between two quantities as a ratio or a fraction, e.g. when *A*:*B* are in the ratio 3:5, *A* is *B*. When 4*a* = 7*b*, then *a* =  or *a*:*b* is 7:4; | | |  |  |  |
| Solve proportion problems using the unitary method; | | |  |  |  |
| Work out which product offers best value and consider rates of pay; | | |  |  |  |
| Work out the multiplier for repeated proportional change as a single decimal number; | | |  |  |  |
| Represent repeated proportional change using a multiplier raised to a power, use this to solve problems involving compound interest and depreciation; | | |  |  |  |
| Understand and use compound measures and: | | |  |  |  |
| convert between metric speed measures; | | |  |  |  |
| convert between density measures; | | |  |  |  |
| convert between pressure measures; | | |  |  |  |
| Use kinematics formulae from the formulae sheet to calculate speed, acceleration, etc (with variables defined in the question); | | |  |  |  |
| Calculate an unknown quantity from quantities that vary in direct or inverse proportion; | | |  |  |  |
| Recognise when values are in direct proportion by reference to the graph form, and use a graph to find the value of *k* in *y* = *kx*; | | |  |  |  |
| Set up and use equations to solve word and other problems involving direct proportion (this is covered in more detail in unit 19); | | |  |  |  |
| Relate algebraic solutions to graphical representation of the equations; | | |  |  |  |
| Recognise when values are in inverse proportion by reference to the graph form; | | |  |  |  |
| Set up and use equations to solve word and other problems involving inverse proportion, and relate algebraic solutions to graphical representation of the equations. | | |  |  |  |

**Links:**

LG1: You will work with ratios, calculate quantities using unitary method and calculate compound measures.

LG2: You will apply your knowledge of ratio and proportion to solve problems involving best value, compound interest and depreciation. You will link proportion problems to their corresponding graphs.

LG3: You will solve problems that combine knowledge and skills from this topic with other topics, such as solving word problems involving inverse and direct proportion, by setting up and solving equations.