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| **H Unit 15: Review setting up, rearranging and solving equations; Sequences** | **Road Map** | | | | | |
| In this unit you will learn about algebra. The aims are as follows:  **LG1**: Knowledge  **LG2**: Application  **LG3**: Skills | Assessment Grades |  |  | | | |
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| **Themes** | **Learning Goals/Outcomes/Content** | | |  |  |  |
| 15a Review setting up, rearranging and solving equations | Set up simple equations from word problems and derive simple formulae; | | |  |  |  |
| Understand the ≠ symbol (not equal), e.g. 6*x* + 4 ≠ 3(*x* + 2), and introduce identity ≡ sign; | | |  |  |  |
| Solve linear equations, with integer coefficients, in which the unknown appears on either side or on both sides of the equation; | | |  |  |  |
| Solve linear equations which contain brackets, including those that have negative signs occurring anywhere in the equation, and those with a negative solution; | | |  |  |  |
| Solve linear equations in one unknown, with integer or fractional coefficients; | | |  |  |  |
| Set up and solve linear equations to solve to solve a problem; | | |  |  |  |
| Derive a formula and set up simple equations from word problems, then solve these equations, interpreting the solution in the context of the problem; | | |  |  |  |
| Substitute positive and negative numbers into a formula, solve the resulting equation including brackets, powers or standard form; | | |  |  |  |
| Use and substitute formulae from mathematics and other subjects, including the kinematics formulae *v* = *u* + *at*, *v*2 – *u*2 = 2*as*, and *s* = *ut* +  *at*2; | | |  |  |  |
| Change the subject of a simple formula, i.e. linear one-step, such as *x* = 4*y*; | | |  |  |  |
| Change the subject of a formula, including cases where the subject is on both sides of the original formula, or involving fractions and small powers of the subject; | | |  |  |  |
| Simple proofs and use of ≡ in “show that” style questions; know the difference between an equation and an identity; | | |  |  |  |
| Use iteration to find approximate solutions to equations, for simple equations in the first instance, then quadratic and cubic equations. | | |  |  |  |

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| 15b Review of sequences | Recognise simple sequences including at the most basic level odd, even, triangular, square and cube numbers and Fibonacci-type sequences; |  |  |  |
| Generate sequences of numbers, squared integers and sequences derived from diagrams; |  |  |  |
| Describe in words a term-to-term sequence and identify which terms cannot be in a sequence; |  |  |  |
| Generate specific terms in a sequence using the position-to-term rule and term-to-term rule; |  |  |  |
| Find and use (to generate terms) the *n*th term of an arithmetic sequence; |  |  |  |
| Use the *n*th term of an arithmetic sequence to decide if a given number is a term in the sequence, or find the first term above or below a given number; |  |  |  |
| Identify which terms cannot be in a sequence by finding the *n*th term; |  |  |  |
| Continue a quadratic sequence and use the *n*th term to generate terms; |  |  |  |
| Find the *n*th term of quadratic sequences; |  |  |  |
| Distinguish between arithmetic and geometric sequences; |  |  |  |
| Use finite/infinite and ascending/descending to describe sequences; |  |  |  |
| Recognise and use simple geometric progressions (*rn* where *n* is an integer, and *r* is a rational number > 0 or a surd); |  |  |  |
| Continue geometric progression and find term to term rule, including negative, fraction and decimal terms; |  |  |  |
| Solve problems involving sequences from real life situations. |  |  |  |

**Links:**

LG1: You will solve equations including those with brackets and with unknowns on both sides, using a variety of methods. You will find the nth term rules for linear and quadratic sequences.

LG2: You will apply your knowledge of equations to form and solve equations from geometric and word problems and interpret the solutions in the context of the original problem.

LG3: You will use your fluency in algebraic methods to formulate proofs and structure answers to “show that” questions.