Year 9 Higher Curriculum Overview   **Subject: Mathematics**

Year 9 Overview:

Year 9 is the start of the GCSE course and students build upon the *core skills* learnt in Years 7 and 8 and extend their knowledge with new topics such as Pythagoras, Inequalities and Data Handling. Reasoning skills are developed to ensure understanding.

Autumn Term

Outline of Key Learning	Hegarty Code	Lesson
Indices, powers and roots (1b, 1c) a. Find the value of calculations using indices including positive, fractional and negative indices b. Use index laws to simplify and calculate the value of numerical expressions involving multiplication and division of integer powers, fractional and negative powers, and powers of a power c. Find the prime factor decomposition of positive integers – write as a product using index notation d. Find the LCM and HCF of two numbers, by listing, Venn diagrams and using prime factors – include finding LCM and HCF given the prime factorisation of two numbers; e. Solve problems using HCF and LCM, and prime numbers	103,104 105, 106 29,30,32 27, 31-36	Indices Negative and Fractional indices Factors and Multiples Venn Diagrams HCF / LCM
Pythagoras (5b) a. Understand, recall and use Pythagoras' Theorem in 2D b. Calculate the length of a line segment AB given pairs of points	498,499	Pythagoras
Standard form and Surds (1d) a. Add, subtract, multiply and divide numbers in standard form b. Understand surd notation, e.g. calculator gives answer to sq rt 8 as 4 rt 2 c. Simplify surd expressions involving squares	125,126 112 115	Standard form Surds Multiplying surds

Equations (2a, 2b) a. Solve linear equations, with integer coefficients, in which the unknown appears on either side or on both sides of the equation; b. Solve linear equations which contain brackets, including those that have negative signs occurring anywhere in the equation, and those with a negative solution c. Derive a formula and set up simple equations from word problems, then solve these equations, interpreting the solution in the context of the problem d. Substitute positive and negative numbers into a formula, solve the resulting equation including brackets, powers or standard form e. 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 f. Use iteration to find approximate solutions to equations, for simple equations in the first instance, then quadratic and cubic equations	176 287 280-286 322	Solve simple equations Substitution and rearranging Iteration
Sequences (2c) a. Use the nth 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 b. Identify which terms cannot be in a sequence by finding the nth term c. Continue a quadratic sequence and use the nth term to generate terms d. Find the nth term of quadratic sequences e. Distinguish between arithmetic and geometric sequences	198 247 248 264	Linear sequences Quadratic sequences

Teach for Understanding