KS4 Year 11 Group C

Subject: Mathematics

The mathematics department aim to develop the full potential of every student in the subject. It is our aim to ensure that every pupil experiences success and enjoyment in the subject, whether it be equipping them with sufficient mathematical skills for everyday life or developing problem solving and reasoning skills to take them beyond GCSE.

The scheme of learning is divided into units of study consisting of interlinking skills and topics that build on prior learning. Throughout the year students will complete multi-choice quizzes, homework, 'common homework tasks' and assessments. The common homework tasks will be completed by all students following this scheme of learning. The assessments provide opportunities for students to demonstrate their ability to recall information, methods of calculation and skills studied in previous units of work, and apply their problem solving skills to a variety of contextual problems.

Year 11 – Group C

		I will learn to	How I will be assessed
Autumn Term	Unit 1	• Simplify surds • Simplify expressions using the rules of surds • Expand brackets where the terms may be written in surd form • Rationalise a denominator • Solve equations which may be written in surd form • Change recurring decimals into their corresponding fractions and vice versa	Multi-choice Quiz Revision Homework Practice exam paper
	Unit 2	• Calculate values using fractional indices, including finding missing values (e.g. $x^{\frac{2}{3}} = 2^5$ • Use index laws for multiplication and division of positive, negative and fractional indices • Represent the ratio of two quantities which are in direct proportion as a linear relationship and represent graphically • Understand that X is inversely proportional to Y is equivalent to X is proportional to 1/y; construct and interpret equations that describe direct and inverse proportion. • Draw an exponential graph and understand the main features of an exponential graph • Find the coordinates of a point given the ratio along a line • Combine two two part ratios to one three part ratio (i.e. A:B =5:6, B:C = 8:11, work our A:C in its simplest form • Convert between a ratio and its formula and be able to apply this to a problem (x:y=7 :4 x=7y/4)	Multi-choice Quiz Revision Homework Practice exam paper
	Unit 3	• Use systematic trial and improvement to find approximate solutions of equations where there is no simple analytical method • find approximate solutions to equations numerically using iteration • Model growth and decay problems mathematically • Solve growth and decay problems, for example using multipliers or an iterative process • Understand that some iterations may have a limiting value	Multi-choice Quiz Revision Homework **Mock Exams**

	Unit 4	• Calculate quartiles and interquartile range from a small set of data • Construct cumulative frequency graphs for grouped discrete and continuous data • Estimate values from a cumulative frequency graph including lower quartile, upper quartile, median • Construct and interpret a box plot • Construct and interpret histograms with equal and unequal intervals for grouped discrete and continuous data • Use a histogram to estimate the median and estimate frequencies • Compare two distributions to make decisions about a hypothesis using diagrams and by comparing a suitable measure of average and measure of spread • Interpret, analyse and compare the distributions of data sets using boxplots and appropriate measures of central tendency and spread, including quartiles, medians and inter-quartile range.	Multi-choice Quiz Revision Homework Practice exam paper
Spring Term	Unit 5	• Know and apply the sine rule and cosine rule to find unknown lengths and angles • Know and apply the area sine rule to calculate the area, sides or angles of any triangle • Calculate with upper and lower bounds • Understand, recall and use Pythagoras' theorem in 3D problems • Understand, recall and use trigonometric relationships in right-angled triangles in 3D figures	Multi-choice Quiz Revision Homework Practice exam paper
	Unit 6	• Understand and apply the effect of enlargement on areas of shapes • Understand and apply the effect of enlargement on volumes of shapes • Construct enlargements with fractional and negative scale factors • Describe a combination of transformations as a single transformation • Understand and use the term 'invariance' for points, lines and shapes • Map a point on a shape under a combination of transformations	Multi-choice Quiz Revision Homework **Mock exams**
	Unit 7	• Understand and use function notation • Substitute values into a function (ie. Given f(x), find f(2)) • Solve equations that use function notation • Understand, interpret and use composite function notation • Understand, intepret and use inverse function notation • Work out the gradients of lines that are perpendicular to a given line; show that 2 lines are perpendicular (including manipulating equations)	Multi-choice Quiz Revision Homework Practice exam paper
Summer Term	Unit 8	• Calculate and interpret conditional probabilities through representation using expected frequencies with two-way tables, tree diagrams and Venn diagrams • Apply the product rule for counting to calculation the number of combinations/permutations of a particular event	Multi-choice Quiz Revision Homework Practice exam paper
	Unit 9	• recognise and use sequences of geometric progressions (r^n where n is an integer and r is a rational number > 0 or a surd, and other sequences • calculate the nth term of quadratic sequences	Multi-choice Quiz Revision Homework Practice exam paper

	Unit 10	• solve simple geometrical problems in 2D using vector methods • apply vector methods for simple geometric proofs • recognise when lines are parallel using vectors • recognise when three or more points are colinear using vectors • use vectors to show three or more points are collinear	Multi-choice Quiz Homework Practice exam paper
		Revision for GCSE exams	GCSE Exams

How you can support your child's progress in mathematics:

- Encourage independence in repeated practice of unfamiliar topics using vle.mathswatch.co.uk/vle
- Provide real life opportunities to challenge your child's mathematical knowledge and skills. Examples could include; calculating change from a bill, estimating the cost of a restaurant bill, working out the best buy when shopping, working out the cost of a home improvement or the amount of supplies for a home improvement.
- Encourage the use of appropriate mathematics websites such as Nrich or Mathsgenie for 'rich' tasks and exam style questions.
- Encourage your child to attend revision sessions at school
- Encourage your child to follow the revision timetable for mathematics