KS4 Year 10 Group B

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 10 - Group B

		I will learn to	How I will be assessed
Autumn Term	Unit 1	• Convert numbers between ordinary numbers and standard form and visa versa • Order and compare numbers that are written in just standard or mixed with ordinary form numbers • Calculate problems with numbers in standard form without a calculator • Solve problems involving standard form with a calculator • Calculate with positive and negative integer indices • Use compound units such as speed, density and pressure to solve problems, including average speed calculations. • Change freely between related standard units [for example speed m/h to m/s]	Multi-choice Quiz Common Homework Topic Assessment
	Unit 2	• Understand and use the concepts and vocabulary of expressions, terms, equations, factors and formulae • Form and solve linear equations with integer coefficients where the unknown appears on both sides and where the equation involves brackets (on one side or both) • Identify and interpret gradients and intercepts of linear functions graphically and algebraically; recognise that equations of the form y = mx+ c correspond to straight line graphs • Draw graphs of functions in which y is given explicitly or implicitly in terms of x • Find the midpoint of a line segment • Work out the gradient and find the equation of a straight line given 2 points or given one point and the gradient • Manipulate equations so that it is possible to tell whether lines are parallel or not; show that 2 lines are parallel	Multi-choice Quiz Common Homework Autumn Assessment (Units 1 & 2)
Spring Term	Unit 3	• Solve problems involving direct and inverse proportion by graphical and algebraic approaches (introduce k) • Translate them into algebraic formulae and by using graphs • Plot a graph representing a real-life problem from information given in words, in a table or as a formula; answer questions that involve interpretation and reasoning • Draw and interpret linear graphs and piece-wise linear graphs representing real-life situations. Including interpreting the gradient of a straight line as a rate of change • Plot and interpret distance-time graphs	Multi-choice Quiz Common Homework Topic Assessment

	Unit 4	• Describe and transform 2D shapes using single rotations • Describe and transform 2D shapes using single reflections including finding the equation of the line of reflection • Describe and transform 2D shapes using translation by vector notation • Column vector calculations • Describe and transform 2D shapes using enlargements by a positive scale factor (include fractional scale factors) • Identify the scale factor of an enlargement of a shape as the ratio of the lengths of two corresponding sides • Understand the term 'invariance' for points and shapes • Use a straight edge and compasses to complete standard constructions including: equilateral triangle, perpendicular bisector, perpendicular at AND from a given point on a given line and an angle bisector • Draw circles or part circles given the radius or diameter; explicitly address labelling of parts of a circle • Use the standard constructions to construct loci (e.g. A fixed distance from a point and a fixed distance from a given line, given equal distances from two points, given equal distances from 2 line segments, less than a given distance or greater than a given distance from a point or line segment) • Describe regions satisfying several conditions • Work out missing angles using properties of alternate, corresponding and co-interior angles including examples involving parallelograms including giving reasons for answers • Recall and use the eight points of the compass and their equivalent three figure bearings • Use, measure and draw bearings including on scale drawings	Multi-choice Quiz Common Homework Spring Assessment (Units 1 - 4)
Summer Term	Unit 5	• Rearrange formulae where the subject appears once or can be collected as a like term (include examples involving square, square roots, cube and cube roots) • Identify and apply circle definitions and properties including radius, diameter, circumference, chord, sector, segment, tangent and arc • Recall and use the formula for circumference of a circle including being able to find the radius/diameter when given the circumference (including being able to give answers in terms of pi) • Work out the area and perimeter of semi-circles, quarter circles and compound shapes • Recall and use the formula for area of a circle including being able to find the radius/diameter when given the area (including being able to give answers in terms of pi) • Recall and use the formula for volume and surface area of a cylinder • Understand, recall and use Pythagoras' Theorem in 2D problems	Multi-choice Quiz Common Homework Topic Assessment

	Unit 6	• Complete a frequency table for the outcomes of an experiment • Consider differences between theoretical probability and relative frequency in a practical situation • Understand and use the term relative frequency and use relative frequency to estimate probabilities • Understand and use a Venn diagram consisting of a universal set and at most two sets, which may or not intersect including shading areas and solving problems • Construct and use Venn diagrams to solve problems involving probability including set notation ie. P(A) P(A') P(A∪B) P(A∩B) • Design, use and complete two way tables • Complete a frequency tree and use a frequency tree to compare frequencies of outcomes • Calculate the mean, median, mode and range of an ungrouped frequency table • Analyse and compare the distributions of data using graphical distributions (including box plots) and suitable measures of spread and average, including commenting on outliers • Plot, interpret and use a time-series graphs • Understand that if data points are joined with a line then the line will not represent actual values but will show a trend	Multi-choice Quiz Common Homework End of Year Assessment -all units

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

- Encourage independence in repeated practice of unfamiliar topics using vle.mathswatch.co.uk/vle
- Practise mental maths skills such as addition, subtraction, multiplication and division regularly.
- 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.