KS4 Year 10 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.

		I will learn to	How I will be assessed
Autumn Term	Unit 1	- Simplify expressions by collecting like terms, including algebraic terms with a power>1 - Expand a single bracket, including two or more brackets separated by a + or - - Factorise linear expressions - Substitute positive and negative values into formulae and expressions, including 'real-life' questions. - Form and solve equations with an unknown on one side and including brackets - 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 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 - Understand and use the concepts and vocabulary of expressions, terms, equations, factors, identity, inequalities and formulae - Solve linear inequalities in one variable and represent the solution set on a number line	Multi-choice Quiz Homework

	Unit 2	• 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) • Complete a frequency tree and use a frequency tree to compare frequencies of outcomes • Calculate the probability of independent and dependent combined events, including using tree diagrams and other representations, and know the underlying assumptions • Know different types of sampling including random, systematic and stratified sampling (please note questions may not explicitly use the phrase 'stratified sample') • Know the advantages and disadvantages of different sampling methods including bias • Construct and interpret frequency tables and bar charts for grouped continuous data • Construct and interpret Stem and Leaf diagrams • Calculate the mean, mode and median from an ungrouped frequency table • Calculate the estimate of the mean, the interval containing the median and modal class for a grouped frequency table • Apply statistics to describe a population, using measures of central tendency and measures of dispersion	Multi-choice Quiz Homework
	Unit 3	• Solve problems involving direct and inverse proportion • Draw and interpret conversion graphs • Use compound units such as speed to solve problems, including average speed calculations. • Simplify a ratio; include 3 part ratios e.g. 1:3:2 and Write a ratio in the form 1:n • Divide an amount into a given ratio and solve problems involving ratio including real life context (e.g. Billie gets £50 more than Annie). Include missing values. • Solve combination ratio questions; a:b and b:c	Multi-choice Quiz Homework Assessment
Spring Term	Unit 4	• Find the area of composite shapes made up of triangles and rectangles, including missing values and mixed units (ensure students can find the area of triangles and rectangles including calculating missing lengths). • Derive and use the formula for area of a trapezium • 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). This should include parts of circles. • 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). This should include parts of circles. • Solve problems involving area and perimeter e.g. a square with a circle inside. • Recall and use the formula for volume and surface area of prisms including cylinders • Calculate the volume of spheres, pyramids, cones and composite solids (include working backwards to find the radius/diameter)	Multi-choice Quiz Homework

SPRING TERM	Unit 5	- Understand, recall and use Pythagoras' Theorem in 2D problems - Understand congruence and identify shapes that are congruent. - Understand and use the basic congruence criteria for triangles (SSS, SAS, ASA, RHS) - Understand similarity of triangles and of other plane figures and identify shapes that are similar including all squares, all circles or all regular polygons with equal number of sides - Apply the concepts of similarity including the relationships between lengths, areas and volumes in similar figures - Understand, recall and use trigonometric relationships in right-angled triangles, including problems involving bearings - Know the exact values of sinx and cosx for x=0, 30, 45, 60 and 90 and know the exact value of tanx for x=0, 30, 45 and 60	Multi-choice Quiz Homework Assessment
SUMMER TERM	Unit 6	- Know the difference between an equation and an identity - Argue mathematically to show algebraic expressions are equivalent, and use algebra to support and construct arguments - Simplify and manipulate algebraic expressions by expanding products of two binomials - Factorise quadratic expressions of the form $x2 + bx + c$ including the difference of 2 squares - Solve quadratic equations by factorising - Plot graphs of quadratic functions - Solve quadratic equations graphically - Identify and interpret roots, intercepts, turning points of quadratic functions graphically; deduce roots algebraically	Multi-choice Quiz Homework Assessment
	Unit 7	- Draw, sketch, recognise and interpret quadratic graphs, simple cubic graphs and the reciprocal function - Set up, solve and interpret answers in growth and decay problems - Calculate problems which involve simple/compound interest - Solve percentage problems involving finding the original value - Understand that an equation of the form $y = kx$ represents direct proportion and the k is the constant of proportionality. (Include x^2, x^3, $\sqrt{x}$, $\sqrt[3]{x}$) - Understand that an equation of the form $y = k/x$ represents inverse proportion and that k is the constant of proportionality (Include x^2, x^3, $\sqrt{x}$, $\sqrt[3]{x}$)	Multi-choice Quiz Homework End of Year Assessment

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