Key Stage: 3 – Year 8 Set 1

Subject: Mathematics

Aims of the subject:

We aim to develop the full potential of every pupil in Mathematics. We hope that every pupil experiences success and enjoyment in the subject, whether it be equipping them with sufficient Mathematics skills for their day to day life or providing them with a firm foundation for those wishing to pursue Mathematics beyond GCSE. In addition, we hope that we can open our young people's eyes to the creative, imaginative and inspiring world of Mathematics. ,

The Mathematics scheme of learning is divided into units of study consisting of interlinking skills and topics. For each unit of study, pupils will complete a 'common homework' and multiple-choice quizzes. Students will also sit formal assessments three times a year. The 'common homework' will be completed by all the students following this scheme of learning and may take the form of a written task or an online task. In addition to the common homework, pupils will receive homework set by their class teacher. Assessments provide an opportunity for each pupil to demonstrate their ability to recall basic information or perform simple procedures, apply their mathematical understanding to problem solving and contextual problems and to recall information studied in previous units of work.

Year 8

		What will I learn?	What will I do?
Term 1	Unit 1	• Convert numbers between ordinary numbers and standard form and visa versa • Order and compare numbers which have been written in standard form • Calculate problems with numbers in standard form without a calculator • Solve problems involving standard form with a calculator • Solve simple equations where the numbers are written in standard form • 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, density and pressure]	Common Homework Multiple Choice Quizzes Autumn Assessment (Unit 1)
	Unit 2	• Form and solve linear equations with integer coefficients where the unknown appears on both sides and where the equation involves brackets • Understand and use the concepts and vocabulary of expressions, terms, equations, factors and formulae • Represent the ratio of two quantities which are in direct proportion as a linear relationship and represent graphically • Solve problems involving direct and inverse proportion by graphical and algebraic approaches • Model situations or procedures by translating them into algebraic formulae and by using graphs	Common Homework Multiple Choice Quizzes

Term 2	Unit 3	• 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	Common Homework Multiple Choice Quizzes Spring Assessment (Units 1 – 3)
	Unit 4	• 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 or the coordinates of a point a given ratio along a line • 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 • Plot a graph representing a real-life problem from information given in words, in a table or as a formula • Draw and interpret linear graphs and piece-wise linear graphs representing real-life situations • Plot and interpret distance-time graphs	Common Homework Multiple Choice Quizzes

Term 3	Unit 5	• Complete a frequency table for the outcomes of an experiment • Understand and use the term relative frequency and use relative frequency to estimate probabilities • Consider differences between theoretical probability and relative frequency in a practical situation • 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 <u>ungrouped</u> frequency table • Analyse and compare the distributions of data using graphical distributions 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	Common Homework Multiple Choice Quizzes End of year assessments (U1-5)

	Unit 6	• 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 • 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 • 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	Common Homework Multiple Choice Quizzes

Note on Assessments: Pupils will sit formal assessments in Autumn and Spring. End of year assessments will typically be sat in June with a final topic quiz during July.

How you can support your child's progress

- Practise mental maths skills i.e. addition, subtraction, multiplication and division

- Seek real life opportunities to challenge your child's mathematical knowledge for example calculating best buys, calculating how many pots of paint required to decorate a room etc.
- Encourage independence in repeated learning of unfamiliar topics and homework support using vle.mathswatch.co.uk/vle