Key Stage 4 (Sets P* - E)

Set P may follow this scheme of learning or may follow the scheme of learning for sets M – P.

Subject: Mathematics

Aims of the subject:

We aim to develop the full potential of every pupil in Mathematics. We aim to ensure 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', a spelling test and a mini assessment. 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 using vlemathswatch or ActiveLearn. In addition to the common homework, pupils will receive homework set by their class teacher. The mini assessment will provide an opportunity for pupils 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.

GCSE Examination Board: AQA

Assessment Overview:

- Linear course which is assessed by 3 exam papers at the end of Year 11. Further details about the exams will be available in due course.

Year	Term	Unit	What will I learn?	Assessment
9	1	1	- identify square numbers, cube numbers and their associated roots - calculate higher powers (2, 3, 4 and 5) of a number - write a number as a product of prime factors - calculate the LCM and HCF of two numbers - use BIDMAS to work out calculations involving more than one operation	Spelling Test Common Homework Mini Assessment 1

				• add, subtract, multiply and divide decimals • round numbers to a given number of decimal places or significant figures • estimate calculations	
			2	• substitute positive and negative values into a formula • draw a linear graph by completing a table of values • interpret and plot a linear graph from a real life problem • write an algebraic formula for a rule given in words • generate a sequence or specific terms using the nth term • find the nth term of an arithmetic sequence • describe how a sequence continues • recognise different types of sequences e.g. triangular, square, cube, Fibonacci-type sequences, geometric sequences	Spelling Test Common Homework Mini Assessment 2
	2		3	• find missing angles on parallel lines and use correct mathematical terminology when giving reasons • prove and use the fact that exterior angle of a triangle is equal to the sum of the interior angles at the other corners • calculate the sum of interior angles in a polygon and use to find missing angles • use the sum of exterior angles of a polygon and use to find missing angles or the number of sides • calculate the area and perimeter of composite shapes • calculate the area of a trapezium • calculate the volume and surface area of a prism • convert between metric and imperial units • describe the number of faces, edges and vertices of 3D shapes	Spelling Test Common Homework Mini Assessment 3
			4	• describe types of data • design a questionnaire and data collection tables • construct a dual bar chart and composite bar chart • construct a frequency polygon • interpret and construct a stem and lead diagram • calculate the mean, median, mode and range from a set of data • compare two sets of data • recognise and name different types of correlation • draw a scatter graph and draw a line of best fit to estimate values	Spelling Test Common Homework Mini Assessment 4

	3	5	- add and subtract fractions - multiply fractions - divide fractions - convert between equivalent fractions, decimals and percentages - calculate the percentage of an amount with and without a calculator - work out a percentage increase/decrease - calculate the percentage change between two values - work out the original value of an item following a percentage increase/decrease	Spelling Test Common Homework Summer Exam in May
		6	- write a ratio in the form 1:n or n:1 - interpret a ratio using fractions - divide a given quantity into two or more parts - solve real life ratio problems - work out values that vary in direct proportion - work out values that vary inversely - solve best buy problems - use maps and scale drawings - construct a scale drawing	Spelling Test Common Homework Mini Assessment 6
		7	- identify expressions, terms, equations and formulae - simplify an algebraic expression by using the multiplication and division laws of indices - expand and simplify a linear bracket - factorise an algebraic expressions - solve linear equations (including equations involving brackets)	Spelling Test Common Homework Mini Assessment 7
10	1	1	- find the equation of a line from a graph including finding the gradient and y-intercept - find the equation of a line through two given points or through one point with a given gradient - draw graphs of any linear function - algebraically show whether two lines are parallel or not - plot a graph representing a real-life problem from information given in words, a table or as a formula - interpret linear graphs representing real-life problems - plot and interpret distance-time and other piece-wise linear graphs	Spelling Test Common Homework Mini Assessment 1

		2	• solve problems involving direct and inverse proportion using graphical and algebraic methods • complete a table of values for a quadratic function and plot the graph of a quadratic function • estimate values of y for a given value of x (and vice versa) using a quadratic graph • draw and interpret non-linear graphs which represent real-life situations • form and solve linear equations (with 'x' on both sides) • understand the words; expression, term, equation, factor, and formulae	Spelling Test Common Homework Mini Assessment 2
2		3	• convert between ordinary numbers and standard form • solve simple equations involving numbers written in standard form • solve problems involving standard form both with and without a calculator • calculate using index numbers including negative index numbers • use compound units such as speed, density and pressure to solve problems • change between related units (e.g. km/h to m/s)	Spelling Test Common Homework Mini Assessment 3
		4	• calculate probabilities of single events • list the outcomes for two events in a systematic way (lists or sample space diagrams) and use this to calculate probabilities • construct, understand and use Venn diagrams • use Venn diagrams and set notation to solve problems involving probability • design, use and complete two-way tables • understand the differences between theoretical probability and relative frequency • use relative frequency to estimate probabilities • complete and use a frequency tree	Spelling Test Common Homework Mini Assessment 4
3		5	• describe and transform shapes using rotations, reflections, translation and enlargements • identify the scale factor of enlargement as the ratio of the lengths of two corresponding sides • using a ruler and compasses construct; an equilateral triangle, a perpendicular bisector, perpendicular at a point or from a point, and an angle bisector • draw circles or part circles when given radius or diameter • use constructions to solve loci problems • use, measure and draw bearings	Spelling Test Common Homework Mini Assessment 5
		6	• apply Pythagoras' Theorem to solve problems	Spelling Test

			• understand the vocabulary; radius, diameter, circumference, chord, sector, segment, tangent, and arc • recall and use the formula for the circumference of a circle • recall and use the formula for the area of a circle • calculate the area and perimeter of semi-circles, quarter circles or other fractions of a circle • recall and use the formula for volume and surface area of a cylinder	Common Homework Mini Assessment 6
		7	• interpret and construct frequency tables and bar charts • interpret and construct pie charts • describe, interpret and compare data using mean, median, mode and range • calculate the mean, median, mode and range from an ungrouped frequency table • plot and interpret time-series graphs	Spelling Test Common Homework Mini Assessment 7
11	1	1	• expand two brackets and simplify the expression • factorise quadratic expressions including the difference of two squares • solve quadratic equations by factorising • solve quadratic equations graphically • identify and interpret roots, intercepts and the vertex of quadratic functions graphically • use mathematical arguments to show that algebraic expressions are equivalent • know the difference between an equation and an identity	Spelling Test Common Homework Mini Assessment 1
		2	• rearrange formulae to change the subject • calculate arc lengths, angles and areas of sectors of circles • calculate the volume of a sphere, pyramid, cone and composite solids • calculate the surface area of spheres, pyramids, cones and composite solids	Spelling Test Common Homework Mini Assessment 2
	2	3	• solve linear inequalities and represent the solution on a number line • solve simultaneous equations algebraically • solve simultaneous equations graphically • form and solve simultaneous equations • understand and use the vocabulary; expression, term, equation, factor, identity, inequality, and formulae	Spelling Test Common Homework Mini Assessment 3
		4	• know different types of sampling including random, systematic and stratified sampling • know the advantages and disadvantages of different types of sampling including	Spelling Test Common Homework Mini Assessment 4

			• bias • calculate an estimate for the mean from a grouped frequency table • calculate the modal class and the class interval containing the median for a grouped frequency table • apply statistics to describe a population • calculate the probability of independent and dependent combined events using tree diagrams and other representations	
		5	• understand congruence and identify shapes that are congruent • understand and use congruence criteria for triangles (SSS, SAS, ASA, RHS) • understand similarity and identify shapes that are similar • apply the concepts of similarity to find missing lengths in similar shapes • recall and use the trigonometric relationships in right-angled triangles (SOHCAHTOA) 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	Spelling Test Common Homework Mini Assessment 5
3		6	• draw, sketch, recognise and interpret quadratic graphs, cubic graphs and the reciprocal function • plot and interpret graphs in real contexts to solve problems • interpret the gradient of a straight line graph as a rate of change • solve problems which involve simple or compound interest • understand that an equation of the form y=kx represents direct proportion • understand that an equation of the form y=k/x represents inverse proportion	Spelling Test Common Homework Mini Assessment 6
			Revision	

Extra-curricular opportunities

- Enter the Half-Termly Maths Competition

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 your child to use the 'vlemathswatch' and 'Corbett Maths' videos and worksheets regularly to consolidate their knowledge.
- Encourage your child to make use of the 'connect.collins.co.uk' website to refer to class textbooks and consolidate what has been learnt in lessons.