RIPLEY ST THOMAS
A CHURCH OF ENGLAND ACADEMY

Key Stage 4 (Sets M – P*)

Set P may follow this scheme of learning or may follow the scheme of learning for sets P - E

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	• 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	Spelling Test Common Homework Mini Assessment 1

			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	
		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	Spelling Test Common Homework Mini Assessment 5

			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	
		6	• apply Pythagoras' Theorem to solve problems • 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	Spelling Test Common Homework Summer Exam in May
		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
10	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	Spelling Test Common Homework

			• solve simultaneous equations graphically • form and solve simultaneous equations • understand and use the vocabulary; expression, term, equation, factor, identity, inequality, and formulae	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 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	Spelling Test Common Homework Mini Assessment 4
		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
		1	• how to use circle theorems to calculate missing angles • how to calculate missing angles in cyclic quadrilaterals • how to use tangents, chords and the alternate segment theorem to calculate angles in circles	Spelling Test Common Homework Mini Assessment 1

			• know the vocabulary; radius, diameter, tangent, chord, circumference, and segment	
		2	• expand and simplify the expression when expanding 2 or more brackets • factorise quadratic expressions where the coefficient of x^2 is greater than 1 • solve quadratic equations by factorising • solve quadratic equations by completing the square • solve quadratic equations using the quadratic formula • know the difference between an equation and an identity • use algebra to support and construct arguments and proofs	Spelling Test Common Homework Mini Assessment 2
11	1	3	• change recurring decimals into their corresponding fractions and vice versa • simplify surds • rationalise a denominator • simplify expressions involving surds • expand brackets where the terms may be written in surd form • solve equations which may include terms written in surd form	Spelling Test Common Homework Mini Assessment 3
		4	• calculate values using fractional indices • know and apply the index laws for multiplication and division of positive, negative and fractional indices • construct and interpret equations that describe direct proportion • construct and interpret equations that describe inverse proportion	Spelling Test Common Homework Mini Assessment 4
		5	• use trial and improvement to find approximate solutions to an equation • find approximate solutions to equations using iteration • model growth and decay problems mathematically • solve growth and decay problems by using multipliers or an iterative process • understand that some iterations may have a limiting value • draw an exponential graph • understand the main features of an exponential graph	Spelling Test Common Homework Mini Assessment 5
	2	6	• calculate the lower quartile, upper quartile and interquartile range for a small set of data • construct cumulative frequency diagrams • estimate values from a cumulative frequency diagram • construct and interpret a box plot • construct and interpret histograms	Spelling Test Common Homework Mini Assessment 6

			• use a histogram to estimate the median and to estimate frequencies • interpret, analyse and compare two distributions using averages, measures of spread and boxplots • calculate and interpret conditional probabilities using two-way tables, Venn diagrams and tree diagrams • apply the product rule for counting to calculate the number of permutations/combinations of an event	
		7	• calculate with upper and lower bounds • use Pythagoras' theorem to solve problems in 3D • use trigonometric relationships (SOHCAHTOA) in right-angled triangles in 3D problems • know and apply the sine rule to find unknown lengths and angles • know and apply the cosine rule to find unknown lengths and angles • know and apply the sine rule for are to find the area, unknown angles or unknown sides	Spelling Test Common Homework Mini Assessment 7
	3	8	• 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 • understand and apply the effect of enlargement on areas of shapes (area scale factor) • understand and apply the effect of enlargement on volumes of shapes (volume scale factor)	Spelling Test Common Homework Mini Assessment 8
		9	• understand and use function notation • substitute values into a function • solve equations that use function notation • understand, interpret and use composite function notation • understand, interpret and use inverse function notation • work out the gradients of lines that are perpendicular to a given line • show that two lines are perpendicular	Spelling Test Common Homework Mini Assessment 9

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.