

Maths PoS: Year 9 HT1

Students will colour code as they work through the scheme of work.

Students will learn about... Number, data handling and shape		
Grade 1-3	Grade 4-6	Grade 7-9
<p>Students will:</p> <p>Find factors and multiples of numbers.</p> <p>Find common factors and multiples.</p> <p>Add and subtract positive and negative numbers.</p> <p>Order negative numbers on a number line.</p> <p>Know the first few triangular numbers.</p> <p>Understand and know squares and root to 15×15.</p> <p>Construct a frequency table to record information.</p> <p>Calculate mean, mode and median of a set of numbers.</p> <p>Identify the modal group.</p> <p>Construct a bar chart.</p> <p>Construct a simple pie chart.</p> <p>Interpret bar & pie charts by writing a simple conclusion.</p> <p>Find missing angles on a line and round a point.</p> <p>Identify angles with their names including perpendicular.</p> <p>Identify lines of symmetry and order of rotation.</p> <p>Calculate missing angles in a triangle.</p>	<p>Students will:</p> <p>Construct a prime factor tree.</p> <p>Use a prime factor tree to calculate HCF and LCM.</p> <p>Know and use the index laws.</p> <p>Select, construct and analyse graphs and charts which are suitable for the problem.</p> <p>Construct, interpret and comment on correlation for a scattergraph.</p> <p>Use a scattergraph to make predictions and understand the reliability of the prediction.</p> <p>Calculate angles in any polygon.</p> <p>Calculate exterior angles of polygons.</p> <p>Calculate angles in complex shape problems using many different rules.</p>	<p>Students will:</p> <p>Use inverse operations, understanding that the inverse operation of raising a positive number to power 'n' is raising the result of this operation to power $1/n$.</p> <p>Use an appropriate range of statistical methods to explore and summarise data.</p> <p>Use a moving average to identify seasonality and trends in time series data, using them to make predictions.</p> <p>Interpret and use cumulative frequency diagrams to solve problems.</p> <p>Understand and use Pythagoras theorem in 3D shapes.</p> <p>Show step by step deductions in solving complex geometric problems.</p> <p>Prove and use circle theorems.</p>
<p>Assessment</p> <p>End of term tests.</p>		

Maths PoS: Year 9 HT2

Students will colour code as they work through the scheme of work.

Students will learn about... Algebra and shape		
Grade 1-3	Grade 4-6	Grade 7-9
<p>Students will:</p> <p>Understand the words expression, term and equation.</p> <p>Use letters instead of numbers to represent a problem.</p> <p>Simplify an expression by collecting like terms.</p> <p>Expand a single bracket.</p> <p>Choose appropriate units for measurements.</p> <p>Calculate area and perimeter of a rectangle.</p> <p>Calculate area of compound shapes involving rectangles.</p> <p>Calculate the surface area of a cube and cuboid.</p>	<p>Students will:</p> <p>Understand inequations and their meaning.</p> <p>Expand two single brackets and collect like terms.</p> <p>Substitute numbers into expressions and formulae.</p> <p>Evaluate basic indices.</p> <p>Convert mm^2 to cm^2 etc.</p> <p>Know area and circumference of a circle.</p> <p>Calculate surface area of prisms.</p> <p>Calculate the volume of prisms.</p>	<p>Students will:</p> <p>Know and use the index laws including $(2a^4)^3$.</p> <p>Expand 2 brackets e.g. $(2x + 3)(3x+2)$.</p> <p>Square a bracket.</p> <p>Establish identities such as $a^2 - b^2 = (a + b)(a - b)$.</p> <p>Solve problems involving surface areas of cylinders, pyramids, cones and spheres.</p> <p>Understand and use the formulae for the length of a circular arc and area and perimeter of a sector.</p> <p>Begin to recognise the difference between formulae for perimeter, area and volume in simple contexts.</p> <p>Solve problems involving volumes of cylinders, pyramids, cones and spheres.</p>
<p>Assessment</p> <p>End of term tests.</p>		

Maths PoS: Year 9 HT3

Students will colour code as they work through the scheme of work.

Students will learn about... Number and data handling		
Grade 1-3	Grade 4-6	Grade 7-9
<p>Students will:</p> <p>Complete a sequence and describe the term to term rule.</p> <p>Complete a pattern and describe what is happening.</p> <p>Add, subtract, multiply & divide 2 digit numbers including negatives.</p> <p>Simplify a fraction.</p> <p>Calculate 10% and 20%.</p> <p>Use the square, brackets and root buttons on a calculator.</p> <p>Use correct words to describe the probability of an event.</p> <p>Represent probability on a scale.</p> <p>List all possible combinations of 2 events.</p> <p>Represent probability as a fraction.</p> <p>Calculate experimental probability from a frequency table.</p>	<p>Students will:</p> <p>Extend, predict and justify a sequence.</p> <p>Multiply and divide numbers by 0.1 and 0.01 mentally.</p> <p>Use BIDMAS including Indices.</p> <p>Add, subtract, multiply, & divide decimals of any size.</p> <p>Remember not to round answers using the calculator during intermediate steps.</p> <p>Use the Pi button on the calculator.</p> <p>Pose a question, investigate and give reasonable argument.</p> <p>Interpret results and decide if fair and bias with reasons.</p>	<p>Students will:</p> <p>Understand how errors are compounded in calculations.</p> <p>Use standard index form to make sensible estimates for calculations involving multiplication and/or division.</p> <p>Use calculators to explore exponential growth and decay, using a multiplier and the power key.</p> <p>Calculate with standard index form, using a calculator as appropriate.</p> <p>Use tree diagrams to represent outcomes of compound events, recognising when events are independent and without replacement.</p> <p>Understand increasing the sample size generally leads to better estimates of probability and population parameters.</p>
<p>Assessment</p> <p>End of term tests.</p>		

Maths PoS: Year 9 HT4

Students will colour code as they work through the scheme of work.

Students will learn about... Number, algebra and shape		
Grade 1-3	Grade 4-6	Grade 7-9
<p>Students will:</p> <p>Simplify a ratio.</p> <p>Share an amount into a ratio of two numbers.</p> <p>Understand and use direct proportion.</p> <p>Construct a mapping diagram.</p> <p>Plot coordinates in all 4 quadrants.</p> <p>Plot $x =$ and $y =$ graphs.</p> <p>Plot positive linear graphs.</p> <p>Plot and use conversion graphs.</p> <p>Identify lines and order of symmetry.</p> <p>Reflect a shape in a given mirror line.</p> <p>Rotate a shape about a point.</p> <p>Translate a shape using a description.</p>	<p>Students will:</p> <p>Use tree diagrams to represent outcomes of compound events, recognising when events are independent and without replacement.</p> <p>Understand increasing the sample size generally leads to better estimates of probability and population parameters.</p> <p>Calculate the gradient of a graph line.</p> <p>Construct and interpret time series graphs.</p> <p>Identify planes of symmetry in 3D shape.</p> <p>Write the transformation to map two congruent shapes.</p> <p>Transform a shape using 2 or more transformations.</p> <p>Enlarge a shape using a fractional scale factor.</p> <p>Find the centre of enlargement and the scale factor.</p>	<p>Students will:</p> <p>Calculate an unknown quantity from quantities that vary in direct proportion using algebraic methods where appropriate.</p> <p>Use a multiplier raised to a power to represent and solve problems involving repeated proportional change, e.g. compound interest.</p> <p>Identify the equations of straight-line graphs that are parallel.</p> <p>Find the gradient and equation of a straight-line graph that is perpendicular to a given line.</p> <p>Plot graphs of more complex quadratic and cubic functions; estimate values at specific points, including maxima and minima.</p> <p>Find approximate solutions of a quadratic equation from the graph of the corresponding quadratic function.</p> <p>Understand the effect on the graph of addition of (or multiplication by) a constant.</p> <p>Understand and use the effects of enlargement on areas and volumes of shapes and solids.</p> <p>Understand and use vector notation to describe transformation of 2-D shapes by combinations of translations.</p> <p>Calculate and represent graphically the sum of two vectors.</p>
<p>Assessment</p> <p>End of term tests.</p>		

Maths PoS: Year 9 HT5

Students will colour code as they work through the scheme of work.

Students will learn about... Shape, Number and Algebra		
Grade 1-3	Grade 4-6	Grade 7-9
<p>Students will:</p> <p>Compare and evaluate approaches; recognise equivalent approaches.</p> <p>Take account of feedback and learn from mistakes.</p> <p>Understand and use the language and notation associated with reflections, translations and rotations.</p> <p>Recognise and visualise the symmetries of a 2-D shape.</p> <p>Transform 2-D shapes by:</p> <ul style="list-style-type: none"> (i) reflecting in given mirror lines; (ii) rotating about a given point; (iii) translating. <p>•Explore these transformations and symmetries using ICT.</p> <p>Interpret information from a mathematical representation or context.</p> <p>Know the meanings of the words <i>term</i>, <i>expression</i> and <i>equation</i>.</p> <p>Construct and solve simple linear equations with integer coefficients (unknown on one side only) using an appropriate method (e.g. inverse operations).</p> <p>Use accurate notation, including correct syntax when using ICT.</p> <p>Express a smaller whole number as a fraction of a larger one; simplify fractions by cancelling all common factors and identify equivalent fractions; convert terminating decimals to fractions, e.g. $0.23 = \frac{23}{100}$; use diagrams to compare two or more simple fractions.</p> <p>Add & subtract simple fractions and those with common denominators; calculate simple fractions of quantities & measurements (whole-number answers); multiply a fraction by an integer.</p>	<p>Students will:</p> <p>Understand the equivalence of simple algebraic fractions; know that a recurring decimal is an exact fraction.</p> <p>Use efficient methods to add, subtract, multiply and divide fractions, interpreting division as a multiplicative inverse; cancel common factors before multiplying or dividing.</p> <p>Recognise when fractions or percentages are needed to compare proportions; solve problems involving percentage changes.</p> <p>Calculate the volume of right prisms.</p> <p>Use formulae from mathematics and other subjects; substitute numbers into expressions and formulae; derive a formula and, in simple cases, change its subject.</p> <p>Simplify or transform algebraic expressions by taking out single-term common factors.</p> <p>Construct and solve linear equations with integer coefficients (with and without brackets, negative signs anywhere in the equation, positive or negative solution).</p> <p>Visualise and use 2-D representations of 3-D objects; analyse 3-D shapes through 2-D projections, including plans and elevations.</p> <p>Use and interpret maps and scale drawings in the context of mathematics and other subjects.</p> <p>Use the coordinate grid to solve problems involving translations, rotations, reflections and enlargements.</p>	<p>Students will:</p> <p>Use an algebraic method to convert a recurring decimal to a fraction.</p> <p>Consider the dimensions of a formula and begin to recognise the difference between formulae for perimeter, area and volume in simple contexts.</p> <p>Solve problems involving volumes of cylinders, pyramids, cones and spheres.</p> <p>Derive and use more complex formulae; change the subject of a formula, including cases where the subject occurs twice.</p> <p>Use trigonometric relationships in right-angled triangles to solve 3-D problems, including finding the angles between a line and a plane.</p>

Understand percentage as the 'number of parts per 100'; calculate simple percentages and use percentages to compare simple proportions.

Recognise the equivalence of percentages, fractions and decimals.

Assessment

End of year examination, teacher professional judgement based upon classwork and homework

Maths PoS: Year 9 HT6

Students will colour code as they work through the scheme of work.

Students will learn about... Shape and Data Handling		
Grade 1-3	Grade 4-6	Grade 7-9
<p>Students will:</p> <p>Record methods, solutions and conclusions.</p> <p>Understand and use decimal notation and place value; multiply and divide integers and decimals by 10, 100, 1000, and explain the effect.</p> <p>Compare and order decimals in different contexts; know that when comparing measurements the units must be the same.</p> <p>Round positive whole numbers to the nearest 10, 100 or 1000, and decimals to the nearest whole number or one decimal place.</p> <p>Use the order of operations, including brackets.</p> <p>Strengthen and extend mental methods of calculation to include decimals, fractions and percentages, accompanied where appropriate by suitable jottings; solve simple problems mentally.</p> <p>Multiply and divide three-digit by two-digit whole numbers; extend to multiplying and dividing decimals with one or two places by single-digit whole numbers.</p> <p>Check results by considering whether they are of the right order of magnitude and by working problems backwards.</p> <p>Use a ruler and protractor to:</p> <ul style="list-style-type: none"> (i) measure and draw lines to the nearest millimetre and angles, including reflex angles, to the nearest degree; (ii) construct a triangle given two sides and the included angle (SAS) or two angles and the included side (ASA). <p>Use ICT to explore constructions.</p>	<p>Students will:</p> <p>Solve problems involving measurements in a variety of contexts; convert between area measures (e.g. mm^2 to cm^2, cm^2 to m^2, and vice versa) and between volume measures (e.g. mm^3 to cm^3, cm^3 to m^3, and vice versa).</p> <p>Suggest a problem to explore using statistical methods, frame questions and raise conjectures.</p> <p>Discuss how different sets of data relate to the problem; identify possible primary or secondary sources; determine the sample size and most appropriate degree of accuracy.</p> <p>Design a survey or experiment to capture the necessary data from one or more sources; design, trial and if necessary refine data collection sheets; construct tables for gathering large discrete and continuous sets of raw data, choosing suitable class intervals; design and use two-way tables.</p> <p>Gather data from specified secondary sources, including printed tables and lists, and ICT-based sources, including the internet.</p> <p>Compare two or more distributions and make inferences, using the shape of the distributions and appropriate statistics.</p> <p>Review interpretations and results of a statistical enquiry on the basis of discussions; communicate these interpretations and results using selected tables, graphs and diagrams.</p>	<p>Students will:</p> <p>Apply knowledge that measurements given to the nearest whole unit may be inaccurate by up to one half of the unit in either direction and use this to understand how errors can be compounded in calculations.</p> <p>Consider possible difficulties with planned approaches, including practical problems; adjust the project plan accordingly.</p> <p>Deal with practical problems such as non-response or missing data.</p> <p>Identify what extra information may be required to pursue a further line of enquiry.</p> <p>Recognise the limitations of any assumptions and the effects that varying the assumptions could have on the conclusions drawn from data analysis.</p> <p>Compare two or more distributions and make inferences, using the shape of the distributions and measures of average and spread, including median and quartiles.</p>
Assessment		
End of year examination , teacher professional judgement based upon classwork and homework		

