



Year 7 Overall intent		Key prior knowledge and skills				
<p>The Highworth Warneford School Mathematics Department believe students should be encouraged to develop a deep understanding of all concepts taught; it is essential for students to develop mathematical thinking in and out of the classroom, to fully master mathematical concepts. Pupils should be encouraged to use mathematical language throughout their maths learning to deepen their understanding of concepts. Throughout the key stages, students will be encouraged to develop high levels of mathematical fluency and the ability to apply this fluency in order to solve problems both within mathematics and in other curriculum areas. Opportunities to develop mathematical fluency and problem solving should be embedded in all lessons so that students can fulfil their potential regardless of starting point or background. We aim to prepare students well for the mathematical challenges that await them in their future careers and to help them achieve their life ambitions.</p>		<p>Students have covered the KS2 mathematics curriculum, introducing many core concepts. These include Calculations using all 4 operations; base 10 number system; place value; calculations with decimals and fractions; drawing and interpreting bar charts, pie charts; basic statistical measures, such as: mode, median, mean and range; knowledge of 2D shapes and their properties, be able to classify and measure angles, identify and use co-ordinates on a Cartesian grid with one quadrant; recognise that letters can be used for unknown values.</p>				
Topic Focus	Terms 1 Statistics	Terms 2 Number & Algebra	Terms 3 Number	Terms 4 Statistics	Terms 5 Geometry	Terms 6 Algebra
<b>Summary of key knowledge &amp; skills</b>	<p>Students will be developing their understanding of analysing and displaying data and use of the number system.</p> <p>Students will be developing a variety of skills to be able to: find and compare the averages and range for a set of data; find information from tables and diagrams and display it as a tally charts; use different types of bar charts and line graphs; interpret and analyse simple charts for grouped data.</p> <p>Students will be expected to be able to understand the place value system (base 10); to be able to round numbers to varying degrees of accuracy, including 10's, 100's 1000's and decimal places; to apply the four main operations accurately; to convert time into decimal values; to understand how to identify factors and multiples of any given integers; to identify the LCM/HCF of any integer; to know how to use BIDMAS correctly; to apply their knowledge of negative numbers to the four main operations; to recall and use square numbers and square roots.</p>	<p>Students will be developing their understanding of algebra, with a focus on expressions and their measurement skills related to metric measures of length and area.</p> <p>Students will be expected to grasp a range of new skills including; using function machines; simplify linear expressions by collecting like terms; multiplying and dividing terms; expanding brackets; forming expressions from written statements; writing and substituting into formulae.</p> <p>Students will be expected to extend their skills by using prior knowledge of measurement and the decimal system. They will be able to: measure and draw accurately; order and round decimals to make estimations; convert between different units of measure; read analogue scales, use the four operations with decimals, calculate area and perimeter of shapes such as: rectangles, triangles and simple compound shapes; use the appropriate formulae for each shape.</p>	<p>Students will be developing their number skills related to fractions and percentages and their statistical skills with an emphasis on probability.</p> <p>Students will be expected to have a basic understanding of fractions and how they are linked to percentages. They will be able to: use fraction notation; compare, order and simplify fractions; write equivalent fractions; convert between improper fractions and mixed numbers; add and subtract fractions with the same denominators; find fractions of a quantity; write equivalent FDP; find the percentage of an amount.</p> <p>Students will be expected to grasp new skills related to probability, such as: using relevant words and the scale of 0 -1; identifying and calculating probabilities of a single event; finding the probability of an event not happening; recording and using a simple experiment to estimate expected outcomes.</p>	<p>Students will be developing their understanding of ratio and proportion.</p> <p>Students will be expected to be able to: use the unitary method for ratio; use ratio notation, reducing to simplest form; find equivalent ratios; divide an amount into a given ratio; use ratios and measures, such as scales on maps; use fractions and percentages to describe and compare proportions; use and solve direct proportion problems; understand the relationship between fractions, percentages and proportion.</p>	<p>Students will be developing their geometry skills, focusing on angles, and their algebra skills with an emphasis on sequences and straight line graphs.</p> <p>Students will draw on their prior knowledge of the classification of angles and the use of a protractor to: draw and measure angles; recognise different types of angles; estimate the size of a given angle; draw accurate triangles using a protractor and pair of compasses; calculate the size of missing angles on straight lines, around a point and in triangles; identify the properties of quadrilaterals.</p> <p>Students will develop their understanding of sequences by: recognising, describing and continuing a sequence or pattern; generating a sequence; finding and using the nth term rule; plotting co-ordinates from a rule; finding the midpoint of a line segment; draw a straight line graph using a table of values.</p>	<p>Students will be developing their understanding of the Cartesian plane. Pupils will be expected to develop a range of skills related to co-ordinates, 2-d shapes and transformations.</p> <p>Students will be expected to identify co- ordinates on a Cartesian grid; identify congruent shapes; enlarge shapes and find the scale factor; identify symmetry in 2D shapes; reflect a shape in a mirror line; describe and carry out rotations; translate 2D shapes; transform 2D shapes by a combination of rotation, reflection and translation.</p>
<b>Main common assessments</b>	Baseline assessment plus moderation Open book unit tests at the end of each unit.	Open book unit tests at the end of each unit.	Open book unit tests at the end of each unit. Mid-term Assessment on all prior learning.	Open book unit tests at the end of each unit.	Open book unit tests at the end of each unit. End of year exam on all prior learning.	Open book unit tests at the end of each unit.
<b>Extended writing tasks (at least 2 per long term)</b>	Investigation / Research Task		Investigation / Research Task		Investigation / Research Task	
<b>Examples of opportunities for challenge</b>	Students will be given the opportunity to show their understanding of maths by completing an investigation or research task. These are open tasks that are differentiated to allow all pupils to experience a level of challenge that is appropriate for their ability.		Students will be given the opportunity to show their understanding of maths by completing an investigation or research task. These are open tasks that are differentiated to allow all pupils to experience a level of challenge that is appropriate for their ability.		Students will be given the opportunity to show their understanding of maths by completing an investigation or research task. These are open tasks that are differentiated to allow all pupils to experience a level of challenge that is appropriate for their ability.	



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	<b>Terms 1</b>	<b>Terms 2</b>	<b>Terms 3</b>	<b>Terms 4</b>	<b>Terms 5</b>	<b>Terms 6</b>
<b>Links to numeracy, literacy and other subjects</b>	Links with science and geography through the use of graphs and analysing data.	Links with science, geography and DT through the use of measurements.		Links with DT particularly Food Technology through the use of ratios.		
<b>Enrichment, clubs, trips and other extra-curricular activities</b>	Homework Club, High ability students take part in the UKMT, Various inter-school challenge events throughout the year.					
<b>Opportunities for links to careers</b> Teachers are able to link to maths based careers throughout the topics taught in year 7. This includes careers based in engineering, architecture, building, accounting, food preparation, and shop work Students develop their skills in: <ul style="list-style-type: none"> <li>• Decision making – selecting the most efficient methods to solve a given problem</li> <li>• Opportunity - awareness of careers in maths</li> <li>• Transitioning – pupils find out about studying maths at a higher level, including GCSE, A level and beyond,</li> <li>• Self awareness – students will reflect on their skills throughout the year and recognise their strengths and areas for improvement</li> </ul>			<b>Opportunities for links to PSHE, ethos and values</b>			
<b>How can parents support learning?</b> Discussing how maths is used in daily life; such as helping to check bills; including, electricity, gas, broadband, mobile phones. Helping to produce a family budget. Helping to find best value when doing the weekly shop. Management of pocket money and savings.			<b>Other comments</b>			



**Year 8 Overall intent**  
 The Highworth Warneford School Mathematics Department believe students should be encouraged to develop a deep understanding of all concepts taught; it is essential for students to develop mathematical thinking in and out of the classroom, to fully master mathematical concepts. Pupils should be encouraged to use mathematical language throughout their maths learning to deepen their understanding of concepts. Throughout the key stages, students will be encouraged to develop high levels of mathematical fluency and the ability to apply this fluency in order to solve problems both within mathematics and in other curriculum areas. Opportunities to develop mathematical fluency and problem solving should be embedded in all lessons so that students can fulfil their potential regardless of starting point or background. We aim to prepare students well for the mathematical challenges that await them in their future careers and to help them achieve their life ambitions.

**Key prior knowledge and skills**  
 Students have covered the Year 7 mathematics curriculum, extending many core concepts. These include: using formal methods of calculation for all four operations, being able to draw and understand a variety of graphs and charts, understanding that algebra is used to find unknown values, use of the metric measurement system for lengths, areas, volumes and weights and the use of ratio to show proportion.

	Terms 1	Terms 2	Terms 3	Terms 4	Terms 5	Terms 6
Topic Focus	Number & Geometry	Statistics & Algebra	Algebra & Number	Geometry	Number & Algebra	Number
<b>Summary of key knowledge &amp; skills</b>	<p>Students will be extending their numerical abilities with emphasis on negative numbers, factors, multiples and primes, as well as their geometrical knowledge of area and volume.</p> <p>Students will be drawing on prior knowledge to; estimate answers to calculations; use formal written methods for the four operations; apply the four operations to negatives; calculate using squares, cubes and roots; apply BIDMAS appropriately; use prime factors for prime factor decomposition; find the HCF and LCM of any integers.</p> <p>Students will be using prior knowledge of rectangles and triangles and gaining new skills related to area and volume. Students will be able to: calculate the area of triangles, parallelograms and trapezia; calculate the volume and surface area of cubes, cuboids and compound shapes; solve area and volume problems with mixed units; represent 3D solids as 2D nets.</p>	<p>Students will be developing their understanding of statistics, charts and graphs, and algebraic equations.</p> <p>Students will be extending their knowledge of charts and graphs by: drawing and interpreting pie charts, stem and leaf diagrams and scatter graph; using frequency tables and two way tables to organise and compare data; comparing data through averages and range; recognising misleading graphs.</p> <p>Students will use prior knowledge and gaining new skills in solving linear equations. Students will be able to: simplify algebraic expressions including those with indices; expand single brackets; factorise linear expressions; solve one-step and two-step equations; use equations to solve geometric problems; form equations to help solve problems.</p>	<p>Students will be developing both their proportional reasoning skills with an emphasis on real-life graphs, rates of change and ratio.</p> <p>Students will be expected to develop their skills in a range of areas including: drawing and using a conversion graphs, distance-time graphs and line graphs; drawing and interpreting real life graphs from a range of sources; understanding links with direct proportion.</p> <p>Students will be extending the knowledge of decimals and ratios by being able to: round to decimal places and significant figures; order positive and negative decimal values; use place value correctly for calculations; multiply and divide with decimals; solve ratio and proportion problems that include decimal values.</p>	<p>Students will be developing their geometry skills with emphasis on angles.</p> <p>Students will be expected to develop their skills in a range of areas including; classifying quadrilaterals by their properties; identifying alternate and corresponding angles in parallel lines; finding interior and exterior angles of regular polygons; using their knowledge of algebra to solve problems involving angles by setting up and solving equations.</p>	<p>Students will be extending both their numerical skills with an emphasis on fractions, and their algebra skills, with an emphasis on straight-line graphs.</p> <p>Students will be expected to enhance their knowledge of fractions by: ordering fractions; applying the 4 operations to proper fractions and mixed numbers; solving real life problems with fractions; converting between mixed number and improper fractions.</p> <p>Students will be extending their knowledge of straight-line graphs by; plotting straight-line graphs using a table of values; finding the gradient of a line segment; identifying the equation of a straight line.</p>	<p>Students will be extending their numerical skills with an emphasis on percentages, decimals and fractions.</p> <p>Students will use prior knowledge to help them: recall FDP equivalence; recognise recurring and terminating decimals; order fractions; write one number as a percentage of another; find the percentage of an amount; increase and decrease by a given percentage; calculate the original value after a percentage change.</p>
<b>Main common assessments</b>	Baseline assessment plus moderation Open book unit tests at the end of each unit.	Open book unit tests at the end of each unit. Mid-term Assessment on all prior learning.	Open book unit tests at the end of each unit.	Open book unit tests at the end of each unit.	Open book unit tests at the end of each unit. End of year exam on all prior learning.	Open book unit tests at the end of each unit.
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<b>Links to numeracy, literacy and other subjects</b>	Links with all subjects that require a degree of numeracy. Links to Design Technology by using 2D and 3D shapes.	Links with science and geography through the use of charts and graphs. Links with Computing through the use of equations.	Links with Science, interpreting various types of graphs and being able to give answers to an appropriate degree of accuracy.		Links with Science interpreting various types of graphs.	Links to the real world – being able to calculate sale prices, best value products and understanding interest rates.



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