



## Year 9 Homelink Term Two

Subject Area	Classwork/Homework	Period of Study	Examined
<b>Number 2:</b> Decimals and Calculator Methods	Powers of 10. Standard form. Simple column addition and subtraction of decimals. Division and multiplication.	2 weeks	Practice questions from text. Class Test at End of January
<b>Shape 2:</b> Units, Area and Volume	Conversion of units of area and volume. Formulae for triangle, parallelogram, trapezium. Circle measure. Length of arc, area of sector. Volume and surface area of prism,	2 weeks	Homework and Class Test
<b>Handling Data 2:</b> Probability	Review of basic ideas of probability. Outcomes, events, tables,	1 weeks	Exercises from text Class test
<b>Algebra 4:</b> Straight Line Graphs.	Factors, multiples, HCF, LCM primes. Prime factor decomposition, index laws of multiplication and division. The equation $y = mx + c$ graphical methods.	2½ weeks	Homework and Class Tests
<b>Shape3:</b> Transformations	Translations, rotations and reflections.	2 weeks	Homework and Class Tests
<b>Algebra 5:</b> Rearranging Expressions	Collecting like terms. Use of brackets. Product of linear expression. The difference of 2 squares. Substitution	1 ½ weeks	March End of Term One Exam

### Assessment Criteria

Assessment criteria	Percentage Value
Homework	20%
Class work	20%
Attendance	5%
Participation	5%
End of Term Examination	50%

## Course Outline and Attainment Targets Year 9

### Term 2

Curriculum Area	Duration of Study	Attainment Target
<b>Number 2:</b>  Decimals and Calculator Methods	2 weeks	<ul style="list-style-type: none"><li>◆ To read and write numbers that are written as powers of 10.</li><li>◆ To multiply and divide whole numbers and decimals by 0.1 and 0.01.</li><li>◆ To extend knowledge of integer powers of 10.</li><li>◆ To multiply and divide by any integer power of 10.</li><li>◆ To write numbers in standard form.</li><li>◆ To use rounding to make estimates.</li><li>◆ To round number to the nearest whole number or to 1 or 2 decimal places.</li><li>◆ To understand and use upper and lower bounds.</li><li>◆ To round numbers to 3 decimal places and a given number of significant figures.</li><li>◆ To know that a recurring decimal is an exact fraction.</li><li>◆ To use algebraic methods to convert a recurring decimal to a fraction.</li><li>◆ To consolidate standard column procedures of addition and subtractions for integers and decimals of up to 2 decimal places.</li><li>◆ To consolidate standard column procedures of addition and subtractions for integers and decimals of any size, including with differing number of decimal places.</li><li>◆ To use standard column procedures for multiplication and division of integers and decimals e.g. 0.6 or 0.06.</li><li>◆ To understand where to position the decimal point by considering equivalent multiplication and division calculations.</li><li>◆ To multiply and divide by decimals, dividing by transforming to division by an integer.</li><li>◆ To check results using appropriate methods.</li><li>◆ To use a calculator efficiently and appropriately, knowing not to round during intermediate steps of calculation.</li><li>◆ To use the constant, pi, sign change, power, root, fraction, bracket and memory keys.</li></ul>

<p><b>Shape 2:</b></p> <p>Units, Area and Volume</p>	<p>2 weeks</p>	<ul style="list-style-type: none"> <li>◆ To use the reciprocal key on a calculator.</li> <li>◆ To enter numbers into a calculator and interpret the display in context e.g. negative numbers, fractions, decimals, percentages, money, time,...</li> <li>◆ To enter numbers in standard form into a calculator.</li> <li>◆ To solve more complex problems by breaking them into smaller tasks, choosing and using efficient techniques for calculation.</li> <li>◆ To solve substantial problems using a range of efficient techniques, methods and resources including ICT.</li> </ul> <p>To use trial and improvement to solve problems where a more efficient method is not obvious.</p> <ul style="list-style-type: none"> <li>◆ To give the co-ordinates of points A and B and use to find the midpoint of the line segment AB.</li> <li>◆ To find points that divide a line in a given ratio.</li> <li>◆ Given the co-ordinates of the points A and B, calculate the length of AB.</li> <li>◆ To know rough metric equivalents of imperial measures in daily use.</li> <li>◆ To use units of measurements to calculate, estimate, measure and solve problems in a variety of contexts.</li> <li>◆ To convert between area measures e.g. <math>\text{mm}^2</math> to <math>\text{cm}^2</math></li> <li>◆ To convert between volume measures e.g. <math>\text{mm}^3</math> to <math>\text{cm}^3</math></li> <li>◆ To recognise that measurements given to the nearest whole unit may be inaccurate by up to one half of the unit in either direction.</li> <li>◆ To understand and use measures of speed (and other compound measures such as density or pressure) to solve problems.</li> <li>◆ To solve problems involving constant or average rates of change.</li> <li>◆ To deduce and use formulae for the area of a triangle, parallelogram and trapezium.</li> <li>◆ To calculate areas of compound shapes made from rectangles and triangles.</li> <li>◆ To know and use the formula for the circumference and area of a circle.</li> <li>◆ To know and use the formulae for lengths of arcs and areas of sectors.</li> <li>◆ To know and use the formula for the volume of a cuboid.</li> <li>◆ To calculate volumes and surface areas</li> </ul>
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<p><b>Handling Data 2:</b></p> <p>Probability</p>	<p>1 week</p>	<p>of cuboids and shapes made from cuboids.</p> <ul style="list-style-type: none"> <li>◆ To calculate the surface area and volume of right prisms.</li> </ul> <p>To calculate lengths, areas and volumes in right prisms, including cylinders.</p> <ul style="list-style-type: none"> <li>◆ To use the vocabulary of probability in interpreting results involving uncertainty and prediction.</li> <li>◆ To know that if the probability of an event occurring is <math>p</math>, then the probability of an event not occurring is <math>1-p</math>.</li> <li>◆ To find and record all possible mutually exclusive outcomes for single events and two successive events in a systematic way, using diagrams and tables.</li> <li>◆ To identify all the mutually exclusive outcomes of an experiment.</li> <li>◆ To know that the sum of probabilities of all mutually exclusive outcomes is 1 and use this when solving problems.</li> <li>◆ To understand that if an experiment is repeated, there may be, and usually will be, different outcomes.</li> <li>◆ To understand that increasing the number of times an experiment is repeated generally leads to better estimates of probability.</li> <li>◆ To estimate probabilities from experimental data.</li> <li>◆ To understand relative frequency as an estimate of probability and use this to compare outcomes of experiments.</li> </ul> <p>To use efficient methods to add, subtract, multiply and divide fractions.</p>
<p><b>Algebra 4:</b></p> <p>Straight Line Graphs.</p>	<p>2 weeks</p>	<ul style="list-style-type: none"> <li>◆ To recognise and use multiples, factors, HCF, LCM and primes.</li> <li>◆ To use the prime factor decomposition of a number.</li> <li>◆ To use ICT to estimate square roots and cube roots.</li> <li>◆ To use squares, positive and negative square roots, cubes and cube roots and index notation for small positive integer powers.</li> <li>◆ To use index notation for integer powers.</li> <li>◆ To know the index laws and use in simple cases.</li> <li>◆ To know and use the index laws for multiplication and division of all integer powers and some fractional cases.</li> <li>◆ To recognise that equations of the form</li> </ul>

<p><b>Shape3:</b> Transformations</p>	<p>2 weeks</p>	<p><math>y = mx + c</math> correspond to straight line graphs.</p> <ul style="list-style-type: none"> <li>◆ To find the gradient of a line <math>y = mx + c</math>.</li> <li>◆ To investigate the gradients of parallel and perpendicular lines.</li> <li>◆ To plot graphs of simple quadratic and cubic functions.</li> <li>◆ To construct functions arising from real life problems and plot their corresponding graphs.</li> <li>◆ To interpret graphs arising from real life situations e.g. distance-time.</li> </ul> <p>To convert problems into algebraic, graphical and geometric forms as appropriate.</p> <ul style="list-style-type: none"> <li>◆ To distinguish between practical demonstration and proof.</li> <li>◆ To identify the assumptions made to solve a problem and consider the possible limitations.</li> <li>◆ To understand congruence.</li> <li>◆ To apply the conditions, SSS, SAS, ASA and RHS to establish the congruence of triangles.</li> <li>◆ To know that if 2 2D objects are similar, then corresponding angles are equal and corresponding sides are in the same ratio.</li> <li>◆ To identify all the symmetries of 2D shapes.</li> <li>◆ To transform 2D shapes by combinations of translations, rotations and reflections on paper and using ICT.</li> <li>◆ To know that translations, rotations and reflections preserve length and angle.</li> <li>◆ To know that the image of a translation, rotation and reflection is congruent to the original object.</li> <li>◆ To identify reflection symmetry in 3D shapes.</li> <li>◆ To understand and use the language and notation associated with enlargement.</li> <li>◆ To enlarge 2D shapes given a centre and an integer scale factor on paper and using ICT.</li> <li>◆ To identify the scale factor of an enlargement as the ratio of the lengths of any 2 corresponding line segments.</li> <li>◆ To recognise that enlargements preserve angle but not length.</li> <li>◆ To understand the implications of</li> </ul>
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<p><b>Algebra 5:</b></p> <p>Rearranging Expressions</p>	<p>I week</p>	<p>enlargement for perimeter.</p> <ul style="list-style-type: none"> <li>◆ To enlarge 2D shapes given a fractional scale factor.</li> <li>◆ To know that enlargement creates a similar shape.</li> <li>◆ To understand the implications of enlargement for area and volume.</li> <li>◆ To make simple scale drawings.</li> <li>◆ To use and interpret maps and scale drawings.</li> <li>◆ To begin to use sine, cosine and tangent in right-angled triangles to solve problems in 2D.</li> <li>◆ To simplify ratios, including ratios expressed in different units.</li> <li>◆ To use proportional reasoning to solve a problem.</li> </ul> <p>To interpret and use ratio in a range of contexts.</p> <ul style="list-style-type: none"> <li>◆ To simplify linear expressions by collecting like terms.</li> <li>◆ To multiply a single term over a bracket.</li> <li>◆ To simplify expressions by taking out single term common factors.</li> <li>◆ To square a linear expression.</li> <li>◆ To expand the product of 2 linear expressions and simplify the corresponding quadratic expression.</li> <li>◆ To establish identities such as <math>a^2 - b^2 = (a+b)(a-b)</math></li> <li>◆ To solve linear inequalities in one variable, then extending to 2 variables.</li> <li>◆ To represent the solution to linear inequalities on a number line.</li> <li>◆ To substitute into formulae and expressions.</li> <li>◆ To derive a simple formula.</li> <li>◆ To change the subject of a simple formula.</li> <li>◆ To derive and use more complex formulae and change the subject.</li> <li>◆ To plot the graphs of linear functions where y is given explicitly in terms of x.</li> </ul> <p>To generate points and plot graphs of linear functions where y is given implicitly in terms of x</p>
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