



## Subject: Maths

Year 10	
Theme	Teaching
1 Factors, Multiples and Primes	<ul style="list-style-type: none"> <li>Identify factors, multiples and primes including being able to recognise prime numbers up to 100.</li> <li>List factors and multiples systematically and use lists to find common factors and multiples of two numbers.</li> <li>Find the prime factor decomposition of a positive integer and write as a product of its prime factors (understand that each number has a unique prime factor decomposition).</li> </ul>
2 Factors, Multiples and Primes	<ul style="list-style-type: none"> <li>Understand and recognise square and cube root notation. Know the integer square roots of square numbers up to 225 and the integer cube roots of numbers up to 216 and 1000.</li> <li>Estimate square roots.</li> <li>Find LCM and HCF of two numbers; by listing, Venn diagrams, and using prime numbers – including using the prime factor decomposition of two numbers.</li> <li>Solve worded problems with HCF and LCM.</li> </ul>
3 Factors, Multiples and Primes	<ul style="list-style-type: none"> <li>To know the difference between an expression, an identity and an equation.</li> <li>To write an expression and an equation.</li> <li>To expand two brackets and simplify, eg <math>2(x+4) - 3(x+2)</math>.</li> <li>To solve one and two step linear equations using 1 variable.</li> <li>To solve an equation with unknowns on both sides.</li> <li>To apply solving linear equations to other aspects of maths.</li> </ul>
4 Solving Equations	<ul style="list-style-type: none"> <li>Understand and use index notation including finding (or estimating) values of calculations involving square roots, cube roots, and positive indices.</li> <li>Use indices correctly in the hierarchy of operations including with brackets.</li> <li>Recall and use the index laws of multiplication, division and powers of powers.</li> <li>Use a calculator for all operations including powers, roots and brackets.</li> </ul>
5 Solving Equations	<ul style="list-style-type: none"> <li>Use the standard conventions for labelling and referring to the sides and angles of a triangle.</li> <li>Apply the properties of angles at a point, on a straight line, vertically opposite angles, including when represented algebraically.</li> <li>Understand and use alternate, co-interior and corresponding angles on parallel lines.</li> </ul>
6 Indices	<ul style="list-style-type: none"> <li>Understand and use the sum of angles in a triangle to deduce and use the angle sum in any polygon, and to derive properties of regular polygons.</li> <li>Know compass directions and related angles.</li> <li>Know that Bearings are always given as 3 figures and measured clockwise from North.</li> <li>Measure and draw a bearing of B from A.</li> <li>Understand and use the scale for distance on a map.</li> </ul>
7 Angles and Bearings	<ul style="list-style-type: none"> <li>Derive and use the sum of angles in a triangle to deduce and use the angle sum in any polygon, and to derive properties of regular polygons.</li> <li>Know compass directions and related angles.</li> <li>Know that Bearings are always given as 3 figures and measured clockwise from North.</li> <li>Measure and draw a bearing of B from A.</li> <li>Understand and use the scale for distance on a map.</li> </ul>
8 Revision, Assessment and Review	This includes a revision lesson, 2 lessons for the assessment and a lesson to review the assessment.
9 Angles and Bearings	<ul style="list-style-type: none"> <li>Derive and use the sum of angles in a triangle to deduce and use the angle sum in any polygon, and to derive properties of regular polygons.</li> <li>Know compass directions and related angles.</li> <li>Know that Bearings are always given as 3 figures and measured clockwise from North.</li> <li>Measure and draw a bearing of B from A.</li> <li>Understand and use the scale for distance on a map.</li> </ul>
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11 Sequences	<ul style="list-style-type: none"> <li>Generate terms of a sequence from a term-to-term rule.</li> <li>Generate terms of a sequence from a position-to-term rule.</li> <li>Find the term-to-term rule and position-to-term rule for a linear sequence.</li> <li>Recognise and use sequences of triangular, square and cube numbers, simple arithmetic progressions.</li> <li>Recognise and use Fibonacci type sequences and quadratic sequences.</li> </ul>
12 Sequences	<ul style="list-style-type: none"> <li>Generate terms of a sequence from a term-to-term rule.</li> <li>Generate terms of a sequence from a position-to-term rule.</li> <li>Find the term-to-term rule and position-to-term rule for a linear sequence.</li> <li>Recognise and use sequences of triangular, square and cube numbers, simple arithmetic progressions.</li> <li>Recognise and use Fibonacci type sequences and quadratic sequences.</li> </ul>
13 Types of Data, Sampling and Bias	<ul style="list-style-type: none"> <li>Be able to describe and identify different types of data: qualitative, quantitative, discrete, continuous, primary and secondary.</li> <li>Use the data handling cycle to plan an investigation to test a hypothesis.</li> <li>Design or criticise a suitable data collection sheet for different types of data.</li> <li>Understand what is meant by a sample and population and how sample sizes and type of sample can affect results.</li> <li>Know and be able to use different types of sampling including stratified sampling.</li> <li>Understand bias and how it can be minimised to ensure the sample is representative.</li> </ul>
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15 Review Week	This will be spent catching reviewing any gaps from the topics studied up to this point.
16 Ratio and Proportion	<ul style="list-style-type: none"> <li>Understand the link between ratio and fractions and be able to use fractions to solve ratio problems.</li> <li>Use ratio notation, including reduction to simplest form.</li> <li>Divide a given quantity into two parts in a given part : part : whole ratio; apply ratio to real contexts and problems.</li> <li>Express a multiplicative relationship between two quantities as a ratio or a fraction.</li> <li>Understand direct proportion and its link to equivalent ratios.</li> <li>Use and convert standard units of mass, length, time, money and other measures (including standard compound measures) using decimal quantities where appropriate.</li> <li>Solve problems involving direct and inverse proportion, including graphical and tabular representations.</li> </ul>
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18 Formulae	<ul style="list-style-type: none"> <li>Know the hierarchy of operations and be able to use this to form expressions and formulae.</li> <li>Substitute numerical values into scientific formulae.</li> <li>Understand and use standard mathematical formulae.</li> <li>Rearrange formulae to change the subject.</li> <li>Change the subject of a formula with brackets or when the subject appears twice.</li> <li>Translate simple situations or procedures into algebraic formulae.</li> </ul>
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Year 10	
Theme	Teaching
20 Transformations, Similarity and Congruence	<ul style="list-style-type: none"> <li>Be able to identify congruent shapes, and to show that two shapes are congruent.</li> <li>Be able to produce a congruent shape by reflecting, rotating, or translating a shape and understand why it is congruent.</li> <li>Be able to produce similar shapes by enlargement – including with a fractional scale factor, and explain why these shapes are similar.</li> <li>Solve problems involving similar shapes where the scale factor is known or can be found.</li> <li>Compare lengths using ratio notation.</li> <li>Apply the concepts of congruence and similarity, including the relationships between lengths of similar objects.</li> </ul>
21 Transformations, Similarity and Congruence	<ul style="list-style-type: none"> <li>Be able to identify congruent shapes, and to show that two shapes are congruent.</li> <li>Be able to produce a congruent shape by reflecting, rotating, or translating a shape and understand why it is congruent.</li> <li>Be able to produce similar shapes by enlargement – including with a fractional scale factor, and explain why these shapes are similar.</li> <li>Solve problems involving similar shapes where the scale factor is known or can be found.</li> <li>Compare lengths using ratio notation.</li> <li>Apply the concepts of congruence and similarity, including the relationships between lengths of similar objects.</li> </ul>
22 Revision, Assessment and Review	This includes a revision lesson, 2 lessons for the assessment and a lesson to review the assessment.
23 Compound Units	<ul style="list-style-type: none"> <li>Use compound units such as speed and rates of pay.</li> <li>Use compound units such as density and pressure.</li> <li>Change freely between compound units e.g. from km/h to metres/second or from mg per hour to wage per annum.</li> <li>Change freely between compound units (e.g. density, pressure) in numerical and algebraic contexts.</li> <li>Draw and interpret a distance-time graph.</li> <li>Draw and interpret any compound measures graph (e.g. cost per mile for a taxi company).</li> </ul>
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25 Factorising and Solving Quadratic Equations	<ul style="list-style-type: none"> <li>To simplify an expression - including the laws of indices.</li> <li>To multiply a term over a single bracket.</li> <li>To factorise a linear expression by taking out a common factor.</li> <li>Expand the product of two linear brackets.</li> <li>Factorise a quadratic expression of the form <math>x^2 + bx + c</math>.</li> <li>Factorise the difference of two squares.</li> </ul>
26 Factorising and Solving Quadratic Equations	<ul style="list-style-type: none"> <li>To simplify an expression - including the laws of indices.</li> <li>To multiply a term over a single bracket.</li> <li>To factorise a linear expression by taking out a common factor.</li> <li>Expand the product of two linear brackets.</li> <li>Factorise a quadratic expression of the form <math>x^2 + bx + c</math>.</li> <li>Factorise the difference of two squares.</li> </ul>
27 Fractions, Decimals and Percentages	<ul style="list-style-type: none"> <li>To understand and find a reciprocal.</li> <li>Four operations with decimals.</li> <li>Four operations with fractions.</li> <li>Convert between improper fractions and mixed numbers.</li> <li>Find a fraction of a quantity.</li> <li>Convert fluently between fractions, decimals and percentages.</li> <li>Find a percentage of a quantity.</li> <li>Increase or decrease a quantity by a given percentage.</li> <li>Calculate a repeated percentage change.</li> <li>Calculate a change in quantity as a percentage change.</li> <li>Calculate reverse percentages.</li> </ul>
28 Fractions, Decimals and Percentages	<ul style="list-style-type: none"> <li>To understand and find a reciprocal.</li> <li>Four operations with decimals.</li> <li>Four operations with fractions.</li> <li>Convert between improper fractions and mixed numbers.</li> <li>Find a fraction of a quantity.</li> <li>Convert fluently between fractions, decimals and percentages.</li> <li>Find a percentage of a quantity.</li> <li>Increase or decrease a quantity by a given percentage.</li> <li>Calculate a repeated percentage change.</li> <li>Calculate a change in quantity as a percentage change.</li> <li>Calculate reverse percentages.</li> </ul>
29 Probability	<ul style="list-style-type: none"> <li>Compare the probabilities of events by comparing sizes of fractions, decimals and percentages.</li> <li>Use theoretical models to include outcomes using dice, spinners and coins.</li> <li>Record outcomes of probability experiments in tables.</li> <li>Compare experimental data and theoretical probabilities.</li> <li>Compare relative frequencies from samples of different sizes.</li> <li>Find the probability of an event happening using relative frequency.</li> <li>Estimate the number of times an event will occur, given the probability and the number of trials - both for experimental and theoretical probabilities.</li> <li>Use two way tables and frequency trees to record information and calculate probabilities.</li> </ul>
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31 Linear and Quadratic Functions	<ul style="list-style-type: none"> <li>Generate and plot coordinates for any linear function.</li> <li>Recognise that <math>y=mx+c</math> corresponds to a linear graph and know how the parts of this equation determine the line.</li> <li>Calculate the gradient of a straight line segment using <math>\Delta y/\Delta x</math>.</li> <li>Be able to find the equation of any straight line.</li> <li>Recognise and plot simple quadratic functions.</li> </ul>
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33 Surface Area and Volume	<ul style="list-style-type: none"> <li>Identify properties of the faces, surfaces, edges and vertices of: cubes, cuboids, prisms, cylinders, pyramids, cones and spheres.</li> <li>Know and understand units for volume, area and length.</li> <li>Use standard formulae to solve problems involving areas of parallelograms, triangles and trapezia.</li> <li>Calculate area and circumference of circles.</li> <li>Calculate the volume of any prism.</li> <li>Calculate the surface area of any prism.</li> <li>Find the surface area and volume of composite solids.</li> <li>Calculate the volume of spheres, cones and pyramids.</li> <li>Calculate the surface area of spheres, cones and pyramids.</li> </ul>
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36 Mock Exams	
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38 Pythagoras' Theorem	<ul style="list-style-type: none"> <li>Identify and label different parts of a triangle including the hypotenuse, and use conventional notation for this.</li> <li>Recall and use the formula <math>a^2+b^2=c^2</math> to find the hypotenuse right angled triangle.</li> <li>Recall and use the formula <math>a^2+b^2=c^2</math> to find one of the shorter side lengths of a right angled triangle.</li> <li>Be able to use the formula <math>a^2+b^2=c^2</math> to show whether a triangle is right-angled or not.</li> <li>Use Pythagoras' theorem in context or to solve other geometrical problems - for example to find the distance between two coordinates.</li> </ul>
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Year 11		Year 11	
Theme	Teaching	Theme	Teaching
1	Fractions, Decimals and Percentages	20	Quadratic Equations
2	Fractions, Decimals and Percentages	21	Quadratic Equations
3	Fractions, Decimals and Percentages	22	Pythagoras and Trigonometry
4	Probability Trees and Venn Diagrams	23	Mock Exams
5	Probability Trees and Venn Diagrams	24	Pythagoras and Trigonometry
6	Powers, Roots and Standard Form	25	Averages
7	Powers, Roots and Standard Form	26	Averages
8	Sequences	27	Vectors
9	Circles, Arcs and Sectors	28	Other Graphs
10	Circles, Arcs and Sectors	29	Revision and Review
11	Real-life Graphs Revision	30	Revision and Review
12	Mock Exams and Review	31	Revision and Review
13	Mock Exams and Review	32	Revision and Review
14	Inequalities and Simultaneous Equations	33	Revision and Review
15	Inequalities and Simultaneous Equations	34	Revision and Review
16	Ratio and Proportion	35	Revision and Review
17	Ratio and Proportion	36	
18	Constructions and Loci	37	
19	Constructions and Loci	38	
		39	