

Mathematics Year 11 Foundation

Term	1				2			3	4	5	6
Topic	Geometry 1	Algebra 1	Geometry 2	Algebra 2	Ratio and Proportion 1	Algebra 3	Geometry 3	Geometry 4	Revision	Revision	Revision
Detail	Know and apply right angled trigonometry including knowing and using some exact values.	Calculate with roots and with integer indices including negative powers. Solving simultaneous equations algebraically.	Identify, describe and construct similar shapes, including on coordinate axes, by considering enlargement. Recall and apply concepts of congruence and similarity including relationships between lengths in similar figures.	Simply and manipulate algebraic expressions by factoring quadratic expressions of the form $ax^2 + bx + c$, including the difference of two squares. Changing the subject of a formula when more than two steps are required.	Understand direct and inverse proportion. Recognise and interpret equations that describe, and graph that illustrate, direct and inverse proportion. Set up, solve and interpret the answers in growth and decay problems including compound interest.	Recognise and use simple geometric progressions. Identify and interpret roots, intercepts and turning points of quadratic functions graphically.	Find and apply the volume of various solids including composite solids.	Apply addition and subtraction of vectors; multiplication of vectors by a scalar, and diagrammatic and column representations of vectors.	Revision and application of a variety of topics using Strive for Five packs and Gap analysis from Term 2 Mock exams	Problem solving contexts of a variety of topics using the UNPACK and Term 4 Mock exams. Improve exam practice and identifying topics within a question.	Exam practice and revision topics from term 4 Mock exams.
Grade 8-9											
Grade 6-7											
Grade 5	Recall and apply trigonometric ratios to right angled triangles. Recall and use some exact trigonometric values.	Understand and use negative indices. Solving simultaneous equations algebraically.		Recall how to factorise a quadratic expression including the difference of two squares. Apply factorisation when solving a quadratic equation.	Recognise and use equations that describe direct and inverse proportion. Solve problems involving repeated percentage change and exponential growth and decay.	Recognise and describe a simple geometric progression. Find the next three terms, or any given term, in a geometric progression. Identify and interpret roots, intercepts and turning points of quadratic functions graphically.	Find and apply the volume and surface area of spheres, cones and pyramids.	Apply addition and subtraction of vectors; multiplication of vectors by scalar, and diagrammatic and column representations of vectors.		Compound interest	Revision of appropriate GCSE topics in preparation for the exams.
Grade 4	Recognise and apply properties of similar shapes.	Know and apply the index laws for powers of like bases. Recall and use some exact trigonometric values.	Applying properties of congruence and similarity to lengths of shapes. Construct and describe enlargements with/without a centre of enlargement and scale factors including fractions.	Identify and use graphs of direct proportion such as conversion graphs.		Find and apply the volume and surface area of cuboids and composite solids.		Recall and application of Pythagoras' Theorem. Recall and apply Trigonometric ratios. Understand and apply area and percentage. Compare situations involving value for money. Use probability in tree diagrams. Construct and describe enlargements.		Similar shapes, compound measures, percentage increase/decrease.	Revision of appropriate GCSE topics in preparation for the exams.
Grade 2-3	Know and calculate with roots of a number. Use the functionality of a scientific calculator when calculating with roots and powers.			Understand and use direct proportion (rate and compare simple interest problems).		Find and apply the volume and surface area of cuboids and prisms including triangular prisms and cylinders.		Finding and applying HCF/LCM/Product of Prime Factors. Find the nth term of a linear sequence, generate a linear sequence from its nth term. Find missing terms within linear and special sequences. Know the square and cube numbers. Revision of factoring expressions and expanding brackets. Calculate and apply the average and range. Practice rounding to decimal places and significant figures especially when ending a calculation. Identifying correlation and using a line of best fit on scatter graphs. Write and use simple probability. Revision of all angles including parallel lines and interior/exterior angles. Substituting and solving using formulae. Using and interpreting the language of probability.		Area and circumference of circles, best buy, enlargement area and perimeter, surface area, forming and solving equations, fractions, decimals and percentages, frequency trees, HCF, LCM. Money problems, simple interest, proportion, ratio of a quantity, ratio write, scale factor diagrams and maps, standard form, theoretical probability.	Revision of appropriate GCSE topics in preparation for the exams.

Keywords	1	2	3	4	5	6	
Similar, opposite, adjacent, hypotenuse, trigonometry, function, ratio, sine, cosine, tangent, angle of elevation, angle of depression	Power, root, index, indices, standard form, value, unitaries, simultaneous equations, substitution, elimination, angle of depression	congruent, congruency, similarity, similar shapes, similar figures, enlarge, enlargement, scale factor, transformation, dilation, reflection, translation.	Equivalent, equation, expression, expand, linear, quadratic, difference of two squares, binomial, factorise	Direct proportion, inverse proportion, proportion, multiplier, fraction, mixed number, top-heavy fraction, percentage change, percentage increase, percentage decrease, compound interest, simple interest, exponential growth, decay	term, nth term, generate, first beyond difference, Geometric Progression, function, equation, linear, non-linear, quadratic, cubic, reciprocal, parabola, asymptote, gradient, y-intercept, x-intercept, root	Composite, solid, sphere, pyramid, cone, paraboloid, height, slant height, surface area, volume	Vector, scalar, constant, magnitude

Resource Links	KM: From set squares to trigonometry KM: Maths to Infinity: Standard form KM: Trigonometry Rowchart NRICH: Trigonometric proof NRICH: Sine and cosine	KM: Maths to Infinity: Standard form Maths to Infinity: Indices Nrich: Powers and Roots - Short Problems NRICH: Power Countdown	KM: Enlargement 2 KM: Stick on the Maths SSM3: Enlargement (fractional scale factor) KM: Stick on the Maths SSM1: Congruence and similarity NRICH: Growing Rectangles	KM: Maths to Infinity: Brackets KM: Stick on the Maths: Quadratic sequences KM: Maths to Infinity: Quadratics NRICH: What's possible? NRICH: Finding Factors	KM: Graphing proportion KM: Investigating proportionality 2 KM: Stick on the Maths NNS1: Understanding Proportionality KM: Convicted: NNS1: Understanding Proportionality	KM: Sequence plotting: A grid for plotting nth term against term. KM: Maths to Infinity: Sequences Hwb: Linear and quadratic sequences NRICH: Growing Surprises GLOWMaths/JustMaths: Sample Questions: Both Tiers	NRICH: Surface Area and Volume NRICH: Vectors CIMT: Vectors AQA: Bridging Units: Vectors	Pixl Strive for Five booklet provided by class teacher UNPACK booklet provided by class teacher Exam Papers provided by class teacher
	GLOWMaths/JustMaths: Sample Questions Both Tiers KM: Stick on the Maths: ALG2 Simultaneous linear equations KM: Convicted? ALG2: Simultaneous linear equations NRICH: Matchless AQA: Bridging Units: Resource Pocket 4 GLOWMaths/JustMaths: Sample Questions Both Tiers	OCR: Congruence Check in Similarity Check in GLOWMaths/JustMaths: Sample Questions Both Tiers	Algebra Tiles GLOWMaths/JustMaths: Sample Questions Both Tiers	Hwb: Inverse or direct? NRICH: In Proportion GLOWMaths/JustMaths: Sample Questions Both Tiers	GLOWMaths/JustMaths: Sample Questions: Both Tiers KM: 10M11 BAM Task GLOWMaths/JustMaths: Sample Questions: Both Tiers KM: 10M12 BAM Task	GLOWMaths/JustMaths: Sample Questions: Both Tiers AQA: Bridging Units: Vectors		
	KM: Stick on the Maths B: Repeated Proportional Change KM: Convicted? Repeated Proportional Change Hwb: Borrowing money: APR Too good to be true! Double your money Comparing interest GLOWMaths/JustMaths: Sample Questions Both Tiers							

Career Opportunities	Why Maths is important 2 Charge Nurse in ICU Supersonic Car designer Research Meteorologist Assessing Risk in Banks Structural Engineer	Bomb disposal What engineers can achieve Financial Advisor	Economist Cartographer Image Analysis	Maths in Special Effects/Video gaming Actuary
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