Curriculum Map template

Subject:

Year:

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Content Knowledge	<u>Higher and foundation</u> Algebra: further quadratics, rearranging formulae and identities. <u>Higher only</u> Trigonometry recap and extension. Growth and decay. <u>Foundation only</u> Volume.	<u>Higher only</u> Equation of a circle. Further equations and graphs. Direct and inverse proportion. <u>Foundation only</u> Inequalities. Algebra and graphs. Sketching graphs.	<u>Higher only</u> Inequalities. Vectors. Further sketching graphs. <u>Foundation only</u> Direct and inverse proportion. Trigonometry.	<u>Higher only</u> Sine and cosine rules. Transforming functions. Numerical methods. Circle theorems. <u>Foundation only</u> Solving quadratic equations. Quadratic graphs. Growth and decay.	<u>Higher only</u> Gradients and rates of change. Pre-calculus and area under a curve. Algebraic fractions. <u>Foundation only</u> Vectors.	Revision and exams
Skills	Simplify and manipulate algebraic formula; Rearranging formula; surds and indices; factorise expressions of the form	Understand the equation of a circle and its centre at the origin; equations of tangents and normals. Solving linear equations; graphical solutions of quadratic	Solve inequalities with one variable; solve inequalities with two variables. Understand how to solve quadratic inequalities; sketching regions, represent on a number line and	Knowledge and application of the sine and cosine rules for solving non-right angled problems; know and apply the Area=1/2absinC. Describe the	Understand how to identify and interpret gradients and intercepts of a simple linear function both algebraically and graphically. Interpret and	

	$ax^2 + bx + c$; difference of two squares; identity and equation: key differences and mathematical proof. Right-angle trigonometry and pythagoras' theorem; 2D/3D problem solving. Exponential growth and decay; recognise shapes of these graphs. Volumes of shapes; prisms ,pyramids, cones and spheres; worded problems.	equations; forming and interpretation and solving algebraic problems; Understand inverse and direct proportion; construct and solve worded proportion problems. Solve linear inequalities involving one or two variables; represent inequalities accurately on a number line. Solve simultaneous equations using graphs; sketch functions; linear, quadratic, cubic and reciprocal functions.	usage of set notation. Interpret and sketch linear/quadratic/cubic/reciprocal/trigonometric functions; Knowledge and understanding of translations and reflections to provided functions. Study vectors in 2D;add/subtract/multiply vectors by a scalar; diagrammatic and column representation of vectors; solve vector problems; proofs using vectors. Problem solving using direct and indirect proportions; solve worded problems. Understand and apply the three trigonometric ratios: sine, cosine	changes and invariance achieved by combinations of rotations, reflections and translations. Enlargements including fractional and negative scale factors. Understand how to find approximate solutions using iterative methods. Applications and proofs of the standard circle theorems; solve circle problems in context using applied angle knowledge. Solve quadratic equations of the form $ax^2 + bx + c$ using the factorisation method including difference of two squares. Know how to	understand Distance-time graphs to solve. Understanding of how to calculate or estimate gradients and the area under graphs; interpret velocity-time graphs; able to identify and match graphs. Study of simplifying and manipulating algebraic fractions; application of the difference of two squares and factorisation of quadratics to simplify fractions. Solve applied shape problems involving quadratics; reasoning problem solving in a given context. Understand how to describe 2D vectors; application of column vector	

			and tangent. Solve problems using knowledge of right angled triangles involving both Pythagoras' Theorem and Trigonometry.	complete a table of values given a quadratic function; plot and sketch a quadratic function; estimation of values using a quadratic graph and approximate solution of quadratics using a graph. Set-up and solve growth and decay problems including compound interest.	notation. Simple addition/subtraction of vectors; multiplication of vectors by a scalar number. Know and understand how to translate a shape given a translation.	
Key Questions	Given that v = u + 10t. Work out the value of v when u = 10 and t = 7 Make p the subject of the formula: 4(p – 2q) = 3p + 2 A ladder 5 m long, leaning against a vertical wall makes an angle of 65˚ with the ground. a) How high on the wall	A circle has equation $x^2 + y^2 = \frac{1}{4}$ Find the length of its radius. *h* is inversely proportional to the square of *r.* When *r=5, h=3.4.* Find the value of *h* when *r=8.*	–3 < n ≤ 1 n is an integer. a) Write down all the possible values of n. b) Solve the inequality 3p – 7 > 11 Solve 7x – 9 < 12 y is directly proportional to x. When x = 500, y = 10. Find a formula for y in terms of x. A boy is flying a kite. The string is	XYZ is a triangle. XY is 8cm, XZ is 10cm, angle YXZ = 79° (a) Calculate the area of the triangle XYZ. (b) Calculate the length of YZ. An approximate solution to an equation is found using this iterative process: xn+1=√(xn)+10 and x1=3 (a) Work out the values of x2 and x3. (b)Work out the	Simplify fully: $\frac{x}{4} + \frac{x}{3}$ Simplify $\frac{4(p+7)}{(p+7)^2}$ $a = \begin{bmatrix} 5 \\ -2 \end{bmatrix} and\ b = \begin{bmatrix} \frac{1}{2} \end{bmatrix}$ Calculate the vector a – b	

	does the ladder reach? b) How far is the foot of the ladder from the wall? c) What angle does the ladder make with the wall?		held 80cm above the ground. The kite is on a string which is 8m long. The string makes an angle of 30° with the horizontal. Calculate the height of the kite above the ground.	solution to 3 decimal places. The value of a car £V is given by V = 20 000 × 0.9t where t is the age of the car in complete years. (a) Write down the value of V when t = 0. (b) What is the value of V when t = 3?(c) After how many complete years will the car's value drop below £10 000?		
Assessment	End of topic tests.	End of topic tests. Mocks	End of topic tests.	End of topic tests. Mocks	End of topic tests.	GCSE formal exams.
Literacy/numeracy/ SMSC/Character	Discussions - strategic mathematical conversations	Critical thinking - skills of analysis, reflection and evaluation	Perseverance - learning new mathematical concepts and through problem-solving.	Problem solving - approach using the whole problem or task.	Financial decisions - calculating interest, mortgages, coping with less income, consequences of debt, etc.	
Enrichment opportunities and futures	BBC Bitesize: ://www.bbc.co.uk/bitesize/guides/ztj6y4j/revision/1	SSDD Problems: https://ssddproblems.com/tag/algebra-inequalities-solving-linear-inequalities/	Nrich tasks: https://nrich.maths.org/9150	Integral Maths: https://2017.integralmaths.org/pluginfile.php/140921/mod_resource/content/0/Mystery_Quadr	STEM: https://www.stem.org.uk/resources/elibrary/resource/25414/shape-space-and-measure#&gid=	

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