ICKNIELD HIGH SCHOOL **KEY STAGE 3 CURRICULUM MAP**

'Raising the Achievement of All'

WELL-SEQUENCED CONTEXUALISED/INCLUSIVE AMBITIOUS

SUBJECT: MATHS **Year: 9**

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	U1: Fractions, Decimals and Percentages **U2: Probability** **U3: Sets and Venn Diagrams**	**U4: Simultaneous Equations-Solving Algebraically** **U5: Simultaneous Equations-Solving Graphically** **U6: Angle Review**	**U7: Congruence** **U8: Pythagoras Theorem** **U9: Ratio Review**	**U10: Similarity and Enlargement** **U11: Trigonometry**	**U12: Algebra Review** **U13: Quadratic Expressions** **U14: Surds**	**U15: Indices** **U16: Standard Form** **U17: Growth and Decay**
Key Questions	**U1: Can you convert any decimal into a fraction and or a percentage? U2: How do we represent 'chance' in maths? U3: What is the difference between an intersection and a union?**	**U4: How do we manipulate equations to solve them? U5: How do we use algebra when there are several unknowns? U6: How can angles help to solve shape problems?**	**U7: What is the difference between a bisector and a perpendicular line? U8: Where would we use Pythagoras in industry? U9: How can we use ratio to our advantage?**	**U10: Are similar shapes the same? U11: Can you use trigonometry to find a missing angle?**	**U12: Can you solve equations with brackets? U13: How do we plot algebraic expressions onto graphs? U14: What is a surd?**	**U15: What are the different index laws? U16: What is standard form and why do we use it? U17: What is a multiplier?**
Content: 'Know what'	-Recognise the connections between fractions, decimals and percentages -Understand probability is a numerical measure of chance on a scale from 0 to 1 inclusive.	-Know that equivalent equations are satisfied with the same value/s -Identify pairs of equations that are equivalent -Know definition of simultaneous equations -Angle facts in triangle, on a straight line and	-Know the definition of a bisector -Understand the congruency conditions for triangles SSS SAS -Know that the square of the hypotenuse is equal to the sum of the squares of the other two sides	-Understand angles do not change and proportions remain constant in similar shapes -Know the symbol ~ means 'similar' -Understand the constant of	-Know the order of operations -Understand $ab=a\times b$, $a^2 = a \times a$ -Know the equation of a straight line is y = mx + c -Know that quadratics are expressions and	-Understand and know index notation -Know the index laws - Understand standard form is useful for representing very small and very large numbers -Understand why

	-Understand a variety of representations of combined events -Understand the difference between theoretical and experimental Probability -Understand set notation for intersections, unions, complements and the universal set – Identify and interpret sets described by notation and within Venn diagrams – Interpret a range of sets in qualitative and numerical contexts	around a point -Angles in parallel lines -Formula for interior and exterior angles in a polygon	-Identify, describe and define the hypotenuse of a right-angled triangle -Describe proportional relationships using ratios and fractions -Understand all ratios can be written in the form 1:n	proportionality is a relationship within a shape and the scale factor is a relationship between shapes -Understand the centre of enlargement (CoE) determines the position of an enlarged shape - when lengths are enlarged with scale factor x the area is enlarged with scale factor x^2 -Understand right angled triangle can be enlarged and drawn within a unit circle	equations that include a squared variable (and no higher order power) -Know the shape of a quadratic graph is different from a linear graph -Understand that every x-value has a corresponding $y$value -Recognise the relationship between the graph and the equation -Understand surd notion and that a surd is an expression that includes a root	compound change creates a non-linear graph -Understand how to reverse percentage change using inverse operations and by rearranging equations
Expertise: 'Know how'	-Apply the four operations to fractions, decimals and percentage -Manipulate and compare methods of calculation involving fractions, decimals and percentage - Calculate the probability of single	-Solve one and twostep equations -Solve equations including those with fractional and negative solutions, and with unknowns on both sides -Substitute into expressions -Solve simple simultaneous equations	-Construct a perpendicular bisector and an angle bisector -draw a locus of points -Construct a triangle -Find the area of squares on squared paper and use the area to find the side length and find the length of a slanted side using the area of its square	-Identify corresponding sides/angles under rotation/reflection -find missing side lengths using constants of proportionality -Find the scale factor from corresponding distances from CoE - enlarge a shape on a coordinate grid	-Manipulate algebraic expressions by expanding brackets and simplifying or factorising - Identify common factors in an expression -Substitute into expressions including indices and negatives - Solve equations using inverse operations	- Write numbers in index form in decimal and fractional forms - Simplify expressions involving indices with the same base -Interpret numbers in standard form and convert between ordinary numbers and numbers in standard form

	independent events -Compare probabilities using a variety of representations -Calculate the probability of a pair of combined events -Solve probability problems using sample spaces, twoway tables and probability tree diagrams. -Determine whether an experiment is fair or biased -Work with probabilities which are determined by two events -Identify and represent intersections on Venn diagrams -To interpret intersections from contexts	with substitution -Solve simultaneous equations graphically -Calculate missing angles including parallel lines -Find missing interior and exterior angles in polygons	-Find any missing side length of a right-angled triangle -Find the distance between any two coordinate pairs using Pythagoras -Use scale factors, constants of proportionality and unit ratios to solve problems	-Identify the opposite and adjacent of a right-angled triangle in relation to another given angle - Find lengths of opposites and adjacents from a hypotenuse and a given angle in a right-angled triangle -Find the angles in right-angled triangles from two side lengths, using inverse trig functions	-Identify a quadratic expression -Substitute into a quadratic expression -Plot a quadratic graph -Estimate y-values from x-values using a graph and -Expand double brackets -Identify and manipulate surds -Collect like terms including surds - Interpret answers in surd form	-Solve problems with very large and very small numbers -Use decimal multipliers to find percentage change -Use a sequence of decimal multipliers to find repeated percentage change -Find the original amount after compound change has occurred
SMSC	-Recognise importance of decimals in the context of money and medicine -How and where a venn diagram is used	-Angles in the context of the architecture around us -Opportunities to explore where we use algebra in a reallife context eg pricing	**-**The use of angles in graphics and construction careers	**-** students question "why" and avoid assumption when analysing angle problems -	**-**The logical organisation of information and having resilience to solve problems independently	**-**Recognise where we use percentages in real life context -Use percentages to make comparisons recognising their use is retail and nutrition

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Disciplinary Literacy	-Guided reading of questions -Students explain reasoning -What is the same and what is different activities -Talk tasks to develop oracy -Identify and explain key concepts and keywords	-Guided reading of questions -Students explain reasoning -What is the same and what is different activities -Talk tasks to develop oracy -Identify and explain key concepts and keywords	-Guided reading of questions -Students explain reasoning -What is the same and what is different activities -Talk tasks to develop oracy -Identify and explain key concepts and keywords	Guided reading of questions -Students explain reasoning -What is the same and what is different activities -Talk tasks to develop oracy -Identify and explain key concepts and keywords	Guided reading of questions -Students explain reasoning -What is the same and what is different activities -Talk tasks to develop oracy -Identify and explain key concepts and keywords	Guided reading of questions -Students explain reasoning -What is the same and what is different activities -Talk tasks to develop oracy -Identify and explain key concepts and keywords
Careers Links	**Develops numerical reasoning and statistical thinking used by** actuaries, financial analysts, insurance underwriters, healthcare professionals, data scientists, and economists**. Probability and data classification are fundamental in risk assessment, finance and scientific research.**	**Supports careers requiring mathematical modelling and precision, including** engineers, architects, software developers, surveyors, physicists, and computer scientists**. These topics are used to solve complex real-world problems and design accurate systems and structures.**	**Relevant to** civil engineers, architects, construction managers, surveyors, carpenters, and product designers**. Understanding scale, measurement and geometric relationships is essential for designing, building and manufacturing safely and accurately.**	**Links directly to** architects, structural engineers, pilots, surveyors, game developers, geologists, and renewable energy engineers**. Trigonometry and similarity are used in navigation, mapping, engineering design and 3D modelling.**	**Develops advanced algebraic thinking used by** mathematicians, engineers, physicists, economists, software developers, and AI specialists**. These concepts underpin mathematical modelling, optimisation and scientific problem-solving.**	**Supports careers in** scientific research, medicine, environmental science, finance, astronomy, engineering, and epidemiology**. Students explore exponential relationships used in population growth, radioactive decay, investment modelling and large-scale scientific calculations.**

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