Programme of study for 9 2026-27

Autumn (1st term)	Autumn (2nd term)	Spring (1st term)	Spring (2nd Term)	Summer (1st term)	Summer (2nd term)
Other timescale: **From: September** **To: October**	**Other timescale:** **From: October** **To: December**	**Other timescale:** **From: January** **To: February**	**Other timescale:** **From: February** **To: April**	**Other timescale:** **From: April** **To: May**	**Other timescale:** **From: June To: July**
Topic / Key Question: • Pythagoras Theorem • Probability	Topic / Key Question: • Type of sequence • Expanding and simplifying (double brackets) • Factorising Quadratic (double Bracket) • Solving Quadratics • Rearranging formula	Topic / Key Question: • Trigonometry • Standard from	Topic / Key Question: • Straight line Graphs • Real life graphs	Topic / Key Question: • Angle Reasonings • Angles on parallel lines • Angles in polygons	Topic / Key Question: • Transformation • Review Key topics • Project based maths
Key Learning Outcomes: The relationship described by Pythagoras' theorem offers a context for students to reason deductively and use known facts to generate other mathematical truths. The relationship described by Pythagoras' theorem offers a context for	**Key Learning Outcomes:** Much of this core concept focuses on arithmetic sequences, but learners will also experience other types of sequences, including special number sequences, that are connected to new learning in Key Stage 3 (for example, triangular numbers).	**Key Learning Outcomes:** Learners will build their understanding that the trigonometric functions are derived from measurements within a unit circle. They will recognise the right-angled triangle within a unit circle and use proportion to scale to similar triangles.	**Key Learning Outcomes:** Learners to generate coordinate pairs that satisfy a simple linear rule; plot the graphs of simple linear functions, where y is given explicitly. in terms of x, on paper and using ICT; recognise straight-line graphs parallel to the x-axis or y-axis	**Key Learning Outcomes:** Learners to use correctly the vocabulary, notation and labelling conventions for lines, angles and shapes. identify parallel and perpendicular lines;	**Key Learning Outcomes:** focuses on developing students' understanding of geometric transformations, including translation, reflection, rotation, and enlargement. Students will learn to apply these transformations to shapes in a coordinate grid and use them to solve problems in real-world and mathematical contexts.

Learners to reason deductively and use known facts to generate other mathematical truths. Learners will be able to Find a relationship between the lengths of the sides of a right-angled triangle and use and apply Pythagoras' theorem to solve problems in a range of contexts. The introduction of probability at Key Stage 3 will offer learners a way to quantify, explore and explain likelihood and coincidence, and to reason about uncertainty. Learners could engage in experiments and develop a feel for likely, unlikely, even, certain and impossible chances, before starting to quantify probabilities and the likelihood of different outcomes. Furthermore, Learners need to appreciate that predictions of likelihood do not predict individual events. Rather, experimental data will	In here learners will explore: -Understand the features of a geometric sequence and be able to recognise one - Understand the features of special number sequences, such as square, triangle and cube, and be able to recognise one - Appreciate that there are other number sequences Learners will also build their knowledge further in algebra by exploring the following ideas: -Use the distributive law to find the product of two binomials -Understand and use the special case when the product of two binomials is the difference of two squares -Find more complex binomial products Learners will also work on rearranging formulae and: Understand that an additive and multiplicative relationship between variables can be written in several different ways.	Learners will explore Know how the sine, cosine and tangent ratios are derived from the sides of a right-angled triangle. They will be bale to: -choose appropriate trigonometric relationships to use to solve problems in right-angled triangles - Use trigonometric ratios to find a missing side in a right-angled triangle - Use trigonometric ratios to find a missing angle in a right-angled triangle. Students will learn to deal with large and small numbers using standard form. They will learn the four operations with standard form. Standard form is widely used in science, engineering, and technology to represent extremely large or small values, such as: The distance between planets (1.5×1081.5 \times 10^81.5×108 km). The size of microscopic objects like bacteria (3.4×10−63.4 \times 10^{-6}3.4×10−6 m).	Learners to plot and interpret the graphs of simple linear functions arising from real-life situations, e.g. conversion graphs Learners will develop a deeper understanding and achieve fluency. They will explore the connections between equations of lines and their corresponding graphs, including those presented in a non-standard form, such as ax + by = c, as well as the more standard y = mx + c. Learners will also explore and: -Understand that different types of equation give rise to different graph shapes, identifying quadratics in particular - Read and interpret points from a graph to solve problems - Model real-life situations graphically* - Recognise that the point of intersection of two linear graphs satisfies both relationships and hence represents the solution to both those equations	know the sum of angles at a point, on a straight line and in a triangle; recognise vertically opposite angles. Learners to identify and use angle, side and symmetry properties of triangles and quadrilaterals; explore geometrical problems involving these properties, explaining reasoning orally, using step. by-step deduction supported by diagrams. Learners to solve geometrical problems using side and angle properties of equilateral, isosceles and right-angled triangles and special quadrilaterals, explaining reasoning. with diagrams and text, classify quadrilaterals by their geometrical properties.	Learners will be given opportunities to complete maths-based projects. The project will be based on planning a family holidays, making enlarges items using scale factors and home design. Learners will be expected to work in small groups and present their work to other students. For every project, learners are expected to use the following mathematical concepts: Measurements and conversion Scale factors Pythagoras theorem Fractions calculations Perimeter and areas Trigonometry Percentages Conversions Ratio and proportion Calculator skills Translation Students will: Understand translation as a movement of a shape without rotation or resizing. Represent translations using column vectors

tend towards this theoretical value. As they start to quantify outcomes, learners will be exposed to different ways to systematically organise and represent possible results, including lists, tables, grids, Venn and tree diagrams.	-Apply an understanding of inverse operations to a formula to make a specific variable the subject (in a wide variety of increasingly complex mix of operations)	Scientific constants (e.g., speed of light: 3×1083 \times 10^83×108 m/s). Understanding standard form helps students relate mathematics to real-world contexts, especially in STEM fields.	• **Interpret real-life graphs**, such as distance-time, temperature-time, and financial graphs, to analyze trends and solve practical problems. • **Work with linear graphs**, including direct proportion and conversion graphs, to understand relationships between variables and make predictions. • **Understand rates of change** by calculating gradients to compare speeds, growth, or other changes. • **Develop problem-solving skills** by using graphs to extract information, make estimates, and analyze data in everyday contexts.		Perform translations on a coordinate grid. Identify the effects of translation on the position of shapes. Reflection Students will: Understand reflection as a "flipping" of a shape over a line of symmetry (mirror line). Reflect shapes in horizontal, vertical, and diagonal mirror lines (e.g., xxx-axis, yyy-axis, y=xy = xy=x). Describe reflections fully, specifying the equation of the mirror line. Rotation Students will: Understand rotation as turning a shape about a fixed point (the center of rotation). Perform rotations using angles of 90∘90^\circ90∘, 180∘180^\circ180∘, and 270∘270^\circ270∘ clockwise and anticlockwise.

					Use the origin or other points as the center of rotation. Describe rotations fully, specifying the center, angle, and direction.
					Enlargement Students will: Understand enlargement as resizing a shape by a scale factor while maintaining its proportions. Enlarge shapes from a given center using positive and fractional scale factors. Recognize that enlargements with scale factors greater than 1 result in larger shapes, while those with scale factors between 0 and 1 produce smaller shapes. Explore the effect of enlargements on lengths, areas, and perimeters.
					Properties of Transformations Students will: Explore the properties of shapes under transformations:

					Translation, reflection, and rotation preserve congruence (shape and size). Enlargement preserves similarity (shape but not size, except for scale factor 1). Identify and compare transformed shapes to understand the relationship between the original and the image.
					Combining Transformations Students will: Perform and describe a sequence of transformations. Analyze the cumulative effect of multiple transformations on a shape.
End of term 1 assessment to cover: Progress check Assessment		**End of term 2 assessment to cover**: Progress check Assessment		**End of year assessment to cover:** Progress check End of year Exam	

Building understanding: Rationale / breakdown for your sequence of lessons: Before beginning geometrical properties at Key Stage 3, students should already have a secure understanding of the following learning outcomes from study at upper Key. Geometrical properties, possibly above all other areas of mathematics, offers students a set of contexts with which to build their understanding of key mathematical concepts and the nature of mathematics itself. In here the learners will explore Pythagoras theorem and will be able to access further concepts in KS4 such as trigonometric ratios Before beginning to teach probability at Key Stage 3, students should already have a secure understanding of the following learning outcomes from earlier in Key Stage 3	**Building understanding: Rationale / breakdown for your sequence of lessons:** Concepts such as sequences, expanding and factorising double brackets enable learners to make connections to other areas of algebra, particularly solving equations (when checking if a number is a term in a sequence) and graphs. Work on sequences in Key Stage 3 provides the foundation for exploring quadratic sequences and simple geometric progressions in Key Stage 4.	**Building understanding: Rationale / breakdown for your sequence of lessons:** It is important for learners to develop a secure understanding of trigonometry in right-angled triangles in 2D figures in KS3 to support further study in Key Stage 4. Learners will develop the idea of trigonometry from solve problems involving similar shapes using the Unit Circle where the scale factor is known or can be found and earlier in Key Stage 3: and from their understanding and use similarity and congruence. In Year 9, students will further develop their understanding of the different ways that numbers can be expressed and will become more proficient in changing from one form to another. Leaners will be able to Understand that very large numbers can be written in the form A × 10n , (where 1 ≤ A < 10) and appreciate the real-	**Building understanding: Rationale / breakdown for your sequence of lessons:** Real-life graphs at KS3 bridge the gap between abstract math and practical applications. They develop skills in data interpretation, problem-solving, and critical thinking, preparing students for GCSE-level graph work and real-world decision-making. The Key Stage 3 programme of study states that students should be taught to 'move freely between different numerical, algebraic, graphical and diagrammatic representations' and to 'express relationships between variables algebraically and graphically'. After thoroughly exploring the structure of linear relationships in this way, students should have experience of other functions and relationships (particularly quadratic ones), be able to use graphs to solve problems in real-life contexts and understand	**Building understanding: Rationale / breakdown for your sequence of lessons:** Learners to recap and recall geometric properties and some of the key angle facts and use geometric reasoning again here so they can have a better and solid understanding of much more complex geometric problems later in KS4. This program focuses on developing students' understanding of angle properties and reasoning skills. It provides the foundational knowledge needed for geometric problem-solving and prepares students for more	**Building understanding: Rationale / breakdown for your sequence of lessons:** • Understand and apply the four key transformations: translation, reflection, rotation, and enlargement. • Accurately describe and perform transformations on a coordinate grid. • Recognize and analyze properties of shapes under transformations, including congruence and similarity. In here the learners will be given an opportunity to apply their mathematical knowledge in non-conventional way. They will be applying maths concepts, skills and ideas into problem solving. Learners will be able to deeper their understanding, make connections between different part of mathematics and conjecture about different scenarios while solving mathematical tasks.

Students will learn concept of probability in KS3 in more depth which they can use later in the KS4 and KS5. In K4 students will look at dependent events and conditional probabilities.		life contexts where this format is usefully used -Understand that very small numbers can be written in the form A × 10−n, (where 1 ≤ A < 10) and appreciate the real-life contexts where this format is usefully used	how linear graphs can be used to find solutions to simultaneous equations. Much of this learning is new and is built upon significantly in Key Stages 4.	advanced concepts in KS4.	
Home – Learning: Homework is assigned on Sparx Maths for students to complete once a week.	Home – Learning: Homework is assigned on Sparx Maths for students to complete once a week.	Home – Learning: Homework is assigned on Sparx Maths for students to complete once a week.	Home – Learning: Homework is assigned on Sparx Maths for students to complete once a week.	Home – Learning: Homework is assigned on Sparx Maths for students to complete once a week.	Home – Learning: Homework is assigned on Sparx Maths for students to complete once a week.
Reading / High Quality Text: Elements of literacy will be incorporated through key words and worded questions	Reading / High Quality Text: Elements of literacy will be incorporated through key words and worded questions	Reading / High Quality Text: Elements of literacy will be incorporated through key words and worded questions	Reading / High Quality Text: Elements of literacy will be incorporated through key words and worded questions	Reading / High Quality Text: Elements of literacy will be incorporated through key words and worded questions	Reading / High Quality Text: Elements of literacy will be incorporated through key words and worded questions

Enrichment / opportunities to develop cultural capital (including careers, WRL and SMSC):

In maths lessons:

Spiritual growth is encouraged by students reflecting on their answers, reasoning and in class discussions

Learners are made aware of choices they make may results to different outcomes and consequences. Their **Moral** duty is to be able to make the right choices in terms of behaviour and to reach the correct answers/conclusions

Leaners **Social** developments is encouraged through discussions, sharing ideas, peer marking, articulating their thinking and group work

Leaners are exposed to different topics and their links to different **Culture** throughout the curriculum. This includes different multiplication methods from Egypt, Russia and China, Pythagoras' Theorem from Greece, algebra from the Middle East and debates as to where Trigonometry was first used. We try to develop an awareness of both the history of maths alongside the realisation that many topics we still learn today have travelled across the world and are used international