Programme of study for Year 8 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: **Rounding and estimation** **Sequences**	**Topic / Key Question:** **Manipulating Algebraic expressions** **Solving Linear Equations**	**Topic / Key Question:** • **Multiplicative relationship** - **Ratio** - **Percentage**	**Topic / Key Question:** • **Statistical representation and measure** • **Perimeter, Area and Volume**	**Topic / Key Question:** • **Similarity** • **Geometrical Properties: Polygons**	**Topic / Key Question:** • **Construction**
Key Learning Outcomes: **Leaners will:** **Rounding and estimation:** Round numbers to any number of decimal places Understand the concept of significant figures Round integers to a required number of significant figures Round decimals to a required number of significant figures	Understand that a letter can be used to represent a generalised number Understand that algebraic notation follows particular conventions i.e. write the coefficient before the variable Know the meaning of and identity: term, coefficient, factor, product, expression, formula and equation Understand and recognise that a letter can be used to represent a specific unknown value or a variable	**Key Learning Outcomes:** **Leaners will:** **Multiplicative relationship:** Be able to divide a quantity into a given ratio Be able to determine the whole, given one part and the ratio Be able to determine one part, given the other part and the ratio Use ratio to describe rates (e.g. exchange rates, conversions, cogs, etc.)	**Key Learning Outcomes:** **Leaners will:** **Statistical representation and measure** Understand what the mean is measuring, how it is measuring it and calculate the mean from data presented in a range of different ways Understand what the median is measuring, how it is measuring it and find the median from data presented in a range of different ways	**Key Learning Outcomes:** **Leaners will:** **Similarity** Understand the meaning of similar shapes. And recognise mathematically similar shapes Understand how to work out the scale factor between two give similar shapes Use the scale factor to find unknown lengths **Geometrical Properties**	**Key Learning Outcomes:** **Learners will**: **Construction** Understand a circle as the locus of a point equidistant from a fixed point Use intersecting circles to construct triangles and rhombuses from given lengths Be aware that the diagonals of a rhombus bisect one another at right angles

Understand what is meant by a sensible degree of accuracy Estimate numerical calculations Estimate and check if solutions to problems are of the correct magnitude Determine whether calculations using rounding will give an underestimate or overestimate Understand the impact of rounding errors when using a calculator, and the way that these can be compounded to result in large inaccuracies Calculate possible errors expressed using inequality notation $a < x \leq b$ Sequences: Appreciate that a sequence is a succession of terms formed according to a rule Understand that a sequence can be generated and described using term-to-term approaches Understand that a sequence can be	Understand that relationships can be generalised using algebraic statements Understand that substituting particular values into a generalised algebraic statement gives a sense of how the value of the expression changes Identify like terms in an expression, generalising an understanding of unitising Simplify expressions by collecting like terms Understand how to use the distributive law to multiply an expression by a term such as 3(a + 4b) and 3p2(2p + 3b) Understand how to use the distributive law to factorise expressions where there is a common factor, such as 3a + 12b and 6p3 + 9p2b Understand how to use the distributive law to factorise expressions where there is a common factor, such as 3a + 12b and 6p3 + 9p2b	Describe one number as a percentage of another Find a percentage of a quantity using a multiplier Calculate percentage changes (increases and decreases) Calculate the original value, given the final value after a stated percentage increase or decrease Find the percentage increase or decrease, given start and finish quantities Understand the connection between multiplicative relationships and direct proportion Recognise direct proportion and use in a range of contexts including compound measures Recognise and use inverse proportionality in a range of contexts	Understand what the mode is measuring, how it is measuring it and identify the mode from data presented in a range of different ways Understand what the range is measuring, how it is measuring it and calculate the range from data presented in a range of different ways Construct bar charts from data presented in a number of different ways Construct pie charts from data presented in a number of different ways Construct pictograms from data presented in a number of different ways Construct scatter graphs from data presented in a number of different ways Perimeter, Area and Volume Understand the concept of surface area and find the surface area of 3D such cuboids and prisms in an efficient way Be aware that all prisms have two congruent polygonal parallel faces	Use correctly the vocabulary, notation and labelling conventions for lines, angles and shapes Identify parallel and perpendicular lines; know the sum of angles at a point, on a straight line and in a triangle; recognise vertically opposite angles 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 know that if two 2-D shapes are congruent, corresponding sides and angles are equal. Learners to use a ruler and protractor to: measure and draw lines to the nearest millimetre and angles, including reflex angles, to the nearest degree. construct a triangle, given two sides and the included angle (SAS) or two angles and the included side (ASA) Use ICT to explore constructions.	Be aware that the diagonals of a rhombus bisect the angles Use the properties of a rhombus to construct a perpendicular bisector of a line segment Use the properties of a rhombus to construct a perpendicular to a given line through a given point Use the properties of a rhombus to construct an angle bisector

generated and described by a position-to-term rule Understand that any term in an arithmetic sequence can be expressed in terms of its position in the sequence (nth term) Determine whether a number is a term of a given arithmetic sequence			(bases) with parallelogram faces joining the corresponding vertices of the bases Use the constant cross-sectional area property of prisms and cylinders to determine their volume	use ruler and protractor to construct simple nets of 3-D shapes, e.g. cuboid, regular tetrahedron, square-based pyramid, triangular prism	
End of term 1 assessment to cover: Progress check as per assessment calendar		**End of term 2 assessment to cover**: Progress check as per assessment calendar		**End of year assessment to cover:** Progress check as per assessment calendar	
Building understanding: Rationale / breakdown for your sequence of lessons: The elements here build on the work done in Year 7 autumn term and now include studying estimation and rounding. It is essential that students are aware of the general structure of the place-value system as being based on powers of ten and begin to see how this naturally extends to decimals. This	**Building understanding: Rationale / breakdown for your sequence of lessons:** Algebra is one of the the fundamental block of mathematics and Students will recap, consolidate, and become more fluent in algebra in year 8. Students will revisit algebraic manipulation such as collecting like terms, Expanding brackets, Factorising expressions, and substitution of values in an expression. Students will also	**Building understanding: Rationale / breakdown for your sequence of lessons:** In Spring term of year 7 students will have explored fractions and ratios and it is important that this is now connected to work focusing on percentages and proportionality so that students do not experience them as distinct topics with no obvious connections. Percentages, fractions, proportionality, and ratio can all be considered as contexts	**Building understanding: Rationale / breakdown for your sequence of lessons:** At Key Stage 2, students encountered the concept of central tendency and learnt how to calculate the (arithmetic) mean. At Key Stage 3, they will develop their knowledge of calculating measures of central tendency to include the mode and median, work with grouped data, and be introduced to a measure of spread in statistics: range.	**Building understanding: Rationale / breakdown for your sequence of lessons:** At KS2, students focus primarily on **identifying and comparing the size and shape of 2D figures**. While they don't formally study similarity, they begin to develop a foundation through scaling shapes and basic enlargement. In KS3, Students will learn that similar shapes have	**Building understanding: Rationale / breakdown for your sequence of lessons:** In Key Stage 2, students will have learnt about the properties of certain geometric shapes and used these properties to compare and classify shapes. They will also have had experience of drawing certain shapes using a ruler and angle measurer. Developing this work in Key Stage 3, students will learn the ruler and compass constructions of:

learning will support students' work on significant figures and standard form, as students who can express numbers (including very large and very small numbers) in these different ways are more likely to have a feel for the size of such numbers and where they fit in the number system. It is also important to emphasise the use of measures in real-life contexts. This will support students in understanding that measuring is always to a certain degree of accuracy. This teaching will then support students' understanding of and facility with estimating and rounding – essential skills for working with real-life situations involving contextualised data. It is important for students to develop a strong sense of the size of numbers and be able to use various methods of rounding, especially when giving answers in context. Rounding large numbers is particularly useful when estimating (for example, crowds at a football match or winnings in a lottery). Students began to consider sequences in Key Stage 1, when step counting to learn times tables and when	solve area and perimeter problems when manipulating algebra. It is important for students to appreciate that number and algebra are connected. The solving of equations is essentially concerned with operations on yet unknown numbers. At Key Stage 3, this work builds on students' introduction to the language of algebra at Key Stage 2 and at year 7 Autumn2. It explores how linear equations are effectively the formulation of a series of operations on unknown numbers, and how the solving of such equations is concerned with undoing these operations to find the value of the unknown. Building on Key Stage 2 experiences, this collection of key ideas explores how simple, one-step linear equations are the formulation of one operation on an unknown number, and how these equations can be solved by undoing the operation to find the value of the unknown. Similarly, students will be exploring In much more depth to linear equations that requires more than one step to do the "undoing". It is important that students do not just learn and blindly follow a set of procedural	in which multiplicative relationships are used and explored. Maintaining consistency with the vocabulary and imagery used in all contexts will support students in their understanding that the same mathematical principles are involved. In many cases, there will be several different possible representations that could be used to help understand the mathematical structure of a situation. An important aspect of work with students will be to consider the relative usefulness and efficiency of different representations and approaches. Exploring a range of real-life contexts (including use of compound measures) will further support students' understanding of proportionality. Stressing the notion that, when one measure doubles (or trebles or is multiplied by any scale factor) so too does the other, can usefully highlight the terminology of 'direct' proportion and this can be contrasted with inverse proportion, which is a key idea to introduce at Key Stage 3. Manipulating percentage requires multiplicative reasoning and students will be finding the percentage of	This will enable students to engage in more sophisticated data analysis. Students will construct scatter graphs for the first time, building on the representations covered at Key Stage 2 – bar charts, pie charts and pictograms. Constructing pie charts at Key Stage 3 will involve students making connections with angles, fractions, and percentages, and using rulers, protractors and angle measurers. Additionally, students should have opportunities to describe simple mathematical relationships between two variables (bivariate data) in observational and experimental contexts, and to illustrate such relationships using scatter graphs. This will be developed further in Key Stage 4, alongside more sophisticated measures of central tendency (including modal class) and spread (including quartiles and inter-quartile range). At Key Stage 2, students will have had the opportunity to measure the perimeter of simple 2D shapes; find the area by counting squares; and estimate volume by counting blocks. They should	the **same shape but different sizes**, with corresponding angles equal and sides in proportion. Students will make a link between similarity and enlargements using a **scale factor** (positive integers, fractions, and decimals) and a centre of enlargement. Explore Understanding and calculating the ratio of corresponding sides in similar shapes. Students distinguish between similarity and congruence, understanding that congruent shapes are a special case of similar shapes (where the scale factor is 1). KS4 Students will apply similarity to more complex geometric problems, including finding unknown lengths, using similarity in the context of trigonometry, and linking it with Pythagoras' theorem.	• triangles of given lengths • a perpendicular bisector of a line segment • a perpendicular to a given line through a given point • an angle bisector. An important awareness is that these constructions are based on the geometrical properties of a few key shapes (a circle, an isosceles triangle and a rhombus). A deep understanding and awareness of these geometrical properties will support students in gaining a conceptual overview of these constructions and guard against constructions being learnt mechanically as a set of procedural steps. Students can find it difficult to memorise the various steps in creating constructions when they do not link this work to other knowledge about geometrical properties. They will be helped considerably if they are aware that constructing a perpendicular bisector of a line segment is not an isolated concept but linked to the properties of circles and rhombuses.

looking at the composition of numbers. In Key Stage 2, they were introduced to the use of symbols and letters to represent variables and unknowns in familiar mathematical situations and began to generalise number patterns. Students will have explored non-numerical (shape) and numerical sequences, noticed a pattern, described the pattern in words and found the next term in the sequence from the previous term. It is important that students have time to develop a full understanding of the connection between the notation and the sequence and come to see the nth term as a way of expressing the structure of every term in the sequence. Work on sequences both here and later in Key Stage 3 provides the foundation for exploring quadratic sequences and simple geometric progressions in Key Stage 4 and beyond.	rules for solving equations without this sense of what a solution means. Deep, conceptual understanding allows students to be fluent and flexible problem solvers. Therefor the use of different representations will help secure solving linear equations which students can use in many other topics in KS4.	an amount, increase and decrease as well as percentage changes using multiplicative relationship between two given quantities. Students will explore the concept of a multiplier in percentage and be able to use it later in KS4 when working with much more complex percentage problems such compound interest and population growth.	have calculated the area of rectangles, triangles and parallelograms, and the volume of cubes and cuboids using formulae. They will now build on this to learn about the perimeter (circumference) of circles and that the ratio between circumference and diameter is the same for all circles. When calculating areas, this will include students using their knowledge of area of circles and the surface area of prisms. Additionally, the concept of surface area will provide an ideal opportunity for students to make connections between two and three dimensions and apply and consolidate their understanding of the area and properties of 3D shapes from Key Stage 2. Students will be familiar with finding the volume of cubes and cuboids from Key Stage 2 and will have used the formula Volume = width × height × length (or similar) to calculate volumes. At Key Stage 3, these ideas are developed to include the volume of prisms more generally. KS2: Focuses on basic understanding, equivalence,	Students will have had opportunities to develop their spatial awareness and geometrical intuition in Key Stage 2 through situations involving angles (angles meeting at a point, angles on a straight line, vertically opposite angles and angles in regular polygons) and similar shapes. They will be aware of the geometrical facts and properties inherent in these situations. An important development throughout Key Stage 3 is to be able to reason and construct proofs for why such facts and properties hold and begin to understand the nature of mathematical proof. In Key Stage 3, students will develop their understanding of what is meant by mathematical proof. This is likely to include understanding proof as a form of convincing argument based on logical deduction and an expression of generalisation, as opposed to checking against a few specific cases. Students are also developing an understanding about the conventions of communicating proof, including the use of language such as 'if … then', 'therefore' and 'because', and correct and unambiguous use of mathematical symbolism.	In the summer term of Year 7 students will have explored fractions and ratios and it is important that this is now connected to work focusing further calculations with fractions and conceptualised how fraction calculation is done before moving on to ratio, percentages and proportionality so that students do not experience them as distinct topics with no obvious connections. Percentages, fractions, proportionality and ratio can all be considered as contexts in which multiplicative relationships are used and explored. Maintaining consistency with the vocabulary and imagery used in all contexts will support students in their understanding that the same mathematical principles are involved. In many cases, there will be several different possible representations that could be used to help understand the mathematical structure of a situation.

			and simple calculations involving percentages. KS3: Expands to include percentage change, reverse percentages, and real-world applications. KS4: Advances to complex, multi-step problems, financial contexts, compound percentages, and algebraic connections.	This will enable students to have a strong foundation when covering circle theorems in KS4 and beyond.	
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
Numeracy: Throughout the lessons students will be engaged with numeracy.	Numeracy: Throughout the lessons students will be engaged with numeracy.	Numeracy: Throughout the lessons students will be engaged with numeracy.	Numeracy: Throughout the lessons students will be engaged with numeracy.	Numeracy: Throughout the lessons students will be engaged with numeracy.	Numeracy: Throughout the lessons students will be engaged with numeracy.

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