Year 8	AUTUMN					
	Ratio and Scale	**Multiplicative Scale**	**Multiplying and dividing fractions**	**Working in the Cartesian plane**	**Representing Data**	**Probability**
Declarative *What should they know?* *What key facts/concepts/knowledge do we want all students to know?*	Change freely between related standard units [for example time, length, area, volume/capacity, mass] Use ratio notation, including reduction to simplest form. Divide a given quantity into two or more parts.	Use compound units such as speed, unit pricing and density to solve problems. Solve problems involving direct and inverse proportion, including graphical and algebraic representations. Examples may include: - Recipe problems - Best buy problems - Exchange rates	Use a variety of representations to multiply and divide fractions including proper and improper fractions. Understanding of the reciprocal and its uses.	Move freely between numerical, algebraic, graphical and diagrammatic representations. Make connections between number relationships and their algebraic and graphical representations. Recognise, sketch and produce graphs of linear functions in the Cartesian plane.	Construct and interpret appropriate tables charts and diagrams including frequency tables, bar charts, pie charts and pictograms. Describe mathematical relationships for bivariate data.	Record, describe and analyse the frequency of outcomes of simple probability experiments, involving randomness, fairness, equally and unequally likely outcomes, using appropriate language and the 0-1 probability scale. Generate theoretical sample spaces for single or combined events.

Procedural *What should they be able to do?* *What things should all students be able to do?*	Understand that a relationship between two quantities can be expressed as a ratio or a fraction. Understand ratio and its link to multiplication Write a ratio Simplify ratios Calculate the circumference of a circle	Use scale factors, linking to ratio, solve simple direct proportion problems Convert between currencies, including using graphs Draw and interpret scale diagrams and maps	Multiply and divide fractions by integers Multiply and divide fractions by fractions Understand and use reciprocals Use diagrams to represent fractions	Plot and interpret straight line graphs Understand and use equations of a straight line, including lines parallel to the axes Model situations by translating them into expressions, formulae and graphs Substitute numerical values into formulae and expressions.	Draw and interpret scatter graphs Understand correlation Draw and use lines of best fit Understand grouped, ungrouped, discrete and continuous data Design and use one and two way tables	List outcomes using sample space diagrams for one and two events Find probabilities using tables and Venn diagrams
Disciplinary Literacy **(Tier 3 Vocab)**	Ratio, proportion, parts, directly proportional.	Scale factor, exchange rates, inverse proportion, proportion, parts, directly proportional.	Integer, improper fraction, mixed numbers, reciprocal, increase, decrease	Scale, axis, co-ordinate, increase, decrease, gradient.	Line of best fit, outlier, extrapolate, negative, positive, strong, weak correlation.	Outcomes, sample space, bivariate data, theoretical, experimental.

Assessment	1 x Ratio & Scale Assessment	1 x Multiplicative Change Assessment	1 x Multiplying and Dividing Fractions Assessment	1 x Working in the Cartesian Plane	1 x Representing Data	1 x Autumn Progress Test

Year 8		**SPRING**				
	Brackets, Equations and Inequalities	**Sequences**	**Indices**	**Fractions and Percentages**	**Standard Index Form**	**Number Sense**
Declarative *What should they know?* *What key facts/concepts/knowledge do we want all students to know?*	Substitute numerical values into formulae and expressions, including scientific formulae. Use a variety of representations to simplify and manipulate algebraic expressions Use a variety of methods to solve linear equations in one variable	Explore sequences using the nth term	Use a variety of methods to write/simplify expressions involving indices	Develop understanding of fractions, decimals and percentages Evaluate percentages increases and decreases Use multipliers to solve percentage problems Percentage increase, decrease and original value problems and simple	Understand how to solve problems with standard form	Use a variety of methods to solve numerical problems

	(including all forms that require rearrangement), including those with brackets and fractions. Understand and use inequalities			interest in financial mathematics.		
Procedural *What should they be able to do?* *What things should all students be able to do?*	Expand, and factorise into single brackets Form and use expressions, formulae and identities Form and solve equations and inequalities with and without brackets Distinguish between equations, expressions, formulae and identities Expand products of two or more binomials. Understand and use the vocabulary of inequalities.	Generate sequences from a rule Generate sequences using more complex rules, e.g. with brackets, squared terms, both in words and algebraically Calculate the nth term of a sequence	Form expressions Use indices Understand and use addition and subtraction rules Simplify expressions involving sums, products and powers, including the laws of indices.	Define percentage as 'number of parts per hundred'. Interpret diagrams as percentages and vice versa. Find a percentage of an amount with or without a calculator. Interpret percentages as a fraction or decimal. Compare two quantities using percentages, and work with percentages greater than 100%. Express one number as a percentage of another	Convert between numbers in ordinary and standard form Calculate with numbers given in standard form, with and without a calculator	Develop mental strategies Convert between metric measures and units Estimate, including rounding to a given number of decimal places Use the order of operations

Disciplinary Literacy **(Tier 3 Vocab)**	Expressions, equations, formulae, substitute, factorise, binomial, indices, inequalities, rearrange formulae/change the subject			Percentage, reverse percentages, multiplier, simple finance		
Assessment	1 x Brackets, equations and inequalities assessment	1 x Sequences & Indices Assessment	1 x Indices Assessment	1 x Fractions and Percentages Assessment	1 x Standard Form Assessment	1 x Spring Progress Test

Year 8		SUMMER			
	Angles in parallel	**Area of trapezia and circles**	**Line of symmetry**	**The Handling Data Cycle**	**Measure of location and dispersion**

	lines and polygons		and reflection		
Declarative *What should they know?* *What key facts/concepts/knowledge do we want all students to know?*	Apply the properties if angles at a point, angles on a straight line and vertically opposite angles. Understand and use the relationship between parallel lines and alternate and corresponding angles. Derive and use the sum of the angles in a triangle and use it to deduce the angle sum in any polygon. Use standard conventions for labelling sides and angles.	Derive and apply formulae to calculate and solve problems involving perimeter and area of triangles, parallelograms, trapezia and circles.	Describe, sketch and draw using conventional terms and notations, point, parallel lines, perpendicular lines, right angles, regular polygons, and other polygons that reflectively and rotationally symmetric. Identify properties of and describe the results of reflections applied to given figures.	Describe, interpret and compare data. Construct and interpret appropriate tables, charts and diagrams.	Describe, interpret and compare observed through appropriate measures of central tendency, such as the mean, mode, median and spread (range and outliers).
Procedural *What should they be able to do?* *What things should all students be able to do?*	• Review Year 7 angles rules • Identify angles in parallel lines • Revisit geometric notation	• Review area of shapes covered in Year 7 • Calculate the area of a trapezium	• Recognise line symmetry in polygons and other shapes	• Understand and use primary and secondary sources of data • Collect data, including questionnaires	• Revisit the median and mean, including finding the total given the mean • Find the mean of grouped data

	• Work angles in special quadrilaterals • Find and use the sum of the interior angles of a polygon • Prove simple geometric facts	• Calculate the area of a circle and the areas of parts of a circle • Use significant figures • Calculate the area of compound shapes	• Reflect shapes in horizontal, vertical and diagonal lines	• Interpret and construct statistical diagrams, including multiple bar charts • Identify misleading graphs	• Work out the mode and modal class • Choose the appropriate average • Comparing distributions using measures
Disciplinary Literacy **(Tier 3 Vocab)**	Isosceles, parallel, alternate, corresponding, co-interior, vertically opposite.	Area, trapezium, isosceles, compound shape, circle, arc, sector, radius, diameter.	Perpendicular, parallel, polygon, rotational symmetry, reflection, order of symmetry.	Primary data, secondary data, questionnaire, random, bias.	Primary data, secondary data, discrete, continuous, frequency, grouped frequency, mean, median, mode, range, outliers.
Assessment	1 x Angles Assessment	1 x Area of Trapezia and Circles Assessment	1 x Line Symmetry Assessment	1 x Statistics Assessment	1 x Summer Progress Test