

# Curriculum Knowledge Map 2023-24

Year 8						
AUTUMN						
Topic	Ratio and Scale	Multiplicative Scale		Multiplying and dividing fractions	Working in the Cartesian plane	Representing Data
<b>Declarative</b> <i>What should they know? What key facts/concepts/knowledge do we want all students to know?</i>	<ul style="list-style-type: none"> <li>Change freely between related standard units [for example time, length, area, volume/capacity, mass].</li> <li>Use ratio notation, including reduction to simplest form.</li> <li>Divide a given quantity into two or more parts.</li> </ul>	<ul style="list-style-type: none"> <li>Use compound units such as speed, unit pricing and density to solve problems.</li> <li>Solve problems involving direct and inverse proportion, including graphical and algebraic representations.</li> <li>Examples may include:                             <ul style="list-style-type: none"> <li>Recipe problems.</li> <li>Best buy problems.</li> <li>Exchange rates.</li> </ul> </li> </ul>		<ul style="list-style-type: none"> <li>Use a variety of representations to multiply and divide fractions including proper and improper fractions.</li> <li>Understanding of the reciprocal and its uses.</li> </ul>	<ul style="list-style-type: none"> <li>Move freely between numerical, algebraic, graphical and diagrammatic representations.</li> <li>Make connections between number relationships and their algebraic and graphical representations.</li> <li>Recognise, sketch and produce graphs of linear functions in the Cartesian plane.</li> </ul>	<ul style="list-style-type: none"> <li>Construct and interpret appropriate tables charts and diagrams including frequency tables, bar charts, pie charts and pictograms.</li> <li>Describe mathematical relationships for bivariate data.</li> </ul>
<b>Procedural</b> <i>What should they be able to do? What things should all students be able to do?</i>	<ul style="list-style-type: none"> <li>Understand that a relationship between two quantities can be expressed as a ratio or a fraction.</li> <li>Understand ratio and its link to multiplication.</li> <li>Write a ratio.</li> <li>Simplify ratios.</li> <li>Calculate the circumference of a circle.</li> </ul>	<ul style="list-style-type: none"> <li>Use scale factors, linking to ratio, solve simple direct proportion problems.</li> <li>Convert between currencies, including using graphs.</li> <li>Draw and interpret scale diagrams and maps.</li> </ul>		<ul style="list-style-type: none"> <li>Multiply and divide fractions by integers.</li> <li>Multiply and divide fractions by fractions.</li> <li>Understand and use reciprocals.</li> <li>Use diagrams to represent fractions.</li> </ul>	<ul style="list-style-type: none"> <li>Plot and interpret straight line graphs.</li> <li>Understand and use equations of a straight line, including lines parallel to the axes.</li> <li>Model situations by translating them into expressions, formulae and graphs.</li> <li>Substitute numerical values into formulae and expressions.</li> </ul>	<ul style="list-style-type: none"> <li>Draw and interpret scatter graphs.</li> <li>Understand correlation.</li> <li>Draw and use lines of best fit.</li> <li>Understand grouped, ungrouped, discrete and continuous data.</li> <li>Design and use one and two way tables.</li> </ul>
<b>Disciplinary Literacy</b> <i>(Tier 3 Vocab)</i>	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.
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



# Curriculum Knowledge Map 2023-24

Year 8	SPRING					
Topic	Brackets, Equations and Inequalities	Sequences	Indices	Fractions and Percentages	Standard Index Form	Number Sense
<b>Declarative</b> <i>What should they know? What key facts/concepts/knowledge do we want all students to know?</i>	<ul style="list-style-type: none"> <li>Substitute numerical values into formulae and expressions, including scientific formulae.</li> <li>Use a variety of representations to simplify and manipulate algebraic expressions.</li> <li>Use a variety of methods to solve linear equations in one variable (including all forms that require rearrangement), including those with brackets and fractions.</li> <li>Understand and use inequalities</li> </ul>	<ul style="list-style-type: none"> <li>Explore sequences using the <math>n</math>th term</li> </ul>	<ul style="list-style-type: none"> <li>Use a variety of methods to write/simplify expressions involving indices</li> </ul>	<ul style="list-style-type: none"> <li>Develop understanding of fractions, decimals and percentages</li> <li>Evaluate percentages increases and decreases.</li> <li>Use multipliers to solve percentage problems.</li> <li>Percentage increase, decrease and original value problems and simple interest in financial mathematics.</li> </ul>	<ul style="list-style-type: none"> <li>Understand how to solve problems with standard form</li> </ul>	<ul style="list-style-type: none"> <li>Use a variety of methods to solve numerical problems</li> </ul>
<b>Procedural</b> <i>What should they be able to do? What things should all students be able to do?</i>	<ul style="list-style-type: none"> <li>Expand, and factorise into single brackets.</li> <li>Form and use expressions, formulae and identities.</li> <li>Form and solve equations and inequalities with and without brackets.</li> <li>Distinguish between equations, expressions, formulae and identities.</li> <li>Expand products of two or more binomials.</li> <li>Understand and use the vocabulary of inequalities.</li> </ul>	<ul style="list-style-type: none"> <li>Generate sequences from a rule.</li> <li>Generate sequences using more complex rules, e.g. with brackets, squared terms, both in words and algebraically</li> <li>Calculate the <math>n</math>th term of a sequence.</li> </ul>	<ul style="list-style-type: none"> <li>Form expressions</li> <li>Use indices.</li> <li>Understand and use addition and subtraction rules.</li> <li>Simplify expressions involving sums, products and powers, including the laws of indices.</li> </ul>	<ul style="list-style-type: none"> <li>Define percentage as 'number of parts per hundred'.</li> <li>Interpret diagrams as percentages and vice versa.</li> <li>Find a percentage of an amount with or without a calculator.</li> <li>Interpret percentages as a fraction or decimal.</li> <li>Compare two quantities using percentages, and work with percentages greater than 100%.</li> <li>Express one number as a percentage of another</li> </ul>	<ul style="list-style-type: none"> <li>Convert between numbers in ordinary and standard form.</li> <li>Calculate with numbers given in standard form, with and without a calculator.</li> </ul>	<ul style="list-style-type: none"> <li>Develop mental strategies.</li> <li>Convert between metric measures and units.</li> <li>Estimate, including rounding to a given number of decimal places.</li> <li>Use the order of operations</li> </ul>
<b>Disciplinary Literacy</b> <i>(Tier 3 Vocab)</i>	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



# Curriculum Knowledge Map 2023-24

Year 8 SUMMER					
Topic	Angles in parallel lines and polygons	Area of trapezia and circles	Line of symmetry and reflection	The Handling Data Cycle	Measure of location and dispersion
<b>Declarative</b> <i>What should they know? What key facts/concepts/knowledge do we want all students to know?</i>	<ul style="list-style-type: none"> <li>Apply the properties of angles at a point, angles on a straight line and vertically opposite angles.</li> <li>Understand and use the relationship between parallel lines and alternate and corresponding angles.</li> <li>Derive and use the sum of the angles in a triangle and use it to deduce the angle sum in any polygon.</li> <li>Use standard conventions for labelling sides and angles.</li> </ul>	<ul style="list-style-type: none"> <li>Derive and apply formulae to calculate and solve problems involving perimeter and area of triangles, parallelograms, trapezia and circles.</li> </ul>	<ul style="list-style-type: none"> <li>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.</li> <li>Identify properties of and describe the results of reflections applied to given figures.</li> </ul>	<ul style="list-style-type: none"> <li>Describe, interpret and compare data.</li> <li>Construct and interpret appropriate tables, charts and diagrams.</li> </ul>	<ul style="list-style-type: none"> <li>Describe, interpret and compare observed measures of central tendency, such as the mean, mode, median and spread (range and outliers).</li> </ul>
<b>Procedural</b> <i>What should they be able to do? What things should all students be able to do?</i>	<ul style="list-style-type: none"> <li>Review Year 7 angles rules.</li> <li>Identify angles in parallel lines.</li> <li>Revisit geometric notation.</li> <li>Work angles in special quadrilaterals.</li> <li>Find and use the sum of the interior angles of a polygon.</li> <li>Prove simple geometric facts.</li> </ul>	<ul style="list-style-type: none"> <li>Review area of shapes covered in Year 7.</li> <li>Calculate the area of a trapezium.</li> <li>Calculate the area of a circle and the areas of parts of a circle.</li> <li>Use significant figures.</li> <li>Calculate the area of compound shapes.</li> </ul>	<ul style="list-style-type: none"> <li>Recognise line symmetry in polygons and other shapes.</li> <li>Reflect shapes in horizontal, vertical and diagonal lines.</li> </ul>	<ul style="list-style-type: none"> <li>Understand and use primary and secondary sources of data.</li> <li>Collect data, including questionnaires.</li> <li>Interpret and construct statistical diagrams, including multiple bar charts.</li> <li>Identify misleading graphs.</li> </ul>	<ul style="list-style-type: none"> <li>Revisit the median and mean, including finding the total given the mean.</li> <li>Find the mean of grouped data.</li> <li>Work out the mode and modal class.</li> <li>Choose the appropriate average.</li> <li>Comparing distributions using measures</li> </ul>
<b>Disciplinary Literacy</b> <i>(Tier 3 Vocab)</i>	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

