Year 8	Curriculum Checkpoints: What do students know and what can they do?			
Mathematics	Developing	Securing	Flourishing	Excelling
Statistical representations	Create frequency tables.Construct bar chart, pictograms and pie charts. Complete partially drawn scattergraphs	Interpret bar charts, pictograms and pie charts. Construct scattergraphs	Create grouped frequency tables. Interpret scattergraphs	Work with side by side bar charts. Draw a line of best fit on a scattergraph
	Find mean, median, mode and range from a list of data	Find mean, median and mode from diagrams and charts. Interpret averages	Find mean, median and mode from frequency tables. Compare sets of data.	Calculate a weighted mean and mean from grouped data. Identify outliers
Shape	Complete costructions of circles, triangles and rhombuses.Recognise that the circumference divided by the diameter is the same for all circles. Find the areas of circles. Recognise rotational symmetry. Recognise and identify similar shapes. Find missing angles in pairs of similar triangles. Find missing sides in pairs of similar shapes with a positive integer scale factor. Know that congruent shapes have the same angles and lengths. Recognise SSS for triangles.	Construct circles, triangles and rhombuses. Understand tht a circle is a locus of points equidistant from a point. Find the circumference given the diameter or radius. Find the radius of a circle given the area. Know that enlargemtns, rotations, translations and reflections produce similar shapes. Find missing angles in pairs of similar triangles or quadrilaterals. identify congruent shapes drawn on a grid and find missing sides and angles.	Construct a rhombus from a given isoscles triangle. Find the preimeter of semicircles and quadrants. Find the radius or diameter of a circle given the area. Approximate the area of a circle by arranging sectors into a parallelogram. Solve area of a cirlce problems in context. Identify non examples of similar shapes. Find missing angles in pairs of similar shapes. Find missing sides in pairs of similar shapes where the scale factor is a unit fraction. know that reflections, rotations and transations produce congruent shapes. Identify non examples of congruent shapes. Recognise SSS, SAS, ASA and AAS for triangles	Use constructions to reason geometrically. Recognise that if the radius or diamter has been multiplied by a constant then the circumference will have been multiplied by the same constant. Find the perimeter of compoud shapes including parts of circles. Find radius or diameter given the area of a semicircle or quadrant. Recognise all circles as being similar. Find missing sides in pairs of similar shapes where the scale factor is a unit fraction. Explain congruence and show two shapes are congruent by comparing sides and angles. Know why SSA is not sufficient for congruence.

Surface Area and Volume	Identify the parts of a solid. Fold up a nets of cubes, cuboids, triangular prisms and pyramids and recognise those nets. Find the surface area of a cube, cuboid, prism or cylinder from a net. Find the volume of simple shapes made from uit cubes	State how many vertices, edges and faces a solid has. Draw accurate nets of cubes, cuboid, triangular prisms and pyramids. Find the surface area of a cube, cuboid, prism or cylinder. Find the volume of cuboid, prisms and cylinders given the base area.	Identify prisms from sketches or nets and explain whether a solid is a prism or a pyramid. Find the surface area of a composite solid made from cubes and cuboids. Find the volume of cuboid, prisms and cylinders or find missing dimensions given the volume.	Work out the number of vertices, edges and faces a composite solid has when some are hidden in a sketch. Find the surface area of a composite solid made from cubes, cuboids, prisms or cylinders. Find volumes of composite shapes, cut-outs and partially filled solids.
Pythagoras	Demonstrate Pythagoras' Theorem. Recognise 3,4,5 and 5, 12, 13 triangles. Find the length of the hypotenuse or a shorter side using a calculator.Find the perimeter of a right angled triangle given the 2 shorter lengths. Use a calculator to check if a triangle is right angled	Know Pythagoras' Theorem. Recognise Pythagorean Triples through similar triangles. Find the legth of the hypotenuse or a shorter side. Find the diagonal of a rectangle. Find the perimeter of a right angled triangle given the area and one of the shorter sides. Verify if a triangle is right angled	Follow a proof of Pythagoras' Theorem. Give answer for hypotenuse in exact form	Follow and complete a proof of Pythagoras' Theorem. Give answer ofr hypotenuse in exact form including fractions. Find the perimter of an isoscles trapezium given the height and the parallel sides. Find the height of an isosceles or equilateral triangle in exact form
Trigonometry	Identify similar right angled triangles and find misssing sides. Find a missing side given the hypotenuse using sin and cos. Find inverse trig functions using a calculator	Recognise the right angled triangle in a unit circle. Find missing sides given an angle and a side	Recognise that tan is sin/cos. Find an angle given two sides	Recognise congruent triangles within the unit circle. Link trig ratios to the unit circle eg cos for obtuse angles. Find an angle given two lengths in surd form or as fractions
Probability	Understand that if there are two outcomes they do not have to be equally likely. Place events on a probability scale. Understand that probailties lie between 0 and 1. Know that probabilities total 1. Calculate a theoretical probaility. Represent probabilites as fractions, decimals and percentages. Use results of a simple experiment to estimate a probability. List all the outcomes from 2 events and fill in a table of outcomes and usue it to find probabilities. read a two way frequency table. Use a Venn diagram to find the probability of an event	Recognise outcomes which are equally likely and those which are not. Work out the probability of an event not happening. Represent probabilities as ratios. Design an experiment to test a particular outcome. List all the outcomes from 3 events. Complete a two way frequency table. Use a Venn diagram to find the probability of one event and/or another event.	Understand that probability is a scale. Use the fact that probabilites total 1 to check you have all the outcomes. Use probability to estimate the number of times a thing may happen. Know that experimental probabilities tend towards theoretical probabilities the more trials there are. Construct a sample space diagram for two distinct outcomes and use it to find probabilities. Construct a two way frequency table.	Reason that combined events will be less likely than individual events. Given the probabilty of an event work out facts about the event. Work with mutually exclusive events. Product rule for counting. Construct a sample space diagram for two outcomes which are not distinct and use it to find probabilities. Use a Venn diagram to find the probability of an event not happening

Angles	Measure acute and obtuse angles. Work out a missing anlge from a simple geomtrical figure where only one step is required. Corresponding and alternate angles. Know and use the term exterior angle. Find the interior angle of a regular polygon.	Measure and draw angles. Work out missing angles using angles at a point, on a line and vertically opposite (2 steps). Find missing angles involving parallel lines and a single transversal. Prove the sum of tha angles in a triangle is 180 given steps and a diagram.	Measure and draw angles in a range of geometrical figures. Angle properties of polygons. Solve parallel line problems with more than one set of parallel lines. Prove tha ngle sum of a triangle. Find the sum of the interior angles of a polygon	Draw triangles or quadrilaterals with given angles. Apply angle facts to multi step problems. Solve parallel line problems with more than one transversal and with polygons. Construct proofs for exterior and interior angles of polygons.
Standard form	Write a number as another number multiplied by 10 or 100. Write any power of 10 in index notation. Recognise when a number is not in standard form. Convert an integer from standard form to ordinary form	Write a number as another number multiplied by a power of 10. Compare numbers written as powers of 10. Convert between integers in standard and ordinary form	Find missing values in equivalent multiplications. Understand the equivalence of fractional form and negative index form. Order numbers in standard form	Write a power of 10 as the product of other powers of 10. Convert numbers where A is too large or too small into standard form
Graphs	Draw linear graphs given in the form y=mx+c (including in context). Use a linear graph to estimate values or y or x given the other. Use linear graphs in this form to solve problems involving linear simultaneous equations. Interpret points on distance time graphs. Plot simple points of reference on a distance-time graph. Plot a quadratic graph from a given table of values. Recognise quadratics produce parabolas. Understand how direct and inverse proportion can be modelled graphically.	Ident ify the gradient and y-intercept from an equation. Understand how a linear graph splits the plane into three parts. Interpret gradients on distance-time graphs as speed. Plot points of reference on a distance-time graph. Complete a table of values and draw a quadratic. recognise the graphs of $y=x^2$ and $y=x^2+a$. Read and interpret y values from a given x value for a non linear graph. Understand how direct and inverse proportion can be modelled graphically and algebraically	Draw linear graphs given in forms other than y=mx+c (including in context) Ident ify gradient and y-intercept after rearranging. Identify parallel lines from their equations given in form y=mx+c.Use linear graphs in this form to solve problems involving linear simultaneous equations. Produce distance-time graphs. read and interpret points from a quadratic, exponential or reciprocal graph in context. Use interpolation to solve proportion problems graphically.	Determine if a graph will be linear by rearranging into the form y=mx+c. Identify parallel lines from their equations given in forms other than y=mx+c. Use linear graphs to solve problems in unfamiliar contexts.Use linear graphs in this form to solve problems involving linear simultaneous equations. Interpret distance-time graphs including comparing speeds. model two journeys on the same distance-time graph including different starting times. Recognise the link between the x intercepts and solutions to the expression being equal to zero. Explain how the shape of a grpah relates to the real life situation it is modelling. Use a graph to find equations for direct and inverse proportion

Algebra	Expand and simplify brackets of the form (x+a)(x+b) and apply to finding expressions of area of a rectangle. Find missing terms from a binomial given its product. Find the product of two binomials which give the difference of two squares (coefficient of 1). Recognise area model and link to negative multiplication. List related additive, subtractive and multiplicative expressions for linear relationships. Identify the subject of a formula	Expand and simplify brackets of the form (x-a)(x-b) and apply to finding expressions of area of shapes. Find missing terms from a binomial given its product. Find the product of two binomials which give the difference of two squares (coefficient up to 12). List related additive, subtractive and multiplicative expressions for non linear relationships. Change the subject of a formula involving one step.	Expand and simplify brackets of the form (x+a)(x-b) and apply to finding expressions of area of shapes. Find missing terms from a binomial given its product. Use difference of two squares to simplify calculations. Write multiplicative raltionships in a variety of ways. Change the subject of a formula involving two or more steps including brackets.	Expand and simplify brackets of the form (ax+b)(cx+d) or where one of the brackets has more than 2 terms. Find missing terms from a binomial given its product. Recognise difference of two squares and use it factorise. Use difference of two sqares in contexts relating to Pythagoras and area which involve solving an equation. change the subject of a formula involving powers or roots