

Year 7	Curriculum Checkpoints: What do students know and what can they do?			
Mathematics	Developing	Securing	Flourishing	Excelling
Place Value	Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit. Multiply and divide by positive powers of 10. Order units of measure when they have the same prefix.	Understand and use place value (e.g. when working with very large or very small numbers, and when calculating with decimals). Order units of measure where conversion is necessary	Multiply and divide numbers by positive powers of 10 and combine operations using positive powers of 10.	Multiply and divide numbers by negative powers of 10 and combine operations using negative powers of 10.
Properties of Number	Identify common factors, common multiples, highest common factor and lowest common multiple	Use the concepts and vocabulary of prime numbers, factors (or divisors), multiples, common factors, common multiples, HCF, LCM, prime factorisation, including product notation.	Use integer powers and associated real roots (square, cube and higher), recognise powers of 2,3,4 & 5	Make and test conjectures about patterns and relationships; look for proofs or counterexamples.
Arithmetic Procedures	Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication.	Apply the four operations, including formal written methods, to integers, decimals and simple fractions (proper and improper), and mixed numbers	Apply the four operations, including formal written methods, to integers, decimals and simple fractions (proper and improper), and mixed numbers – all both positive and negative	Recognise and use relationships between operations, including inverse operations (e.g. cancellation to simplify calculations and expressions)
	Divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders			Estimate answers; check calculations using approximation and estimation, including answers obtained using technology
	Use negative numbers in context, and calculate intervals across zero	Use the four operations, including formal and written methods, applied to integers, both positive and negative	Select and use appropriate calculation strategies to solve increasingly complex problems	Select and use appropriate calculation strategies to solve increasingly complex problems
	Select and use appropriate calculation strategies to solve increasingly complex problems	Consolidate numerical and mathematical capability from key stage 2 and extend their understanding of the number system and place value to include decimals, fractions, powers and root system and place value to include decimals, powers and roots		
Expressions and Equations	Simplify and manipulate algebraic expressions by collecting like terms and multiplying a single term over a bracket	Use and interpret algebraic notation, including: $ab$ in place of $a \times b$ , $3y$ in place of $y + y + y$ and $3 \times y$ , $a^2$ in place of $a \times a$ , $a^3$ in place of $a \times a \times a$ , $a/b$ in place of $a \div b$ , brackets	Use and interpret algebraic notation, including: $a^2b$ in place of $a \times a \times b$ , coefficients written as fractions rather than as decimals	Simplify and manipulate algebraic expressions by taking out common factors and simplifying expressions involving sums, products and powers, including the laws of indices
	Multiplying out and factorising expressions into a single bracket, understanding the distributive property and techniques for factoring.	Expanding a pair of binomials, understanding the area model and applying it to multiply binomial expressions.	Understand and use the concepts and vocabulary of expressions, equations, inequalities, terms and factors	Confidently simplify and manipulate algebraic expressions to maintain equivalence
	Expanding multiple single brackets and simplifying expressions by combining like terms.	Substitute numerical values into formulae and expressions, including scientific formulae		
Coordinates	Plot integer coordinates in all four quadrants and write the coordinates of an indicated point	Plot integer and decimal coordinates in the first quadrant and write the coordinates of an indicated point	Plot integer and decimal coordinates in all four quadrants and write the coordinates of an indicated point	Draw a coordinate grid, choosing scales and plot integer and decimal coordinates in the first quadrant and write the coordinates of an indicated point
	Find the integer midpoint of a pair of coordinates shown on a coordinate grid	Find the midpoint of any pair of coordinates.	Find the midpoint of any pair of coordinates and find the coordinates of a point following reflection in a coordinate axis	Given point A and midpoint of AB find the coordinates of B
	Find the coordinates of a missing vertex of a square or rectangle where edges are horizontal and vertical. Identify a square or rectangle when vertices are at given coordinates	Identify shapes from coordinates	Work out the coordinates of a missing vertex of a square or rectangle	Find the coordinates of a missing vertex of a parallelogram
	Use words to describe the rule of a horizontal or vertical line	Write equations of and draw vertical and horizontal lines	Explain that all points on a line satisfy a relationship	Understand that graphs can show non linear relationships
	Plot points that satisfy a relationship given in words eg the y coordinate is twice the x coordinate	Plot points given an algebraic description of a relationship	Draw a set of axes and draw a given line	Write a relationship algebraically given a set of coordinates and draw the graph.
Perimeter and area	Know and use the properties of a square and rectangle	Know and use the properties of a square, rectangle parallelogram and kite	Know and use the properties of a square, rectangle parallelogram, kite, rhombus and trapezium.	Understand the relationships between the different quadrilaterals
	Name the type of triangle shown in a sketch with some angles and sides marked on	Know and use the properties of the following types of triangle: equilateral and isosceles	Know and use the properties of the following types of triangle: equilateral, isosceles, scalene, obtuse angled	Know how the different types of triangles can coincide
	Find the perimeter of irregular polygons with all edge lengths given	Find the perimeter of a regular polygon with one side given	Find the perimeter of polygons where some of the edge lengths are missing and need to be derived	Find the perimeter of a range of polygons where lengths have to be deduced
	Use the perimeter to find the lengths of a regular polygon or a rectangle	Solve problems involving perimeter of regular and rectilinear polygons	Solve problems involving perimeter of regular and rectilinear polygons and polygons marked with equal sides.	Solve problems involving perimeter of polygons
	Find the area of polygons drawn on squared paper (whole squares)	Find the area of polygons drawn on squared paper (whole squares and half squares)	Find the area of polygons drawn on squared paper (including parts of squares)	Split and rejoin polygons drawn on squared paper to deduce the area of a shape
	Find the area of a rectangle	Find the area of a rectangle and of a composite shape that has already been split into rectangles	Find the area of rectangles and of composite shapes that can be split into rectangles	Find the area of rectilinear shapes including cut outs
	Understand the area of a rectangle is half the area of the rectangle around it	Find the area of a triangle given the base and height	Find the area of a triangle deciding which given lengths are a base and a height	Recognise that many different triangles with the same base and height will have the same area