Curriculum Overview: Maths

The KS2 Maths Curriculum at PBA has been designed using the White Rose Units (with some small amendments to suit the needs of our cohorts). Lessons are taught in blocks using the small steps to ensure detailed coverage. We use starters in lessons to recap areas of learning throughout the year using a combination of the 'Flashback Four' resources from White Rose and our own gap analysis. The KS3/4 curriculum is a progression model based on Oat Maths; it enables students at all levels of attainment to practise fluency, to reason and to think mathematically at every possible opportunity. The principle of White Rose small steps is incorporated into the curriculum. Each year, topics are generally revisited to consolidate prior learning before building new learning.

Year Group	Content overview Cycle 1	Content overview Cycle 2	Content overview Cycle 3
5	**Place Value** - up to 1,000,000 including comparing, ordering and rounding. **Addition and Subtraction** - formal written methods. Multiplication and Division - number facts and multiply and divide by powers of 10. **Fractions A** - equivalents, ordering and comparing, converting fractions and addition and subtraction.	**Multiplication and division** - Formal written method of short division, long and short multiplication and division with remainders. **Fractions B** - multiply fractions, fractions of an amount. **Decimals and Percentages** - ordering decimals up to 3DP, understanding percentages, rounding decimals, fraction decimal and percentage equivalents. **Perimeter and Area** - perimeter and area of rectangles and compound shapes, estimating area. **Statistics** - draw and interpret line graphs, timetables, two-way tables,	**Shape** - classify angles, draw and measure angles, angles on a straight line and a point, regular and irregular polygons, 3D shapes. **Position and Direction** - symmetry, reflection, translation with coordinates, all in only one quadrant. **Decimals** - adding and subtracting decimals and multiplying and dividing by powers of 10. **Negative Numbers** - understand negative numbers, comparing negative numbers, calculating across zero. **Converting Units** - converting metric units of measure, converting units of time. **Volume** - understanding the concept, comparing and estimating (including capacity).
6	**Place Value** - Up to 10,000,000, including negative numbers, comparing ordering and rounding. **Addition, Subtraction, Multiplication and Division** - formal written methods, including long/short multiplication and division, number facts, BIDMAS.	**Ratio** - vocabulary and scale factor. **Decimals** - place value up to 3DP (including rounding), multiply and divide by powers of 10 and multiplication and division. **Fractions Decimals and Percentages** - finding equivalences between fractions, decimals and percentages including ordering and comparing and finding percentages.	**Shape** - measure, classify and draw angles, angles around a point, straight line and in a triangle, opposite and missing angles, circles and nets. **Application of skills projects** - combining skills learnt from different units this year to complete small projects: Design a garden, Kandinsky Art, Data Collection. **Algebra** - 1 and 2 step function machines, simple formulae,

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	Fractions A - equivalents fractions and addition and subtraction. **Fractions B** - multiply and divide fractions and fractions of amounts. **Position and Direction** - reflections, translations and coordinates up to 4 quadrants.	**Area, Perimeter and Volume** - including rectilinear shapes, triangles and parallelograms, volume without cubes. **Converting Units** - metric measures and imperial conversions. **Statistics** - line graphs, pie charts, dual bar graphs, the mean.	substitution, solving one and 2 step equations. **Year 7 Transition unit** – Calculators.
7	**Place value and the number line** – ordering positive and negative numbers, multiplying/ dividing by positive/negative powers of 10, rounding to dp and sf. **Addition & Subtraction** – inverting addition/subtraction, zero pairs, complement of a decimal, strategies including decimals. **Multiplication & Division** – strategies for positive integers and decimals, inverse operations, LCM and HCF, coprime numbers, volume of cuboid/cube.	**Powers, Roots and Primes** - roots as inverses as powers, addition/subtraction rules with positive indices, product of primes, prime factorisation. **Order of Operations** - four operations, exponents, brackets, practice with integers and decimals. **Directed Number** - ordering positive/negative numbers, four operations, powers of negative numbers, order of operations with negative numbers. **Introduction to Algebraic Thinking** - concept of unknown variable, solving simple unknown value problems, substituting numbers for unknown variables.	**Fractions** - proper and improper fractions, complement of a fraction, multiplication of a number by its reciprocal gives 1, order of operations with fractions. **Percentages, Fractions and Decimals** - equivalence of FDP, techniques to convert, ordering FDP, recurring and terminating decimals, percentage of an amount with decimal multipliers. **Manipulating and Simplifying Expressions 1** - algebraic notation, collecting like terms, simplifying indices and coefficients when multiplying/dividing, multiplication rule for indices. **Drawing, Measuring and Constructing** - constructing triangles given SSS, SAS, ASA, constructing a perpendicular bisector, perpendicular from a point on/to a line, angle bisector, simple loci.
8	**Estimation and Use of Calculator** - timetables - with and without the time button on the calculator, approximate metric/imperial conversions, approximating powers and roots, error intervals for rounded numbers. **Manipulating and Simplifying Expressions 2** - expanding/ factorising single bracket, expanding 2 simple binomials, writing complex algebraic expressions. **Linear Equations** - one and two-step solutions,solving equations unknown both sides,	**Polygons & Angles** - angles on a straight line, around a point, vertically opposite, angles in parallel lines (alternate, corresponding, co-interior), bearings. **Area** - area of a circle, area of triangles and quadrilaterals (incl. kite, parallelogram, trapezium), complex areas of compound shapes. **Formulae** - writing formulae in words and letters, generating sequences, rearranging linear and non-linear formulae. **The Cartesian Grid** - plotting 2D coordinates in four quadrants, finding the midpoint of a line segment, introduction to two-dimensional vectors.	**The Cartesian Grid (2)** - drawing and recognising graphs of y=n and x=n, write the equation in the form y = mx+c. **Discrete Data** - data handling cycle, data - discrete and continuous, ungrouped and grouped frequency tables, graphical representations. **Bivariate Data & Time Series** - interpret relationships and correlations from a scatter graph, identify outliers, draw a line of best fit. **Sequences 1** - generate terms of a sequence from term-to-term and position to term rules, find missing terms in a sequence, find and use the nth term of an arithmetic (linear) sequence.

	unknown in the denominator, real-life context problems and application. **Proportional Reasoning** - direct and inverse proportion, comparing quantities, percentage increase and decrease, decimal multipliers. **Ratio** - ratio notation, simplifying ratios, unit ratios, fractions from ratios.		
9	**Standard Form -** small/large numbers in standard form, comparing/converting from 'almost standard' form to standard form, multiplying and dividing in standard form. **Congruence and Similarity** - tessellating congruent shapes, isometries, transformations. **Right-angled Triangles** - Pythagoras' Theorem, trigonomic ratios, exact values of sine, cosine and tangent for 0,30, 45, 60 and 90 degrees by heart.	**Linear Inequalities** - single and double linear inequalities, solve systems of multiple linear inequalities, represent inequalities by shading on a graph. **Introduction to Probability** - introduce language of probability, sum of probabilities of all mutually exclusive events = 1, frequency trees, two-way tables and simple Venn diagrams. **Contextual Graphs** - 'real-life' graphs, introduction to speed, distance, time, distance-time and velocity-time graphs.	**Circles** - problems with area and circumference of circle, circle theorems. **Advanced Drawing, Measuring and Constructing** - interior and exterior angles in polygons, Euler's Formula, drawing 3D shapes, planes of symmetry. **Continuous Data** - mean, mode and median, cumulative frequency and boxplots, measures of spread.