

Pentagon Partnership Year 6 Overview



Year 6 end of term expectations			
Strand	Autumn	Spring	Summer
Number and Place Value	<ul style="list-style-type: none"> use negative numbers in context, and calculate intervals across zero read, write, order and compare numbers up to 10 000 000 and determine the value of each digit round any whole number to a required degree of accuracy eg to the nearest 10, 20, 50 etc. Read and write numbers with up to three decimal places. Round decimals with three decimal places to the nearest whole number or one or two decimal places. Round recurring decimals to three decimal places solve number and practical problems that involve all of the above. 	<ul style="list-style-type: none"> use negative numbers in context, and calculate intervals across zero Find 0.1, 0.01 and 0.001 more or less than a given number. Use <, > and = to compare 2 calculations using the 4 operations. round any whole number to a required degree of accuracy solve number and practical problems that involve all of the above. 	<ul style="list-style-type: none"> use negative numbers in context, and calculate intervals across zero Count forwards and backwards in fractional and decimal steps up to 3 decimal places. round any whole number to a required degree of accuracy solve number and practical problems that involve all of the above.
Addition and Subtraction	<ul style="list-style-type: none"> solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why (including fractions, decimals and percentages) Complements to 100 to 2d.p. Solve problems involving addition, subtraction, including those with missing numbers use estimation (including rounding to the nearest 20/50 if appropriate) to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy. 	<ul style="list-style-type: none"> Introduce brackets and how this affects calculation. Pupils explore the order of operations using brackets; for example, $2 + 1 \times 3 = 5$ and $(2 + 1) \times 3 = 9$. use their knowledge of the order of operations to carry out calculations involving the four operations add and subtract any set of whole numbers and decimals using an appropriate written method Add and subtract at least 2 whole numbers with more than 4 digits and decimals with up to 3 decimal places solve addition and subtraction multi-step problems in contexts, deciding which 	<ul style="list-style-type: none"> add and subtract any set of whole numbers and decimals using an appropriate written method Add and subtract at least 2 whole numbers with more than 4 digits and decimals with up to 3 decimal places solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why (including fractions, decimals and percentages) Solve problems involving addition, subtraction, including those with missing numbers

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	<ul style="list-style-type: none"> • add and subtract any set of whole numbers and decimals using an appropriate written method Add and subtract at least 2 whole numbers with more than 4 digits and decimals with up to 3 decimal places • perform mental calculations, including with mixed operations and large numbers 	<p>operations and methods to use and why (including fractions, decimals and percentages)</p> <ul style="list-style-type: none"> • Solve problems involving addition, subtraction, including those with missing number 	
Multiplication and Division	<ul style="list-style-type: none"> • solve addition and subtraction, multiplication and division multi-step problems in contexts, deciding which operations and methods to use and why • Use estimation, rounding and inverse to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy. • identify common factors, common multiples and prime numbers • multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication • divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context (e.g. $98 \div 4 = 24 \text{ r}2$) • $\frac{1}{2} = 24.5 \approx 25$. • divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context 	<ul style="list-style-type: none"> • solve addition and subtraction, multiplication and division multi-step problems in contexts, deciding which operations and methods to use and why • Introduced to the division of decimal numbers by one-digit whole number, initially, in practical contexts involving measures and money. • finding prime factors of 2 digit numbers, and testing for prime numbers beyond 100 • use their knowledge of the order of operations to carry out calculations involving the four operations • Pupils explore the order of operations using brackets; for example, $2 + 1 \times 3 = 5$ and $(2 + 1) \times 3 = 9$. • Multiply and divide one digit numbers with up to two decimal places by 1- and 2-digit whole numbers (eg 1.46×3) • Use mental arithmetic strategies when appropriate, e.g. partitioning, chunking and jottings • Pupils continue to use all the multiplication tables to calculate mathematical statements in order to maintain their fluency. 	<ul style="list-style-type: none"> • solve addition and subtraction, multiplication and division multi-step problems in contexts, deciding which operations and methods to use and why • Use mental arithmetic strategies when appropriate, e.g. partitioning, chunking and jottings • Pupils continue to use all the multiplication tables to calculate mathematical statements in order to maintain their fluency.

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	<ul style="list-style-type: none"> • Use mental arithmetic strategies when appropriate, e.g. partitioning, chunking and jottings • Multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places • Pupils continue to use all the multiplication tables to calculate mathematical statements in order to maintain their fluency. 	<ul style="list-style-type: none"> • Multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places • Use written division methods in cases where the answer has up to two decimal places • Solve problems involving addition, subtraction, multiplication and division (including those with missing numbers) 	
Fractions	<ul style="list-style-type: none"> • use common factors to simplify fractions; use common multiples to express fractions in the same denomination • associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, $\frac{3}{8}$] • recall and use equivalences between simple fractions, decimals and percentages, including in different contexts. • (halves, quarters, thirds, fifths, eighths, tenths, and explore sixths, ninths and elevenths) • compare and order fractions, including fractions > 1 • Rounding recurring decimals to 1, 2 and 3 dp. • add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions (for example, $\frac{1}{2} + \frac{1}{8} = \frac{5}{8}$) 	<ul style="list-style-type: none"> • multiply simple pairs of proper fractions, writing the answer in its simplest form [for example, $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$] • divide proper fractions by whole numbers [for example, $\frac{1}{3} \div 2 = \frac{1}{6}$] • recall and use equivalences between simple fractions, decimals and percentages, including in different contexts. • (halves, quarters, thirds, fifths, eighths, tenths, and explore sixths, ninths and elevenths) • compare and order fractions, including fractions > 1 	<ul style="list-style-type: none"> • recall and use equivalences between simple fractions, decimals and percentages, including in different contexts. • (halves, quarters, thirds, fifths, eighths, tenths, and explore sixths, ninths and elevenths)

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Ratio and Proportion		<ul style="list-style-type: none"> • solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts Pupils solve problems involving unequal quantities, for example, 'for every egg you need three spoonfuls of flour', '$\frac{3}{5}$ of the class are boys'. These problems are the foundation for later formal approaches to ratio and proportion • Pupils recognise proportionality in contexts when the relations between quantities are in the same ratio (for example, similar shapes and recipes). • solve problems involving similar shapes where the scale factor is known or can be found • Pupils should consolidate their understanding of ratio when comparing quantities, sizes and scale drawings by solving a variety of problems. They might use the notation $a:b$ to record their work. • Solve problems involving unequal sharing & grouping using knowledge of fractions & multiples. 	<ul style="list-style-type: none"> • solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison • Pupils link percentages or 360° to calculating angles of pie charts.
Measurement	<ul style="list-style-type: none"> • solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate • use, read, write and convert between standard units, converting measurements of length and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation up to three decimal places 	<ul style="list-style-type: none"> • use, read, write and convert between standard units, converting measurements of, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation up to three decimal places • recognise when it is possible to use formulae for volume of shapes • calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm^3) and cubic 	<ul style="list-style-type: none"> • solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate • Pupils could be introduced to compound units for speed, such as miles per hour, and apply their knowledge in science or other subjects as appropriate

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	<ul style="list-style-type: none"> convert between miles and kilometres and use graphical representations recognise that shapes with the same areas can have different perimeters and vice versa recognise when it is possible to use formulae for area of shapes calculate the area of parallelograms and triangles Using the number line, pupils use, add and subtract positive and negative integers for measures such as temperature. 	<p>metres (m³), and extending to other units [for example, mm³ and km³].</p>	
<p>Geometry (Properties of Shape)</p>	<ul style="list-style-type: none"> draw 2-D shapes using given dimensions and angles recognise, describe and build simple 3-D shapes, including making nets compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles. [These relationships might be expressed algebraically for example, $d = 2 \times r$; $a = 180 - (b + c)$.] 		<ul style="list-style-type: none"> illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius
<p>Geometry (Position and Direction)</p>		<ul style="list-style-type: none"> describe positions on the full coordinate grid (all four quadrants) draw and translate simple shapes on the coordinate plane, and reflect them in the axes. Pupils draw and label rectangles (including squares), parallelograms and rhombuses, specified by coordinates in the four 	

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		<p>quadrants, predicting missing coordinates using the properties of shapes.</p> <ul style="list-style-type: none"> These might be expressed algebraically for example, translating vertex (a, b) to $(a - 2, b + 3)$; (a, b) and $(a + d, b + d)$ being opposite vertices of a square of side d. 	
	<ul style="list-style-type: none"> calculate and interpret the mean as an average. Draw graphs relating to two variables arising from own work. Interpret a reading that lies between two numbered divisions on a scale. 	<ul style="list-style-type: none"> Interpret and construct pie charts and line graphs and use these to solve problems (connect to work on angles, fractions and percentages). Interpret a reading that lies between two numbered divisions on a scale. 	
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Algebra	<ul style="list-style-type: none"> use simple formulae generate and describe linear number sequences express missing number problems algebraically 	<ul style="list-style-type: none"> find pairs of numbers that satisfy an equation with two unknowns enumerate possibilities of combinations of two variables. 	<ul style="list-style-type: none"> Pupils should be introduced to the use of symbols and letters to represent variables and unknowns in mathematical situations that they already understand, such as: <ul style="list-style-type: none"> missing numbers, lengths, coordinates and angles formulae in mathematics and science equivalent expressions (for example, $a + b = b + a$) generalisations of number patterns - number puzzles (for example, what two numbers can add up to).