

Maths Curriculum Progression and End Points

Addition & Subtraction

- | | | |
|---|--|---|
| <ul style="list-style-type: none">▪ solve problems with addition and subtraction:▪ using concrete objects and pictorial representations, including involving numbers, quantities and measures▪ applying their increasing knowledge of mental and written methods▪ recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100▪ add and subtract numbers using concrete objects, pictorial representations, and mentally, including:<ul style="list-style-type: none">▪ a two-digit number and ones▪ a two-digit number and tens▪ two two-digit numbers▪ adding three one-digit numbers▪ show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot▪ recognise and use the inverse relationship between addition▪ and subtraction and use this to check calculations and solve missing number problems. | <ul style="list-style-type: none">• add and subtract numbers with up to 4 digits using the efficient written methods of columnar addition and subtraction where appropriate• estimate and use inverse operations to check answers to a calculation• solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why | <ul style="list-style-type: none">• multiply multi-digit numbers up to 4 digits by a two-digit whole number using the efficient 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• divide numbers up to 4 digits by a two-digit whole number using the formal written method of short division, and interpreting remainders according to the context• perform mental calculations, including with mixed operations and large numbers• identify common factors, common multiples and prime numbers• use their knowledge of the order of operations to carry out calculations involving the four operations• solve addition and subtraction multi-step problems in contexts, deciding |
|---|--|---|

Multiplication & Division

- | | | |
|--|--|--|
| <ul style="list-style-type: none">▪ recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers▪ calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (\times), division (\div) and equals (=) signs▪ show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot▪ solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts | <ul style="list-style-type: none">▪ recall multiplication and division facts for multiplication tables up to 12×12▪ use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers▪ recognise and use factor pairs and commutativity in mental calculations▪ multiply and divide two-digit and three-digit numbers by a one-digit number using formal written layout▪ solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects | <p>which operations and methods to use and why</p> <ul style="list-style-type: none">• solve problems involving addition, subtraction, multiplication and division• use estimation to check answers to calculations and determine context of a problem, levels of accuracy. |
|--|--|--|

Fractions (including decimals and percentages)

- | | | |
|---|---|---|
| <ul style="list-style-type: none">▪ recognise, find, name and write fractions $1/3$, $1/4$, $2/4$ and $3/4$ of a length, shape, set of objects or quantity▪ write simple fractions for example, $1/2$ of $6 = 3$ and recognise the equivalence of $2/4$ and $1/2$. | <ul style="list-style-type: none">▪ recognise and show, using diagrams, families of common equivalent fractions▪ count up and down in hundredths; recognise that hundredths arise when dividing an object by a hundred and dividing tenths by ten▪ solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number▪ add and subtract fractions with the same denominator▪ recognise and write decimal equivalents of any number of tenths or hundredths▪ recognise and write decimal equivalents to $1/4$; $1/2$; $3/4$▪ find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as units, tenths and hundredths▪ round decimals with one decimal place to the nearest whole number▪ compare numbers with the same number of decimal places up to two decimal places | <ul style="list-style-type: none">• use common factors to simplify fractions; use common multiples to express fractions in the same denomination• compare and order fractions, including fractions >1• associate a fraction with division to calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. $3/8$)• add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions• multiply simple pairs of proper fractions, writing the answer in its simplest form (e.g. $1/4 \times 1/2 = 1/8$)• divide proper fractions by whole numbers (e.g. $1/3 \div 2 = 1/6$).• identify the value of each digit to three decimal places and multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places• multiply one-digit numbers with up to two decimal places by whole numbers |
|---|---|---|

▪ solve simple measure and money problems involving fractions decimals to two decimal places.

- use written division methods in cases where the answer has up to two decimal places
- solve problems which require answers to be rounded to specified degrees of accuracy.
- recall and use equivalences between simple fractions, decimals and percentages, including in different contexts and to compare proportions

Measurement

- | | | |
|--|---|---|
| <ul style="list-style-type: none">▪ choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels▪ compare and order lengths, mass, volume/capacity and record results using $>$, $<$ and $=$▪ recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value▪ find different combinations of coins that equal the same amounts of money▪ solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change▪ compare and sequence intervals of time▪ tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times▪ know the number of minutes in an hour and the number of ho a day. | <ul style="list-style-type: none">• convert between different units of measure (e.g. kilometre to metre; hour to minute)• measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres• find the area of rectilinear shapes by counting squares• estimate, compare and calculate different measures, including money in pounds and pence• read, write and convert time between analogue and digital 12 and 24-hour clocks• solve problems involving converting from hours to minutes; mi seconds; years to months; weeks to days. | <ul style="list-style-type: none">• solve problems involving the calculation and conversion of units of measure, using decimal notation to three decimal places where appropriate• use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to three decimal places• convert between miles and kilometres• recognise that shapes with the same areas can have different perimeters and vice versa• calculate the area of parallelograms and triangles• recognise when it is necessary to use the formulae for area and volume of shapes• calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm³) and cubic metres (m³) and extending to other units, such as mm³ and km³. |
|--|---|---|

<p>Geometry (Properties of Shapes)</p>	<ul style="list-style-type: none"> ▪ identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line ▪ identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces ▪ identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid] ▪ compare and sort common 2-D and 3-D shapes and everyday objects 	<ul style="list-style-type: none"> • compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes • identify acute and obtuse angles and compare and order angles up to two right angles by size • identify lines of symmetry in 2-D shapes presented in different orientations • complete a simple symmetric figure with respect to a specific line of symmetry. 	<ul style="list-style-type: none"> • Draw 2D 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 • illustrate and name parts of circles, including radius, diameter and circumference • recognise angles where they meet at a point, are on a straight line, and are vertically opposite and find missing angles
<p>Geometry (Position & Direction)</p>	<ul style="list-style-type: none"> ▪ order and arrange combinations of mathematical objects in patterns and sequences ▪ use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguish between rotation as a turn and in terms of right angles for quarter and three-quarter turns (clockwise and anticlockwise). 	<ul style="list-style-type: none"> • describe positions on a 2-D grid as coordinates in the first quadrant • describe movements between positions as translations of a given unit to the left/right and up/down • plot specified points and draw sides to complete a given polygon. 	<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.

Statistics	<ul style="list-style-type: none"> ▪ interpret and construct simple pictograms, tally charts, block di and simple tables ▪ ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity ▪ ask and answer questions about totaling and comparing categorical data. 	<ul style="list-style-type: none"> • interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs • solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs. 	<ul style="list-style-type: none"> • interpret and construct pie charts and line graphs and use these to solve problems • calculate and interpret the mean as an average
Ratio & Proportion		<ul style="list-style-type: none"> • recognise the per cent symbol (%) and understand that per cent relates to ‘number of parts per hundred’, and write percentages as a fraction with denominator 100, and as a decimal • solve problems which require knowing percentage and decimal equivalents $\frac{1}{2}$ $\frac{1}{4}$ etc those fractions with a denominator of a multiple of 10 or 25. 	<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 • solve problems involving the calculation of percentages e.g. of measures and such as 15% of 360 and the use of percentages for comparison • solve problems involving similar shapes where the scale factor if known or can be found • solve problems involving unequal sharing and grouping using knowledge and multiples

Algebra

<ul style="list-style-type: none">• solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems• recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.	<ul style="list-style-type: none">• solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction.	<ul style="list-style-type: none">• express missing number problems algebraically• use simple formulae expressed in words• generate and describe linear number sequences• find pairs of numbers that satisfy number sentences involving two unknowns.• Enumerate all possibilities of combinations of two variables
--	--	---