

Mathematics Curriculum - Year 6

Autumn 1

- Identify, represent and estimate numbers using the number line.
- 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.
- Use negative numbers in context, and calculate intervals across zero.
- Count forwards or backwards in steps of integers, decimals or powers of 10 for any number.
- Order and compare numbers including integers, decimals and negative numbers.
- Find 0.001, 0.01, 0.1, 1, 10 and powers of 10 more or less than a given number.
- Recall and use addition and subtraction facts for 1 (with decimal numbers to two decimal places).
- Round decimals with three places to the nearest whole number or one or two decimal places.
- Identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places.
- Solve number and practical problems that involve all of the above.
- Perform mental calculations, including with mixed operations and large numbers and decimals.
- Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting, written method).
- Select a mental strategy appropriate for the numbers involved in the calculation.
- Solve addition multi-step problems in contexts, deciding which operations and methods to use and why.
- Express missing number problems algebraically.
- Find pairs of numbers that satisfy an equation with two unknowns.
- Use estimation and inverse to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.
- Add whole numbers and decimals using formal written methods (columnar addition).
- Solve problems which require answers to be rounded to specified degrees of accuracy.
- Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication.
- Multiply one-digit numbers with up to two decimal places by whole numbers.
- Solve problems involving addition, subtraction, multiplication and division.
- Use, read, write and convert between standard units, converting measurements of time from a smaller unit to a larger unit, and vice versa.
- Use estimation and inverse to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.
- Solve problems which require answers to be rounded to specified degrees of accuracy.
- 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.
- Continue to complete and interpret information in a variety of sorting diagrams (including those used to sort properties of numbers and shapes).
- Identify, represent and estimate numbers using the number line.
- Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting, written method).
- Select a mental strategy appropriate for the numbers involved in the calculation.
- Solve subtraction multi-step problems in contexts, deciding which operations and methods to use and why.
- Subtract whole numbers and decimals using formal written methods (columnar subtraction).
- Solve problems which require answers to be rounded to specified degrees of accuracy.
- Perform mental calculations, including with mixed operations and large numbers and decimals.
- 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 number using the formal written method of short division where appropriate, interpreting remainders according to the context.
- Use written division methods in cases where the answer has up to two decimal places.

Autumn 2

- Identify common factors, common multiples and prime numbers.
- Compare and order fractions, including fractions >1 (including on a number line).
- Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions.
- Associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. $\frac{3}{8}$).
- Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.
- Solve problems involving fractions.
- Find simple percentages of amounts.
- 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 (for example, of measures, and such as 15% of 360) and the use of percentages for comparison.
- Solve problems involving similar shapes where the scale factor is known or can be found.
- Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.
- Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.
- Interpret and construct pie charts and line graphs and use these to solve problems.
- Solve comparison, sum and difference problems using information presented in all types of graph.
- Solve problems involving the calculation and conversion of units of measure (including money and time), using decimal notation up to three decimal places where appropriate.
- Use, read, write and convert between standard units, converting measurements of length and mass, from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up 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.
- Use, read and write standard units using decimal notation to up to three decimal places.
- Recognise when it is possible to use the formulae for area and volume of shapes.
- Calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm^3) and cubic metres (m^3) and extending to other units (for example, mm^3 and km^3).

Spring 1

- Count forwards or backwards in steps of integers, decimals or powers of 10 for any number.
- Describe and extend number sequences including those with multiplication and division steps, inconsistent steps, alternating steps and those where the step size is a decimal.
- Use simple formulae.
- Generate and describe linear number sequences.
- 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.
- Use negative numbers in context, and calculate intervals across zero.
- Order and compare numbers including integers, decimals and negative numbers.
- Calculate and interpret the mean as an average.
- Identify common factors, common multiples and prime numbers.
- Use common factors to simplify fractions; use common multiples to express fractions in the same denomination.
- 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 (using diagram) (e.g. $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$).
- Divide proper fractions by whole numbers (using diagram) (e.g. $\frac{1}{3} \div 2 = \frac{1}{6}$).
- Associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. $\frac{3}{8}$).
- 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 number using the formal written method of short division where appropriate, interpreting remainders according to the context.
- Use written division methods in cases where the answer has up to two decimal places.
- Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting, written method).
- Solve problems which require answers to be rounded to specified degrees of accuracy.
- Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication.
- Multiply one-digit numbers with up to two decimal places by whole numbers.
- Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting, written method).
- Select a mental strategy appropriate for the numbers involved in the calculation.
- Solve problems which require answers to be rounded to specified degrees of accuracy.
- Enumerate possibilities of combinations of two variables.

Spring 2

- Identify, represent and estimate numbers using the number line.
- Add and subtract whole numbers and decimals using formal written methods (columnar addition and subtraction).
- Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact,

calculate mentally, use a jotting, written method).

- Select a mental strategy appropriate for the numbers involved in the calculation.
- Solve problems involving addition and subtraction.
- Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.
- Use their knowledge of the order of operations to carry out calculations involving the four operations.
- Solve problems involving similar shapes where the scale factor is known or can be found.
- 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 up to three decimal places.
- Solve problems involving the calculation and conversion of units of measure (including money and time), using decimal notation up to three decimal places where appropriate.
- 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 (for example, of measures, and such as 15% of 360) and the use of percentages for comparison.
- Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.
- 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.
- Continue to complete and interpret information in a variety of sorting diagrams (including those used to sort properties of numbers and shapes).
- Illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius.
Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.
- Recognise that shapes with the same areas can have different perimeters and vice versa.
- Recognise when it is possible to use the formulae for area and volume of shapes.
- Calculate the area of parallelograms and triangles.
- Calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm^3) and cubic metres (m^3) and extending to other units (for example, mm^3 and km^3).
- Convert between miles and kilometres.
- Interpret and construct pie charts and line graphs and use these to solve problems.
Solve comparison, sum and difference problems using information presented in all types of graph

Summer 1

- Count forwards or backwards in steps of integers, decimals or powers of 10 for any number.
- Order and compare numbers including integers, decimals and negative numbers.
- Identify, represent and estimate numbers using the number line.
- Find 0.001, 0.01, 0.1, 1, 10 and powers of 10 more or less than a given number.
- Round decimals with three places to the nearest whole number or one or two decimal places.
- Use common factors to simplify fractions; use common multiples to express fractions in the same denomination.
- Compare and order fractions, including fractions >1 (including on a number line).
- Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions.
- Associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. $\frac{3}{8}$).
- Perform mental calculations, including with mixed operations and large numbers and decimals.
- Add and subtract whole numbers and decimals using formal written methods (columnar addition and subtraction).
- Choose an appropriate strategy to solve a calculation based upon the numbers involved (recall a known fact, calculate mentally, use a jotting, written method).
- Select a mental strategy appropriate for the numbers involved in the calculation.
- Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.
- Solve problems involving addition, subtraction, multiplication and division.
- Use their knowledge of the order of operations to carry out calculations involving the four operations.
- 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.
- 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.
Use estimation and inverse to check answers to calculations and determine, in the context of a problem, an

appropriate degree of accuracy.

- Multiply simple pairs of proper fractions, writing the answer in its simplest form (using diagram) (e.g. $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$).
- Divide proper fractions by whole numbers (using diagram) (e.g. $\frac{1}{3} \times 2 = \frac{2}{3}$).
- Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts.
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- Draw 2-D shapes using given dimensions and angles.
- Describe positions on the full coordinate grid (all four quadrants).
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- Use simple formulae.
- Generate and describe linear number sequences.
- Convert between miles and kilometres.
- Solve problems involving the calculation and conversion of units of measure (including money and time), 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.
- Calculate and interpret the mean as an average.
- Solve comparison, sum and difference problems using information presented in all types of graph.

Summer 2

- Solve problems involving the calculation and conversion of units of measure (including money and time), using decimal notation up to three decimal places where appropriate.
- Use, read, write and convert between standard units, converting measurements of mass and volume from a smaller unit of measure to a larger unit, and vice versa, using decimal notation up to three decimal places.
- Calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm^3) and cubic metres (m^3) and extending to other units (for example, mm^3 and km^3).
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- Count forwards or backwards in steps of integers, decimals or powers of 10 for any number.
- Order and compare numbers including integers, decimals and negative numbers.
- Calculate differences in temperature, including those that involve a positive and negative temperature.
- Find 0.001, 0.01, 0.1, 1, 10 and powers of 10 more or less than a given number.
- Round decimals with three places to the nearest whole number or one or two decimal places.
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alternating steps and those where the step size is a decimal.

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