

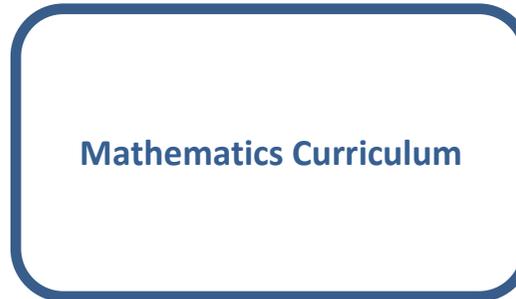
St Thomas of Canterbury Catholic Primary School



Where every child is special



Making $S=P+A+C+E$ for learning



Mathematics Curriculum

Number & Place Value

Addition and subtraction

Multiplication and division

Fractions

Measurement

Properties of Shapes

Position and direction

Year 6 only

Ratio and proportion

Algebra

Number & Place Value

Year 1

Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number.

Count, read and write numbers to 100 in numerals; count in multiples of 2s, 5s and 10s

Given a number, identify 1 more and 1 less

Identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least

Read and write numbers from 1 to 20 in numerals and words.

Year 2

Count in steps of 2, 3, and 5 from 0, and in 10s from any number, forward and backward

Recognise the place value of each digit in a two-digit number (10s, 1s)

Identify, represent and estimate numbers using different representations, including the number line

Compare and order numbers from 0 up to 100; use $<$, $>$ and $=$ signs

Read and write numbers to at least 100 in numerals and in words

Use place value and number facts to solve problems.

Year 3

Count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number

Recognise the place value of each digit in a 3-digit number (100s, 10s, 1s)

Compare and order numbers up to 1,000

Identify, represent and estimate numbers using different representations

Read and write numbers up to 1,000 in numerals and in words

Solve number problems and practical problems involving these ideas.

Number & Place Value

Year 4

Count in multiples of 6, 7, 9, 25 and 100

Find 1,000 more or less than a given number

Count backwards through 0 to include negative numbers

Recognise the place value of each digit in a four-digit number (1,000s, 100s, 10s and 1s)

Order and compare numbers beyond 1,000

Identify, represent and estimate numbers using different representations

Round any number to the nearest 10, 100 or 1,000

Solve number and practical problems that involve all of the above and with increasingly large positive numbers

Read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of 0 and place value.

Year 5

Read, write, order and compare numbers to at least 1,000,000 and determine the value of each digit

Count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000

Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through 0

Round any number up to 1,000,000 to the nearest 10, 100, 1,000, 10,000 and 100,000

Solve number problems and practical problems that involve all of the above

Read Roman numerals to 1,000 (M) and recognise years written in Roman numerals.

Year 6

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 0

Solve number and practical problems that involve all of the above

Addition and subtraction

Year 1

Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs.

Represent and use number bonds and related subtraction facts within 20.

Add and subtract one-digit and two-digit numbers to 20, including 0.

Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as: $7 = ? - 9$.

Year 2

Solve problems with addition and subtraction: (Using concrete objects and pictorial representations, including those 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: a two-digit number and 1s; a two-digit number and 10s

2 two-digit numbers

adding 3 one-digit numbers

Show that addition of 2 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.

Year 3

Add and subtract numbers mentally, including:

- i. a three-digit number and 1s
- ii. a three-digit number and 10s
- iii. a three-digit number and 100s

Add and subtract numbers with up to 3 digits, using formal written methods of columnar addition and subtraction

Estimate the answer to a calculation and use inverse operations to check answers

Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction.

Addition and subtraction

Year 4

Add and subtract numbers with up to 4 digits using the formal 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

Year 5

Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)

Add and subtract numbers mentally with increasingly large numbers

Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy

Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why

Year 6

Perform mental calculations, including with mixed operations and large numbers.

Use their knowledge of the order of operations to carry out calculations involving the 4 operations

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 estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.

Multiplication and division

Year 1

Solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.

Year 2

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 2 numbers can be done in any order (commutative) and division of 1 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.

Year 3

Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables

Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods

Solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects.

Multiplication and division

Year 4

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 3 numbers

Recognise and use factor pairs and commutativity in mental calculations

Multiply 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 1 digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects

Year 5

Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers.

Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers

Establish whether a number up to 100 is prime and recall prime numbers up to 19

Multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers

Multiply and divide numbers mentally drawing upon known facts

Divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context

Multiply and divide whole numbers and those involving decimals by 10, 100 and 1,000

Recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3)

Solve problems involving multiplication and division, including using their knowledge of factors and multiples, squares and cubes

Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign

Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates

Year 6

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

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 4 operations

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 estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.

Fractions

Year 1

Recognise, find and name a half as 1 of 2 equal parts of an object, shape or quantity

Recognise, find and name a quarter as 1 of 4 equal parts of an object, shape or quantity.

Year 2

Recognise, find, name and write fractions $\frac{1}{3}$, $\frac{1}{4}$, $\frac{2}{4}$ and $\frac{3}{4}$ of a length, shape, set of objects or quantity

Write simple fractions, for example $\frac{1}{2}$ of $6 = 3$ and recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$.

Year 3

Count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10

Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators

Recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators

Recognise and show, using diagrams, equivalent fractions with small denominators

Add and subtract fractions with the same denominator within one whole

Compare and order unit fractions, and fractions with the same denominators

Solve problems that involve all of the above

Fractions

Year 4

Recognise and show, using diagrams, families of common equivalent fraction

Count up and down in hundredths; recognise that hundredths arise when dividing an object by a 100 and dividing tenths by 10.

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 $\frac{1}{4}$; $\frac{1}{2}$; $\frac{3}{4}$

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 ones, tenths and hundredths

Round decimals with 1 decimal place to the nearest whole number

Year 5

Compare and order fractions whose denominators are all multiples of the same number

Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths

Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number

Add and subtract fractions with the same denominator and denominators that are multiples of the same number

Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams

Read and write decimal numbers as fractions

Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents

Round decimals with 2 decimal places to the nearest whole number and to 1 decimal place

Read, write, order and compare numbers with up to 3 decimal places

Solve problems involving number up to 3 decimal places

Recognise the per cent symbol (%) and understand that per cent relates to "number of parts per 100", and write percentages as a fraction with denominator 100, and as a decimal fraction

Solve problems which require knowing percentage and decimal equivalents of $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{2}{5}$, $\frac{4}{5}$ and fractions with a denominator of a multiple of 10 or 25

Year 6

Use common factors to simplify fractions; use common multiples to express fractions in the same denomination

Compare and order fractions, including fractions > 1

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

Divide proper fractions by whole numbers

Associate a fraction with division and calculate decimal fraction equivalents for a simple fraction.

Identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1,000 giving answers up to three decimal places

Multiply one-digit numbers with up to 2 decimal places by whole numbers

Use written division methods in cases where the answer has up to 2 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.

Measurement

Year 1

Compare, describe and solve practical problems for: lengths and heights [e.g. long/short, longer /shorter, tall/short, double/half]
mass / weight
capacity and volume
time

Measure and begin to record the following:
lengths and heights
mass/weight
capacity and volume
time (hours, minutes, seconds)

Recognise and know the value of different denominations of coins and notes

Sequence events in chronological order using language.

Recognise and use language relating to dates, including days of the week, weeks, months and years

Tell the time to the hour and half past the hour and draw the hands on a clock face to show these times

Year 2

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 the 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 hours in a day

Year 3

Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)

Measure the perimeter of simple 2-D shapes

Add and subtract amounts of money to give change, using both £ and p in practical contexts

Tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks

Estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours; use vocabulary such as o'clock, am/pm, morning, afternoon, noon and midnight

Know the number of seconds in a minute and the number of days in each month, year and leap year

Compare durations of events

Measurement

Year 4

Convert between different units of measure

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, minutes to seconds, years to months, weeks to days

Year 5

Convert between different units of metric measure

Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints

Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres

Calculate and compare the area of rectangles (including squares) including using standard units, square centimetres (cm^2) and square metres (m^2) and estimate the area of irregular shapes

Estimate volume and capacity

Solve problems involving converting between units of time

Use all four operations to solve problems involving measure using decimal notation including scaling

Year 6

Solve problems involving the calculation and conversion of units of measure, using decimal notation up to 2 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 up to 3 decimal places

Convert between miles and kilometres

Recognize that shapes with the same areas can have different perimeters and vice versa

Recognize when it is possible to use 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

Properties of Shapes

Year 1

Recognise and name common 2-D and 3-D shapes, including:

- i. Rectangles (including squares) triangles and circles.
- ii. Cuboids (including cubes), pyramids and spheres

Year 2

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 e.g. the circle on a cylinder or the triangle on a pyramid

Compare and sort common 2-D and 3-D shapes and everyday objects.

Year 3

Draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them

Recognise angles as a property of shape or a description of a turn

Identify right angles, recognise that 2 right angles make a half-turn, 3 make three quarters of a turn and 4 a complete turn; identify whether angles are greater than or less than a right angle

Identify horizontal and vertical lines and pairs of perpendicular and parallel lines

Properties of Shapes

Year 4

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 2 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

Year 5

Identify 3-D shapes, including cubes and other cuboids, from 2-D representations

Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles

Draw given angles, and measure them in degrees ($^{\circ}$)

Identify:

- angles at a point and 1 whole turn (total 360°)
- angles at a point on a straight line and half a turn (total 180°)
- other multiples of 90°

Use the properties of rectangles to deduce related facts and find missing lengths and angles

Distinguish between regular and irregular polygons based on reasoning about equal sides and angles

Year 6

Draw 2-D shapes using given dimensions and angles

Recognize, 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 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

Position and direction

Year 1

Describe position, directions and movements, including whole, half, quarter and three-quarter turns.

Year 2

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 distinguishing between rotation as a turn and in terms of right angles for quarter, half and three-quarter turns (clockwise and anti-clockwise).

Year 3

Position and direction

Year 4

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

Year 5

Identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed

Year 6

Describe positions on the full coordinate grid (all 4 quadrants)

Draw and translate simple shapes on the coordinate plane, and reflect them in the axes

Statistics

Year 1

Year 2

Year 3

Interpret and construct simple pictograms, tally charts, block diagrams and 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 totalling and comparing categorical data.

Interpret and present data using bar charts, pictograms and tables

Solve one-step and two-step questions using information presented in scaled bar charts and pictograms and tables

Statistics

Year 4

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

Year 5

Solve comparison, sum and difference problems using information presented in a line graph

Complete, read and interpret information in tables, including timetables

Year 6

Interpret and construct pie charts and line graphs and use these to solve problems

Calculate and interpret the mean as an average.

Ratio & Proportion

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 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

Year 6 only

Algebra

Use simple formulae

Generate and describe linear number sequences

Express missing number problems algebraically

Find pairs of numbers that satisfy an equation with two unknowns

Enumerate possibilities of combinations of 2 variables