

Mathematics Subject Skeleton Overview



"It's not that I'm so smart, I just stay with problems longer." Albert Einstein

Essential Knowledge

Mathematics Overview						
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Christian Values	FORGIVENESS		PERSEVERANCE		RESPECT	
	FRIENDSHIP	TRUTHFULNESS	WISDOM	COMPASSION	JUSTICE	RESPONSIBILITY
EYFS	<u>Number and Place Value</u> <u>Numbers to 5</u> - Subitising - Comparing groups within 5 - Comparing quantities of identical objects/ non-identical objects <u>Addition and Subtraction</u> - Change within 5 - One more/one less <u>Number and Place Value</u> - Numbers 4,5,6,7,8 - Subitising and early doubling <u>Time</u> - First/Then/Now <u>Spatial Thinking and Shape</u> 2D/3D shape - Creating patterns		<u>Number and Place Value</u> <u>Numbers 6,7,8</u> - Making Pairs - Combining different groups <u>Numbers 9,10</u> - Building 9 and 10 - Early Doubling - Subitising <u>Shape</u> 2D/3D <u>Numbers 7,8,9,10</u> - Halving - Doubling - Sharing - Subitising		<u>To 20 and Beyond</u> - Building numbers beyond 10 10-15 - Counting patterns beyond 10 <u>Patterns</u> - Making more complex patterns - Find my pattern <u>Numbers</u> 15,16,17,18,19,20 - Halving, doubling, sharing - Subitising <u>Measure</u> - Length - Weight - Capacity	
Y1	<u>Number- Place Value (Within 10)</u> I can count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number		<u>Number- Addition and Subtraction (Within 20)</u> I can read, write and interpret mathematical statements involving addition (+), subtraction (−) and equals (=) signs		<u>Number- Multiplication and Division</u> I can solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial	

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Mathematics at Holy Trinity CE Primary School

- I can count, read and write numbers to 100 in numerals - I can count in multiples of twos, fives and tens - I can identify one more and one less <u>Number- Addition and Subtraction (Within 10)</u> - I can read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs - I can represent and use number bonds and related subtraction facts within 20 <u>Geometry- Shape</u> - I can recognise and name common 2-D and 3-D shapes <u>Number- Place Value (Within 20)</u> - I can count in multiples of twos, fives and tens - I can read and write numbers from 1 to 20 in numerals and words.	<u>Number- Place Value (Within 50)</u> - I can count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number - I can count, read and write numbers to 100 in numerals - I can count in multiples of twos, fives and tens - I can identify one more and one less - I can identify and represent numbers using objects and pictorial representations - I can read and write numbers from 1 to 10 in numerals and words. <u>Measurement- Length and Height</u> - I can compare, describe and solve practical problems for: lengths and heights <u>Measurement- Weight and Volume</u> - I can compare, describe and solve practical problems for: mass/weight	representations and arrays with the support of the teacher. <u>Number- Fractions</u> - I can recognise, find and name a half as one of two equal parts of an object, shape or quantity - I can recognise, find and name a quarter as one of four equal parts of an object, shape or quantity. <u>Geometry- Position and Direction</u> - I can describe position, direction and movement, including whole, half, quarter and three-quarter turns. <u>Number- Place Value (Within 100)</u> - I can count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number - I can count, read and write numbers to 100 in numerals - I can count in multiples of twos, fives and tens - I can identify one more and one less - I can identify and represent numbers using objects and pictorial representations - I can read and write numbers from 1 to 10 in numerals and words. <u>Measurement- Money</u> - I can recognise and know the value of different denominations of coins and notes <u>Measurement- Time</u> - I can sequence events in chronological order
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			- I can recognise and use language relating to dates, including days of the week, weeks, months and years - I can tell the time to the hour and half past the hour and draw the hands on a clock face to show these times
Y2	<u>Number- Place Value</u> - I can count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward - I can recognise the place value of each digit in a two-digit number (tens, ones) - I can compare and order numbers from 0 up to 100; use <, > and = signs <u>Number- Addition and Subtraction</u> - I can recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100 - I can add and subtract numbers using concrete objects, pictorial representations, and mentally, including: - 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 <u>Measurement- Money</u> - I can recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value <u>Number- Multiplication and Division</u>	<u>Number- Multiplication and Division</u> - I can calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signs - I can solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts. <u>Statistics</u> - I can interpret and construct simple pictograms, tally charts, block diagrams and simple tables <u>Geometry- Properties of Shape</u> - I can identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line - I can identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces <u>Number- Fractions</u> - I can recognise, find, name and write fractions: $\frac{1}{3}$, $\frac{1}{4}$ and $\frac{2}{4}$ and $\frac{3}{4}$ of a length, shape, set of objects or quantity - I can write simple fractions for example, $\frac{1}{2}$ of 6 = 3 and recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$ <u>Measurement- Length and Height</u>	<u>Geometry- Position and Direction</u> - I can 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 anticlockwise). <u>Problem Solving</u> - I can solve problems with addition and subtraction - I can solve problems including multiplication and division - I can use place value and number facts to solve problems <u>Measurement- Time</u> - I can 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 - I know the number of minutes in an hour and the number of hours in a day. <u>Measurement- Mass, Capacity and Temperature</u> - I can choose and use appropriate standard units to estimate and measure mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using scales, thermometers and measuring vessels - I can compare and order lengths, mass, volume/capacity and record the results using >, < and =

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	- I can recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers - I can calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication ($\times$), division ($\div$) and equals (=) signs - I can show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot	- I can choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm) to the nearest appropriate unit, using rulers, - I can compare and order lengths using $>$, $<$ and $=$	
Y3	<u>Number- Place Value</u> - I can count from 0 in multiples of 4, 8, 50 and 100 - I can find 10 or 100 more or less than a given number - I can recognise the place value of each digit in a three-digit number (hundreds, tens, ones) - I can compare and order numbers up to 1000 <u>Number- Addition and Subtraction</u> - I can add and subtract numbers mentally, including: - a three-digit number and ones - a three-digit number and tens - a three-digit number and hundreds - I can add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction <u>Number- Multiplication and Division</u> - I can recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables - I can write and calculate mathematical statements for multiplication and division using the multiplication tables that I know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods	<u>Number- Multiplication and Division</u> - I can 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. <u>Measurement- Money</u> - I can add and subtract amounts of money to give change, using both $\pounds$ and p in practical contexts <u>Statistics</u> - I can interpret and present data using bar charts, pictograms and tables - I can solve one-step and two-step questions [for example, 'How many more?' and 'How many fewer?' using information presented in scaled bar charts and pictograms and tables. <u>Measurement- Length and Perimeter</u> - I can measure, compare, add and subtract: - lengths (m/cm/mm) - mass (kg/g) - volume/capacity (l/ml) - I can measure the perimeter of simple 2-D shapes <u>Number- Fractions</u>	<u>Number- Fractions</u> - I can recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators - I can recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators - I can recognise and show, using diagrams, equivalent fractions with small denominators <u>Measurement- Time</u> - I can tell and write the time from: - an analogue clock, - including using Roman numerals from I to XII 12-hour and 24-hour clocks - I know the number of seconds in a minute and the number of days in each month, year and leap year <u>Geometry- Properties of Shape</u> - I can draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them - I can recognise angles as a property of shape or a description of a turn - I can identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn;

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Mathematics at Holy Trinity CE Primary School

		- I can 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 - I can add and subtract fractions with the same denominator within one whole - I can compare and order unit fractions, and fractions with the same denominators	identify whether angles are greater than or less than a right angle - I can identify horizontal and vertical lines and pairs of perpendicular and parallel lines. <u>Measurement- Mass and Capacity</u> - I can measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)
Y4	<u>Number- Place Value</u> - I can count in multiples of 6, 7, 9, 25 and 1000 - I can find 1000 more or less than a given number - I can count backwards through zero to include negative numbers - I can recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones) - I can order and compare numbers beyond 1000 - I can round any number to the nearest 10, 100 or 1000 <u>Number- Addition and Subtraction</u> - I can add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate <u>Measurement- Length and Perimeter</u> - I can convert between different units of measure for example, kilometre to metre - I can measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres <u>Number- Multiplication and Division</u> - I can recall multiplication and division facts for multiplication tables up to 12×12 - I can multiply two-digit and three-digit numbers by a one-digit number using formal written layout	<u>Number- Multiplication and Division</u> - I can 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 - I can 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. <u>Measurement- Area</u> - I can find the area of rectilinear shapes by counting squares <u>Number- Fractions</u> - I can recognise and show, using diagrams, families of common equivalent fractions - I can count up and down in hundredths - I can add and subtract fractions with the same denominator <u>Decimals</u> - I can recognise and write decimal equivalents of any number of tenths or hundredths - I can recognise and write decimal equivalents to $\frac{1}{4}$, $\frac{1}{2}$ and $\frac{3}{4}$ - I can 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	<u>Decimals</u> - I can round decimals with one decimal place to the nearest whole number - I can compare numbers with the same number of decimal places up to two decimal places - I can solve simple measure and money problems involving fractions and decimals to two decimal places. <u>Measurement- Money</u> - I can estimate, compare and calculate different measures, including money in pounds and pence <u>Measurement- Time</u> - I can read, write and convert time between analogue and digital 12- and 24-hour clocks <u>Statistics</u> - I can interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs. - I can solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs. <u>Geometry-Properties of Shape</u> - I can compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes

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		I can round decimals with one decimal place to the nearest whole number	- I can identify acute and obtuse angles and compare and order angles up to two right angles by size - I can identify lines of symmetry in 2-D shapes presented in different orientations <u>Geometry-Position and Direction</u> - I can describe positions on a 2-D grid as coordinates in the first quadrant - I can describe movements between positions as translations of a given unit to the left/right and up/down - I can plot specified points and draw sides to complete a given polygon.
Y5	<u>Number- Place Value</u> - I can read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit - I can interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero - I can round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000 - I can read Roman numerals to 1000 (M) and recognise years written in Roman numerals. <u>Number- Addition and Subtraction</u> - I can add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction) - I can use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy <u>Statistics</u> - I can solve comparison, sum and difference problems using information presented in a line graph	<u>Number- Multiplication and Division</u> - I can recognise and use square numbers and cube numbers, and the notation for squared - I can solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes - I can solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign <u>Fractions</u> - I can compare and order fractions whose denominators are all multiples of the same number - I can identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths - I can recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number - I can add and subtract fractions with the same denominator and denominators that are multiples of the same number	<u>Number- Multiplication and Division</u> - I can 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 - I can multiply and divide whole numbers and those involving decimals by 10, 100 and 1000 - I can recognise and use square numbers and cube numbers, and the notation for squared - I can solve problems involving multiplication and division including using knowledge of factors and multiples, squares and cubes - I can solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign <u>Fractions</u> - I can compare and order fractions whose denominators are all multiples of the same number - I can identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths

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- I can complete, read and interpret information in tables, including timetables.

Number- Multiplication and Division

- I can identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers
- I know and use the vocabulary of prime numbers, prime factors and composite (nonprime) numbers
- I can establish whether a number up to 100 is prime and recall prime numbers up to 19
- I can 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
- I can multiply and divide numbers mentally drawing upon known facts

- I can multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams

Decimals and Percentages

- I can read and write decimal numbers as fractions
- I can recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents
- I can round decimals with two decimal places to the nearest whole number and to one decimal place
- I can read, write, order and compare numbers with up to three decimal places
- I can 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
- I can 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 those fractions with a denominator of a multiple of 10 or 25

- I can recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number
- I can add and subtract fractions with the same denominator and denominators that are multiples of the same number
- I can multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams

Decimals and Percentages

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Number- Decimals

- I can read and write decimal numbers as fractions
- I can recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents
- I can round decimals with two decimal places to the nearest whole number and to one decimal place
- I can read, write, order and compare numbers with up to three decimal places

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- I can solve problems involving number up to three decimal places
- I can 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 those fractions with a denominator of a multiple of 10 or 25

Geometry- Properties of Shape

- I can identify 3-D shapes, including cubes and other cuboids, from 2-D representations
- I know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles
- I can draw given angles, and measure them in degrees
- I can identify:
 - angles at a point and one whole turn (total 360°)
 - angles at a point on a straight line and 2
 - 1 a turn (total 180°)
 - other multiples of 90°
- I can use the properties of rectangles to deduce related facts and find missing lengths and angles
- I can distinguish between regular and irregular polygons based on reasoning about equal sides and angles.

Geometry- Position and direction

- I can 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.

Measurement- Converting units and volume

- I can convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre)
- I understand and can use approximate equivalences between metric units and common imperial units such as inches, pounds and pints

			- I can measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres - I can calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm²) and square metres (m²) and estimate the area of irregular shapes - I can estimate volume [for example, using 1 cm³ blocks to build cuboids (including cubes) and capacity [for example, using water] - I can solve problems involving converting between units of time - I can use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling.
Y6	<u>Number and Place value</u> - I can read, write, order and compare numbers up to 10,000,000 and determine the value of each digit - I can round any whole number to a required degree of accuracy - I can use negative numbers in context, and calculate intervals across 0 <u>Number: Addition, Subtraction, Multiplication and Division</u> - I can multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication - I can divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division - I can 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	<u>Decimals and Percentages</u> - I can associate a fraction with division and calculate decimal fraction equivalents - I can identify the value of each digit in numbers given to 3 decimal places and multiply and divide numbers by 10, 100 and 1,000 giving answers up to 3 decimal places - I can multiply one-digit numbers with up to 2 decimal places by whole numbers - I can use written division methods in cases where the answer has up to 2 decimal places <u>Algebra</u> - I can use simple formulae - I can generate and describe linear number sequences - I can express missing number problems algebraically - I can find pairs of numbers that satisfy an equation with 2 unknowns - I can enumerate possibilities of combinations of 2 variables	<u>Geometry- Properties of Shape</u> - I can draw 2-D shapes using given dimensions and angles - I can recognise, describe and build simple 3-D shapes, including making nets - I can compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons - I can illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius - I can recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles <u>Problem Solving</u> - solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why

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Mathematics at Holy Trinity CE Primary School

- I can perform mental calculations, including with mixed operations and large numbers
- I can identify common factors, common multiples and prime numbers

Geometry - Properties of Shapes

- I can illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius

Fractions

- I can use common factors to simplify fractions
- I can use common multiples to express fractions in the same denomination
- I can compare and order fractions, including fractions >1
- I can add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions
- I can multiply simple pairs of proper fractions, writing the answer in its simplest form
- I can divide proper fractions by whole numbers
- I can associate a fraction with division and calculate decimal fraction equivalents

Geometry - Position and Direction

- I can describe positions on the full coordinate grid (all 4 quadrants)
- I can draw and translate simple shapes on the coordinate plane, and reflect them in the axes

Measurement- Converting Units

- I can solve problems involving the calculation and conversion of units of measure, using decimal notation up to 3 decimal places where appropriate
- I can 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
- I can convert between miles and kilometres

Measurement- Perimeter, Area and Volume

- I can recognise that shapes with the same areas can have different perimeters and vice versa
- I can recognise when it is possible to use formulae for area and volume of shapes
- I can calculate the area of parallelograms and triangles
- I can calculate, estimate and compare volume of cubes and cuboids using standard units

Ratio and Proportion

- I can solve problems involving the relative sizes of 2 quantities where missing values can be found by using integer multiplication and division facts
- I can solve problems involving the calculation of percentages [for example, of measures and such as 15% of 360] and the use of percentages for comparison
- I can solve problems involving similar shapes where the scale factor is known or can be found
- I can solve problems involving unequal sharing and grouping using knowledge of fractions and multiples

- 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
- 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

Statistics

- I can interpret and construct pie charts and line graphs and use these to solve problems
- I can calculate and interpret the mean as an average