Holy Trinity Catholic Primary School

What have you done today to make you feel proud?

Maths Progression of Skills Year 1

Number: Number and place value

- 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 twos, fives and tens
- Given a number, identify one more and one 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

Number: Addition and Subtraction

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

Number: Multiplication and Division

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

Number: Fractions

- Recognise, find and name a half as one of two equal parts of an object, shape or quantity
- Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity

Measurement

- Compare, describe and solve practical problems for:

lengths and heights (e.g. long/short, longer/shorter, tall/short, double/half)
- mass or weight (e.g. heavy/light, heavier than, lighter than)
- capacity/volume (full/empty, more than, less than, half, half full, quarter)
- time (quicker, slower, earlier, later) ⎫ 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 such as: before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening
- 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

Geometry: Properties of shapes

- Recognise and name common 2-D and 3-D shapes, including:
  - 2-D shapes (e.g. rectangles (including squares), circles and triangles)
  - 3-D shapes (e.g. cuboids (including cubes), pyramids and spheres)

Geometry: Position and direction

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

Maths Progression of Skills Year 2

Number: Number and place value

- Count in steps of 2,3 and 5 from 0, and in tens from any number, forward and backward
- Recognise the place value of each digit in two-digit numbers (tens and ones)
- 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

Number: Addition and Subtraction

- 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 method
- 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 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

Number: Multiplication and Division

- 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 (x), division (÷) 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 one-step problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.

Number: Fractions

- 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 e.g. 1/2 of 6 = 3 and recognise the equivalence of two quarters and one half

Measurement

- 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 to 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

Geometry: Properties of shapes

- Identify and describe the properties of 2-D shapes, including the number of sides and symmetry in a vertical line
- Identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces
- To 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 Geometry: Position and direction
- 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)

Statistics

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

Maths Progression of Skills Year 3

Number: Number and place value

- Count from 0 in multiples of 4, 8, 50 and 100; finding 10 or100 more or less than a given number
- Recognise the place value of each digit in a three-digit number (hundreds, tens, ones)
- Compare and order numbers up to 1000
- Identify, represent and estimate numbers using different representations
- Read and write numbers to at least 1000 in numerals and in words
- Solve number problems and practical problems involving these ideas

Measurement

- 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, hours and o'clock; use vocabulary such as a.m./p.m., 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, for example to calculate the time taken by particular events or tasks.

Number: Addition and Subtraction

- Add and subtract numbers mentally, including:
  - a three-digit number and ones
  - a three-digit number and tens
  - a three-digit number and hundreds
- Add and subtract numbers with up to three digits, using the efficient written methods of columnar addition and subtraction
- Estimate the answer to a calculation and use inverse operations to check answer
- Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction

Number: Multiplication and Division

- 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 efficient written methods
- Solve problems, including missing number problems, involving multiplication and division, including integer scaling problems and correspondence problems in which n objects are connected to m objects

Geometry: Properties of shapes

- 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 two right angles make a half turn, three make three quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle
- Identify horizontal, vertical, perpendicular and parallel lines

Number: Fractions

- 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 (e.g. 5/7 + 1/7 = 6/7)
- Compare and order unit fractions with the same denominator
- Solve problems involving all of the above

Statistics

- Interpret and present data using bar charts, pictograms and tables
- Solve one-step and two-step questions such as 'How many more?' and 'How many fewer?' using information presented in scaled bar charts and pictograms and tables

Maths Progression of Skills Year 4

Number: Number and place value

- Count in multiples of 6, 7, 9, 25 and 1000
- Find 1000 more or less than a given number
- Count backwards through zero to include negative numbers
- Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones)
- Order and compare numbers beyond 1000
- Identify, represent and estimate numbers using different representations
- Round any number to the nearest 10, 100 or 1000
- 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 understand how, over time, the numeral system changed to include the concept of zero and place value.

Measurement

- 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
- 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.

Number: Addition and Subtraction

- 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

Number: Multiplication and Division

- 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 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 multiplication problems such as which n objects are connected to m objects

Geometry: Properties of shapes

- To compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes
- To identify acute and obtuse angles and compare and order angles up to two right angles by size
- To identify lines of symmetry in 2-D shapes presented in different orientations
- To complete a simple symmetric figure with respect to a specific line of symmetry

Geometry: Position, direction, motion

- To describe positions on a 2-D grid as coordinates in the first quadrant
- To describe movements between positions as translations of a given unit to the left/right and up/down
- To plot specified points and draw sides to complete a given polygon

Number: Fractions (including decimals)

- 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; ¾
- 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
- Solve simple measure and money problems involving fractions and decimals to two decimal places

Statistics

- To interpret and present discrete data using bar charts and continuous data using line graphs
- To solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and simple line graphs.

Maths Progression of Skills Year 5

Number: Number and place value

- 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 through zero
- Round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000
- Solve number problems and practical problems that involve all of the above
- Read Roman numerals to 1000 (M) and recognise years written in Roman numerals

Measurement

- Convert between different units of measure (e.g. kilometre and metre; metre and centimetre; centimetre and millimetre; kilogram and gram; litre and millilitre)
- Understand and use approximate equivalences between metric 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 squares and rectangles (including squares), and including using standard units, square centimetres (cm2) and square metres (m2) and estimate the area of irregular shapes
- Estimate volume (e.g. using 1 cm3 blocks to build cubes and cuboids) and capacity (e.g. using water)
- Solve problems involving converting between units of time
- To solve problems involving addition and subtraction of units of measure (e.g. length, mass, volume, money) using decimal notation.
- Use all 4 operations to solve problems involving measure (e.g. Length, mass, volume, money) using decimal notation including scaling

Number: Addition and Subtraction

- Add and subtract whole numbers with more than 4 digits, including using efficient written methods (columnar addition and subtraction)
- Add/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
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Number: Multiplication and Division

- 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 efficient 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 1000
- 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
- To solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign
- To solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates

Geometry: Properties of shapes

- Identify 3-D shapes, including cubes and 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 (o)
- To Identify:
  - multiples of 90o
  - angles at a point and one whole turn (total 360o)
  - angles at a point on a straight line and 1/2 a turn (total 180o)
  - other multiples of 90o
- 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

Geometry: Position, direction, motion

- 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.

Number: Fractions (including decimals)

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

Statistics

- Solve comparison, sum and difference problems using information presented in a line graph
- Complete, read and interpret information in tables, including timetables

❖ Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths ❖ Add and subtract fractions with the same denominator and denominators that are multiples of the same number ❖ Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements >1 as a mixed number (e.g. 2/5 + 4/5 = 6/5 = 1 1/5) ❖ Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams ❖ Read and write decimal numbers as fractions (e.g. 0.71 = 71/100) ❖ Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents ❖ Round decimals with two decimal places to the nearest whole number and to one decimal place ❖ Read, write, order and compare numbers with up to three decimal places ❖ Solve problems involving number up to three decimal places ❖ 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 hundred, and as a decimal fraction ❖ Solve problems which require knowing percentage and decimal equivalents of 1/2, 1/4, 1/5, 2/5, 4/5 and those with a denominator of a multiple of 10 or 25	

Maths Progression of Skills Year 6

Number: Number and place value

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

Algebra

- Use simple formulae
- Generate and describe linear number sequences
- Express missing number problems algebraically
- Find pairs of numbers that satisfy number sentences involving two unknowns
- Enumerate possibilities of combinations of two variables

Number: Addition, Subtraction, Multiplication and Division

- 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 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 four 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, levels of accuracy.

Measurement

- 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
- Recognise when it is necessary 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 centimetre cubed (cm3) and cubic metres (m3) and extending to other units, such as mm3 and km3

Number: Fractions (including decimals and percentages)

- 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 (e.g. $1/4 \times 1/2 = 1/8$)
- Divide proper fractions by whole numbers (e.g. $1/3 \div 2 = 1/6$)
- Associate a fraction with division to calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. 3/8)
- 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
- 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

Geometry: Properties of shapes

- Draw 2D shapes using given dimensions and angles
- Recognise, describe and build simple 3-D shapes, including making net
- 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, and are vertically opposite.

Geometry: Position, direction, motion

- 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

Ratio and Proportion	Statistics
❖ 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 ❖ To solve problems involving similar shapes where the scale factor is known or can be found ❖ Solve problems involving unequal sharing and grouping using the knowledge of fractions and multiples	❖ Interpret and construct pie charts and line graphs and use these to solve problem ❖ Calculate and interpret the mean as an average