



St Paul's Mathematics Progression Statements

Mathematics Intent Statement

At St Paul's CE Primary school we will "Start children off on the way they should go..." by enabling children to:

- become fluent in the fundamentals of Mathematics so that they develop conceptual understanding and the ability to recall and apply their knowledge
- reason, by following an enquiry to justification or proof, using mathematical language
- solve problems by applying mathematical knowledge to break them down into simpler steps and persevere to seek solutions.

Maths: Place Value

EYFS:

Have a deep understanding of number to 10, including the composition of each number.

Subitise (recognise quantities without counting) up to 5.

Compare quantities up to 10 different in different contexts, recognising when one quantity is greater than, less than, or the same as the other quantity.

Year 1:

Use number lines, objects and pictures to identify and represent numbers.

Count, read and write numbers to 100 in numerals.

Say what is one more or one less than a number up to 100.

Count to 100 and above, forwards and backwards, starting at any number.

Year 4:

Understand the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones).

Order and compare numbers beyond 1000.

Count backwards through zero to include negative numbers.

Round any number to the nearest 10.

Round any number to the nearest 100.

Round any number to the nearest 1000.

Compare numbers with the same number of decimal places up to two decimal places.

Round decimals with one decimal place to the nearest whole number.

Year 3:

Read and write numbers up to 1000 in numerals and in words.

Understand the place value of each digit in a three-digit number (hundreds, tens, ones).

Compare and order numbers up to 1000.

Find 10 or 100 more or less than a given number.

Year 2:

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

Count in 10's from any number, forwards and backwards.

Recognise the place value of each digit in a two-digit number (tens, ones).

Compare and order numbers from 0 up to 100, using the $<$, $>$ and $=$ signs.

Use place value and number facts to solve problems.

Year 5:

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

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

Count forwards and backwards with positive and negative whole numbers, including through zero.

Round any number up to 1,000,000 to the nearest 10, 100, 1000, 10,000 and 100,000.

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

Round decimals with two decimal places to the nearest whole number and to one decimal place.

Year 6:

Read, write, order and compare numbers up to 10 000 000 and determine the value of each digit.

Use negative numbers in context and calculate intervals across zero eg. find the difference between -25 and 15.

State the value of each digit in numbers given to three decimal places.

Multiply and divide numbers by 10, 100 and 1000 giving answers up to 3 decimal places.

Solve problems which require answers to be rounded to specified degrees of accuracy – whole numbers or decimals.

Year 7 (from main feeder school):

Understand the meaning of equality.

Understand and use fact families, numerically and algebraically.

Understand the meaning of like and unlike terms.

Understand the meaning of equivalence.

Extend their understanding of the number system; make connections between number relationships.

Consolidate their understanding of the number system and place value to include decimals and fractions

Describe and continue a sequence given diagrammatically.

Predict and check the next term(s) of a sequence.

Recognise the difference between linear and nonlinear sequences.

Continue numerical linear sequences.

Continue numerical non-linear sequences.

Explain the term-to-term rule of numerical sequences in words.

Find missing numbers within sequences.

Maths: Addition and Subtraction

EYFS:

Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.

Verbally count beyond 20, recognising the pattern of the counting system.

Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity.

Explore and represent patterns within numbers up to 10, including eves and odds, double facts and how quantities can be distributed equally.

Year 1:

Say a number one more or one less than a given number.

Read, write and solve numbers sentences using + - and =.

Add and subtract one-digit and two-digit numbers to 20.

Use addition and subtraction bonds up to 20.

Solve one-step problems that involve addition and subtraction, using objects and pictures if needed.

Solve missing number problems, using objects and pictures if needed.

Year 4:

Add numbers with up to 4 digits using the formal written method of columnar addition where appropriate.

Subtract numbers with up to 4 digits using the formal written method of columnar subtraction, including borrowing.

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

Solve addition and subtraction two-step problems in context, deciding which operations and methods to use and why eg. Written or mental methods with jottings.

Year 3:

Add or subtract mentally a three-digit number and ones, crossing the tens boundary.

Add or subtract mentally a three-digit number and tens, crossing the hundred boundary.

Add or subtract mentally a three-digit number and hundreds.

Add numbers with up to three digits using column addition.

Subtract numbers with up to three digits using column subtraction, including exchanging.

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

Year 2:

Recall and use addition and subtraction facts to 20 fluently, and use this for facts up to 100 eg. $7+2=9$ so $70+20=90$.

Mentally add three single digit numbers.

Mentally add or subtract a two-digit number and a single digit number.

Mentally add or subtract a two digit number and tens eg. $23+30$, $55-20$.

Mentally add or subtract two two-digit numbers.

I understand and can show that addition can be done in any order but subtraction cannot (commutative law).

Year 5:

Use the column method to add numbers with at least 4 digits.

Use the column method to subtract numbers with at least 4 digits, including double exchanging.

Add and subtract numbers mentally with increasingly large numbers.

Use rounding to check answers to calculations.

Solve addition and subtraction multi step problems in context (eg. money).

Year 6:

Use effective strategies for mental addition and subtraction calculations.

Use the column method to add whole numbers and numbers with up to three decimal places.

Use the column method to subtract whole numbers and numbers with up to three decimal places.

Use estimation to check answers to calculations.

Solve addition and subtraction multi step problems in a range of contexts.

Year 7 (from main feeder school):

Understand the properties of addition and subtraction.

Use mental strategies for addition and subtraction.

Use formal methods for addition of integers.

Use formal methods for addition of decimals.

Use formal methods for subtraction of integers.

Use formal methods for subtraction of decimals.

Choose the most appropriate method: mental strategies, formal written or calculator.

Solve one-step linear equations involving +/- using inverse operations.

Use formal written methods, applied to positive integers and decimals.

Recognise and use relationships between operations including inverse operations.

Maths: Multiplication

EYFS:

Recall and use songs, rhymes, games and activities.

Use the following language: groups of and lots of.

Year 1:

Show an understanding of multiplication by grouping objects.

Count in twos.

Count in fives.

Count in tens.

Double numbers and quantities up to 10.

Double numbers and quantities up to 20.

Solve one-step problems involving \times , using objects and pictures to help me.

Year 4:

Recall and use multiplication facts for the 6 and 12 times tables.

Recall and use multiplication facts for the 7 and 9 times tables.

Recall and use multiplication facts up to 12×12 .

Use place value and known facts to multiply mentally, including: multiplying together three numbers or using multiples of 10 and 100 eg. $6 \times 4 = 24$ so $600 \times 4 = 2400$

understand the distributive law ie. use partitioning (eg. The grid method) to solve calculations.

Multiply two-digit numbers by a one-digit number using short multiplication.

Multiply three-digit numbers by a one-digit number using short multiplication.

Year 3:

Recall and use multiplication facts for the 3 times table.

Recall and use multiplication facts for the 4 and 8 times tables.

Derive new facts using known multiplication tables eg. $3 \times 2 = 6$, $30 \times 2 = 60$.

Calculate two digit numbers multiplied by a one-digit number using mental methods and jottings.

Solve missing number problems involving multiplication.

Year 2:

Recall and use multiplication facts for the 10 times table.

Recall and use multiplication facts for the 2 times table. recognise odd and even numbers.

Recall and use multiplication facts for the 5 times table.

I know that multiplication of two numbers can be done in any order (commutative law)

write multiplication statements using the symbols \times and $=$.

Solve problems involving multiplication. I might use equipment, arrays, repeated

addition, mental methods or known multiplication facts to help me.

Year 5:

Multiply whole numbers and those involving decimals by 10, 100 and 1000.

Multiply numbers with up to 4 digits by a one-digit number using short multiplication.

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

identify multiples and common multiples of pairs of numbers.

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

Multiply numbers with up to 4 digits by a two-digit number using long multiplication.

Year 6:

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

Identify common factors, common multiples and prime numbers.

Multiply multi-digit numbers by a 2 digit whole number using the formal written method of long multiplication.

Solve problems involving addition, subtraction, multiplication and division.

Use my knowledge of the order of operations to carry out calculations involving all four operations.

Year 7 (from main feeder school):

Understand the properties of multiplication and division.

Understand and use factors.

Understand and use multiples.

Multiply integers and decimals by powers of 10.

Multiply by 0.1 and 0.01.

Use formal methods to multiply integers.

Use formal methods to multiply decimals.

Understand and use the order of operations

Solve one-step linear equations involving \times/\div using inverse operations

Maths: Division

EYFS:

Recall and use songs, rhymes, games and activities.
Use the following language: share and half.

Year 1:

Count in twos.
Count in fives.
Count in tens.
Use grouping or sharing to show an understanding of division.
Solve one-step problems using \div , using objects and pictures to help me.

Year 4:

Recall division facts for the 6 and 12 times tables.
Recall division facts up to 12×12 .
Divide mentally using place value and known or derived facts. Eg. $600 \div 3 = 200$ because $6 \div 3 = 2$.
Use partitioning to help me divide larger two digit numbers by a one digit number eg. $72 \div 3$ – splits into $60 \div 3 = 20$ and $12 \div 3 = 4$ so $72 \div 3 = 24$.

Year 3:

Recall and use division facts for the 3, 4 and 8 division tables.
Write and calculate mathematical statements for division using the multiplication tables that I know.
Solve missing number problems involving multiplication and division.
Solve word problems or puzzles involving division.

Year 2:

Recognise odd and even numbers (linked to halving).
Recall and use division facts for the 2, 5 and 10 multiplication tables.
Write division statements using the symbols \div and $=$.
Solve division problems (in context) in different ways eg. Using equipment, using a number line.

Year 5:

Identify factors, including finding all factor pairs of a number, and common factors of two numbers.
Divide whole numbers and those involving decimals by 10, 100 and 1000.
Divide numbers up to 4 digits by a one-digit number using the formal written method of short division.
Interpret remainders appropriately for the context by rounding up or down.
Record and interpret a remainder as a fraction.
Record and interpret a remainder as a decimal.
Solve problems involving multiplication and division.
Solve problems involving factors, multiples, squared and cubed numbers.

Year 6:

Divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division.
Interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context.
Solve problems by scaling quantities up and down.
Solve multi-step problems involving multiplication and division.

Year 7 (from main feeder school):

Divide integers and decimals by powers of 10.
Use formal methods to dividing integers.
Use formal methods to divide decimals.
Understand and use the order of operations.
Solve one-step linear equations involving x/\div using inverse operations.

Maths: Fractions

EYFS:

Find half of a quantity.
Recognise the notation of a fraction.

Year 1:

Find half of an object, shape or quantity.
Find a quarter of an object, shape or quantity.
Explain that halves are two equal parts and quarters are four equal parts of the whole.

Year 4:

Recognise and show, using diagrams, families of common equivalent fractions.
Add and subtract fractions within the same denominator.
Recognise and write decimal equivalents to $\frac{1}{4}$, $\frac{1}{2}$ and $\frac{3}{4}$.
Solve problems involving increasingly harder unit fractions to calculate quantities.
solve problems involving increasingly harder non-unit fractions to calculate quantities.

Year 3:

Recognise, find and write fractions of a set of objects. (Unit fractions and non-unit fractions with small denominators).
Compare and order fractions with the same denominators.
Compare and order unit fractions.
Add and subtract fractions with the same denominator within one whole. (eg $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$).
Recognise and show, using diagrams, equivalent fractions with small denominators.

Year 2:

Recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$.
Recognise, find, name and write fractions, $\frac{1}{4}$, $\frac{2}{4}$ ($\frac{1}{2}$) and $\frac{3}{4}$ of a set of objects, shape or quantity.
Recognise, find, name and write $\frac{1}{3}$, of a set of objects or quantity eg. $\frac{1}{3}$ of 6 = 2.
Count in fractions up to 10, starting from any number and using the $\frac{1}{2}$ and $\frac{2}{4}$ equivalence on the number line.

Year 5:

Identify, name and write equivalent fractions of a given fraction, including tenths and hundredths.
Recognise mixed numbers and improper fractions and convert from one form to the other.
Compare and order fractions whose denominators are multiples of the same 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.

Year 6:

Use common factors to simplify fractions.
Use common multiples to find a common denominator for a set of fractions.
Compare and order fractions, including fractions >1 .
Multiply simple proper fractions, writing the answer in the simplest form.
Add and subtract fractions with different denominators and mixed numbers.
Divide proper fractions by whole numbers.
Solve a range of fraction word problems, including improper fractions and mixed numbers.

Year 7 (from main feeder school):

Consolidate their understanding of the number system and place value to include decimals and fractions.
Move freely between different numerical representations (e.g. equivalent fractions, fractions and decimals).
Express one quantity as a fraction of another, where the fraction is less than 1, greater than 1.
Find a fraction given an amount.
Use a given fraction to find the whole and/or other fractions.

Maths: Measures

EYFS:

Compare quantities up to 10 different in different contexts, recognising when one quantity is greater than, less than, or the same as the other quantity.

Year 1:

Measure and begin to record lengths and heights.
Measure and begin to record mass/weight.
Measure and begin to record capacity and volume.
Compare or describe lengths, weights and volumes eg. Longer, heavier, half full.
Solve practical problems involving length, weight or volume.

Year 4:

Use decimal notation to record metric measures eg. Kilograms, kilometres, metres and litres.
Convert between different units of measure [for example, kilometre to metre; litre to millilitre].
Measure and calculate the perimeter of a rectilinear figure (a shape whose all edges meet at right angles), including squares, in centimetres and metres.
Find the area of rectilinear shapes by counting squares.
Estimate, compare and calculate different measures.

Year 3:

Measure and compare: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml).
Add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml).
Measure the perimeter of simple 2-D shapes.

Year 2:

Choose and use appropriate standard units to estimate and measure length/height (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit.
Compare and order lengths, mass, volume/capacity and record the results using $>$, $<$ and $=$

Year 5:

Convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre).
Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres.
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.
Use all four operations to solve problems involving measure [for example, length, mass and volume] using decimal notation, including scaling.

Year 6:

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, using decimal notation up to three decimal places where appropriate.
Substitute values into a simple formula to solve problems e.g. perimeter of a rectangle, the area of a triangle or the volume of a cuboid.
Calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm³) and cubic metres (m³), and extending to other units [for example, mm³ and km³].

Year 7 (from main feeder school):

Derive and apply formulae to calculate and solve problems involving perimeter.
Solve problems in the context of perimeter.
Convert metric units.
Solve problems using the area of rectangles and parallelograms.

Maths: Time

EYFS:

Recite numbers past 5 and 10.
Begin to describe a sequence of events, real or fictional, using words such as 'first', 'then...'

Year 1:

Recognise and use language relating to dates, including days of the week, weeks, months and years.
Tell the time to the hour and draw the hands on a clock face to show these times.
Tell the time to half past the hour and draw the hands on a clock face to show these times.

Year 4:

Read, write and convert time between analogue and digital 12- and 24-hour clocks.

Convert between different units of time eg. hours to minute, minutes to seconds.

Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days.

Year 3:

Tell and write the time from 12-hour and 24-hour digital clocks.

Tell and write the time from an analogue clock, including using Roman numerals from I to XII.

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

Estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours.

Year 2:

Compare and sequence intervals of time.

Tell and write the time to quarter past/to the hour and draw the hands on a clock face to show these times.

Tell and write the time to five minutes 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 5:

Solve problems involving converting between units of time.

Complete, read and interpret information in timetables.

Year 6:

No new objectives

Year 7 (from main feeder school):

Maths: Money

EYFS:

Begin to recognise the value of different coins.

Recognise that items can have values.

Year 1:

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

Year 2:

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.

Year 3:

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

Year 4:

Use decimal notation to record money as pounds and pence.

Year 5:

Use all four operations to solve problems involving measure [for example, money] using decimal notation, including scaling.

Year 6:

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

Year 7 (from main feeder school):

Solve financial maths problems.

Maths: Geometry - Properties of Shapes

EYFS:

Exploring spatial relations and the properties of shapes.

Year 1:

Recognise and name common 2D shapes – rectangles (including squares), circles and triangles.

Recognise and name common 3D shapes – cuboids (including cubes), pyramids and spheres.

Year 2:

Identify and describe the properties of 2D shapes eg. The number of sides and lines of symmetry.

Identify the 2D shapes that make the faces of 3D shapes eg. Circle on a cylinder.

Identify and describe the properties of 3D shapes eg. The number of edges, vertices and faces.

Year 3:

Identify right angles and the number of right angles in half, three-quarter and full turns.

Identify whether angles are greater than or less than a right angle.

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

Year 4:

Identify acute and obtuse angles and order angles by size.

Compare and classify geometric shapes eg. Quadrilaterals and different triangles based on their properties.

Identify lines of symmetry in 2D shapes presented in different orientations.

Complete a simple symmetric figure/pattern with respect to a specific line of symmetry.

Year 5:

Calculate angles at a point and in one whole turn.

Draw and measure different angles, including acute, obtuse and reflex angles. calculate angles on a straight line.

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

Identify regular and irregular polygons based on reasoning about equal sides and angles.

Year 6:

Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangle, quadrilateral or regular polygon.

Recognise angles where they meet at a point, are on a straight line or are vertically opposite and find missing angles.

Draw and translate simple shapes in all four quadrants of the coordinate grid and reflect them in the axes.

Year 7 (from main feeder school):

Solve problems involving the area of triangles.

Solve problems involving the area of trapezia.

Maths: Statistics

EYFS:

Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.

Verbally count beyond 20, recognising the pattern of the counting system.

Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity.

Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.

Year 1:

No objectives

Year 2:

Interpret simple pictograms, tally charts, block diagrams and simple charts.

Year 3:

Solve one and two step problems using information presented in scaled bar charts, pictograms and tables.

Year 4:

Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs (including time graphs).

Year 5:

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

Year 6:

Interpret pie charts and line graphs and use them to solve problems.
Calculate and interpret the mean of a set of data.

Year 7 (from main feeder school):

Construct and interpret appropriate tables, charts and diagrams, including frequency tables, bar charts and pictograms for categorical data, and vertical line (or bar) charts for ungrouped numerical data.

Represent sequences in tabular and graphical forms.

Solve problems using the mean.

Maths: Ratio and Proportion

EYFS:
No objectives

Year 1:
No objectives

Year 4:
No objectives

Year 3:
No objectives

Year 2:
No objectives

Year 5:
Write percentages as a fraction with denominator 100 and as a decimal.
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:
Solve problems involving the calculation of percentages of numbers or quantities.
Solve problems which require scaling up or down of a number/quantity by using multiplication and division facts.

Year 7 (from main feeder school):
Define percentages as 'number of parts per hundred', interpret percentages as a fraction or decimal.
Compare two quantities using percentages.
Work with percentages greater than 100%
interpret pie charts.
Find a percentage of a given amount using mental methods.
Find a percentage of a given amount using a calculator.
Solve problems with fractions greater than 1 and percentages greater than 100%.