Curriculum overview for parents and carers

Mathematics

Summary of key Mathematics learning for Reception to Year 6.

Mathematics Curriculum overview for parents and carers (EYFS: Reception)

Reception

Place Value up to 20

- Find 1, 2, 3
- Subitise 1, 2 and 3
- Represent 1, 2, and 3
- 1 more
- 1 less
- Composition of 1, 2 and 3
- Find 4 and 5
- Subitise 4 and 5
- Represent 4 and 5
- Composition of 4 and 5
- Composition of 1-5
- Introducing 0
- Find 0-5
- Subitise 0-5
- Represent 0-5
- Composition
- Conceptual subitising to 5
- Find 6,7,8
- Represent 6,7,8
- Composition of 6,7,8
- Make pairs- odd and even
- Finding and making a double to 8
- Compare 2 groups
- Conceptual subitising
- Build numbers beyond 10 (10-13, 14-20)
- Continue patterns beyond 10 (10-13, 14-20)
- Verbal counting beyond 20
- Verbal counting patterns

Shape

- Identify and name circles and triangles
- Compare circles and triangles
- Shapes in the environment
- Describe position
- Identify and name shapes with 4 sides
- Combine shapes with 4 sides
- Shapes in the environment
- Recognise and name 3D Shapes
- Find 2D shapes within 3D shapes
- 3D shapes within the environment
- Identify more complex patterns
- Copy and continue complex patterns
- Patterns in the environment
- Select shapes for a purpose
- Rotate shapes
- Manipulate shapes
- Explain shape arrangements
- compose shapes
- decompose shapes
- copy 2D shape patterns
- Find 2D shapes within 3D shapes

Addition and Subtraction

- Add more
- How many did I add?
- Take away
- How many did I take away

Measurement

- Comparing size
- Comparing mass
- Comparing capacity
- Explore simple patterns
- Copy and continue simple patterns
- Explore length
- Compare length
- Explore height
- Compare height
- Day and night
- Talk about time
- Order and sequence time
- Compare mass
- Find a balance
- Explore capacity
- Compare capacity

Sharing and Grouping

- Explore sharing and grouping
- Even and odd sharing
- Play with and build doubles

Patterns

- Deepening understanding
- Finding patterns and relationships between learning

Position and direction

- Identify units of repeating patterns
- Create own pattern rules
- Explore own pattern rules
- Replicate and build scenes and constructions
- Visualise from different positions
- Describe positions
- Give instructions to build
- Explore mapping
- Represent maps with models
- Create own maps from familiar places
- Create maps and plans from story situations

Mathematics Curriculum overview for parents and carers (KS1)

Year 1

Place Value up to 100

- Reading and writing the numbers to 100 in numerals and in words.
- Count to and across 100 from any given number
- Comparing numbers

Shape

- Recognising 2D and 3D shapes
- Describe patterns

Addition and Subtraction within 20

- Add and subtract 1 digit and 2 digit numbers including 0
- Understand the symbols +/ -/=and statements that include these symbols
- Number bonds to 20 and related subtraction facts
- Addition using number lines within 20
- Subtraction using number line within 20
- Missing number problems within 20

Measurement

- Understanding length
- Understanding height
- Finding the length and heigh of an object
- Using a ruler
- Understanding mass
- Understanding volume and capacity

Multiplication and Division

- Multiplication and division using concrete objects, pictorial representations and arrays
- Count in multiples of 2's, 5's and 10's

Money

- Money and recognising different denominations of coins and notes

Time

- Sequencing in chronological order
- Tell the time to the hour and half past the hour

Fractions

- Finding half and quarter of an object, shape or quantity

Position and direction

- Describe position, direction, movement including whole, half, quarter and three quarter turns

Mathematics Curriculum overview for parents and carers (KS1)

Year 2

Place Value

- Read and write numbers to at least 100 in numerals and words
- Compare and order number from 0 up to 100; using ≤ , ≥ and = signs
- Identify, represent and estimate numbers using different representations including the number lines
- Recognise odd and even numbers
- Cout in steps of 2, 3, 10 and 5 from 0 and in tens from any number forwards and backwards
- Recognise the place value of each digit in a 2-digit number
- Use place value and number facts to solve problems

Shape

- Identify and describe the properties of 2D shapes, including the number of sides and line symmetry in a vertical line
- Identify and describe the properties of 3D shapes, including the number of edges, vertices and faces
- Identify 2D shapes on the surface of 3D shapes
- Compare and sort common 2D and 3D shapes and everyday objects

Addition and Subtraction

- Recall and use addition and subtraction facts to 20 and derive and use related fact up to 100
- Show that addition of two numbers can be done in any order and subtraction of one number from another cannot (commutativity)
- Solve problems with addition and subtraction
- Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems

Measurement

- Recognise find, name and write fractions 1/3, ¼, 2/4, ¾ of a length, shape, set of objects or quantity
- Compare and order lengths, mass, volume/ capacity and record results using <,> and = signs
- Choose and use appropriate standard units to estimate and measure length/height, mass, temperature, capacity using rulers, scales, thermometers and measuring vessels

Multiplication and Division

- Recall and use multiplication and division facts for the 2,5 and 10 multiplication tables
- Calculate mathematical statements for multiplication and division using x, ÷ and = symbols
- Show that multiplication of two numbers can be done by any order and division of one number by another cannot

Money

- Find different combinations of coins to equal the same amounts of money
- Solve simple problems in practical context involving addition and subtraction of money of the same unit, including giving change
- Recognise and use symbols £ and p to combine amounts to make a particular value

Time

- 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

Fractions

- Recognise find, name and write fractions 1/3, ¼, 2/4, ¾ of a length, shape, set of objects or quantity
- Write simple fractions e.g. ½ of 6 = 3 and recognise the equivalence of 2/4 and ½

Position and direction

- Use mathematical vocabulary to describe position, direction and movement
- Distinguish between rotation as a turn and in terms of right angles for quarter turns (clockwise and anti-clockwise)

Problem Solving

- Solve problems with addition and subtraction
- Solve problems involving multiplication and division
- Solve problems in the context of money, time and measurement

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 category by quantity
- Ask and answer questions about totalling and comparing categorical data

Mathematics Curriculum overview for parents and carers (Lower KS2)

Year 3

Place Value

- Place value of 3- digit numbers
- Numbers up to 1000
- Representations of number including estimation
- Number problem solving
- Count in multiples of 4,8,50,100; find 10 or 100 more or less than a given number

Shape

- Angles greater than or less than a right angle
- 2D shapes
- 3D shape modelling
- Angles as a property of a shape or a description of a turn
- Right angles to make a quarter, half, three quarters and a whole turn.
- Identify horizontal and vertical lines and pairs of perpendicular and parallel lines

Addition and Subtraction

- Addition and subtraction up to 3 digits
- Inverse operations
- Add and subtract money with £ and p and give change

Measurement

- Length (m/cm/mm)
- Understanding the term perimeter
- Comparing lengths
- Converting lengths between m, cm and mm
- Adding lengths
- Subtracting lengths
- Mass (kg/g)
- Volume (l/ml)
- Using scales
- Comparing mass
- Equivalent masses kg and g
- Adding and subtracting mass
- Measuring capacity and volume in l and ml
- Equivalent capacity and volumes l and ml
- Adding and subtracting volumes and capacities

Multiplication and Division

- Count in multiples of 100
- Count in multiples of 4,8,,50,100
- Multiplication and division facts for 3,4 and 8 timetables
- Multiplication and division problem solving using scaling and correspondence
- Multiplication and division statements using mental and progressing to formal written methods
- Multiplication and division statements
- Inverse operations

Money

- Add and subtract money both £ and p give change
- Understand denominations

Problem solve with money

Time

- Tell and write the time from an analogue clock, 12 hour and 24 hour clocks
- Use roman numerals I and XII on analogue clocks
- Read time to the nearest minute
- Record and compare times using seconds, minutes, hours
- Compare durations of events
- Know number of seconds in a minute, number of days in each month, year, leap year

Fractions

- Counting up and down in tenths
- Recognise and use fractions as numbers: unit fractions and non-unit 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 denominator
- Fraction problem solving
- Recognise and show, using diagrams, equivalent fractions with small denominators

Statistics

- Bar Charts, pictograms and tables
- Solve one step and 2 step questions using information from bar charts, pictograms and tables

Mathematics Curriculum overview for parents and carers (Lower KS2)

Year 4

Place Value

- Count in multiples of 1000
- Find 1000 more/less from any given number
- Place value of 4- digit numbers
- Order and compare numbers beyond 1000
- Representations of number including estimation
- Round any number to the nearest 10, 100, 1000
- Count backwards through zero to include negative numbers
- Read Roman Numerals to 100 (I and C) and known that over time, the numeral system changed to include the concept zero and place value
- Solving number problems

Shape

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

Addition and Subtraction

- Addition and Subtraction up to 4 digits using formal written methods of columnar addition and subtraction
- Inverse operation
- Addition and subtraction 2- step problems

Measurement

- Convert between different units of measure
- Measure and calculate the perimeter of a rectilinear figure (including squares) in cm and m
- Understanding area
- Counting squares
- Making Shapes
- Compare areas

Multiplication and Division

- Recall multiplication and division facts for multiplication tables up to 12 x 12
- Count in multiples of 6,7,9,25 and 1000
- Multiplying by 0 and 1; dividing by 1; multiplying together 3 numbers
- Recognise and use factor pairs and community in mental calculations
- Solve addition and multiplication problems using the distributive law and integer scaling
- Multiply two -digit and three-digit numbers by a one digit number using formal written layout
- Multiply a one or two digit number by 10, 100 and 1000 identifying the value of the digits in the answer
- Divide a one or two digit number by 10 and 100, identifying the value of the digits in the answer
- Divide numbers up to 4 digits by 1-digit number using the formal written method of short division and interpret remainders appropriately for the context

Money

- Estimate , compare and calculate different measures including money in £ and p
- Solve simple measure and money problems involving fractions and decimals to two decimal places

Time

- 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 day

Fractions

- Recognise and show, using diagrams, families of common equivalent fractions
- Add and subtract fractions with the same denominator
- Solve problems involving increasingly harder fractions to calculations and fractions to divide quantities including non-unit fractions where the answer is a whole number

Statistics

- Solve comparison sum and difference problems using information presented in bar charts, pictograms, tables and other graphs
- Interpret and represent discrete and continuous data using appropriate graphical methods, including bar charts and time graphs

Decimals

- Round decimal place to the nearest whole number
- Compare numbers with the same number of decimal places up to two decimal places
- Recognise and write decimal equivalents to ¼ , ½ , ¾

Position and Direction

- Describe positions on a 2D grid as coordinates in the first quadrant
- Describe movements between positions as translations of a given unit to the left/right and up/down

Mathematics Curriculum overview for parents and carers (Upper KS2)

Year 5

Place Value

- Read, write, order and compare numbers up to 10000000 and determine the value of each digit
- Counting forwards and backwards in steps of powers of 10 for any given number up to 100000
- Round any number up to 1000000 to the nearest 10, 100, 1000, 10000 and 100000
- Solve number and place value problems
- Read Roman numerals to 1000 (M) and recognise years written in Roman numerals
- Know and use the vocabulary of prime numbers, prime factors and composite numbers Square numbers, prime numbers
- Establish whether a number up to 100 is prime numbers up to 19
- Interpret negative numbers in context, count forward and backwards with positive and negative whole numbers, including through zero

Shape

- Identify 3D shapes from 2D representations
- Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles
- Draw given angles and measure them in degrees
- Identify angles at a point and one whole turn; angles at a point on a straight line and a ½ turn, other multiples of 90 degrees
- Use 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

Addition and Subtraction

- Mental strategies
- Solve problems involving addition, subtraction and a combination of these, including understanding the meaning of the equals sign
- Solve addition and subtraction multi-step problems in a context
- Column method (whole numbers and decimals in different contexts £ etc)
- Solve comparison, sum and difference problems using information
- Add and subtract whole numbers with more than 4 digit including using formal written methods. Using rounding to check answers to calculations and determine levels of accuracy

Measurement

- Use all four operations to problems solve problems involving measure using decimal notations including scaling
- Measure and calculate the perimeter of composite rectilinear shapes in cm and m
- Calculate and compare the area od rectangles (including squares) using standard units and estimate the area of irregular shapes
- Convert between units of metric measure
- Solving problems involving converting between units of time
- Understand and use approximate equivalences between metric units such as inches, pounds and pints
- Use all 4 operations to solve problems involving measure

Multiplication and Division

- Identify multiples and factors, including finding all factor pairs of a number and common factors of two numbers
- Multiply numbers up to 4 digits by 1 digit number using a formal written method
- Multiply and divide numbers mentally drawing upon known facts
- Divide numbers up to 4 digits by 1 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 10,100,1000
- Solve problems involving multiplication and division including using their knowledge of factors and multiples
- Solve problems involving multiplication and division and a combination of these, including understanding the meaning of the equals sign

Position and Direction

- 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

Statistics

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

Fractions

- Compare and order fractions whose denominators are all multiples of the same number
- Recognise mixed numbers and improper fractions and convert from one to the other
- Improper fractions and mixed numbers
- Identify and name equivalent fractions of a given fraction of a given fraction, represented visually including tenths and hundredths
- Multiply fractions and mixed numbers by whole number, supported by materials and diagrams

Decimals and Percentages

- Recognise and use thousandths and relate them to tenths, hundredths, and decimals equivalents
- Round decimals with two decimals place
- Recognise the percent symbol and understand that percent relates to the number of parts per hundred and write percentages as a fraction with the denominator of 100 and as a decimal knowing percentage and decimal equivalents of ½, ¼, 1/5, 2/5, 4/5 and those with a denominator of multiples of 10 and 25

Mathematics Curriculum overview for parents and carers (Upper KS2)

Year 6

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 intervals across zero
- Identify the value of each digit in numbers given to three decimal places

Shape

- Draw 2D shapes using given dimensions and angles
- Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals and regular polygons
- Recognise where angles meet at a point, are on a straight line, or at vertically opposite and find missing angles
- Recognise, describe and build simple 3D shapes, including making nets
- Illustrate and name parts of circles, including radius, diameter and circumferences and known that the diameter is twice the radius
- Calculate the area of parallelograms and triangles

Four Operations

- Multiply and divide numbers by 10, 100, 1000 giving answers up to 3 decimal places
- Calculations with mixed operations and large numbers
- Solve problems involving addition, subtraction, multiplication and division
- Multiply numbers up to 4 digit by 2 digit number using the formal written method of long multiplication
- Multiplying 1-digit numbers with up to two decimal places by whole numbers
- Divide numbers up to 4 digits by 2 digit number using the formal written method of short division and interpret remainders as whole numbers, fractions, or by rounding, as appropriate for the context
- Use written division methods in cases where the answer has up to 2 decimal places

Measurement

- Recognise when it is possible to use the formulae for area and volume of shapes
- Solve problems involving similar shapes where the scale factor is known or can be found
- Calculate, estimate and compare volume of cubes and cuboids using standard units

Fractions, Decimals and Percentages

- Use common factors simplify fraction the concept of equivalent fractions
- Multiply simples pairs of proper fractions, writing the answer in its simplest form
- Divide proper fractions by whole numbers
- Use common multiples to express fractions in the same denominations
- Compare and order fractions
- Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions Solve problems which require answers to be calculation of percentages

Position and Direction

- Describe positions on the full coordinate grid
- Draw and translate simple shapes on the coordinate plane and reflect them in the axes

Statistics

- Interpret and construct pie charts and line graphs and use these to solve problems
- Calculate and interpret the mean as an average

Algebra

- Use simple formulae
- Express missing number problems algebraically
- Find pairs of numbers that satisfy an equation with two unknowns

Sequences

- Generate and descried a linear number sequences

Ratio and Proportion

- Enumerate possibilities of combinations of two variables