Curriculum Overview Maths

Intent

We teach Maths:

- To develop logical thinkers, communication, reasoning and problem solving skills.
- In a wide range of contexts throughout the whole curriculum.
- Building on prior knowledge, through a progressive range of skills and support children to make connections between different mathematical concepts or domains.
- Where we encourage children to search for patterns and make sensible estimations.
- To increase fluency with problem solving tasks, through the teaching and practise of mental strategies.
- Where we encourage the children to value each other's ideas and strategies, making use of a wide range of resources, images and practical experiences, including use of the outdoor spaces.
- To enable all children to deepen their learning and realise the importance of mathematics in everyday life and its relevance to the real world.

Our curriculum aim is:

For children to become fluent in the fundamentals of mathematics, including through varied and frequent practise with increasingly complex problems over time, so that they develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
To enable children to solve problems by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

We want children to be able to reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language.

How is Maths taught at Heatherside Infants?

At Heatherside Infant School maths is taught using a mastery approach which incorporates White Rose Maths and NCTEM. As part of NCTEM we use mastering number which aims to secure the foundations of good number sense, fluency in calculation and the confidence and flexibility with number.

The mastery approach is delivered through high quality teaching and explicit modelling using a range of visual aids and mathematical resources to support all learners. Careful questioning is used throughout lessons to develop and extend children's understanding, including the use of stem sentences to embed mathematical vocabulary.

Children have the opportunity to work collaboratively in pairs, small groups and independently, where they are encouraged to make connections through small step changes, and develop their problem solving and reasoning skills.

Vocabulary

Theme / area	Year R		Year 1		Year 2	
Counting and Place Value	number numeral zero – twenty and beyond none how many …? count count in ones forwards backwards equal to is the same as odd even pattern pair size	order many more less most least last before after next to between bigger biggest larger largest smaller smallest	zero – one hundred and beyond count in ones, twos, fives, tens multiple of few digit the same number as greater most fewer fewest less least compare first – twentieth half-way between partition tens and ones		equivalent to count in threes	
Addition And Subtraction	add more plus equals total sum altogether number bonds double	take away minus subtract	number pairs missing number	difference between	addend	minuend subtrahend

Vocabulary

Theme / area	Year R		Year 1		Year 2
Multiplication And Division	odd even double	halve share, share equally group in pairs equal groups of divide	multiplication multiply multiplied by multiple of doubling	division dividing grouping sharing halving	multiplicand
Fractions	whole equal half		fraction halve quarter equal grouping sharing	parts of a whole half is one of two equal parts quarter is one of four equal parts	three quarters thirds equivalent fractions equivalence
Money	money coin pence pound		money coin note penny pence pound	price cost buy sell amount total	change offer discount sale cheap expensive

Vocabulary

Theme / area	Year R		Year 1		Year 2	
Shape	shape flat curved straight round repeating pattern corner side	2D shape oblong square rectangle circle triangle	hexagon pentagon cube cuboid pyramid sphere cone cylinder	3D shape face edge vertex vertices	Symmetry Symmetrical Octagon Quadrilateral Regular Irregular Prism	
Position and Direction	on above below top bottom over under up down in front behind front back	beside next to outside inside underneath side next to around between middle forwards backwards	position opposite centre corner direction left right sideways across close near far	whole turn half turn quarter turn three-quarter turn	rotation clockwise anti-clockwise	
Statistics			sort		data group set list table tally chart vote	graph block graph pictogram most popular most common least popular least common difference how many more how many fewer

Vocabulary

Theme / area	Year R		Year 1		Year 2
Measurement	measure size compare guess		measurement estimate nearly close to roughly	too much too little too many too few	approximately
Length	length height long longer longest short shorter shortest	tall taller tallest high higher highest low	centimetre metre width wide narrow thick thin	far near close ruler	depth
Mass	weigh balances heavy heavier than heaviest	light lighter than lightest	Kilogram gram equal		

Vocabulary

Theme / area	Year R		Year 1		Year 2
Capacity	full empty		litre capacity volume more than less than		
Time	time Monday, Tuesday … January, February … spring, summer, autumn, winter day week weekend month year birthday holiday	morning afternoon evening night bedtime dinner time playtime today yesterday tomorrow date watch clock	hour minutes o'clock half past clock face clock hands hour hand minute hand hours minutes	before after earlier later next first last midnight now soon early late	quarter past quarter to 5 minute intervals half an hour quarter of an hour
Temperature					degrees celsius thermometer

Progression map / end points

Theme / area	Year R	Year 1	Year 2
Counting and Place Value	♣ have a deep understanding of numbers to 10, including the composition of each number ♣ subitise (recognise quantities without counting) up to 5 ♣ verbally count beyond 20 ♣ recognise the pattern of the counting system ♣ compare quantities up to 10 in different contexts ♣ recognise when one quantity is greater than, less than or the same as the other quantity ♣ explore and represent patterns within numbers up to 10 ♣ explore and represent patterns of even and odd numbers	♣ 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.	♣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 a two-digit number (tens, 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.
Addition And Subtraction	♣ automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 ♣ automatically recall subtraction facts up to 5 ♣ automatically recall some number bonds to 10 ♣ automatically recall some double facts ♣ explore and represent patterns in double facts	♣ 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 one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = – 9	♣ solve problems with addition and subtraction: using concrete objects and pictorial representations, including those involving numbers, quantities and measures, applying their increasing knowledge of mental and written methods ♣ recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100 ♣ add and subtract numbers using concrete objects, pictorial representations, and mentally, including: a two-digit number and 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.

Progression map / end points

Theme / area	Year R	Year 1	Year 2
Multiplication And Division	♣ explore and represent patterns of even and odd numbers ♣ explore and represent how quantities can be distributed equally.	♣ solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.	♣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 (×), 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 problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts
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	♣ recognise, find, name and write fractions 1/3 , ¼ , 2/4 and ¾ of a length, shape, set of objects or quantity ♣ write simple fractions for example, ½ of 6 = 3 and recognise the equivalence of 2/4 and ½.
Money		♣ recognise and know the value of different denominations of coins and notes	♣ recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value ♣ find different combinations of coins that equal the same amounts of money ♣ solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change

Progression map / end points

Theme / area	Year R	Year 1	Year 2
Shape	♣ develop spatial reasoning skills in shape ♣ continue, copy and create repeating patterns.	♣ recognise and name common 2-D and 3-D shapes, including: 2-D shapes [for example, rectangles (including squares), circles and triangles], 3-D shapes [for example, cuboids (including cubes), pyramids and spheres].	♣ identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line ♣ identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces ♣ identify 2-D shapes on the surface of 3-D shapes, [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
Position and Direction		♣ describe position, direction and movement, including whole, half, quarter and three quarter turns.	♣ 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 anticlockwise).
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.

Progression map / end points

Theme / area	Year R	Year 1	Year 2
Length	♣ develop spatial reasoning skills in measures	♣ compare, describe and solve practical problems for: lengths and heights [for example, long/short, longer/shorter, tall/short, double/half] ♣ measure and begin to record the following: lengths and heights	♣ choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm) to the nearest appropriate unit, using rulers ♣ compare and order lengths and record the results using >, < and =
Mass		♣ compare, describe and solve practical problems for: mass/weight [for example, heavy/light, heavier than, lighter than] ♣ measure and begin to record the following: mass/weight	♣ choose and use appropriate standard units to estimate and measure mass (kg/g) to the nearest appropriate unit, using scales ♣ compare and order mass and record the results using >, < and =
Capacity		♣ compare, describe and solve practical problems for: capacity and volume [for example, full/empty, more than, less than, half, half full, quarter] ♣ measure and begin to record the following: capacity and volume	♣ choose and use appropriate standard units to estimate and measure capacity (litres/ml) to the nearest appropriate unit, using measuring vessels ♣ compare and order volume/capacity and record the results using >, < and =
Time		♣ compare, describe and solve practical problems for: time [for example, quicker, slower, earlier, later] ♣ sequence events in chronological order using language [for example, 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. ♣ measure and begin to record the following: time (hours, minutes, seconds)	♣ 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
Temperature			♣ choose and use appropriate standard units to estimate and measure temperature (°C) to the nearest appropriate unit, using thermometers