Hartford Infant and Preschool
Maths Workshop
for EYFS, Year 1 & 2

Thursday 23rd November 2023
9:00 – 9:30am

Aims of the session

- Maths curriculum and where to find it
- Understand how CPA underpins teaching and learning
- Mathematical fluency and ways to calculate
- Mathematical vocabulary
- Mathematical models
- Support at home

Hartford Infant and Preschool Maths Long Term Plan

	Autumn Term using planning from NCETM, Power Maths and Mastering Number. Mastering Number lesson and Maths Medium Term Plans give further detailed information on maths main lessons and maths fluency.						
Reception	Numbers to 10 + place value Structured and unstructured subitising	Connect quantities and number to finger patterns 1-1 correspondence when counting	Cardinality when counting The counting sequence to 10 and the staircase model	Comparison - compare sets of objects by matching	Develop the language of 'whole' when talking about objects which have parts	Repeating patterns Reasoning Puzzles	2D/3D shape properties Positional and directional language
Year 1	Number – number and place value to 10. Part-whole within 10			Number – addition and subtraction to 10		Geometry – properties of shape 2D and 3D shape	
Year 2	Number – number and place value, numbers to 100		Number – addition and subtraction (1)		Measurement - money		Number – multiplication and division (1)

	Spring Term using planning from NCETM, Power Maths and Mastering Number. Mastering Number lesson and Maths Medium Term Plans give further detailed information on maths main lessons and maths fluency.				
Reception	Order numbers 1-5, then 1-10 Subitising skills for numbers within and beyond 5, and increasingly connect quantities to numerals	Identify missing parts for numbers within 5. Structure of the numbers 6 and 7 as '5 and a bit'	Understand a 'double' as two equal groups and connect to finger patterns Counting sequence beyond 20, hearing the repeated pattern within the counting numbers	Link cardinality and ordinality through the 'staircase' pattern	Comparison – equal and unequal groups Odd and even numbers
Year 1	Number – number and place value within 20	Number – addition and subtraction within 20	Number – number and place value to 50	Measurement – length and height	Measurement - money
Year 2	Measurement – length and height	Number – addition and subtraction (2)	Geometry – properties of shape	Number - fractions	Number – multiplication and division (2)

	Summer Term using planning from NCETM, Power Maths and Mastering Number. Mastering Number lesson and Maths Medium Term Plans give further detailed information on maths main lessons and maths fluency.				
Reception	One more than and one less/ fewer than numbers within 10 Conceptual subitising skills, including when using a rekenrek	Magnitude - knowing that 8 is a lot more than 2, but 4 is only a bit more than 2 Representations of numbers, including the 10-frame, and see how doubles can be arranged in a 10-frame	Count larger sets as well as actions and sounds Number bonds to 5 and then 10	Comparison - compare quantities and numbers, including sets of objects which have different attributes Odd and even numbers Doubles – recall facts Sharing quantities equally	Measure – length and height Weight Volume and capacity
Year 1	Number and place value – numbers to 100	Measurement – weight and volume	Measurement - time	Number – multiplication and division	Number –fractions finding halves and quarters	Geometry – position and direction
Year 2	Statistics	Measurement – weight, volume and temperature	Number -problem solving and efficient methods	Measurement - time	Geometry -position and direction

Brief summary EYFS

Number
- Count confidently
- Deep understanding of numbers to 10 including the composition of each number
- 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.
- Subitise (recognise quantities without counting) up to 5

Numerical patterns
- 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.

Brief summary Year One

- **Number** – Count forwards and backwards from any number to 100, use the language of one more and one less, equal, greater and less than, read and write numbers 1-20 as numerals and in words, + and – of one-digit and two-digit numbers within 20 including solving problems with objects, pictorial models and abstract, x and ÷ with support of teacher and objects and fractions involving halves and quarters of objects shapes and quantities.

- **Measurement** – Solve practical problems for length and height such as longest, shortest and tallest. Doubles and halves. Solve problems for mass/weight, capacity and volume. Tell the time for o'clock and half past. Recognise the value and denominations of coins. Sequence events in chronological order such as morning, afternoon and evening. Know the days of the week, months and years.

- **Geometry** – know the properties of 2-D shapes (rectangles, squares, circles and triangles). 3-D shapes such as as, cubes, cuboids, pyramids and spheres. Know the position and direction for whole, half, quarter and three-quarter turns.

5 + 5 + 5 = 15

Cube — 6 faces, 8 vertices, 12 edges
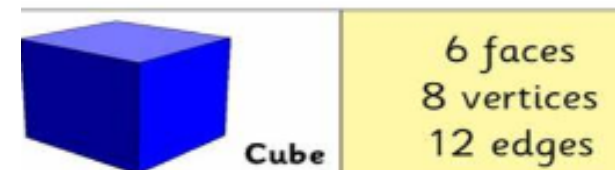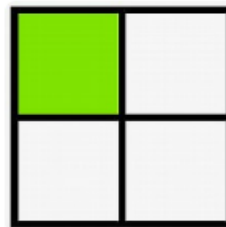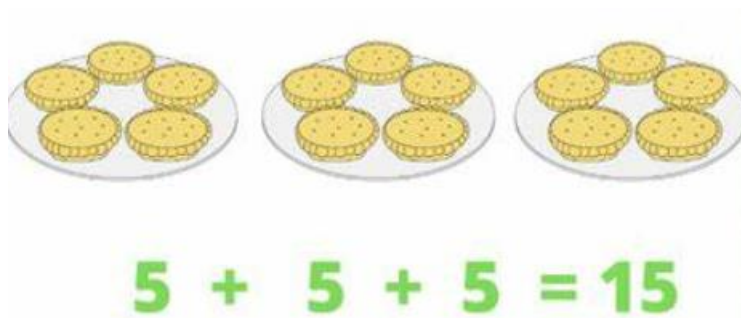
Year Two Maths

- 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 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

- 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 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

- 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 (×), 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

Year Two Maths

- Number (Fractions) – recognise, find, name and write fractions , , and of a length, shape, set of objects or qua
  • write simple fractions for example, of 6 = 3 and recognise the equivalence of and two-quarters and a 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 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 • 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 shape) – 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
- 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)
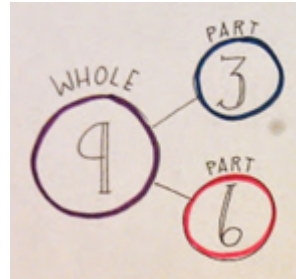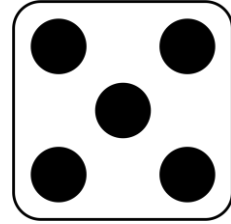
Year Two Maths

- 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

CPA approach

- Concrete

- Pictorial

- Abstract

- Concrete, Pictorial, Abstract (CPA) is a highly effective approach to teaching that develops a deep and sustainable understanding of maths in pupils. CPA was developed by American psychologist Jerome Bruner. We teach maths in small coherent steps that we build on and make connections and use appropriate mathematical models to support understanding.

- https://mathsnoproblem.com/en/mastery/concrete-pictorial-abstract/

Mathematical fluency

Fluency in maths is important as it can free up the working memory so that children can solve problems. If children don't know key number facts then they have cognitive overload when trying to solve mathematical problems and may easily give up. We use stem sentences to support children.

In KS1 your child has a numbots account which can be used at home. They are rewarded with certificates.
msmith@hartfordinfantschool.org
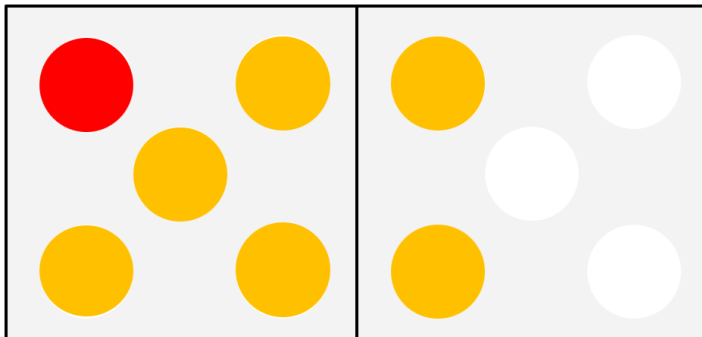
_____ needs _____ to make 7;
_____ and _____ make 7.

Subitising

This is the ability to instantaneously recognise the amount of objects in a group without the need to count them.

Children learn to subitise naturally from a very young age.

Games with dice help subitising.

Lots of subitising is built into the number blocks series
https://www.bbc.co.uk/iplayer/episode/b0bmkb6k/numberblocks-series-3-now-we-are-six-to-ten

Subitising is key to early addition. If children recognise the patterns they are less likely to resort in counting from the beginning again.

Today's Number Is...
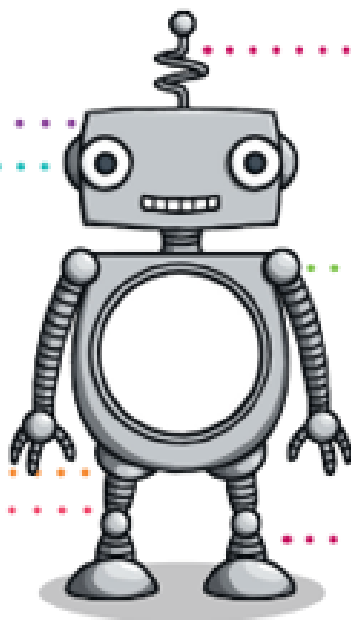
spell it:

_____

draw it:

odd / even

today's number > [ ]

today's number < [ ]

$\frac{1}{2}$? _____

$\frac{1}{4}$? _____

less:

2 **less** is: _____

10 **less** is: _____

more:

2 **more** is: _____

10 **more** is: _____

Is it in these times tables?

2 × [ ]   5 × [ ]   10 × [ ]

tens	ones

Where is it? Draw an arrow on the number line:

0   10   20   30   40   50   60   70   80   90   100

partition it: (e.g. 24 = 20 + 4)

number sentence:

anything special?

Add by making 10 ❶

1 Work out 8 + 5.

Use the ▦ to help you.
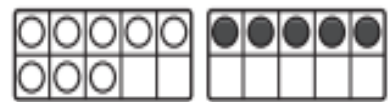
First, I need to work out what makes 10.

$8 + \boxed{} = 10$

$10 + \boxed{} = \boxed{}$

$8 + 5 = \boxed{}$

2 Work out 7 + 7.

$7 + \boxed{} = 10$

$10 + \boxed{} = \boxed{}$

$7 + 7 = \boxed{}$

3 Work out 8 + 6.

$8 + \boxed{} = 10$

Use the beads to help you.

$10 + \boxed{} = \boxed{}$

$8 + 6 = \boxed{}$

4 Freddie found 9 🐚 last week.

He found 5 🐚 this week.

How many 🐚 did Freddie find in total?

5 Use each of these numbers once.

CHALLENGE

| 7 | 5 | 8 | 9 |

Make the greatest total and the smallest total.

I will pick two numbers and work out the total. Then I will try a different two numbers.

Greatest: $\boxed{} + \boxed{} = \boxed{}$

Smallest: $\boxed{} + \boxed{} = \boxed{}$

Reflect

$5 + 7 = \boxed{}$

Explain how you worked out the answer.

Maths

- Addition & Subtraction Facts for KS1
- EYFS Maths Calculation Policy
- KS1 Maths Calculation Policy
- Maths Curriculum Progression
- Maths Long Term Plan
- Maths Policy


Year 2 Addition

Watch on YouTube
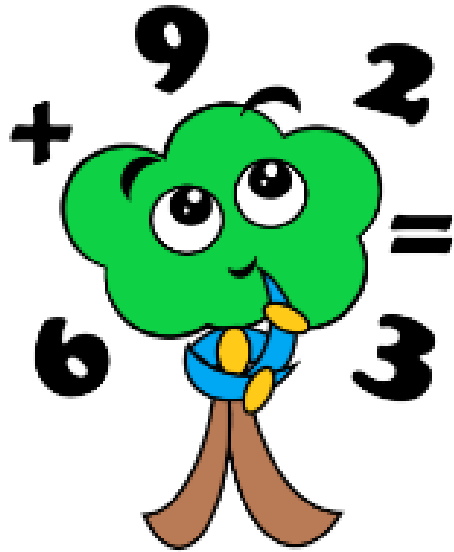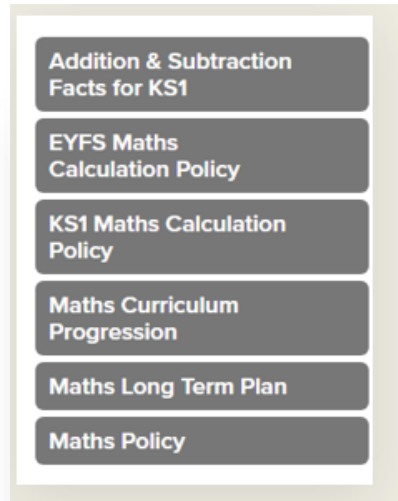
- Methods we use to calculate in addition and subtraction Mrs Smith model concreate, pictorial and abstract for simple addition

- For further guidance on how we calculate in addition, subtraction, multiplication and division please see the EYFS and KS1 calculation policies (handouts and on the website). There are some videos too for KS1.

- EYFS Calculation Policy with Power Maths March 2021.pdf

- KS1 Maths Calculation Policy with Power Maths March 2020.pdf

Models and apparatus we use
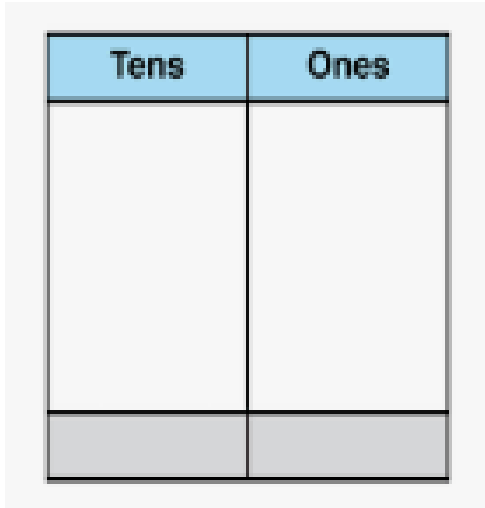
Place Value Grid
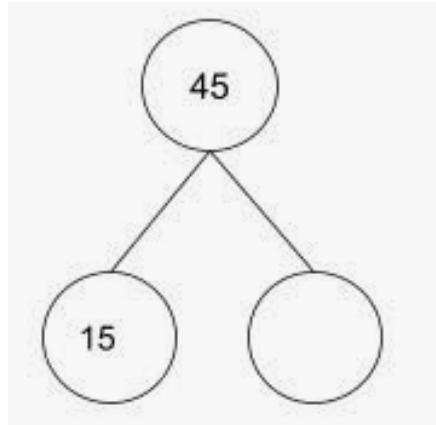
Part Whole Model
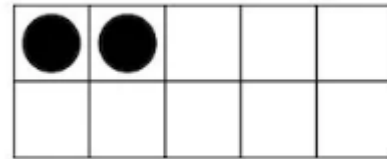
Ten Frame

Numicon
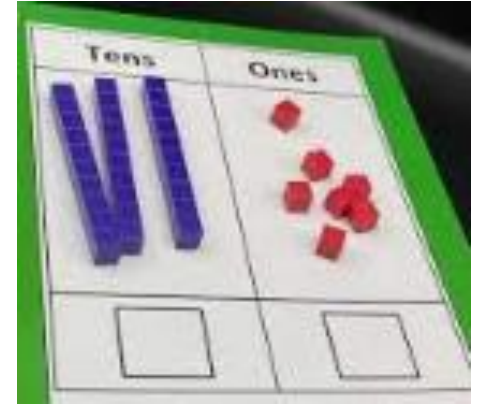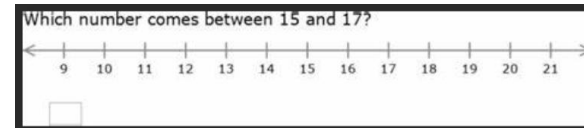
Dienes apparatus

Hungarian Number Frame

Rekenrek
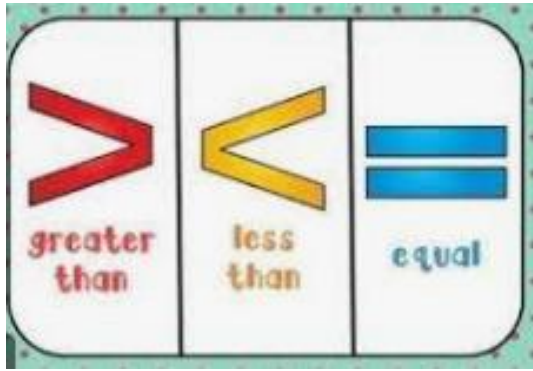
Number Line

Snap Cubes

Inequality symbols

Number bond A pair of numbers with a particular total e.g. number bonds for ten are all pairs of whole numbers with the total 10.

Addend A number to be added to another

Array An ordered collection of counters, numbers etc. in rows and columns

Cardinal number A cardinal number denotes quantity.

Ordinal number Denotes position within a series. First (1st), second (2nd), third (3rd) etc denote position in a series, and are ordinals.
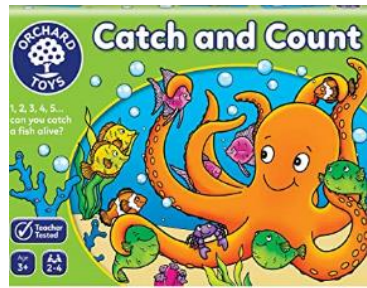
Commutative Law 2 + 3 = 3 + 2 or 2 x 5 = 5 x 2

Partition To split a number into component parts. Example: the two-digit number 38 can be partitioned into 30 + 8 or 19 + 19

Inverse To reverse the previous operation

Websites

Catch and Count

Magic Maths

The Game of Ladybirds

Number Bears
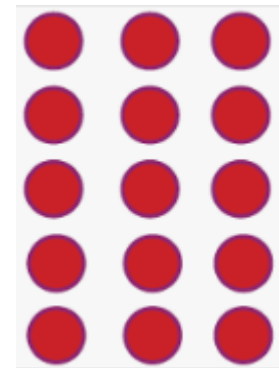
BBC iPlayer Numberblocks

www.ictgames.com

Topmarks
https://www.topmarks.co.uk/

KS1 BBC Bitesize Maths

FIRST MATHS
This book is available on Amazon [click image] includes addition & subtraction.
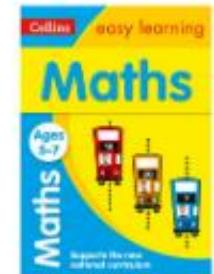
Maths
This book is available on Amazon [click image] includes addition & subtraction and multiplication & division.
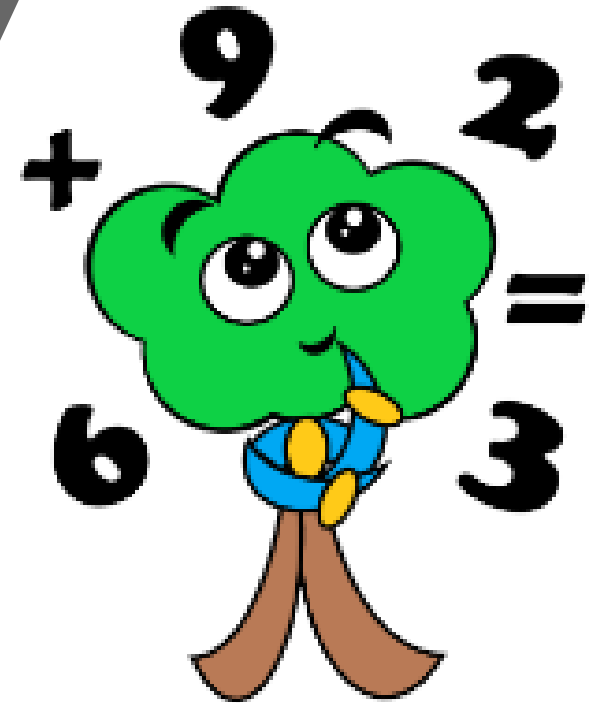
Oak National Academy Online Classroom (thenational.academy)

Don't forget use opportunities when out and about. Doubles, subitise, spot the numeral, more, less, shapes, measures, patterns, money, time and fractions.   Year 2 parents x2, x5, x10 and x3. Year 1 counting in 2s, 5s and 10s.

Thank you for your time

Please complete the evaluation

Contact:
msmith@hartfordinfantschool.org

Maths