Calculations Policy

Approved by: **B.Suddhi**		**Date:**	January 2026
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Signed by:

	Headteacher	Date:	January 2026
	Chair of governors	Date:	January 2026

Maths Mastery Approaches to Arithmetic and Reasoning

This document is aimed at supporting parents and teachers alike in understanding how the children at Pear Tree Infant School will progress in Maths. Following a mastery approach to Mathematics will deepen children's understanding of mathematical concepts. To embed their understanding, children will have the opportunity to use concrete objects and manipulatives before representing these objects using pictures. Once the foundations have been laid, children should be able to move onto a more abstract approach which involves problem solving and reasoning. This is often known as the Concrete, Pictorial, Abstract (CPA) approach. This document offers suggestions and ideas as to how to apply the CPA approach to support the children in their journey to mastering mathematical concepts laid out by the National Curriculum. It highlights resources that will be used in each Key Stage and how these resources and methods for solving problems will develop and change as the children move through EYFS into Year 1 and then into Year 2.

Explanation of Vocabulary

Concrete

This is the 'doing' stage. Children should have the opportunity to use and handle concrete objects and manipulatives to help them understand what they are learning. Manipulatives and concrete objects are things that can be touched and moved around to support understanding of a mathematical concept. In the Early Years Foundation Stage (EYFS), concrete objects may include a range of everyday things such as shells, leaves, fir cones, conkers, pebbles, building bricks and toys etc. Whilst these manipulatives may still be used throughout Key Stage 1, there will also be progression onto more mathematical resources including counters, bead strings, dienes and numicon.

Pictorial Representations

This is the 'seeing' stage. Here, visual representations of concrete objects are used to model problems. This stage encourages children to make a mental connection between the physical object they just handled and the abstract pictures, diagrams or models that represent the objects from the problem. Building or drawing a model makes it easier for children to grasp difficult abstract models.

Abstract

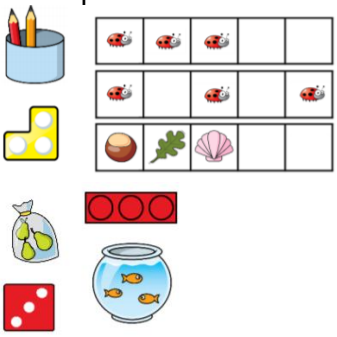
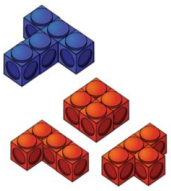
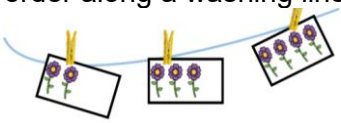
This is the 'symbolic' stage, where children use abstract symbols to model problems. Children need to have a secure and solid understanding of the concrete and pictorial stages of the problem before moving onto this stage. At this stage, children will also be able to begin reasoning about how and why they have solved a problem in a particular way.

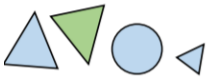
Making CPA work

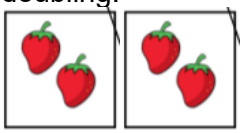
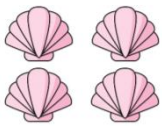
Although CPA is presented as three distinct stages, each stage can and will be revisited in order to reinforce concepts and build confidence. The apparatus selected will vary and children will be encouraged to represent a problem in different ways. By systematically varying the resources, children will build powerful mental connections between the concrete, pictorial and abstract phases, providing them with a deep and meaningful mathematical understanding.

NUMBER

In EYFS children will…

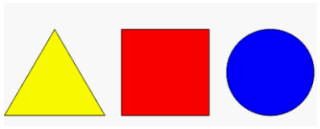
National Curriculum statement	Progression of Learning		
	Concrete	**Pictorial**	**Abstract**
Children count reliably with numbers from 1-20	Children to count up to a number (e.g. 3) using identical 'real life' concrete objects. **Key questions:** Can you count the objects? Can you touch each object as you count? How many objects are there altogether? Children to count out objects from a larger group. **Key questions:** Can you get me two pencils? I think there are 2 left in the pot, can you check? Does it matter if the pencils are different colours?	Children use pictorial representations of real life objects to support counting. **Key questions:** Which pictures show 3? 	Once secure, children should have an abstract understanding of number and should be able to attempt problem solving and reasoning tasks. **Activity:** Put a selection of shapes into a feely bag.  **Key questions:** Can you (the child) find a '4 shape' without looking? How did you know it was a 4 shape? **Activity:** Using number cards: Find me a number smaller than 5. Find me a number bigger than 7.
Place numbers in order	Children to begin lining up concrete objects to support them with counting. Children to compare groups of objects and put in the correct order from smallest to largest amount.	Children to use pictorial representations of concrete objects and arrange them in order along a washing line.  At this stage, children should be encouraged to use the language of more than and fewer than to compare the pictures.	**Activity:** Hidden shapes: Put a selection of shapes made with different amounts of linking cubes into a feely bag. Ask a child to choose a shape. Can they feel how many cubes there are before looking? Ask a friend to feel in the bag and a find a shape with more/less or the same amount of cubes. Can you order the cubes from fewest to most cubes? 

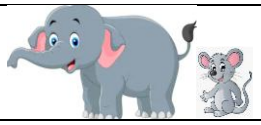
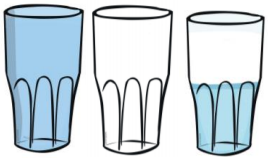
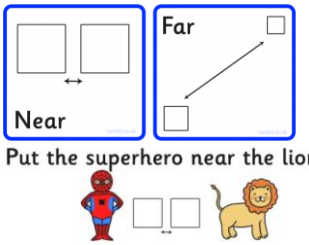
Say which number is one more than a given number.	Children to count a variety of concrete objects and talk about what number is one more. Children could also build a staircase looking at how many items they use for each step. Have they used one more each time?  Using concrete objects, ask the children, can you show me two? Can you show me one more than two? Can you show me one more than 4? Make a number, can your partner show me one more than that number?	Children to make a number on a five frame using pictures of concrete objects.  Children identify one more. Place a number track underneath the five frame. Children to point to the number that has been made and then the number that is one more to make links between the pictorial representation and the abstract form of the number.	**<u>Activity linked to abstract understanding:</u>** <u>Mystery bag:</u> Ask children to help you count three items into a bag. Add one more and ask children how many there are now. How could we check? Repeat for other numbers.
Say which number is one less than a given number.	Play musical chairs with the children. What happens each time the music stops? How many chairs do we have now? Is that enough chairs for everyone? Each time the music stops, children to say how many chairs there are after one is removed.	Pictorial representations for children to link to concrete objects.  Discuss how many buns there are and how many would be left if one was eaten/taken away.	**<u>Activity linked to abstract understanding:</u>** Clap four times. Ask the children if they can clap one less time? Repeat for other actions (e.g. hopping, jumping)
Sort objects into groups (prerequisite for addition and subtraction)	Provide children with a range of real objects for them to sort. Talk about how they have sorted the objects. Use hoops to sort objects (start with two initially). **<u>Key questions:</u>** Can children say what is different about each group? Is there anything the same? Could the objects be sorted another way?	Show children pictorial representations of how objects have been sorted.  **<u>Key questions:</u>** How have I sorted the items? Where would _____ go? Can they be sorted another way?	**<u>Activity linked to abstract understanding:</u>** <u>Odd one out:</u> Make a set with one that doesn't belong. Ask the children to identify which one it is and explain why. There could be more than one answer… 

Doubling, halving and sharing	Use concrete objects and double by combining two equal sets. Halve by sharing concrete objects by sharing equally between two people.	Pictorial representations of doubling.  I want to double my two strawberries, so I add on another two. Is this right? Children to begin explaining their understanding in preparation for abstract stage of learning. Pictorial representations of doubling. I want to halve my shells. Each person will get two. Is this right? Show me how you know. 	In the abstract phase, children may use and apply their understanding of doubling and halving with concrete objects or pictorial representations to support them in solving one step problems. **<u>For example:</u>** I want to share my 6 sweets with my friend. How many will we get each? I had 5p. My mum had double this amount. How much did she have?

SHAPE, SPACE AND MEASURE

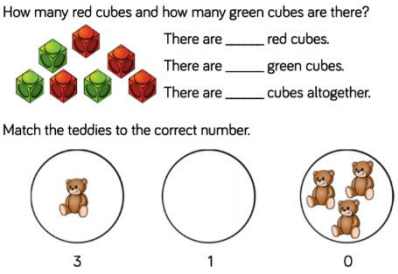
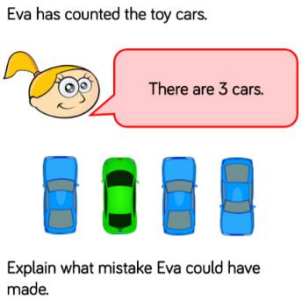
In EYFS children will…

National Curriculum Statement	Progression of Learning		
	Concrete	**Pictorial**	**Abstract**
Shape	Use shapes to support children in recognising and naming the shapes. **Activities:** Go on a shape hunt. Hide shapes for children to find (e.g, in the sandpit or water tray).	Show children pictorial representations of shapes for children to begin recognising and naming. 	Once the children understanding of shape is secure, they will be able to visualise them without seeing a picture and begin to reason and problem solve. **Activities:** Odd one out: Which is the odd one out in this set of shapes? Explain how you know? There could be more than one answer… Mystery Bag: Put your hand in the bag, can you find the square? What about the circle? How did you know that was a circle?
Size	Use building blocks as concrete objects. **Key questions:** How tall is your tower? How many blocks have you used? Can you make me a taller tower? Can you make me a shorter tower?	Use pictorial representations of real life things to discuss. **For example:** Look at the picture, which animal is the tallest? Which is the shortest? 	In the abstract phase, children will begin to reason and use and apply their knowledge to support them in solving simple problems. **For example:** Sam made a tower that was 8 blocks high. Sally made a tower that was 4 blocks high. Which tower was the tallest? Explain how you know.
Weight	Children to use a range of concrete objects and feel the weight of them in their hands to develop understanding that some objects are heavier or lighter than others. **Key questions:** Can the children find something that is heavier or lighter? Use balancing scales to weigh items.	Children to use pictorial representations of scales to identify heavier and lighter objects. Children may also use pictorial representations to make estimations regarding heavier and lighter objects. **For example:** Which object is the heaviest/lightest?  Which object do you think will be heavier?	Once secure, children will be able to reason and explain their thinking. **Activity:** Look at various objects on the table: Which object do you think would be the heaviest? Which object do you think would be the lightest? Why? Do you think you can order the objects from heaviest to lightest?

			
Capacity	Children to explore capacity practically. **Activity:** Fill various containers with coloured/glittered water. **Key questions:** Which jugs are full? Which jugs are empty? Which jugs are half full? **Activity:** Can children fill a container so it is full? What about half full?	Using pictorial representations, can children identify which containers are full, empty, half full? 	Children can use their understanding from practical activities to estimate and reason during this phase of learning. **Activity:** How many jugs are needed to fill the bucket?
Position	**Activity:** Position concrete objects in different places around the classroom. Children to identify the position of each object: 'the shell is on top of the table.' 'The toy car is behind the shell' etc. **Activity:** Teacher to encourage children to position concrete objects e.g can you put the doll under the table?	Use pictures for children to describe the position of an object.  The teddy is _____	Children to use their understanding of positional vocabulary to describe positions of objects or to find objects based on the description of its position.
Distance	**Activity:** Throw/kick concrete objects (beanbags, balls etc). **Key questions:** Which beanbag/football is the closest to you? Which beanbag/ball has gone the furthest?	Use pictures to represent distance:  	Use knowledge to make estimations about abstract ideas. **For example:** Would it take longer to walk across the classroom or around the playground? Why? Let's try it.
Time	Use a class calendar to introduce time durations and think about 'how many sleeps' there are until a particular event. Use songs and rhymes to introduce days of the week. Use vocabulary: today, yesterday, tomorrow, this morning, this afternoon, next, after, soon, before, later	Use a visual timetable for important events throughout the day. Refer back to this timetable to talk about what is happening now, next, after lunch etc Use pictures to order familiar activities and stories using key language to describe the sequence.	At this stage, children will use their understanding to begin making predictions about what might take longer or what they might be able to do in that period of time. **Activity:** Provide a range of timers that measure different lengths of time. Children can choose a timer and see what they can do in that period of time. How many star jumps in 10 seconds? Etc

			What would take longer: 10 star jumps or 10 claps?
Money	Children use coins to pay for items (role play – shop, post office, bank etc) Coin hunt around the classroom/outdoor area.	Use pictorial representations of coins and objects. **<u>Key questions:</u>** How much do the seeds cost? Which coin would I use to pay for the seeds? seeds 2p 	Children to use their understanding of money and the value of coins to begin reasoning and solving simple problems. **<u>For example:</u>** Can you find another way to make 5p? Tom has 2 coins. How much money might he have?

Key Stage 1 – Year 1

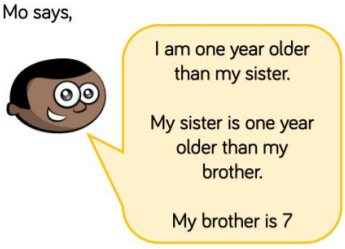
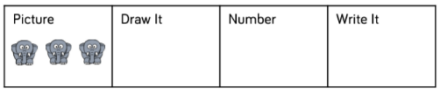
<table>
<tr><td colspan="4"><u>NUMBER</u>
Children in Year 1 will…</td></tr>
<tr><td rowspan="2">National Curriculum statement</td><td colspan="3">Progression of Learning</td></tr>
<tr><td>Concrete</td><td>Pictorial</td><td>Abstract/Reasoning</td></tr>
<tr><td>Count to and across 100, forwards and backwards from any given number</td><td>Provide children with opportunities to count concrete objects. Children will need to be encouraged to touch objects when counting to reinforce one to one correspondence.</td><td>Use pictorial representations of real life objects for children to count.
 
At this stage, a number line or number track can be introduced to support children in counting forwards and backwards.</td><td>At this stage, children should be secure enough with their understanding of number to begin reasoning and solving problems.
<u>Activity:</u>
 
<u>Activity:</u>
Fill in the missing numbers
5, 6, 7, __, 9, __
15, 14, 13, 12, __, 10</td></tr>
<tr><td>Read and write numbers to 100 in numerals</td><td colspan="3"><u>Possible activities:</u>
Match concrete objects to pictorial representations of the number.

Practice reading the number and then writing the word and vice versa.

Practice counting objects and writing the number in digits and words.</td></tr>
<tr><td>Read and write numbers from 1 to 20 in words</td><td colspan="3"><u>Possible activities:</u>
Match concrete objects to pictorial representations, the number and the word.

Practice reading the number and then writing the word and vice versa.

Practice counting objects and writing the number in digits and words.</td></tr>
</table>

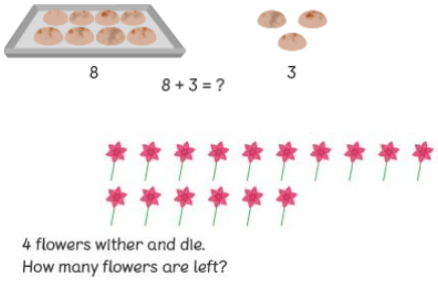
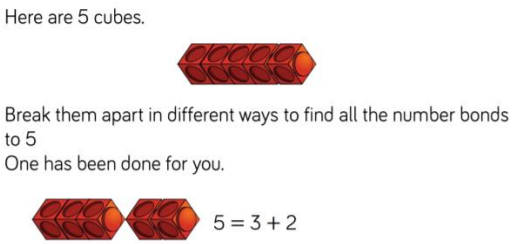
Given a number, identify one more and one less	Children to count concrete objects. **<u>Key questions:</u>** How many will there be if 1 more is added? What about if 1 is taken away? Where can 1 more be found on a number track? What about 1 less? Use manipulatives to make numbers and practise 1 more and less.	Use pictorial representations to support children in finding one more and one less.  **<u>Key questions:</u>** How many strawberries are there? How many will I have if I am given one more? How many will there be if I eat 1?	At this stage, children should begin to reason about number. They may still refer back to concrete objects or pictorial representations to support them with their problem solving. **<u>Possible activities:</u>** Mo says,  How old is Mo? Who is the oldest? Explain why. True or False? One more than 7 is the same as 1 less than 9 Use a number track to help you. Can you think of another statement like this?
Identify and represent numbers in different ways and use the language of equal to, more than, less than (fewer), most least.	Provide opportunities for children to show numbers in different ways – using concrete objects. These concrete objects may then be substituted for mathematical resources. Children to group objects together and talk about which group has the most/least/same amount?	Children progress onto the use of pictorial representations of concrete objects to support them in their journey to solving problems. Using counters, show how many pineapples there are, then write the numerals for each.  How many whales can you see on the wrapping paper? Place counters on the whales to help you. What else can you count? Which animal is represented the most? Which animal is represented the least?  Complete the table. 	At this stage, children should begin to reason about number. They may still refer back to concrete objects or pictorial representations to support them with their problem solving. **<u>Possible activities:</u>** How many ways can you represent 6 glasses of apple juice? How many ways can you show me less than 16 sweets? Whitney has this many cubes in one hand.  She has fewer cubes in the other hand. How many cubes could she have in her other hand?

Count in multiples of twos, fives and tens. **(Multiplication and division)**	Use concrete objects to practise counting in steps of 2, 5 or 10 e.g. (pairs of socks, crayons in packs of 5 or 10)	Use pictorial representations to practise counting in 2's, 5's and 10's. **For example:**  How many eyes are there altogether?	Counting in 2s, 5s and 10s from any number without concrete or pictorial resources. Children may learn how to use an array to support counting in 2's, 5s and 10's and use this to solve problems.

Key Stage 1 – Year 1

ADDITION AND SUBTRACTION

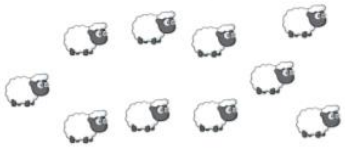
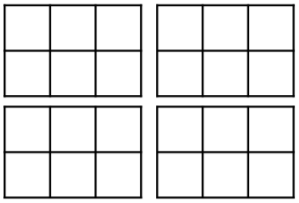
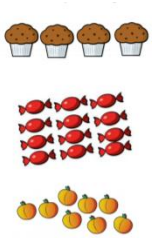
Children in Year 1 will…

National Curriculum Statement	Progression of Learning		
	Concrete	**Pictorial**	**Abstract/reasoning**
Add and subtract one-digit and two-digit numbers to 20, including zero	Use concrete objects to begin adding two groups together. **Key questions:** How many were there at the start? How many more were added/taken away? What is the total? How many are left?	Use pictorial representations of real life objects to begin adding and subtracting.  Children may also begin to draw their own pictures to support them in solving addition and subtraction calculations. **For example:** 5+3=? Children might draw 5 circles and add 3 more to it to find the answer 8.	Children will begin to use a number line to support them I counting forwards and backwards as a means of adding and subtracting. Mental arithmetic methods should also begin to be developed at this stage.
Represent and use number bonds and related subtraction facts within 20	Use real-life objects and mathematical apparatus (cubes, numicon) to investigate how numbers to 20 can be made. **For example:**  		At this stage, children should be able to recall all number bonds and related subtraction facts to 20.
Solve one-step problems that involve addition and subtraction and missing number problems.	Children can use concrete objects to support them in finding a missing number.	Children will use a number line to support them in counting forwards and backwards when solving simple word problems.	

Key Stage 1 – Year 1

FRACTIONS

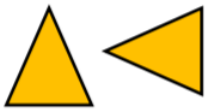
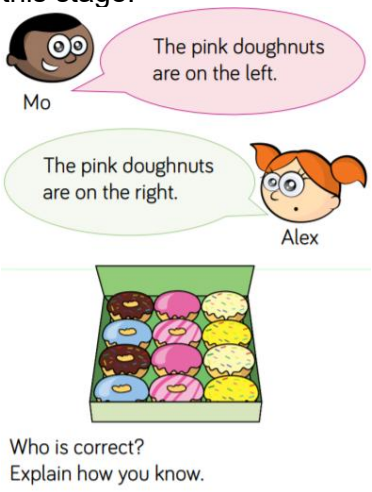
Children in Year 1 will…

Nation curriculum statement	Progression of Learning		
	Concrete	**Pictorial**	**Abstract/Reasoning**
Recognise, find and name a half as one of two equal parts of an object, shape or quantity	Children will physically share concrete objects into two groups. Use 'real life' concrete objects to show how things can be cut in half (apple, cake)	Use pictorial representations to find halves. Find half of the sheep. 	Children will begin to solve problems using their understanding of what a half and a quarter is. **For example:** How many different ways can you shade one half of the shapes? 
Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity	Children will physically share concrete objects into four groups. Use 'real life' concrete objects to show how things can be cut into quarters (apple, cake).	Use pictorial representations to find quarters. 	

Key Stage 1 – Year 1

GEOMETRY

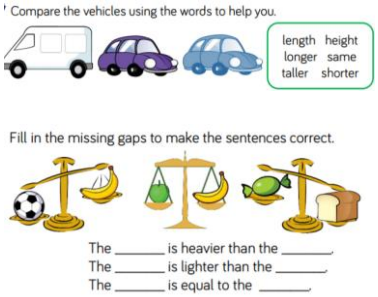
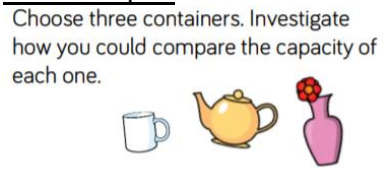
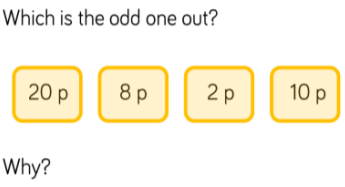
Children in Year 1 will…

Nation curriculum statement	Progression of Learning		
	Concrete	**Pictorial**	**Abstract/Reasoning**
Recognise and name 2D and 3D shapes	Children handle common 2D and 3D shapes and relate to everyday objects. Children to recognise the shapes in different orientations and sizes.	Children to relate shapes (including everyday objects) to pictorial representations of 2D and 3D shapes.	Children are able to visualise a shape at this stage and say the name of a shape based on its description. **Reasoning Activity:** Place a 3D shape in a feely bag. What shape could it be?  Explain how you know.
Describe position, direction and movement	Children to physically turn objects (this could include themselves). Children need to recognise whole turns, half turns, quarter and three quarter turns. Children to describe the position of objects within the classroom.	Children to describe the turns made in pictorial representations.  Children to use pictorial representations of real life objects to describe its position.	Children begin to reason at this stage.  Who is correct? Explain how you know.

Key Stage 1 – Year 1

Measurement

Children in Year 1 will…

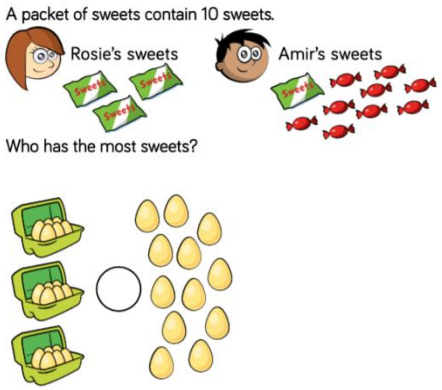
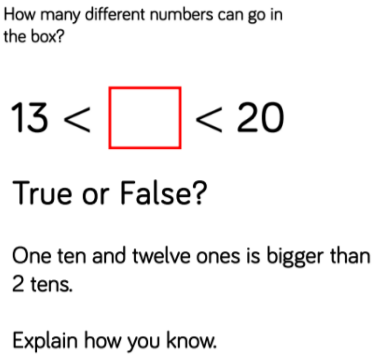
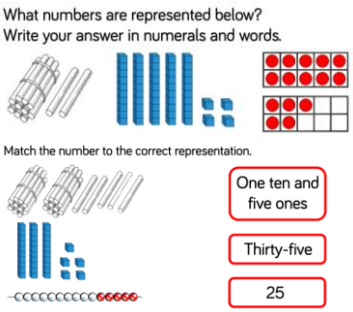
Nation curriculum statement	Progression of Learning		
	Concrete	**Pictorial**	**Abstract/Reasoning**
Compare, describe and solve practical problems for: • **Lengths and heights** • **Mass/weight** • **Capacity and volume** • **time**	Children need to understand the language of longer/shorter, heavier/lighter, taller/shorter, double/half, full/empty, slower/quicker, earlier/later. They will do this using concrete objects.	Use pictorial representations to embed language. For example: 	Children begin to solve problems – they may still use concrete objects or pictorial representations. For example: 
Measure and begin to record the following: • **lengths and heights** • **mass/weight** • **capacity and volume** • **time**	Children will use non-standard units of measurement (hands, cubes etc) before progressing onto using standard units (ruler for cm, scales for g/kg etc).	Pictorial representations to begin reading scales for length, mass, volume and time.	Children will begin investigating how they can use standard forms of measurement to find length, mass and capacity. For example: 
Recognise and know the value of different denominations of coins and notes.	Children will use coins and notes to begin recognising what they are and their value. They may us in practical contexts such as role playing paying for items in a shop.	Children will begin to relate the physical object to a picture to continue deepening their understanding of coins. For example: 	Children begin to solve problems and explain their reasoning. For example: 
Sequence events in chronological order. **Recognise and use language relating to dates including days of the week**	Children need to understand the vocabulary before, after, soon, next, then, first, today, yesterday, tomorrow, morning, afternoon and evening. Children may use songs to embed their understanding of the days of the week and months of the year. Children will use analogue clocks to begin telling the time.		

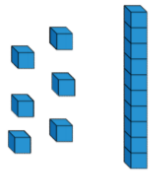
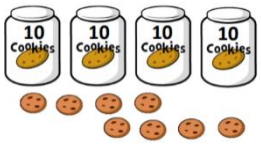
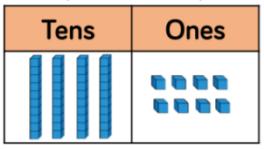
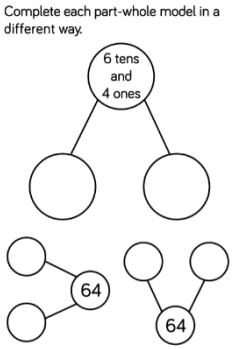
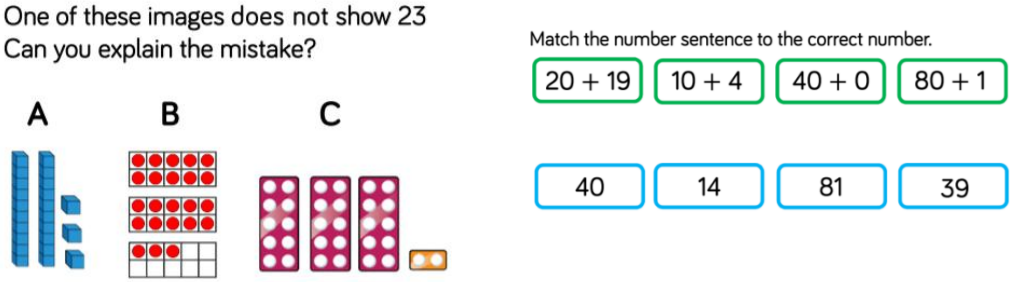
and months of the year. **Tell the time to the hour and half past.**	

Key Stage 1 - Year 2

NUMBER

Children in Year 2 will…

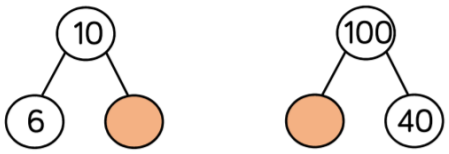
National Curriculum Statement	Progression of Learning		
	Concrete	**Pictorial**	**Abstract/Reasoning**
Read and write numbers to at least 100 in numerals and words	Match concrete objects to pictorial representations of the number and the word. Practice reading the number and then writing the word and vice versa. Practice counting objects and writing the number in digits and words. How can you count the objects? Do you have a strategy? What would 1 more/less be?		
Compare and order numbers from 0 up to 100 using < > and = signs	Children to begin grouping objects together and talking about which group has the most, least of the same amount. At this stage, the mathematical symbols < > = will be introduced for children to use when comparing groups of concrete objects.	Using pictorial representations, children will reinforce their understanding of the mathematical symbols < > = to compare numbers. **For example:** 	At this stage of learning, children should be confident in their use of the mathematical symbols < > = and should be beginning to solve problems. **For example:** 
Identify, represent and estimate numbers using different representations	Provide opportunities for children to show numbers in different ways using 'real life' concrete objects. Then begin to substitute real life objects for mathematical resources. (numicon, dienes etc).	Use pictures of concrete resources to support representing numbers in different ways. 	At this stage of learning, children should begin to reason and problem solve. They may draw on their knowledge and understanding of concrete objects and pictorial representations to support them in doing this. **For example:**

			Jack says he has 61 Is he correct?  Explain your reasoning.
Recognise the place value of each digit in a two-digit number (tens, ones)	Use concrete objects to partition numbers into different combinations. Begin to substitute concrete objects for mathematical equipment – partition using, numicon, dienes etc	Use pictures of real life objects to support partitioning into tens and ones.  Use picture representations of mathematical objects to support recognition of place value.  	At this stage, children should be able to reason about place value and use resources effectively to partition the same number in different ways. **For example:** 
Use place value and number facts to solve problems	Children can use concrete resources if and when needed to support them in solving problems. **For example:**  		
Count in steps of 2, 3 and 5 from 0, and in 10s from any number, forwards and backwards	Use concrete objects to practise counting in steps of 2, 5 or 10. Use concrete objects and mathematical apparatus to begin counting in 10s from any number (e.g. using dienes to repeatedly add 10 to a number.	Children will learn about repeated addition and will begin to use pictorial representations to support them in solving calculations. Children will also secure their understanding of an array as a method for solving multiplication calculations. They may use pictures of concrete objects to support them in their understanding of this.	At this phase of learning, the children will need to learn times table facts. The children will also understand how to use and draw an array independently to support them in answering multiplication calculations.

Key Stage 1 - Year 2

ADDITION AND SUBTRACTION

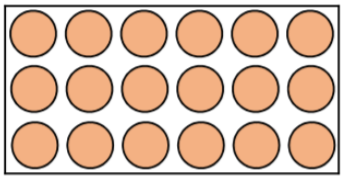
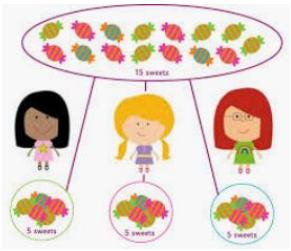
Children in Year 2 will…

National Curriculum Statement	Progression of Learning		
	Concrete	**Pictorial**	**Abstract/Reasoning**
Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100.	Children will use the part-whole model to derive and use facts to 10, 20 and 100. Complete the part-whole models below: 		Children to develop rapid recall of these facts and then use this understanding to reason. **For example:** Kim says, "If I know 9 + 1 = 10, I can work out 90 + ___ = 100" Find the missing number and explain how Kim knows.
Add and subtract: • **A two-digit number and ones** • **A two-digit number and 10s** • **Two two-digit numbers** • **Three one-digit numbers** **Show that addition of two numbers can be done in any order and subtraction cannot.**	At this stage of learning, the children will use mathematical apparatus to support them in adding numbers together. Digits will be referred to as tens and ones. **For example:** Use the place value charts and concrete materials to complete the calculations.  2 3 + 4 0  5 6 − 3 0		At this stage of learning, children will use the 100 square to develop their understanding of place value and begin to use this to add and subtract ones and tens from any number. Following on from the 100 square, children will use the column method for addition and subtraction. They will learn how to carry into the tens when adding and exchange a ten when subtracting. When carrying a ten, the digit will be carried to the top of the tens column. 3 2 + 4 5 7 7

Key Stage 1 – Year 2

MULTIPLICATION AND DIVISION

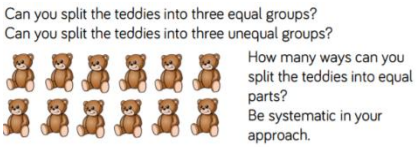
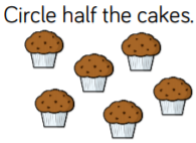
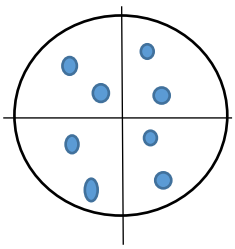
Children in Year 2 will…

National Curriculum Statement	Progression of Learning		
	Concrete	**Pictorial**	**Abstract/Reasoning**
Recall and use multiplication and division facts for the 2, 5 and 10 times tables. **Calculate mathematical statements for multiplication.** **Show that multiplication can be done in any order.**	Children will begin by grouping concrete objects to support them in counting in steps of 2, 5 and 10.	Children will then use pictorial representations of grouped objects and begin to link this to repeated addition. **For example:**  2 + 2 + 2 + 2 = 8	Children will learn how to use an array to support them in solving multiplication calculations. **For example:** 3x6 =  Children will now need to learn all times table facts for 2, 5 and 10 times tables to enable rapid recall.
Calculate mathematical statements for division.	Children will begin by physically sharing concrete objects into groups.	Children will then use pictorial representations to share and group. 	Children will learn the inverse operation and how multiplication facts can support rapid recall of division facts.

Key Stage 1 – Year 2

FRACTIONS

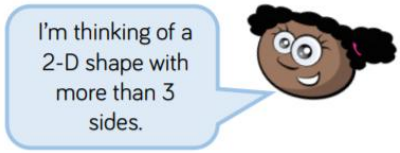
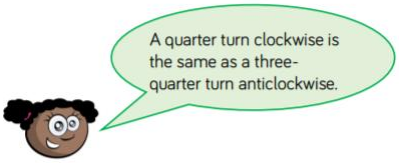
Children in Year 2 will…

National Curriculum Statement	Progression of Learning		
	Concrete	**Pictorial**	**Abstract/Reasoning**
Recognise, find, name and write fractions 1/3, ¼, 2/4 and ¾ of a length, shape, set of objects or quantities.	Children will begin by sharing concrete objects to ensure children recognise fractions as equal groups. Use 'real life' concrete objects to show how things can be cut in half (apple, cake)	Using pictorial representations, the children will find equal groups and fractions of  amounts.  	Children will learn the following written method for solving fraction problems: **¼ of 8 = 2** 
Write simple fractions for example ½ of 6 =3 and recognise the equivalence of 2/4 and 1/2	**Recognise equivalence:** Through cutting up apples/cake etc – show how eating half the cake is the same as 2/4.	**Recognise equivalence:** **Activity:** Using two strips of identical paper, explore what happens when you fold 1 into two equal pieces and the other into four equal pieces. 	

Key Stage 1 – Year 2

GEOMETRY

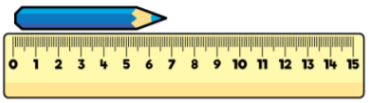
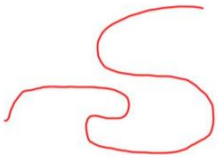
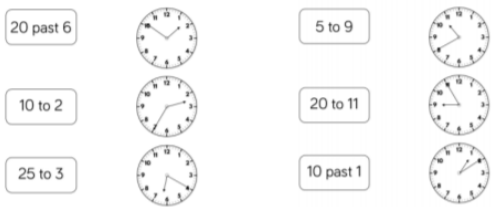
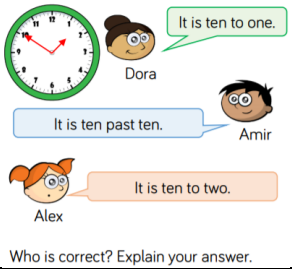
Children in Year 2 will…

Nation curriculum statement	Progression of Learning		
	Concrete	**Pictorial**	**Abstract/Reasoning**
Identify and describe the properties of 2D and 3D shapes **Compare and sort 2D and 3D shapes.**	Children handle common 2D and 3D shapes and relate to everyday objects. Children to recognise the shapes in different orientations and sizes. Children to use mathematical vocabulary to describe the shapes (lines of symmetry, edges, vertices, faces)	Children begin to relate shapes to pictorial representations and use a combination of both to describe the properties.	Children are able to visualise shapes at this stage and use this to describe their properties and solve problems. **Reasoning Activity:**  What shape could Whitney be thinking of? Are there any other shapes it could be? What shape is Whitney definitely not thinking about? How do you know?
Order and arrange combinations of mathematical objects in patterns and sequences	Use concrete objects to create patterns and sequences.	Continue patterns and sequences based on pictorial representations. **For example:** 	At this stage, children will be able to reason and make predictions about what will come next in a sequence. **For example:** Dora says that the 12th shape in this pattern will be a triangle.  Is she correct? How do you know?
Use mathematical vocabulary to describe position, direction and movement.	Use concrete objects to support descriptions of position and movement. Children should be using the vocabulary 'clockwise,' anti-clockwise,' 'left' and 'right'	Use pictorial representations to begin describing position, direction and movement. **For example:** 	At this stage, children will begin to reason. **For example:** Is Whitney correct?  Convince me.

Key Stage 1 – Year 2

MEASUREMENT

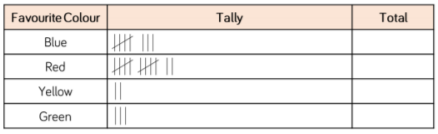
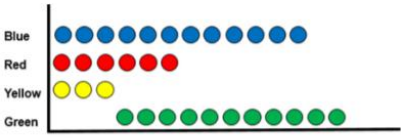
Children in Year 2 will…

Nation curriculum statement	Progression of Learning		
	Concrete	**Pictorial**	**Abstract/Reasoning**
Choose and use appropriate standard units to estimate and measure length/height, mass, temperature and capacity **Compare and order lengths, mass, volume.**	Children will use rulers, metre sticks, scales, thermometers, measuring jugs and cylinders to measure accurately in cm/m, g/kg, ®c and ml/l.	Children will use pictorial representations to begin reading scales. For example: Choose a variety of objects and practice measuring them using a centimetre ruler. Remember to line up the object to the 0 mark on the ruler. e.g. How long is the pencil to the nearest centimetre? 	Children will begin to reason and solve problems. For example: How long is this piece of string? How could you find out?  Does the length change if you change the orientation?
Recognise and use symbols for pounds and pence. **Find different combinations of coins that equal the same amounts of money.** **Solve simple problems involving money, including finding change.**	Children will use coins and notes to embed their understanding of their value. Using the coins, they will the find different ways to pay for items in a shop. They will also use coins in a practical contexts to support them in finding change.	Children use pictorial representations to support them in selecting the correct coins required to make an amount. For example: Circle 56 p. 	Children will begin to solve problems using concrete objects when required: For example: Dora has these coins.  She spends 53 p. What money will she have left? What coins could it be?
Tell and write the time to 5 minutes.	Children will use analogue clocks to begin telling the time.	Children will use pictures of clocks to read the time. For example: Match the times to the correct clock.  	Children will begin to reason and problem solve. For example:  Who is correct? Explain your answer.

Key Stage 1 – Year 2

STATISTICS

Children in Year 2 will…

Nation curriculum statement	Progression of Learning		
	Concrete	**Pictorial**	**Abstract/Reasoning**
Interpret and construct simple pictograms, tally charts, block diagrams and simple tables.	Children will sort concrete objects into categories and count the objects in each.	In practical contexts, children will begin to collect information and read and interpret tables, pictograms and block diagrams. For example: Complete the tally chart.  What does the data tell you? Tell me the story.	Children will begin to reason and problems solve. For example: Here is a pictogram.   Do you agree with Eva? Explain why and correct any mistakes.