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| **EYFS and Links with Statutory Requirements across KS1 – Mathematics** |
| ***Numbers, Ordering, Place Value*** *Remember: The position a digit is placed in a number determines its value. The language used to name numbers does not always expose the place value, for example the word ‘twelve’ does not make it transparent that the value of this number is ten and two. It is important that children develop secure understanding of the value of each digit. Place value is based on unitising: treating a group of things as one ‘unit’. In mathematics, units can be any size, for example units of 1, 2, 5 and 10 are used in money. In place value units of 1, 10 and 100 etc. are used. The position (place) of a digit in a number determines its value. Hence the term* ***place value.*** |
| Application in Continuous Provision FS | adult led EYFS | Year 1 | Year 2 | *Notes* |
| **Construction (blocks):** comparing lengths and heights of blocks and models built: same length as, shorter than, longer than; height: same height as, shorter than, taller than;**Construction (items that connect):** comparing amount of items used in built models/numbers of wheels/etc.**Water:** comparing the capacity of different containers i.e. same/more than/less than etc. Be comparing the speed of flow of water from different containers**Sand:** comparing properties of dry and wet sand and using language to describe similarities and differences also counting sand pies/shells in sand/ etc. Also weight/mass: same weight as, balanceswith, lighter than, heavier than**Malleable:** counting and comparing items made and equipment used. Also weight/mass: same weight as, balances with, lighter than, heavier than**Mark making:** items to use which are labelled and numbered so children have to count them back when tidying up**Workshop:** items displayed in amounts and types so that comparing and ordering is part of working behaviours in this area/zone.**Painting:** items labelled (thick paint brushes & thin paint brushes) and numbered to promote comparing and ordering in this area.**Role play:** promoting comparing and ordering with how items are displayed and which items are being used **Small world:** promoting comparing and ordering with how items are displayed and which items are being used | Count aloud saying the numbers from 1 to 20 (and beyond) | N&PV: count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number N&PV: count … numbers to 100 in numerals; **count in multiples of twos, fives and tens**  | N&PV: count in **steps of 2, 3, and 5 from 0,** and in tens from any number, forward and backward *(also up to 100 and beyond, counting in ones, forwards and backwards)*P&D: order and arrange combinations of mathematical objects in **patterns and sequences** *(this* *requirement comes from the ‘Geometry: position and direction’ domain but it links well with this work.)* | *When* ***counting*** *to 100 with everyone, focus EYFS on using the pattern of ‘one to nine’ to count within each boundary and put more emphasis on backwards and over boundaries for Y2.**When counting in multiples, initially say the numbers in between the multiples quietly and saying the multiples louder.**Focus on describing numbers which are one more and one less than other numbers. Then for Y2, ten more and ten less…* |
| Whilst counting on say: ‘six and one more is seven and one more is eight…’ as well as counting back ‘ten and one less is nine and one less is eight…’ | N&PV: given a number, identify one more and one less | *one more than an odd number is even etc.* |
| Subitise amounts using a variety of patterns, up to 5 (including up to ten where the patterns they know up to 5 are combined i.e. two fives like the dice patters). | N&PV: 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 | N&PV: compare and order numbers from 0 up to 100; use <, > and = signs N&PV: recognise the place value of each digit in a two-digit number (tens, ones) N&PV: identify, represent and estimate numbers using different representations, including the number line | *When understanding* ***numbers ad amounts*** *you can use Base Ten equipment , bead strings and 10p and 1p pieces to build numbers to compare amounts. Use multilink/Numicon to prove a number is odd or even.* *Sketch images of equipment as proof.* |
| Read and write numbers as numerals (currently up to twenty) but focus explicitly up to 10. | N&PV: read and write numbers from 1 to 20 in numerals and words.N&PV: … read and write numbers to 100 in numerals. | N&PV: read and write numbers to at least 100 in numerals and in words N&PV: use place value and number facts to solve problems. | *How many different words do we say when we count from one to one hundred? Which digits are written with just straight lines? With just curved lines? With straight and curved lines?* |
| ***Addition and Subtraction (combining, separating and comparing amounts)****Remember: Relating numbers to 5 and 10 helps develop knowledge of the number bonds within 20. For example, given 8 + 7, thinking of 7 as 2 + 5 and adding the 2 to 8 to make 10 and then the 5 to total 15. Thinking of part whole relationships is helpful in linking addition and subtraction. For example, where the whole is 6, and 4 and 2 are parts. This means that 4 and 2 together form the whole, which is 6 and 6 subtract 4 leaves the 2 and 6 subtract 2 leaves the 4. Understanding that addition of two or more numbers can be done in any order is important to support children’s fluency. When adding two numbers it can be more efficient to put the larger number first. For example, given 3 + 8 it is easier to calculate 8 + 3. When adding three or more numbers it is helpful to look for pairs of numbers that are easy to add. For example, given 5 + 8 + 2 it is easier to add 8 + 2 first than to begin with 5 + 8. Understanding the importance of the equals sign meaning ‘equivalent to’ using the expression ‘is the same as’ (i.e. that 6 + 4 = 10, 10 = 6 + 4 and 5 + 5 = 6 + 4 are all valid uses of the equals sign) is crucial for later work in algebra. Empty box problems can support the development of this key idea. Correct use of the equals sign should be reinforced at all times. Altering where the equals sign is placed develops fluency and flexibility.* |
| Application in Continuous Provision FS | adult led EYFS | Year 1 | Year 2 | *Notes* |
| **Construction (blocks):** comparing amounts of blocks used such as ‘total’, ’altogether’, ‘you have used three more bricks than your friend’, ‘your friend has used three fewer bricks than you’…**Construction (items that connect):** comparing and totalling the amount of items used in built models/numbers of wheels/lengths of parts/etc.**Water:** putting a large amount of liquid into smaller unequal containers and filling a large container with smaller unequal containers**Sand:** comparing and totalling items made and being used in the sand**Malleable:** comparing and totalling items made and being used in the sand**Mark making:** items to use which are labelled and numbered so children have to count them back when tidying up – ‘How many thick writing pencils should we have? Are they all there? How many are missing?’**Workshop:** items displayed in amounts and types so that comparing, ordering and totalling is part of working behaviours in this area/zone.**Painting:** items labelled (thick paint brushes/thin paint brushes) and numbered to promote comparing, ordering and totalling in this area.**Role play:** promoting comparing, orderingand totalling with how items are displayed and which items are being used; ‘How many different hats do we have in the area today? How many are being used by you and how many are still on the shelf?’**Small world:** promoting comparing, ordering and totalling with how items are displayed and which items are being used | Draw images of amounts (subitising patterns) to show parts and whole of amounts. | A&S: read, write and interpret mathematical statements involving addition (+), subtraction (–) and equals (=) signs  | A&S: 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 | *Children should create number sentences with dots as well as numerals. Focus on the idea of part-whole i.e. for 12-4 say: ‘Twelve is the whole (full number) and we are splitting it into two parts. One part is 4 so the other part will be 8.’* |
| Know that if amounts are moved around the total remains the same i.e. ‘bunny ears’ and drawing the same amount in different ways. | A&S: represent and use number bonds and related subtraction facts within 20 | A&S: recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100 | *Again, teach through part-whole i.e. 10 is the whole (the full number) which can be split into two parts. Here, one of the parts is 4 & the other part is 6.’ (Which other ways can we split 10 into two parts? GD: If one of the parts is an even number will the other part ever be an odd number?)* |
| Using the counting items in ones and subitising to know the total of amounts (up to 10).Drawing amounts to show how many in total.Drawing amounts to cross items off for ‘taking away’.Building and drawing towers for two amounts to show the distance between them. | A&S: add and subtract one-digit and two-digit numbers to 20, including zero | A&S: 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 | *Encourage the use of facts as well as counting on and back in ones, such as doubles and number bonds.* |
| Adding and taking-away and finding the distance between items in areas of Continuous Provision, i.e. in the construction area, outdoors, sand area, water area, etc. | A&S: solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as: 7 = – 9  |  A&S: show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot A&S: recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems. | *Again, the concept of part-whole is crucial to understanding the ‘balance’ of the equals sign. Call the sign ‘is the same as’ when reading number sentences aloud.* |
| ***Multiplication and Division (equal groups )****Remember: Counting in steps of equal sizes is based on the big idea of ‘unitising’ ; treating a group of, say, five objects as one unit of five. Working with arrays helps pupils to become aware of the commutative property of multiplication, that 2 × 5 is equivalent to 5 × 2. It is important that pupils both commit multiplication facts to memory and also develop an understanding of conceptual relationships. This will aid them in using known facts to work out unknown facts and in solving problems. Pupils should look for and recognise patterns within tables and connections between them (e.g. 5× is half of 10×). Pupils should recognise multiplication and division as inverse operations and use this knowledge to solve problems. They should also recognise division as both grouping (putting a larger amount into ‘equal groups of’ by taking items a group at a time) and sharing (by sharing items between places). The recognition of pattern in multiplication helps pupils commit facts to memory, for example doubling twice is the same as multiplying by four, or halving a multiple of ten gives you the related multiple of five.* |
| Application in Continuous Provision FS | adult led EYFS | Year 1 | Year 2 | *Notes* |
| **Construction (blocks):** make a model which is double the height of the first; make two models with different sized bricks where the model with the smallest bricks has double the number of bricks – is it double the height now?**Construction (items that connect):** count the wheels on the model in twos; make more carriages which are exactly the same and fit them together… **Water:** putting a large amount of liquid into smaller equal containers and filling a large container with smaller equal containers **Sand:** Be doubling items made and using two shells in each sand pie…**Malleable:** Be doubling items made; making specific reference to using bun trays in arrays**Mark making:** when tidying up, maybe some could count items in twos using both hands at once – ‘Can you make a story book about counting in equal groups/doubling?’; ‘Can you draw with both hands at the same time so that you double the amount you draw?’**Workshop:** Can you make a model that has wheels in pairs? Can you make your own ‘Russian dolls’ where one fits inside the other?**Painting:** Can you make a painting of a ladybird by folding so that the dots are doubled?**Role play:** When you look in the mirror are there now two of you? Put these items into the party bags equally.**Small world:** Put the twelve animals into equal groups and arrange them in their groups. Put these footballers into equal teams… | Talk about items being in equal groups (or not in equal groups)Discuss: How many equal groups there are. How much in each group. How much in total. (This will need a great deal of time on it – drip feed it over the year. Aim for clarity of description and a deep understanding.) | M&D: 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.  | M&D: recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers M&D: calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (×), division (÷) and equals (=) signsM&D: show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannotM&D: solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts. | *Encourage part-whole thinking where each part is the same value as each other.**Encourage thinking of multiplication and division as scaling i.e. by using descriptions such as: twice as much as… and three times as much… three times taller… etc.**When looking at odd and even numbers, DO NOT teach them the proof by sharing into two places as the children will then believe that they cannot halve an odd number. Instead, use the model of putting the number of items into groups of two (pairs) and if the amount can be built into groups of two with nothing left over it will be an even amount but if there is one left over when putting into groups of two it will be an odd number. Numicon tiles show this proof.* |
| ***Fractions (sharing items equally)****Fractions express a relationship between a whole and equal parts of the whole. Ensure children express this relationship when talking about fractions. For example, ‘If the circle (where the circle is divided into four equal parts with one part shaded) is the whole, one part is one quarter of the whole circle.’**Halving involves partitioning an object, shape or quantity into two equal parts. The two parts need to be equivalent in, for example, area, mass or quantity. Fractions involve a relationship between a whole and parts of a whole. Ensure children express this relationship when talking about fractions. For example, ‘If the bag of 12 sweets is the whole, then 4 sweets are one third of the whole.’ Partitioning or ‘fair share’ problems when each share is less than one gives rise to fractions. Measuring where the unit is longer than the item being measured gives rise to fractions (i.e. using a metre ruler to measure something shorter than 1 metre).* |
| Application in Continuous Provision FS | adult led EYFS | Year 1 | Year 2 | *Notes* |
| **Construction (blocks):** make a model which is half the height of the first; share the bricks out equally before you start; which of these bricks are half as long/tall as each other?**Construction (items that connect):** make your model half the size of this model.**Water:** half full; half empty; not full; full; less than full; share out the ‘tea’ equally between these cups **Sand:** cut your sand pie exactly into two halves…**Malleable:** cut your cakes exactly into two halves…**Mark making:** make a book to show about halves**Workshop:** make half of your model using plastic straws and half of your model using paper straws…**Painting:** make a painting by mixing colours where a colour is made of half yellow and half red…**Role play:** dress up with your top half in blue and your bottom half in red… put a yellow glove on you right hand and a green glove on your left hand… **Small world:** share the twelve animals into fields (2, 3 or 4 fields) so that each field has the same number of animals. | Experiences of cutting and pouring single (continuous) items into equal parts to share, such as toast, sandwich, milk, water and also of a group of items (discrete) such as grapes etc.  | F: recognise, find and name a half as one of two equal parts of an object, shape or quantity  | F: write simple fractions for example, 1/2 of 6 = 3 and recognise the equivalence of 2/4 and ½ | *The introduction of writing fractions as numerals is saved until Year 2. By that time, children are developmentally ready for an abstract representation. However concrete and pictorial experiences are still necessary.**Remember to use many different images of fractions such as rectangles and bar models and arrays as well as circles.* |
| F: recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.  | F: recognise, find, name and write fractions 1/3, 1/4, 2/4 and 3/4 of a length, shape, set of objects or quantity |
| ***Measurement (comparing, ordering and measuring in contexts)***Remember: Measurement is about comparison, for example measuring to find out which rope is the longest. Measurement is about equivalence, for example how many cubes are equivalent to the length of the table or the mass of the teddy? Standard units can initially be introduced through using a unit that is greater than the things being compared, for example comparing the capacity of a cup and a carton by filling each and pouring into matching bottles to compare the two. Measuring is a practical activity and activities should be conducted in practical contexts, using real materials. We need standard units of measure in order to compare things more accurately and consistently. |
| EYFS & CP  | Y1 | Y2 | *notes* |
| Length: Construction and Block PlayHeight: Construction and Block PlayWeight: Malleable AreaVolume: Sand AreaCapacity: Water AreaMoney: Home CornerTime: Daily RoutinesExperiencing length and height i.e. adult models putting children into height when lining up and discussing whether there is enough paper to cover a present.Experiencing that if something is heavy we need to be stronger to hold it up which is why balance scales ‘drop’ the heaviest item(s).Experiencing capacity by deciding if there is enough liquid in containers for purposes.Experiencing volume by commenting if items will fit into containers and places or not and how many items will fill containers.Sensing the passing of time using a timeline of the day (marked at hours) to use as a visual time-table and move a photograph across it as the day progresses, discussing where we have got to as well as making comments to the children about if we are going faster or slower etc. | M: compare, describe and solve practical problems for:-lengths and heights [for example, long/short, longer/shorter, tall/short, double/half] -mass/weight [for example, heavy/light, heavier than, lighter than] -capacity and volume [for example, full/empty, more than, less than, half, half full, quarter] -time [for example, quicker, slower, earlier, later]  | M: compare and order lengths, mass, volume/capacity and record the results using >, < and =  | *Use the NCETM model of understanding the greater and less than signs, rather than the euphemism of ‘Greedy Crocodile’:* |
|  M: measure and begin to record the following: -lengths and heights -mass/weight -capacity and volume -time (hours, minutes, seconds) | M: 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 | *Have a permanent interactive display table with measuring tools for the children to interact with (you might not need this if you have continuous provision).* |
| M: recognise and know the value of different denominations of coins and notes  | M: recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular valueM: find different combinations of coins that equal the same amounts of moneyM: solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change | *Find situations for children to use REAL money in class on a regular basis (1p, 2p, 5p and 10p coins) such as they ‘pay’ for their snack.* |
| M: sequence events in chronological order using language [for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening]  | M: compare and sequence intervals of time | *Have displays that include a calendar, clock, days and months etc. that can be discussed every day as part of daily routines.**Your year 2 children might be your ‘time team’ that tell you the time when you ask, across the day.* |
| M: recognise and use language relating to dates, including days of the week, weeks, months and years  | M: know the number of minutes in an hour and the number of hours in a day |
| M: tell the time to the hour and half past the hour and draw the hands on a clock face to show these times.  | M: 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 |
| ***Geometry – properties as well as position and direction (shapes)****Remember: It is important for children to be familiar with a range of 2-D and 3-D shapes and not just recognise them in specific orientations, e.g. thinking that this is a triangle but this or this are not. It is preferable to introduce 3-D shapes before 2-D shapes, since 2-D shapes only exist in the real world as faces of 3-D shapes. An emphasis should be placed upon identifying and describing the properties of shapes. It is important that pupils develop the correct mathematical language to do so. The development of precise language to describe position and movement is important. It is not uncommon for pupils to say that this is a square and this  is not, or that something like this is a triangle. It is important for pupils to know what the properties are that make up certain shapes, and for them not to just learn the names of typical proto looking shapes. It is helpful to think about non examples of shapes. For example, why this is not a triangle: Recognising pattern and generalising structures and relationships are key elements for laying the foundations for later work in algebra.* |
| Application in Continuous Provision | EYFS adult led | Y1 | Y2 | *notes* |
| **Construction (blocks):** make a model using just cylinders… cuboids… cubes**Construction (items that connect):** why are wheels cylinders?**Water:** fill the container shaped like a cylinder and pour the water into the container shaped like a cube [where both have the same capacity i.e. 1 litre]. What do you notice? **Sand:** make some different shapes in the sand and tell me about them.**Malleable:** make some different shapes in the playdough and tell me about them.**Mark making:** make a book to show about shapes; which letters have straight lines and which have curved lines? Which numerals have straight lines and which have curved lines? Make patterns with curved and straight lines.**Workshop:** make a model and tell me about the shapes you have used.**Painting:** print using different shapes to see the faces of the shapes – (begin to realise that some shapes have faces which are the all the same such as a cube and others contain different shaped faces such as triangular prisms)**Role play:** wear items with squares on them; pretend to be a shape; dance in straight lines; dance in curved lines**Small world:** make your characters move in different directions and in different places i.e. retell the story of the Billy Goats Gruff or other stories that use positional and directional language | Rehearse the words: ‘straight’, ‘curved’ and ‘flat’Name flat shapes.Name solid shapes | G: recognise and name common 2-D and 3-D shapes, including: for example, rectangles (including squares), circles and triangles] and for example, cuboids (including cubes), pyramids and spheres.  | G: identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical lineG: identify and describe the properties of 3-D shapes, including the number of edges, vertices and facesG: identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid]G: compare and sort common 2-D and 3-D shapes and everyday objects | *If you are using plastic flat shapes do not call them ‘2D’… call them flat. Say ‘This is the shape of a triangle’ rather than ‘This is a triangle.’* |
| Rehearse and model language of direction and position: put, place, over, under, above, below, top, middle, bottom, on, in, outside, inside, ***around,*** in front, behind, front, back, before, after, ***beside***, next to, ***apart,*** between, middle, edge, corner, direction, up, down, forwards, backwards, ***sideways,*** across, close, far, near, along, through, to, from, towards, away from, movement, slide, roll, turn, stretch, bend | P&D: describe position, direction and movement, including whole, half, quarter and three-quarter turns.  | P&D: use mathematical vocabulary to describe position, direction and movement, including movement in a straight line and distinguishing between rotation as a turn & in terms of right angles for quarter, half & three-quarter turns (clockwise & anti-clockwise) | *Take photographs with the children to put on display, and discuss, of the birds’ eye view of parts and areas of the classroom, and of the children working.* |
| ***Statistics (data)*** *Remember: Data need to be collected with a question or purpose in mind. Tally charts are used to collect data over time (cars passing the school, birds on the bird table).* |
| Use of daily routines and continuous provision to ‘drip feed’ data representation FS and Y1 | Y2 | *notes* |
| Use tally charts for:Numbers using different areas of provision. Marking going out of a door. How many children having sandwiches or school lunches.Use simple pictograms for:Number of children attending in each day (shown in ten frames).Voting for preferences.Use simple tables for:Sorting to different criteria and listing preferences. | S: interpret and construct simple pictograms, tally charts, block diagrams and simple tables | *Use daily routines and other subjects where you model how to complete and use tally charts, block diagrams, pictograms and simple tables, for real purposes.* |
| S: ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity |
| S: ask and answer questions about totalling and comparing categorical data |

Key principles: Use concrete resources and pictorial approaches to ensure that they understand what they are learning. Where appropriate, begin lessons with the year 1 requirement then ‘leave’ year 1s to continue to rehearse that. Move the year 2s to their requirements. SO – teacher models the teaching with concrete resources and the children copy the teacher. Then the teacher sketches a picture of the concrete resources and the children draw their resources. Talk and write (adults scribe if needed) about the learning. At other times, you might start a lesson with year 2s together whilst year 1s are doing something from before and then leave year 2s to get on with follow-up and then teach year 1s next thing. At other times, do some teaching tasks with everyone i.e. there might be children in year 1 who are able to understand year 2 requirements etc.

Do not be afraid of exposing younger children to ideas from year groups ahead as they will take it in if they understand or it will ‘go over their head’ for that time, however there will be some subliminal learning happening i.e. when counting aloud up to 100 in KS1, Reception children can join in with the numbers between each boundary if you emphasise the digit in the ones place. When looking at telling the time by drawing hands on a clock in year 2, Reception children could have a blank clock and write the numbers in order around the dial – their focus would be writing the numbers in order where the year 2 focus would be to write the numbers in order AND draw the hands to show times.