Mathematics Rubric: Updated June 2021 S.Thornton
This rubric details the **Learning Outcomes** for Math lessons.

In all math lessons, teachers plan engaging lessons with the aim that pupils:

- master skills in maths which they are then able to apply to a range of contexts within the school and home context
- embed their new skills and understanding to a range of contexts; thus supporting application and progress in learning
- acquire core mathematical skills to support their independence as they progress through the school; such as telling the time, using money and counting.
- are able to apply their understanding to the world of work; supporting them as a young adult when they leave school.

These support and ensure that the following National Curriculum aims are consistently met.

NATIONAL CURRICULUM AIMS (2014)

1. become **fluent** in the fundamentals of mathematics so that they are efficient in using and selecting the appropriate written algorithms and mental methods, underpinned by mathematical concepts
2. can **solve problems by** applying their mathematics to a variety of problems with increasing sophistication, including in unfamiliar contexts and to model real-life scenarios
3. can **reason mathematically** by following a line of enquiry and develop and present a justification, argument or proof using mathematical language.

Mathematical topic areas covered in this document are:

1	**Number** - Number and place value - Addition and subtraction - Multiplication and division - Fractions
2	**Algebra (Early skills)** - Patterns - Number sentences
3	**Ratio & proportion (Early skills)** - Size - Factions - Capacity
4	**Measurement** - Size, length, weight and capacity - Time - Money
5	**Geometry** - Shape - Position and direction
6	**Statistics**

1. Number: Number and place value

	B2 progression step 5	B2 progression step 6-8	B2NC step 1c-1b	B2NC Step 1b-2c	B2NC Step 2c-2a	B2NC Step 2a-3a
Subject specific knowledge **What do pupils need to know?**	To know numbers to 5 inc. their name and shape To know the order of numbers to 5 To know to only touch each object once as they count To know re-arranging objects does not change the quantity To know the last number counted represents the total number of objects	To know numbers to 10 inc. their name and shape (then numbers to 20 – PS8) To know the order of numbers to 10 (then numbers to 20 – PS8) To know one more and one less of a given number 1-20 To know ordinal numbers 1st 2nd and 3rd	To know the order of numbers 1-20 To know key words 'more' and 'less' To know one more and one less of a given number 1-20 To know which direction to move along the number line to find one more and one less of a number	To know numbers 1-100 including their name and shape To know 2s, 5s and 10s times tables; counting on and knowing their corresponding multiplication number sentences To know and use the language 'equal to, more than and less than (fewer) correctly	To know 3s, 4s and 6s times tables; counting on and their corresponding multiplication number sentence.. To know how many tens and ones a 2-digit number has. To know comparative symbols: < = and >	To know 7, 8, 50 and 100 times tables. To know 10 or 100 more and less than a given number; knowing to use partitioning method or times tables To know and identify any 3 digit/4-digit number. To know how many hundreds tens and ones are needed for a 3-digit number **HTO** To know how many thousands, hundreds ,tens and ones are needed for a 4-digit number **ThHTO**

Subject specific skills **What do pupils need to be able to do?**	Is able to rote count to 5 fluently Is able to count given quantities to 5 Is able to count out a quantity asked for to 5 Is able to find numbers to 5 Is able to represent numbers to 5 using objects or fingers Is able to write numbers to 5	Is able to count to 10 fluently (then to 20) Is able to identify any mistakes when counting or recognise a missing number Is able to order a full set of numbers to 10 (then 20) Is able to order a random set of numbers to 10 e.g. 2-6-10 (then to 20) Is able to state the order of objects in a range of scenarios e.g. I came 1st in the race	Is able to read and write numerals to 20 Is able to represent numbers using quantity of objects Is able to move forwards and backwards along a number line	Is able to count to 100 Is able to count forwards and backwards from any given number Is able to read and write any numeral 1-100 Is able to count in multiples of 2s, 5s, and 10s	Is able to count in 3s, 4s and 6s starting from 0. Is able to partition tens and ones in a 2 digit number. **TO** Is able to count forwards and backwards in 10s from any number Is able to compare and order numbers 0-100 using: < > = symbols	Is able to count 7, 8, 50 and 100 times tables. Is able to count 10 or 100 more and less than a given number. Is able to read and write numbers to 1000 (including words) Is able to compare and order numbers 3-4 digit numbers using words and mathematical symbols
Suggested teaching activities **How should I teach this?**	Counting songs Counting stories Passing objects around the classroom Collecting up to 2 leaves/fruit/veg Count number of coloured balls	counting songs/stories Numicon number lines Ordering number cards Collecting correct number of objects/leaves/fruit/veg Counting food harvested/grown on plant	Numicon number lines Number flashcards Write numbers in foam/sand/gloop Collecting correct number of objects/leaves/fruit/veg	Number square – find the number game Count on using fingers (large number in head and count on small number using fingers) Timetable songs/storiesCounting wheels on number of bikes (x2) representing	Counting wheels on bike (x2) lights on traffic light (x3) or wheels on car (x4) – visual representation of timetables Number squares to count on and backwards in 10s and find patterns Overlapping partition cards ITP partitioning (google)	

		Count number of circles/squares/triangles in the room		times tables visually Give a colour / shape a specific number e.g. 2 = green …. Count up in 2s for number of green balls found- link to multiples	Crocodile teeth for < and > symbols Count crop from two different patches/bushes/plants. Decide which has more/less using '< and >' symbols Count down timer in 10s from given number to find object in the room - competition	

1. Number: Addition and subtraction

	B2 progression step 5	B2 progression step 6-8	B2NC step 1c-1b	B2NC Step 1b-2c	B2NC Step 2c-2a	B2NC Step 2a-3a
Subject specific knowledge **What do pupils need to know?**	To know and be familiar with the word 'add' To know 'add' means the same as 'more' To know and be familiar with the word 'take' To know and be familiar with the word 'subtract' To know 'subtract/take' means the same as 'less'	To know symbols: +, - & =, To know to count altogether / how many left **after** a calculation using concrete resources To know to count on from first number being added (not starting from the beginning) To know to count on from the largest number being added (for efficiency)	To know what a number bond is To know and recall all number bonds to 10 To know what strategy to use to calculate a missing number bond. e.g. 7 + ? = 10	To know and recall all number bonds to 20 To know how to use the counting on method (for either addition or subtraction) e.g. 11 + 7 = 12,13,14,15,16,17,18 Or 21 – 19 = 20,21 (=2) To know how to use the counting backwards method for subtraction	To know addition of numbers can be done in any order To know the inverse of addition is subtractionand vice versa	To add and subtract numbers mentally including: 3-digit numbers and ones, 3-digit number and tens, 3-digit number and hundreds e.g. 514 + 200 Use formal written methods for addition and subtraction of 3 digit numbers **HTO** To be able to estimate calculations

	To be familiar with appearance of symbols + and -			To know which strategy to use to calculate an addition or subtraction number sentence and which is the most efficient.		To use inverse operations to check answers To solve problems including: missing number, number facts and place value
Subject specific skills **What do pupils need to be able to do?**	Is able to connect (add) cubes to a tower Is able to take off (subtract) cubes from a tower Is able to place more items onto a pile Is able to remove items from a pile Is able to pick up numerous objects when asked for 2	Is able to use concrete resources, to add two single digit numbers Is able to use language: add, subtract, more, less, altogether Is able to count on to calculate addition of two single digits Is able to remove an and objects and count how many now to 10 Is able to read an addition / subtraction number sentence Is able to represent a calculation using a	Is able to read and write number sentence using the correct symbols (+, - and =) Is able to represent number bonds to 10 using a variety of concrete resources. Is able to add and subtract one digits numbers from 1-2 digit number to 20	Is able to represent number bonds to 20 Is able to add and subtract 1-2 digit numbers from 1-2 digit numbers to 20 including 0 Is able to solve one step problems in number sentences e.g. 7 = 9 - ? Is able to solve one step worded problems	Is able to add and subtract: - 1digit from 2digit or 2digit from 2digit e.g.: 63 – 9 = 75 + 21 = Is able to solve simple problems using mental arithmetic Is able to solve addition and subtraction problems using pictorial / jotting methods independently Is able to use knowledge inverse of addition and subtraction to	Is able to add and subtract numbers mentally including: 3-digit numbers and ones, 3-digit number and tens, 3-digit number and hundreds e.g. 514 + 200 Is able to use formal written methods for addition and subtraction of 3 digit numbers **HTO** Is able to estimate calculations Is able to use inverse operations to check answers

		simple addition/subtraction number sentence. (P8-1C)			find missing numbers in a number sentence	Is able to solve problems including: missing number, number facts and place value
Suggested teaching activities How should I teach this?	Make towers by adding bricks together Destroy towers by taking away bricks Collect MORE leaves/fruit/veg/soil from outside Placing more items into showing trolley Taking items out of a showing trolley "add" or "subtract"balls into ball suction tube	Adding objects together (can be done using leaves/fruit/veg) Use addition box to add objects Add numicon pieces together Use fingers to count on Frog jumps on number line (on floor or numicon number line) Subtraction dentist teeth Subtract number of leaves/veg/fruit from a patch	Numberbond rainbow Numicon pieces to represent number bonds to 10 (photocopy 10 piece for underneath) Bead strings for number bonds – can make bead string using large seeds Subtract objects Frog jumps backwards on numberline Create number sentences with shape blocks	Numicon numberbonds to 20 Numicon addition/subtraction Frog jumps on number line Create number bonds with shape blocks		

1. Number: Multiplication and division

	B2 progression step 5	B2 progression step 6-8	B2NC step 1c-1b	B2NC Step 1b-2c	B2NC Step 2c-2a	B2NC Step 2a-3a
Subject specific knowledge	To know the word 'share' and respond appropriately.	To know words 'share', 'half' and 'equal' To know method 'one for you, one for me'	To know the word 'double' and connect to multiplying by 2.	To know times tables 2s and 10s To know what an 'array' is and how to use it.	To know and use multiplication facts for 2,5 and 10	To know and recall multiplication and division facts for 3, 4 and 8

What do pupils need to know?		To know sharing needs to be equal and 'fair' To know cutting objects in half need to be in equal pieces To know the word 'double' and connect to repeated addition. To know doubles to the total of 10 and recall confidently	To know doubles to the total of 20 and recall confidently To know key words : multiply and divide To know symbols: x and ÷ To know multiplying is linked to repeated addition To know division is linked to sharing		To know the multiplication of 2 numbers can be done in any order To know what a factor and multiple is	To know how to use formal written methods for multiplying 2-digit numbers
Subject specific skills **What do pupils need to be able to do?**	Is able to pass / share objects amongst peers in response to being asked to 'share' Is beginning to group objects in 2s and 3s	Is able to use vocabulary: share and half in structured and unstructured conversations Is able to share objects between two people using correct method. Is able to double quantities to the sum of 10 (first using concrete resources, then jottings and then recall.	Is able to double quantities to the sum of 20 (first using concrete resources, then jottings and then recall. Is able to represent the multiplication of 2s and 5s using concrete objects Is able to represent simple multiplication as a number sentence Is able to represent simple division as a number sentence	Is able to represent the multiplication of 2, 5 and 10 using arrays Is able to explore number patterns for multiplication (number square etc) Is able to share any given amount equally using concrete objects Is beginning to solve one step division and multiplication problems using arrays with support from an adult	Is able to calculate and write multiplication number sentences using x , ÷ and = Is able to solve contextual multiplication and division problems using a range of resources	Is able to use an array to give creative multiplication or division number sentences for a multiple Is able to multiply 2-digit numbers by 1-digit numbers using facts they already know Is able to solve problems involving multiplication and division; including scaling

			Is able to represent division by sharing objects in 2s			
Suggested teaching activities **How should I teach this?**	Have sweets/classroom objects to share during a party/celebration – passing to peers in the room Share things grown from allotment Share use of ball suction tube with turn taking	Cut things grown/bought into two Share food onto set number of plates/people	Share food onto set number of plates/people	Multiplication songs Arrays Number square – colouring squares to represent patterns Share food/things grown between people equally Cut food into $\frac{1}{4}$ Give colours / shape a specific value. Catch in a net and calculate e.g. if green = 2 and 5 were 'caught' = 10	Arrays Number square – colouring squares to represent patterns Share food/things grown between people equally Cut food into $\frac{1}{4}$ Give colours / shape a specific value. Catch in a net and calculate e.g. if green = 2 and 5 were 'caught' = 10	

1. Number: Fractions

	B2 progression step 5	B2 progression step 6-8	B2NC step 1c-1b	B2NC Step 1b-2c	B2NC Step 2c-2a	B2NC Step 2a-3a
Subject specific knowledge **What do pupils need to know?**	To know cutting an object creates more smaller pieces	To know when two pieces haven't been cut fairly – equally To know where to cut / draw a line to	To know key word: fraction To know representations of $\frac{1}{2}$ via images, resources and words (half)	To know representations of $\frac{1}{4}$ via images, resources and words (quarter) To know half of even numbers to 10	To know half of numbers to 20 To know representations of 1/3 and 1/8 via images, resources	To know and read all fractions represented as numbers To know key word: denominator

		represent 2 equal parts – halves To know key words: half, equal, same and fair.		To know to use 'sharing model' to find ¼ of numbers/objects e.g. 4 plates, share 16 apples.	and words (third/ eighths) To know the equivalence of 2/8 and ¼	To know the denominator represents the number of equal pieces the whole has been split into
Subject specific skills **What do pupils need to be able to do?**	Is able to experience cutting food into pieces	Is able to roughly cut a piece of food in half Is able to say why something hasn't been cut into equal pieces Is able to independently use key words 'equal' and 'fair' in structured and unstructured setting e.g. play	Is able to recognise and name ½ as two EQUAL parts Is able to correctly use the terminology 'Equal pieces" Is able to find ½ of a shape or quantity	Is able to recognise and name ¼ and 1 of 4 equal parts Is able to find ¼ of an object, shape or quantity	Is able to recognise, find, name and write fractions : 1/3, ¼ 2/4 and ¾ of a shape/set of objects Is able to calculate simple fractions of number e.g. ½ of 6 = 3	Is able to count up and down in tenths by dividing an objects into 10 equal parts Is able to recognise and use fractions as numbers Is able to show, using diagrams, equivalent fractions with small denominators To be able to add and subtractions with the same denominator To be able to compare and order fractions with the same denominator
Suggested teaching activities	• Cut up food • Cut up playdough	• Cut up food/playdough	• Fair/equal story	• Cut bread into ¼ (can be things grown)	• Place number of pieces into a fraction of a shape e.g fit two	

How should I teach this?		• Talk about fair – fair story	• Cut shapes into half could weigh pieces to see if they are roughly equal • Have shapes made out of playdough and cut using knife	• Cut playdough into ¼ – could weigh pieces to see if they are roughly equal • Connect to position and direction – quarter turns to move around the soft play room	¼ pieces into a half block to represent equivalent fractions • Fraction wall • Lego pieces to represent fractions and equivalent fractions • Connect to position and direction – quarter, half, three-quarter turns when moving around soft play area

2. Algebra (Early skills): Patterns, number and number sentences

	B2 progression step 5	B2 progression step 6-8	B2NC step 1c-1b	B2NC Step 1b-2c	B2NC Step 2c-2a	B2NC Step 2a-3a
Subject specific knowledge **What do pupils need to know?**	**Patterns:** To know colours within a 1-2 step pattern	**Patterns:** To know colours within a 2-3 step pattern To know sequence of colours in a 2-step pattern e.g. blue, green, blue, green **Number:** **To know** numbers 1-10 **To know** numbers 1-20	**Number:** **To know** 1 more and 1 less of numbers 1-20 **Number: Addition/subtraction** To know and recall all number bonds to 10 To know +, - and = symbols	**Number: Addition/subtraction** To know and recall all number bonds to 20 To know the relationship between + and - To know +, - and = symbols	**Number: Addition/subtraction** To know all 2-didgit numbers inc. their order To know the relationship between + and -	**Number: Addition/subtraction** To know all 3-4 didgit numbers inc. their order To know the relationship between + and -

| **Subject specific skills**

What do pupils need to be able to do? | **Patterns:**

Is able to continue missing colours from a 1-step pattern e.g. blue, blue, blue, blue, ? , blue …

Is able to **copy** a 2-step pattern including missing colours | **Patterns:**

Is able to **continue** missing colours from a 2-step pattern e.g. blue, green, blue, green, ? , green …

Number:
Is able to order numbers 1-10, filling in missing numbers e.g. 1,2,3,4,5,6 _, 8, 9, _

Is able to order numbers 1-20, filling in missing numbers e.g. 14, 15, _, 17, 18, _, 20 | **Number:**
Is able to fill in missing numbers in a number sequence e.g.
14, _, 16, _, 18, _, 20

Number: Addition/subtraction

Is able to identify missing numbers to complete a number sentence e.g.
8 + ? = 10

Is able to complete a + or – number sentence (to 10) by replacing letters with numbers e.g.
A=2
B=6
C = 5

2 + A = ?
6 – C = ? | **Number: Addition/subtraction**

Is able to identify missing numbers to complete a number sentence e.g.
18 + ? = 20

Is able to apply understanding of inverse operations to identify missing numbers in a subtraction number sentence e.g.
20 - ? = 18

Is able to complete a + or – number sentence (to 20) by replacing letters with numbers e.g.
A=8
B=10
C = 15

6 + A = ?
18 – C = ? | **Number: Addition/subtraction**

Is able to identify missing numbers to complete a number sentence e.g.
88 + ? = 100

Is able to apply understanding of inverse operations to identify missing numbers in a subtraction number sentence e.g.
100 – ? =88

Is able to complete a + or – number sentence (to 100) by replacing letters with numbers e.g.
A=50
B=10
C = 23

A + 20 = ?
A + B = ?
A + B + C = ? | **Number: Addition/subtraction**

Is able to identify missing numbers to complete a number sentence e.g.
485 + ? = 500

Is able to apply understanding of inverse operations to identify missing numbers in a subtraction number sentence e.g.
500 – ? =485

Is able to complete a + or – number sentence (to 1000) by replacing letters with numbers e.g.
A=500
B=100
C = 230

A + 100 = ?
A + B = ?
A + B + C = ? |

Suggested teaching activities **How should I teach this?**	-printing using paint -threading coloured beads	-printing using paint -threading coloured beads -Number songs and using number lines	-Use Numicon to support understanding of number bonds including missing numbers in number sentences -Using base ten sets and counters to calculate number bonds	-Using Numicon and -Operation triangle	-operation triangle (relationship between operations)	-operation triangle (relationship between operations)

3. Ratio & proportion: Early skills linked to fractions, size and capacity

	B2 progression step 5	B2 progression step 6-8	B2NC step 1c-1b	B2NC Step 1b-2c	B2NC Step 2c-2a	B2NC Step 2a-3a
Subject specific knowledge **What do pupils need to know?**	**Proportation** To know key words big/small and bigger/smaller To know key words more/less **Ratio** To know and count to 5 To know the key word fill	**Proportation** To know comparative key words: bigger/smaller, longer/shorter & taller/shorter **Ratio** To know and count to 10 To know how to accurately fill a measuring tool e.g. cup	**Proportation** To know comparative key words: bigger/smaller, longer/shorter & taller/shorter To know the key word 'double' **Ratio** To be familiar with the word 'part'	**Proportation** To know the key word 'double' To know fractions $\frac{1}{2}$ and $\frac{1}{4}$, $\frac{3}{4}$:	**Proportation** To know fractions $\frac{1}{2}$, $\frac{1}{4}$, $\frac{3}{4}$, 1/3 and 1/8	**Proportation** To know all fractions
Subject specific skills	**Proportation** Is able to identify objects as big/small or bigger/smaller	**Proportation** Is able to order objects by length and	**Proportation** Is able to alter the size of an object to make it	**Proportation** Is able to identify the fraction of a	**Proportation** Is able to identify the fraction of a	**Proportation** Is able to identify the fraction of a

What do pupils need to be able to do?	Is able to identify when there is more or less of a quantity of objects **Ratio** Is able to follow verbal instructions to create a mixture e.g. 1 cup of milk and 1 cup of flour	size inc. comparative language Is able to identify and describe the size of objects using comparative language **Ratio** Is able to follow verbal instructions to create a mixture e.g. 1 cup of cordial and 5 cups of water.	bigger/smaller or longer/shorter Is able to double the size of a shape Is able to double quantities up the total of 20 **Ratio** Is able to follow less detailed instructions involving ratio such as 1 part ___ and 8 parts ___ in a range of scenarios e.g. using coloured lego blocks / figurines / liquids	shape that has been shaded Is able to shade the correct fraction of a shape requested **Ratio** Is able to verbalise the ratio of objects used in play e.g. in a block of lego in a tower: 1 red : 7 blue.	shape that has been shaded Is able to compare the range of shaded fractions of shapes **Ratio** Is able to represent ratio of objects / mixtures e.g 1 red block and 6 blue blocks. → 1:6 1 flour and 4 water → 1:4	shape that has been shaded **Ratio** Is beginning to apply understanding of simple ratios for bigger quantities e.g. for every 1 cup of cordial, 4 cups of water -→ 2 cups cordial, 8 cups water
Suggested teaching activities **How should I teach this?**	-comparing objects in the classroom / mathematics figurines / 2d shapes / 3d shapes -Creating mixtures (link to science)	-comparing objects in the classroom / mathematics figurines / 2d shapes / 3d shapes -Creating mixtures (link to science)	-Building lego towers -printing to creative double the size of 2d shapes -using Numicon to double numbers but also shape	-Lego towers, - creating smoothies -shading shapes	-Lego towers -making mixtures -making drinks / smoothies -shading shapes	-Lego towers -making mixtures -making drinks / smoothies -shading shapes

4. Measurement: Length, Weight and capacity

	B2 progression step 5	B2 progression step 6-8	B2NC step 1c-1b	B2NC Step 1b-2c	B2NC Step 2c-2a	B2NC Step 2a-3a
Subject specific knowledge	To know key words: big/small tall/short	To know key words: heavy/light To know the size of object does not	To know they can measure lengths using cubes, objects or hand-spans	To know a ruler measures length To know how to use a ruler correctly: start	To know which is the correct standard unit for a measurement	To know how to break down a worded problem related to measure

What do pupils need to know?	To know to place objects next to each other to accurately compare inc. from same starting point	always determine the weight e.g. bigger does not always mean heavier	To know what a balance scale is and how to use it To know the side of the balance then touches the table = heaviest and the side that lifts = lightest	at zero and not end of ruler, then see where the object ends To know rulers only accurately measure straight objects – not curved. To know cm and mm are units to measure length To know 10 mm = 1cm To know you can measure liquids using cups and know each cup must be full for accuracy. To know a measuring jug measures liquids To know liquid is measured in ml and l To know how to use a measuring jug accurately: go to eye level and pour slowly.	e.g. mm,cm,m,g,kg etc To know what measuring tool is needed to measure something specific	
Subject specific skills	Is able to find big and small objects on request.	Is able to use every day language to talk about size in context and through play:	Is able to measure lengths using cubes/objects/ Hand-spans	Is able to measure the perimeter of 2d shapes (cm)	Is able to use standardised measuring tools to measure length, capacity or weight	Is able to solve worded problems related to measure.

What do pupils need to be able to do?	Experience comparing heights by placing objects next to each other. Is able to indicate which of two saucepans is the bigger. Experience comparing sizes by placing objects next to each other	Weight, capacity, distance, time, money. Is beginning to compare quantities of object e.g. knows whether they have more or less biscuits than their friend Is able to compare and describe lengths and heights using 'long/short, tall short' vocabulary Is beginning to compare and describe weights of objects using heavy/light	Is able to use a balance scale to aid comparative vocabulary independently	Is able to compare and describe lengths and heights using 'double/half' vocabulary Is beginning to use standardised measuring tools to measure length e.g. ruler (start with whole cm, then move onto cm & mm combined) Is able to compare and describe capacity using 'half full/quarter full/empty' vocabulary Is able to solve practical problems for length, weight and capacity. Is able to count out number of cups taken to fill a container Is beginning to use a measuring jug by reading the numbers in ml and attempting to measure this out with some accuracy	Is able to compare and order measurements (cm, ml, g etc)	

Suggested teaching activities **How should I teach this?**	• Line up toys according to size • Measurement stories • Compare familiar objects one small and one big	• Role play situations with comparative language e.g. shop. Please can I have a long piece of string? • Order the length of carrots grown when dug out Compare heights of square block / steps in right hand corner of soft play room	• Ordering heights of children in the class • Measure using hand spans/bricks • Balance weights / hold weights and compare • Compare weight of two of the same food grown • Use certain amount of cups of water to water crops daily • Measure marked out areas of soft play using hand spans Compare weight of chn using sea-saw soft play piece	• Measure with ruler/m wheel • Have competition of how far chn can run in 30 secs and measure etc • Fill containers with water • how many cups to fill this bowl • Measure liquids/weights according to recipe • Measure water needed for crops daily • Measure marked out areas of soft play using m and cm	• Add measurements of liquid together and check with addition method e.g. poor 450ml with 200ml – answer should be 650ml • Measure water that has evaporated over the course of a day (link with science and subtraction) • Measure out all recipe components Measure area and perimeter of marked out areas of soft play	

3. Measurement: Time

	B2 progression step 5	B2 progression step 6-8	B2NC step 1c-1b	B2NC Step 1b-2c	B2NC Step 2c-2a	B2NC Step 2a-3a
Subject specific knowledge **What do pupils need to know?**	To know the word 'wait'. To know the order of morning and night.	To know key words: before, after next, today, yesterday, tomorrow, morning, afternoon and evening To know which of the above key words links to past, present or future events.	To know the names of all days of the week To know Mon-Friday are wee days To know Saturday-Sunday and weekend dates Note: going from vocabulary/language they are used to in the UK To know all seasons To know all months in the correct order	To know key words: 'hour, minute and second'. To know clocks / watches tell the time To know clocks have two 'hands' and know which represent minutes and hours To know the minute hand on '12' = o'clock To know the minute hand on '6' = half past	To know the number of minutes in an hour and hours in a day To know left of the clock = past and right = to (towards the hour) To know the minute hand on '3' = quarter past and '9' = quarter to To know to count in 5s around the clock e.g. 1 = 5 past, 2 = 10 past – stopping at half past To know to continue to use key phrased : o'clock, quarter past, half past and quarter to even when telling the time to 5 minute intervals	To know and use vocabulary: AM, PM, morning, after noon and night To know the number of seconds in a minute, days in a month, days in a year inc. leap year

Subject specific skills **What do pupils need to be able to do?**	Is able to wait for an activity / turn Is beginning to / able to sequence event images from morning to night.	Is able to sequence events in chronological order using language: before, after, next, today, yesterday, tomorrow, morning, afternoon, evening' Is able to describe and compare events and activities using 'quicker, slower, earlier' vocabulary	Is able to name days of the week in order Is able to say days that come before or after another Is able to identify key events for specific days Is beginning to/ able to name months and seasons of the year in the correct order. Is beginning to / able to link seasons to weather and month to seasons	Is able to read o'clock times Is able to read half past times Is able to read a mixture of o'clock and half past times (flicking from one to another easily)	Is able to compare and sequence intervals of time Is able to read and write the times for quarter **past** (including drawings hands on a clock) Is able to read and write the times for quarter **to** (including drawings hands on a clock) Is able to read and write the times for quarter to and quarter past (including drawings hands on a clock) Is able to tell and write the time to 5 minute intervals (including drawing hands on a clock)	Is able to tell and write the time from an analogue clock; those with roman numerals Is able to estimate and read time to the nearest minute Is able to compare durations of events
Suggested teaching activities	• Waiting for snack/dinner /turn in game	• Ordering pictures of bed, brush teeth, food, school	• Ordering clocks • Physical clocks resources	• Saying month and year each day as part of routine in date	• Asking chn to water harvest at certain times of the day e.g. quarter to 12 • Time how long a lesson lasts	

How should I teach this?	• Good morning, good afternoon • Waiting for turn to water plants Chn to wait for their turn to use specific equipment in soft play area	• Saying day and date of each day in school routine • Knowing what says chn go to school • What time is it mr wolf • Role play making a dentist appointment etc • Watering harvest on set day of the week Understanding time taken for a plant to grow-how many days	• Looking at numbers on a clock face • Mr wolf game	• Timed competitions • Gym – exercise for certain time • Physical clock resources • Drawing o clock and half past • Watering harvest at half past time every day • Timed competitions how many …can you do in…? – time each other to complete circuit in soft play and compare timings using number skills	• Time how long it takes them to complete a task Finish soft play task at a specific time – children to read clock and know when to finish – know how long left

2.Measurement: Money

	B2 progression step 5	B2 progression step 6-8	B2NC step 1c-1b	B2NC Step 1b-2c	B2NC Step 2c-2a	B2NC Step 2a-3a
Subject specific knowledge	To know and be familiar with the appearance of money	To know key words: pounds and pence	To know there is a front and back to a coin	To know 'notes' are higher in value than coins	To know and use the symbols (£) and (p)	To know to round up the total and give more money

What do pupils need to know?	To know what money is – coins are money To know different coins look different To know some coins are shiny and some are not	<u>To know</u> and expect change to be given in money handling contexts	<u>To know</u> the names of all coins		<u>To know</u> coins can be added to make the same value of another coin <u>To know</u> more coins does not always mean more money	than eeded, then wait for change <u>To know</u> sensible coins to give when rounding e,g, if something is £4.50, give a £5 note and not a £10 if you have it
<u>Subject specific skills</u> **What do pupils need to be able to do?**	To experience handling money To experience handing money to somebody and receiving an item/object. <u>Is able to</u> separate coins based on their colour <u>Is able to</u> role play using money	<u>Is able to</u> use key words: pounds and pence in money role play opportunities <u>Is able to</u> hand over any coin to 'pay' for an item <u>Is able to</u> bring the item and a coin to the counter <u>Is able to</u> sort coins based on colour, size and shape	To be able to name all coins when placed <u>face up</u> To be able to name all coins when placed <u>face down</u>	Is able to order coins based on their value Is able to name all notes Is able to give equivalent amount for each note e.g. £5 note = 5 x pound coins	<u>Is able to</u> use correct signs £ and p independently <u>Is able to</u> find different combination of coins for the same value e.g. 5p + 5p =10p OR 5p + 2p + 2p + 1p = 10p <u>Is able to</u> solve simple problems for addition and subtraction of money	<u>Is able to</u> add and subtract amounts of money to give change in context
<u>Suggested teaching activities</u> **How should I teach this?**	• Money hidden in sand/foam • Putting money in and out of a purse/wallet Role playing shop	• Link with handling data – separate coins according to colour • Role play shop • Number coin flash Coin snap	• Coin snap • Role play shop Find me the … coin game	• Order game… which would you rather have? Role play shop – introduce notes and change	• Role play shop. • Buy items using more than one coin – link with addition • Change – link with subtraction Begin to link things grown in school that are used to make and sell food from school shop and café.	

3. Geometry: Shape

	B2 progression step 5	B2 progression step 6-8	B2NC step 1c-1b	B2NC Step 1b-2c	B2NC Step 2c-2a	B2NC Step 2a-3a
Subject specific knowledge **What do pupils need to know?**	To know to pick up and look at a range of shapes available To know to feel the whole shape To know shapes go onto the peg board	To know that the shape is the same even when it is a different colour/size from the original To know the shape is the same even when it is turned To know a triangle by their three representations (do not need to know mathematical names – just that they are all triangles) To know the name of 2D shapes: circle, square, rectangle, triangle and oval	To know size, colour and position do not alter the name of the shape To know the word 'dimensional' To know what a shape or 2D or 3D To know 3D shapes: sphere, cuboid, cube and pyramid.	To know and name 3D shapes: sphere, cuboid, cube and pyramid. To know which shapes are 3D without visuals	To know properties of all 2D shapes To know where lines of symmetry are for 2D shapes To know properties of all 3D shapes	To know to use a ruler to draw shapes To know what a right angle is To know angles: acute and obtuse
Subject specific skills	Is able to experience and handle different shapes	Is able to find physical shapes that are the same.	Is able to find 2d shapes in their environment	To be able to relate images to 3D shapes	Is able to identify and find properties of 2d shapes; including	Is able to draw 2d shapes accurately

What do pupils need to be able to do?	Is able to place a shape inside a suitable space (e.g. Numicon on a pegboard) Is able to make marks using a shape on a page (printing)	Is able to experience drawing around a shape Is able to name 2D shapes: Rectangles, squares, circles, triangles and ovals (P8) Is able to count number of sides on simple shapes	Is able to separate 2d and 3d shapes Is beginning to recognise and name 3D shapes: sphere, cuboid, cube and pyramid.	Is able to name 3D shapes from a picture or symbol alone Is able to compare and sort common 2d and 3d shapes and every day objects	sides and line of symmetry Is able to identify and describe 3d shapes; including edges, vertices and faces Is able to identify 2d shapes on the faces of 3d shapes	Is able to create 3d shapes using pliable material Is able to describe 3d shapes Is able to identify right angles in shapes Is able to be able to identify horizontal and vertical lines and pairs of perpendicular and parallel lines
Suggested teaching activities **How should I teach this?**	• Placing shapes in a hole • Numicon on peg boards – finding space available • Pattern printing using shapes – link with art and colours (could use leaves/soil) • Sensory shape in foam/sand	• Shape snap • Sensory shape in the bag • Take photos of different shapes • Drawing around shape – link with art and fine motor skills • Draw around cut up fruit and veg grown to explore their shape • Continue a pattern of two using	• Describing shape in the bag/behind back to a partner game • Take photos of different shapes in the environment • Shape snap • Locate a shape in the soft play area Continue a pattern of up to 4 using coloured balls in suction tubes of shape blocks	• Print using 3d shapes – finding shape of faces • Link orange/apples /plums etc to sphere • Describe hidden shape to a partner – communication skills link Find and name 3d shapes in soft play area	• Describing games • Build with 3d shapes – link with DT • Construct 3d shapes – link with DT • Find right angles in the environment using card template (can be on raised beds in play area) • Dance routine using angled turns Follow a map using turn and angles – link with P.E (orienteering and geog)	

	• Fit balls into [illegible] tube Continue a single colour pattern e.g. green, green, green, green	coloured balls [illegible] shape blocks Match shapes in the room that are different colours / sizes			

5. Geometry: Position and direction

	B2 progression step 5	B2 progression step 6-8	B2NC step 1c-1b	B2NC Step 1b-2c	B2NC Step 2c-2a	B2NC Step 2a-3a
Subject specific knowledge **What do pupils need to know?**	To know and be aware of where other people / objects are in comparison to themselves in the room. E.g. if someone is in front or behind them To know where specific items live in the classroom e.g. pens and glue sticks	To know the meaning of quick and slow To know the meaning of pull/push To know key words in front and behind To know to keep turning a shape / item until it fits in the box / hole	To know key words: forward, backward, inside, outside, underneath and ontop'.	To know key words: 'left, right and whole/ half /quarter turns		To know angles and turns: (1 turn, ¼ turn, ¼ turn etc) To know their picture representation
Subject specific skills	Is able to put rings on a peg Is able to imitate circles with hand	Is able to move quickly and slowly on demand	Is able to place an object forward, backward, inside, outside, underneath and ontop'	Is able to describe and react to movement using 'left, right and whole/ half /quarter turns	To be able to order and arrange combinations of mathematical objects in	To identify right angles and relate these to turns (1 turn, ¼ turn, ¼ turn etc)

What do pupils need to be able to do?	Is able to put a coat on a peg Is able to look for a missing item Is able to put objects away in the correct place Is able to place objects inside a container	Is able to pull and press pliable material Is able to place a shape in its specific hole Is able to rotate a shape to fit into a specific hole Is able to complete a 10 piece puzzle Is able to place a shape on top of its double (Numicon peg pattern boards)	Is able to describe and react to movement using 'forward, backward, inside, outside, underneath and ontop'.		patterns and sequences To be able to use mathematical vocabulary to describe position, direction and movement	
Suggested teaching activities **How should I teach this?**	• Doughnut ring game • Tidy game • Clearing up the crop area Planting certain plants in their areas	• Pass the playdough (ask chn to pull, press, squeeze etc the material) • Place shapes in a hole – link with Geometry • Jigsaw puzzles • Numicon peg board • Planting fruit/beg in the correct place Move slowly or quickly around soft play area	• Jigsaw puzzle • Simple dance routine using forwards and backward commands • Blindfold partner and guide them saying forward and backwards number of steps – link with number • Tidy room game Move forwards, backwards, climb over or under in the soft	• Dance routine • Blind fold partner • Tidy room game Move around maze / pathway in room using left / right vocab. Chn lead each other around room to stay away from the 'crafty crocodiles'	• Dance routine Use fraction language for turning directions in soft play area e.g. quarter turn right then stop.	

			play room – positional and directional language		

6. Statistics

	B2 progression step 5	B2 progression step 6-8	B2NC step 1c-1b	B2NC Step 1b-2c	B2NC Step 2c-2a	B2NC Step 2a-3a
Subject specific knowledge **What do pupils need to know?**	To know to place things of the same colour next to each other – with a clear gab from another colour To know same things go together	To know to line heights up to accurately sort.	To know to place objects into columns / squares to show categories. To know to look for similarities on use, shape, size or colour	To know how items have been sorted. To know what a pictogram is To know how to read a pictogram To know what a pictogram is for	To know what a tally is To know tallies are in 5s and to cross on the 5th stroke To know what a block graph is including key features	To know how to read data from a range of sources To know which form of data representation best suits the data they have collected
Subject specific skills **What do pupils need to be able to do?**	Is able to sort objects/items according to colour Is able to make two hand/foot prints on the same page	Is able to order the heights of children from big to small Is able to think of suitable places in the room to put familiar items e.g. cleaning items near the sink Is able to remove odd items from a pile e.g remove the odd colour items from a blue pile	Is able to sort familiar objects when given the criteria Is beginning to think of how to separate items based on similarities and differences	Is beginning to explain the reason for sorting items a particular way Is able to create a physical pictogram Is able to say which option had the most/least counts/votes	Is able to read and create a simple pictogram, tally chart, block diagrams and tables Is able to ask and answer simple questions about information gathered Is able to ask and answer totalling	Is able to use and read data from a bar chart, pictogram and table Is able to draw a bar chart independent to represent their own collected data including all key features. Is able to solve 1 and 2-step

					questions; comparing data	questions for finding data e.g. How many more apples did jack each than sue?- chn to read data then find difference
Suggested teaching activities **How should I teach this?**	• Separating bears by colour – art link • Separating bears by size (big and small) – link with Measure • Hand/foot print making – sensory	• Visual height bar chart with pupil bodies • Tidying activity • Odd one out game Separating fruit/beg/leaves by their colour or size	• Tidying/organising activity e.g. sort your eng and maths work into piles Odd one out game	• Make a concrete pictogram using physical resources • ITP for pictogram, tally chart and bar Gather information about crops grown – be done using a pictogram or making correct number of marks	• Create a story from information gathered • Here is the answer…. The question was? • Create questionnaire – eng link • Record data using ICT • Record crops grown – number Record length of crops grown	

Online resources

Here are suggested online resources to support the teaching of Mathematics.

- Twinkle (e.g. number cards, dice, clocks, number lines etc)
- White Rose
- NCETM (create an account which gives access to interactive editable ppts and printable resources)

Evidencing Work

There must be a **balance** between practical and worksheet based work. Each new skill must be taught using practical style lessons with the use of physical resources. At North Ridge we use a C-P-A approach (Concrete – Pictorial – Abstract) to teach new skills and concepts.

The teaching of the Mathematics curriculum **must not** solely be worksheet led.
See the following page for samples of practical and worksheet based evidencing.

Concrete / practical lesson evidencing

Name: _____ Date: _____

Learning objective:

INSERT IMAGE SUMMARY OF WHAT PUPIL HAS ACHIEVED EITHER IN ONE LESSON OR FOR THE WEEK.

My Success criteria

1	I rote count numbers to 5 independently and accurately	E/G/M
2	I touch each object once as I count	E/G/M
3	I match quantity to numeral	E/G/M
4	I find the correct number	E/G/M
5	I match Numicon to number	E/G/M

Gaining skills / Mastered

My teacher thinks:

Level of support: Signed / verbal / independent

Next step:

Worksheet based lesson evidencing

Name: _____ Date: _____

Learning objective:

Count the pictures below and match them to their number.