



# St Lawrence's Catholic Primary School Mathematics Curriculum Reception

#### St lawrence's Catholic Primary School Reception Mathematics Curriculum Overview

Long term mathematics curriculum plan that progressively develops pupils maths knowledge and skills. Daily adult led maths lessons and opportunities to consolidate learning through routines and songs and rhymes.

Progressive continous provision curriculum planning for maths that builds on children's interests and overarching themes.

Reflective planning following children's interests and using minute by minute formative ongoing assessments to plan opportunities for children to achieve their next steps in learning.

Practical resources are core to our teaching. Numicon, tens frames and number beads are examples of our core resources used to consolodate learning in adult lead activities and play.

Half termly summative assessments that inform planning and targeted specific interventions for pupils not on track to meet curriculum goals.

Parents as Partners We include parents in their child's maths learning through workshops and online learning journals.

Enabling Environments Carefully planned organised and engaging environments to support independent learning through play.

Characteristics of Learning Our provision promotes engagement, motivation and thinking.



Developing a strong grounding in number is essential so that all children develop the necessary building blocks to excel mathematically. Children should be able to count confidently, develop a deep understanding of the numbers to 10, the relationships between them and the patterns within those numbers. By providing frequent and varied opportunities to build and apply this understanding - such as using manipulatives, including small pebbles and tens frames for organising counting - children will develop a secure base of knowledge and vocabulary from which mastery of mathematics is built. In addition, it is important that the curriculum includes rich opportunities for children to develop their spatial reasoning skills across all areas of mathematics including shape, space and measures. It is important that children develop positive attitudes and interests in mathematics, look for patterns and relationships, spot connections, 'have a go', talk to adults and peers about what they notice and not be afraid to make mistakes.

Statutory Framework

#### Reception

Mathematics Long Term Plan

Note: Weeks may have to be adapted to yearly changes in term length across the academic year.

Autumn Term

Week 1	Week 2	Week 3		Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Getti	ng to I You	۲now	Phase	Just Like Me! It's Me 1 2 3! Light and D		lt's Me 1 2 3!		Dark				
Opp settling the ard and get	portunities g in, intro eas of pro tting to kr children.	s for ducing ovision now the	Number	Ma Com	tch and S pare Ame	Sort ounts	Representing 1, 2 & 3 Comparing 1, 2 & 3 Composition of 1, 2 & 3		Representing Numbers to 5. One More and Less.			
Key tin routine contir inside do ti Positi	nes of day es. Explor nuous pro and out. nings belo onal lang	y, class ing the vision Where ong? juage.	Measure, Shape and Spatial Thinking	Compare Size, Ma Capacity Exploring Patter		Mass &	Circles and Triangles Positional Language		Shape	es with 4 Time	Sides.	

				Spring	Term				_
	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9
Phase	A	Alive in 5!			Growing 6, 7, 8		Building 9 & 10		
Number	Intr Compai Comp	Introducing zero Comparing numbers to 5 Composition of 4 & 5 Making pairs			Counting to 9 & 10 Comparing numbers to 10 Bonds to 10				
Measure, Shape and Spatial Thinking	Com Comp	npare Mas are Capac	s (2) city (2)	Ler	igth & Hei Time	ight		3d-shape Patterns	S

					Si	ummer Ter	m					
	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Phase	Tc E	o 20 ai Beyond	nd J	First	First Then Now		First Then Now		Find my Pattern		On the Move	
Number	Build Br Cour Br	ing Nun eyond 1 Iting Pat eyond 1	nbers 0 tterns 0	Ac Ta	Adding More Taking Away		Doubling Sharing & Grouping Even & Odd		g ouping dd	Deepening Understanding Patterns and Relationships		
Spatial Thinking	Spatia Ma M	l Reasor tch, Rota Ianipulat	ning (1) ate, te	Spatia Co Di	l Reason mpose a ecompo	iing (2) and se	Spatial Visua	Reason lise and	iing (3) Build	Spatia	l Reason Mapping	ing (4)

St Law	St Lawrence's Catholic Primary School – Reception KPI's					
Α.	Subitise amounts to 5					
В.	Recognise and write numerals to 20					
C.	Identify one more and one less					

D. Recall number bonds to 5

Reception Medium Term Plan Objective Tracker						
Use this document as a track to ensure that all objectives are covered throughout the academic year. Note the objectives need to be planned by the teacher to form a series of lessons, they are not set out in teaching order other than a termly focus. Revisit objectives throughout the year through maths lesson starters and continuous provision						
	Autumn					
Just Like Me	lt's Me 1, 2, 3	Light and Dark				
Sort	Representing 1, 2, 3	Four				
<ul> <li>I can talk about how items have been sorted based on their attributes.</li> <li>I can sort objects into groups based on their attributes.</li> <li>I can identify objects in a sorted group that do not follow the sorting rule.</li> <li>Match</li> <li>I can find and match objects which are the same.</li> <li>I can identify and talk about attributes that are the same and those that are different.</li> </ul>	<ul> <li>I can identify representations of one, two and three.</li> <li>I can count up to three objects accurately.</li> <li>I can use mark-making to represent one, two and three.</li> <li>Write Numerals 1-3</li> <li>Comparing 1, 2, 3</li> <li>I know that when I count, each number is one more than the one before.</li> <li>I know that when I count back each number is one less than the previous number.</li> <li>I can use words like 'more', 'fewer' and 'same' to compare numbers to three.</li> </ul>	I can count on and back to four. I can count or subitise groups of up to four objects. Write Numeral 4 Five I can subitise up to five objects and count forwards and backwards. I can show five on a five- frame and understand that the five frame is full. Write Numerals 5				

Compare Amounts	Composition of 1, 2, 3	One More and One Less
I can compare small sets of objects using the words	I can explore the different compositions of two.	I can count and subitise to explore one more and
'more', 'fewer' and 'same'	I can explore the different compositions of three.	one less.
I can compare sets of objects of different sizes.	Circles and Triangles	I can see a link between the one more and one less
Compare Size, Mass and Capacity	Lean explain the features of circles and triangles	pattern.
I can compare and order items by size	r can explain the reatures of circles and thangles.	Shape with Four Sides
	I can recognise real-life examples of circles and triangles.	I can recognise that squares and rectangles of
I can compare the mass of objects.	I can build circles and triangles.	different sizes and orientations have four straight
I can compare the capacity of objects.	Spatial Awareness: Positional Language	sides and four corners.
Make Simple Patterns		Night and Day
Lean describe a simple repeating pattern	l can use positional language.	I can talk about day and night
r can describe a simple repeating pattern.	I can copy a picture to build a model from cubes.	rear talk about day and hight.
I can copy and continue a repeating pattern.	I can follow instructions including positional language to	
I can create a simple repeating pattern.	build a model.	

	Spring	
Alive in Five	Growing 6,7,8	Building 9 and 10
Introducing Zero	6, 7, 8	9 and 10
I can recognise when there is zero ofsomething.	I can make 6, 7 and 8.	I can recognise and show the numbers 9 and10 in different ways.
I can identify representations of zero.	I can see 6. 7 and 8 in different ways.	I can use a ten-frame torecognise groups of 9 and
Comparing Numbers to 5	Write Numerals 6,7 and 8	10.
I can use language suchas more than and fewer	Making Pairs	Write Numerals 9 and 10
L can recognise when anamount is the same	I can recognisethat a pair is two.	Comparing Numbers to 10
Composition of 4 and 5	I can arrange small quantitiesinto pairs and recognise whenI have one left over.	I can compare items using one-one correspondence or bycounting.
I can find different waysto make 4 and 5.	Combining Two Groups	I can compare sets of items and say whetherthey have more, fewer or the same number of tems as
Compare Mass	I can combine two groups to work out howmany I have	another set.
heaviest, light or lightestwhen making direct	Length and Height	Order Numerals to 10.
comparisons between objects.		Bonds to 10
Compare Capacity		I can explore number bonds to 10 using realobjects.
I can recognise when acontainer is full, nearlyfull, half full, nearly empty or empty.	cubes.	3D Shape
	Time	I can talk about 3D shapes and describethe similarities and differences betweenthem.
	I can name the days ofthe week and discuss the events that happenin my week.	I can consider a shape'sproperties and how theycan be used.

	Pattern
	I can talk about more complex patterns.

		Summer	
To 20 and Beyond	First, Then, Now	Find My Pattern	On the Move
Building Numbers Beyond 10	Adding More	Doubling	Deepening Understanding
I can recognise numbersto 20 on a range of different resources.	I can use the first, then, now structure to say an 'adding more' number story.	I can make doubles I can sort doubles andnon-doubles.	I can solve problemsand find different possibilities.
I can use a double ten- frame to	I can create and represent an 'adding	Sharing and Grouping	I can talk about how I'vesolved a problem.
Write teen numerals 11-20	frame.	I can share a smallquantity equally.	Patterns and Relationships
Counting Patterns Beyond 10	I can work out a missing number from an 'adding more' number story.	Sharing and Grouping Continued	I can explore the relationship between numbers and shapes.
I can recognise full tens and parts of tens.	Taking Away	l can arrange small quantities into equal groups.	I can copy, continueand create complex repeating patterns.
Counting Patterns Beyond 10 Cont.	I can use the first, then, now structure to say a 'taking away' number story.	Spatial Reasoning: Visualise and Build	I can create asymmetrical arrangement.
I can recognise representations of numbers to 20.	I can create and represent a 'taking away' number story using a ten-frame.	I can use positional language to describe where objects are in relation to other objects	Spatial Reasoning: Mapping
Spatial Reasoning	I can work out a missing number from	I can visualise simplemodels.	I can create a map and describe a simple
I can identify shapesthat look the same	a 'taking away' number story.		route.

Shape Patterns	Spatial Reasoning	Even and Odd
I can copy a simple arrangement of shapes.	I can talk about how shapes can be combined and separated to make new shapes.	I can recognise that some quantities can beshared equally into twogroups and some can't.
	I can explore how to arrange shapes and talk about what I see.	I can recognise the structure of odd and even numbers.

Progression of Skills and Knowledge						
Nursery (Development Matters )	Reception (Development Matters and Statutory ELGs)	Year 1 (National Curriculum)				
<ul> <li>3-4 Year Olds</li> <li>Recite numbers past 5</li> <li>Say one number for each item in order: 1,2,3,4,5.</li> <li>Show 'finger numbers' up to 5</li> <li>Link numerals and amounts: for example, showing the right number of objects to match the numeral, up to 5.</li> <li>Experiment with their own symbols and marks as well as numerals.</li> <li>Compare quantities using language: 'more than', 'fewer than'.</li> </ul>	<ul> <li>Children in Reception: <ul> <li>Count objects, actions and sounds.</li> <li>Link the number symbol (numeral) with its cardinal number value.</li> <li>Count beyond ten.</li> <li>Compare numbers.</li> <li>Understand the 'one more than/one less than' relationship between consecutive numbers.</li> </ul> </li> <li>ELG: Numerical Patterns Children at the expected level of development will: <ul> <li>Verbally count beyond 20, recognising the pattern of the counting system;</li> <li>Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity;</li> <li>Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.</li> </ul> </li> </ul>	<ul> <li>Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number.</li> <li>Count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens.</li> <li>Given a number, identify one more and one less.</li> <li>Use the language of: equal to, more than, less than (fewer), most, least.</li> <li>Identify and represent numbers using objects and pictorial representations including the number line.</li> <li>Read and write numbers from 1 to 20 in numerals and words.</li> <li>Count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens.</li> <li>Count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens.</li> <li>Count in multiples of twos, fives and tens See Objective in Number and Place Value</li> <li>Non Statutory: Through grouping and sharing small quantities, pupils begin to understand: multiplication and division.; doubling numbers and quantities; and finding simple fractions of objects, numbers and quantities.</li> <li>They make connections between arrays, number patterns, and counting in twos, fives and tens.</li> </ul>				

	NUMBER PATTERNS - Reception Curriculum Plan	<ul> <li>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.</li> </ul>
Nursery	Reception	Year 1
· · · · · · · · · · · · · · · · · · ·	What this learning looks like	
Sings number songs and rhymes Children learn a range of number songs and rhymes for example: Alice The Camel Five Fat Sausages Five Little Ducks Five Little Ducks Five Little Monkeys Five Little Snowmen Five Little Speckled Frogs One Potato, Two Potatoes One Two Buckle My Shoe One Two Buckle My Shoe One Two Three Four One Two Three Four One Two Three Four Five Ten Green Bottles Ten In a Bed Ten Little Fingers This Old Man Three Blind Mice Three Little Kittens	<image/> <image/> <image/> <image/>	Count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number. Children must be secure with counting to 10, 20 then 50 before securing the objective to 100 and across 100. To achieve the objective, children will be able to answer questions such as: - count forwards from 80 to 110 - count backwards from 105 Wite the missing number in each box. $19 \xrightarrow{\text{is 1 less than}}$ $33 \xrightarrow{\text{is 1 less than}}$ $54 \xrightarrow{\text{is 1 less than}}$ $59 \xrightarrow{\text{is 1 less than}}$ Within 10:

#### Recites numbers in order to 5

Children are able to rote count numbers 1-5 in order. This skill is developed through a range of songs and practical activities.

# Develops understanding that numbers are used to count







Children can confidently recognise numerals in a range of practical activities. The learning environment and continous provision is planned to support number recognition.

#### Writes Numerals 1-20

Children are taught how to form numerals correctly using our number formation rhymes that are consistent across the Early Years. Children practise number formation using a range of pens, paint and malleable activities.

Number Formation Rhymes:

1 - Start at the top and down we run. Now we've made a number one.

2 - Half a heart says 'I love you'. Draw a line now that makes two.

3 - Around the tree, around the tree. Now we've made a number three.

Complete the number tracks.



Fill in the empty boxes.



Fill in the missing numbers.



nine

(d) six, \_\_\_\_\_, \_\_\_\_,

Spot the mistake and explain what has been done wrong.

5, 6, 8, 9, 10
7, 6, 4, 3, 2
7, 6, 3, 2, 1

Within 20:

Fill in the missing numbers.



Circle the odd one out and explain why.

11, 12, 13, 14, 51, 16, 17

Within 50:

#### Understands that objects can be counted



# To be able to give one or two objects when asked

In practical games and role-play children can pass an adult a requested amount of objects.

#### Beginning to represent numbers using fingers

Children join in counting songs and rhymes with their fingers.



- 4 Down and across and down once more. Now we've made a number four.
- 5 Short stick, belly fat. Number five has a hat.
- 6 Bend down low to pick up sticks. Now we've made a number six.
- 7 Across the sky and down from heaven. Now we've made a number seven.
- 8 Make an s and do not wait. Go back up and that's an eight.
- 9 A loop and a line. That makes nine.
- 10 Ten is like a new train track. Go down pick up then around and back.



### How many muffins are there? 40 41 42 43 44 45 46 47 48 49 50 Use a number track to (a) count back from 46 to 38 (b) count forwards from 35 to 49 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 Sasha is counting from 38 to 24 Will she say the number 19? Explain how you know. To 100: How many straws are there? Bundle the straws in tens to make them easier to count. Use the hundred square to: 1 2 3 4 5 6 7 8 9 Count forwards from 80 to 92 Count backwards from 73 to 65 • Write down the numbers between 68 and 81 • Find what number comes between 76 and 78

Use ten frames and counters to show how many apples Joe

has.

#### **Recognises Numicon Shapes 1-5**





**Order numbers 0-10** Children are able to order numerals 1-10 in a range of practical activities.





Circle the mistake in each sequence.

- 34, 35, 36, 38, 39
- 98, 97, 96, 95, 93
- 78, 79, 18, 81, 82

Count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens.



#### **Recites numbers in order to 10**

Children are able to rote count numbers 1-5 in order. This skill is developed through a range of songs and practical activities.

#### **Correctly Orders Numicon shapes 1-5**







Uses some number names accurately in play When playing children use number names correctly in their play for example they may say: I have made 3 flowers. Can you pass me 4 cups?

#### Rote Count to 20 and beyond

Children are able to confidently rote count to 20. We use songs and games to reinforce counting every day.

#### Correctly identifies and orders Numicon shapes 1-10.



**Counts objects with 1-1 correspondence** Children count objects with 1-1 correspondence.







There are 10 crayons in each box. How many crayons altogether?



Children must be secure within 10, 20, 50 then 100 when reading and writing numbers.

Teacher model numbers in role-play and in continuous provision.

## Beginning to represent numbers using marks on paper or pictures

Children make marks as representations and give meaning to them as numbers.

For example in role-play they may make marks to write a shopping list that includes marks for the amount of objects.



Counts up to three or four objects by saying one number name for each item

Children are able to count out objects from larger groups when requested.



# Says the number that is one more than a given number

Children use practical resources to understand one more and one less. After the learning is embedded they are able to mentally say a number that is one more than a given number to 10.





Children can count beads in groups of two, five and ten.

There are twenty-nine beads in this pot. I am putting one more bead in the pot. How many are in there now? How did you know? How can you check?

This time there are forty beads in the pot. I take out one bead. How many beads are left in the pot? How did you know? How can you check?

Start with a different number of beads in the pot. Ask your partner to put another bead in or take one out and then say how many there are in the pot. How will you know if your partner is right?

Count groups of 10 each of 2p, 5p and 10p coins.

**Given a number, identify one more and one less** Children should be secure within 10, 20, 50 then 100.



#### 4 3 5 ----Four Ne can represent ----nine words 9 digits \*\*\* W THE III man • .... picture: 678 910 11 000 counters five Primary umber track 9 part 5 4 kines PRESS

Says the number that is one more or less than a given number to 20 without the need for practical resources.

Children are able to mentally recall one less than a given number for numbers to 20. Speed of recall can be practised playing games such as Ping Pong.

### Explore patterns of odd and even numbers

Numicon is used to identify odd and even numbers.

Matches numeral and quantity correctly for objects 1-5









Make one more and one less than these numbers.









**Recognises Numicon Shapes 6-10** 





Uses practical resources to double numbers 1 - 5.



Uses practical resources to share objects into equal groups.



Write the missing number in each box. 19 is 1 less than 33 is 1 less than 54 is 1 less than 59 is 1 less than 59 is 1 less than

There are twenty-nine beads in this pot. I am putting one more bead in the pot. How many are in there now? How did you know? How can you check?

This time there are forty beads in the pot. I take out one bead. How many beads are left in the pot? How did you know? How can you check?

Start with a different number of beads in the pot. Ask your partner to put another bead in or take one out and then say how many there are in the pot. How will you know if your partner is right?

Use the language of: equal to, more than, less than (fewer), most, least Children should be secure within 10, 20, 50 then 100.

**Do, then explain** Look at the objects. (in a collection). Are there more of one type

than another? How can you find out?

I'm giving each of you a strip of card with some numbers on [five numbers at random from 0 to 30]. Point to the number which is worth most. Now point to the number which is worth least.

Identify and represent numbers using objects and pictorial representations including the number line Children should be secure within 10, 20, 50 then 100.

#### Orders numbers 1-5





#### **Recognises numerals 6-10**





Solve problems including doubling, halving and sharing.



#### Do, then explain

Look at the objects. (in a collection). Are there more of one type than another? How can you find out?

I'm giving each of you a strip of card with some numbers on [five numbers at random from 0 to 30]. Point to the number which is worth most. Now point to the number which is worth least.

# Identify and represent numbers using objects and pictorial representations including the number line





#### **Correctly Orders Numicon shapes 1-10**





Matches numeral and quantity correctly for objects 6-10





Using base 10, make the following numbers on the place

value chart. • 29 Tens Ones • 30 • 48

There are \_\_\_\_ tens and \_\_\_\_ ones in \_\_\_\_.

Using ten frames and counters, show:

- 19
- 32 • 40

There are \_\_\_\_ tens and \_\_\_\_ ones in \_\_\_\_.

How many different ways can you represent the following numbers? Here is an example

for 25	Base 10		::	Ten frar
		25		
• 34	Straws		Place	Value G
			Ten	Oven
• 20		//	00	000
• 49		//		00

I'm giving each of you a strip of card with some numbers on [five numbers at random from 0 to 30].

Make these numbers using tens and ones apparatus and put them in order.

Why have you put this number there?

#### Read and write numbers from 1 to 20 in numerals and words.









Non Statutory: Through grouping and sharing small quantities, pupils begin to understand: multiplication and division.; doubling numbers and quantities; and finding simple fractions of objects, numbers and quantities. They make connections between arrays, number patterns, and counting in twos, fives and tens.

#### **Multiplication**

Make Equal Groups

- Can you make the cubes into towers of 2?
- Put the teddy bears into groups of 3.



Children count repeated groups of the same size in practical contexts to understand multiplication as repeated addition:





calculate doubles to 10:

'double 2 is 4' 2 + 2 = 4 or 4 = 2 + 2



'double 3 is 6' 3 + 3 = 6 or 6 = 3 + 3

#### **Division**

- Children will start with practical sharing, using a variety of resources.
- They will share objects into equal groups, in a variety of situations.

Doubling - Use concrete and pictorial representations to

T- hey will begin to use the vocabulary associated with division in practical contexts.

It is important that both concepts of division are introduced and understood, alongside the relevant language. There must be sufficient opportunities to manipulate practical resources, in order to support the learning of the difference between the concepts [grouping and sharing].

Sharing:

"Share these 8 apples equally between 2 children. How many apples will each child have?"





Halving: Find half of even numbers up to 12, using concrete apparatus. Explore what happens when an odd number is halved.
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.
Ben had 5 football stickers. His friend Tom gave him 5 more, how many does he have altogether?
Share 12 sweets between two children. How many do they each have?
Show children pictures or groups of objects as below. Ask questions such as: "How many biscuits are they altogether? "How many cherries are there altogether?" Observe how children count the objects. Do they count in twos, fives etc or do they count in ones?
<ul> <li>16 children went to the park at the weekend. Half that number went swimming. How many children went swimming?</li> <li>I think of a number and halve it. I end up with 9, what was my original number?</li> <li>15 children sit at 3 tables. There is the same number of children at each table. How many children sit at each table?</li> </ul>



Progression of Skills and Knowledge				
Number				
Nursery (Development Matters )	Reception (Development Matters and Statutory ELGs)	Year 1 (National Curriculum)		
<ul> <li>Develop fast recognition of up to 3 objects, without having to count them individually ('subitising').</li> <li>Know that the last number reached when counting a small set of objects tells you how many there are in total ('cardinal principle').</li> <li>Experiment with their own symbols and marks as well as numerals. • Solve real world mathematical problems with numbers up to 5.</li> <li>Compare quantities using language: 'more than', 'fewer than'.</li> </ul>	<ul> <li>Subitise.</li> <li>Gain a deep understanding of numbers 1-10</li> <li>Explore the composition of numbers to 10</li> <li>Automatically recall number bonds for numbers 0–10.</li> </ul> ELG: Number Children at the expected level of development will: <ul> <li>Have a deep understanding of number to 10, including the composition of each number;</li> <li>Subitise (recognise quantities without counting) up to 5;</li> <li>Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.</li></ul>	<ul> <li>Represent and use number bonds and related subtraction facts within 20.</li> <li>Add and subtract one-digit and two-digit numbers to 20, including zero.</li> <li>Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs (appears also in Mental Calculation)</li> <li>Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as 7 = □ - 9</li> </ul>		

	Number - Reception Curriculum Planning	
Nursery	Reception	Year 1
	What this learning looks like	
<image/>	Draw representations of numbersChildren learn to draw, write and recognise different representations of numbers including dots, fingers, people and tallies.Image: state of the sta	Represent and use number bonds and related subtraction facts within 20 Children will use their knowledge of number bonds to 10 to find number bonds to 20. Using examples such as, 7 + 3, 17 + 3 or 7 + 13 encourages children to see the link between bonds to 10 and bonds to 20 and reinforces their understanding of place value. 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.

Compares two groups of objects, saying when they have the same number.



Simple Division Math Activity for Early Learners







#### **Comparing Objects**

Children are able to identify sets that have more or fewer objects. Children can select objects to show more or fewer.



#### Practically find the total of two groups



- I'm thinking of a number. I've subtracted 6 and the answer is 8. What number was I thinking of? Explain how you know.
- I'm thinking of a number. I've added 7 and the answer is 18. What number was I thinking of? Explain how you know.
- I know that 6 and 4 is 10. How can I find 7 + 4? How could you work it out?

#### Continue the pattern:

10 + 8 = 18

11 + 7 = 18

Can you make up a similar pattern for the number 17? How would this pattern look if it included subtraction?

Missing numbers

- 10 🕅 = 9

What number goes in the missing box?

# Add and subtract one-digit and two-digit numbers to 20, including zero

Children develop ways of recording calculations pictorially. They can use resources such as numicon, counters, beads, multi-link, base 10 etc.

Addition:

3 + 2 = 5+1 +1 0 1

Separates a group of three or four objects in different ways, beginning to recognise that the total is still the same.

Through practical activities children are introduced to the concept that you can separate a group of objects into smaller groups but the total always stays the same.

Finds the total number of items in two groups by counting all of them.



#### Adding and Subtracting Vocabulary

Children use practical resources such as counters, balls, pegs to add and subtract. Children have opportunities in role-play to use the language of addition and subtraction.





Play Dough Spider Math Addition Gam





Bead strings illustrate addition including bridging through ten by counting on 2 then counting on 3.



Partition small numbers: 6 + 5 becomes 6 + 4 + 1



Partition and combine tens and ones: 12 + 7 becomes 10 + 2 + 7



Higher attaining pupils **will also be able to solve calculations** mentally such as:

20 + 18	= 20 + 10 + 8 = <b>30 + 8</b> = <b>38</b>
12 + 23	= 35
10 + 20	= 30
2 + 5	= 7

Uses part part whole models and Numicon to solve simple calculations.



Hands-On Number Bond Mats Addition & Subtraction



Uses part, part whole and bar models in practical activities to find number bonds



Miles Perpers Porcupines



Communitive law can be introduced (Y2 objective) and can be used to reorder numbers when adding e.g. put the larger number first: 2 + 7 becomes 7+ 2

#### Subtraction:

Children will practise counting back from any number: 'Put seven in your head and count back two.'

5 ....6,7 7....6,5 5 and 2 more is 7 2 less than 7 is 5

Use strategies such as counting back on a number line. **Example:** 

15 ducks are on the pond. 11 of them go away. How many are left?



Finding the difference - Children build on their understanding of subtraction to interpret 14 – 9 as finding the difference between 14 and 9 or: 'How many more must I add to 9 to get 14?'





#### **Draw representations of numbers** Children learn to draw, write and recognise different representations of numbers including dots, fingers, people and tallies.







Subitise (recognise quantities without counting) up to 5.

Children are able to recognise amounts without the need to count. This can be linked to the pattern on dice, counters in the shape of Numicon pieces



**Recognises symbols for adding and subtracting.** Children are able to recognise the symbols for addition and subtraction and equals.

Use a range of methods to solve number problems including Numicon, number lines, beads, number frames part part whole and bar models.

#### Inverse relationships



Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs (appears also in Written Methods)

Children should be able to:

- explain that things on both sides of the equals sign have the same value

- know that the 'total' can be presented on either side of the equals sign

- complete 'empty box' number sentence

6 + 1 = 7; 5 + 2 = 7 ...etc. 8 - 1 = 7; 9 - 2 = 7 ...etc.

They recall the number that is 1 or 10 more or less than a given number and use this to support their calculations, for example to give answers to:

12 + 1, 13 - 1 and 30 + 10 and 60 - 10.

#### Convince me:

In my head I have two odd numbers with a difference of 2. What could they be? Convince me.

Missing numbers:

Fill in the missing numbers (using a range of practical resources to support) 12 + □ = 19

or objects. This skill is developed through repetition and is taught continuously across the year.





Automatically recall number bonds for numbers 0-5 and for 10, including corresponding partitioning facts.

Children are able to recall number bond facts from numbers to 5 and 10 with recall. Teachers use songs and mental maths to ensure that pupils are secure in the knowledge of number bonds and corresponding partitioning facts. 20 - = 3

Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs (appears also in Mental Calculation) See Mental Calculation

Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as  $7 = \Box - 9$ 

Children will be able to apply their addition and subtraction skills to problems such as:

How many biscuits are left on a plate of 13 biscuits if 4 are eaten.



Find the biggest and smallest possible differences between a pair of numbers from the set 8, 5, 12 and 6.

Make up some additions with the answer 15. Try to put them in different ways, like this: 10 + 5 = 15. The total of 10 and 5 is 15. 10 and 5 more makes 15.

How many ways can you show me that 9 subtract 3 is 6?



Share each quantity into four equal groups. There are cakes. There is cake in each quarter. A quarter of is
There are sweets. There are sweets in each quarter. A quarter of is
There are peaches. There are peaches in each quarter. A quarter of is
Use a range of containers and rice/water. Can you show me a quarter full in each container? Do they look the same or different?
Use counters to complete the sentences. A quarter of 4 is A quarter of 8 is
1 is one quarter of 3 is one quarter of
Four children share 12 strawberries into equal parts. How many strawberries will each child get?
Four children share a bag of 12 marbles equally. Draw a diagram
to show how
many marbles each child gets. What fraction of the bag of marbles does each child get?
Complete this halving wall.
20
10
Choose any number and create your own halving wall.
True or false?
apple.

Progression of Skills and Knowledge					
Shane and Pattern					
Nursery (Development Matters )	Reception (Development Matters )	Year 1 (National Curriculum)			
<ul> <li>Talk about and explore 2D and 3D shapes (for example, circles, rectangles, triangles and cuboids) using informal and mathematical language: 'sides', 'corners'; 'straight', 'flat', 'round'.</li> <li>Make comparisons between objects relating to size, length, weight and capacity</li> <li>Select shapes appropriately: flat surfaces for building, a triangular prism for a roof etc</li> <li>Combine shapes to make new ones - an arch, a bigger triangle etc.</li> <li>Talk about and identify the patterns around them. For example: stripes on clothes, designs on rugs and wallpaper.</li> <li>Use informal language like 'pointy', 'spotty', 'blobs' etc.</li> <li>Extend and create ABAB patterns – stick, leaf, stick, leaf.</li> <li>Notice and correct an error in a repeating pattern.</li> <li>Begin to describe a sequence of events, real or fictional, using words such as 'first', 'then'</li> </ul>	<ul> <li>Select, rotate and manipulate shapes in order to develop spatial reasoning skills.</li> <li>Compose and decompose shapes so that children recognise a shape can have other shapes within it, just as numbers can.</li> <li>Continue, copy and create repeating patterns.</li> </ul>	<ul> <li>Recognise and name common 2-D and 3-D shapes, including:</li> <li>2-D shapes [e.g. rectangles (including squares), circles and triangles]</li> <li>3-D shapes [e.g. cuboids (including cubes), pyramids and spheres].</li> <li>Fractions – Shapes</li> <li>Recognise, find and name a half as one of two equal parts of an object, shape or quantity.</li> </ul>			





# Beginning to talk about the shapes of everyday objects, e.g. 'round' and 'tall'

A range of size and shape and space language is introduced to the children so that they can describe and talk about everyday shapes e.g. big, small, straight, round, tall, short.

Notices simple shapes and patterns in pictures. Can name simple shapes in pictures such as triangle, circle, square and rectangle. Uses familiar objects and common shapes to create and recreate patterns and build models



Recognise, create and describe patterns including repeating patterns.



One shape has 2 long sides and 2 short sides. Tick ( $\checkmark$ ) it.



3-D shapes [e.g. cuboids (including cubes), pyramids and spheres].

#### Visualising

Put some shapes in a bag. Find me a shape that has more than three edges.



Place the shapes in the correct groups.



Sort a range of 3-D objects into groups:



#### Can recognise simple repeating patterns



Shows interest in shape by sustained construction activity or by talking about shapes or arrangements Uses shapes appropriately for tasks. Children build models using 3D shapes. They are able to choose shapes appropriately for task.



Explain how you have sorted them using mathematical names for the shapes.

Look at the shape I have given you. Tell me one thing about the shape. Hand each child a solid -Child A: cylinder Child B: triangular prism Child D: cone Child D: cube Look at what I have given you. Tell me one thing about it. Give each child two different solids. Tell me something that is the same about these. Now tell me something that is different about these.

Fred draws round the bottom of a cone.



Tick ( $\checkmark$ ) the shape that Fred draws.

#### What's the same, what's different?

Find a rectangle and a triangle in this set of shapes. Tell me one thing that's the same about them. Tell me one thing that is different about them.

#### True or false?

Children create shape pictures using shapes appropriately e.g. a circle for the head of a person.

**Can identify the names of common 2D shapes.** Can name simple shapes in pictures such as triangle, circle, square and rectangle.

#### Can identify shapes in the environment.





All 2-D shapes have at least 4 sides

Other possibilities Can you find shapes that can go with the set with this label? "Have straight sides"

#### <u>Fractions – Shapes</u> Recognise, find and name a half as one of two equal parts of an object, shape or quantity.

Show the children real life objects and how they can be cut in half. How can we cut these objects in half? Draw a line to cut the objects in half.



Match the half shapes below to make 5 complete shapes.

Shade one half of each shape. Can you find different ways to do this?



	Colour half of each whole shape:	Which of these show half of each whole shape? Explain your reasoning. Children should talk about the two parts needing to be equal parts of the whole.
	dividing a shape into any two prices is halving but understand that they need t be equal pieces. Colour a quarter of each shape. Can you colour it in different ways?	
	Tick the shapes that show que the whole shape is Explain your answ	What fraction of s shaded?

Progression of Skills and Knowledge			
Position and Direction			
Nursery (Development Matters )	Reception Development Matters	Year 1 (National Curriculum)	
<ul> <li>Understand position through words alone – for example, "The bag is under the table," – with no pointing.</li> <li>Describe a familiar route.</li> <li>Discuss routes and locations, using words like 'in front of' and 'behind'.</li> </ul>	<ul> <li>Select, rotate and manipulate shapes in order to develop spatial reasoning skills.</li> </ul>	Describe position, direction and movement, including half, quarter and three-quarter turns.	





# Solves problems relating to position and



distance.





#### 



Look at the shelves with the objects.

The cups are in the middle row and third from the right. They are below the straws.

Percla	Paper	4	Mathabacks	Topic books
Whiteboards	A Shepes	Capit	Curd	Scissors
Pana	abes 1	Ráber	Bulan	

How could you describe the positions of other things on the shelves? I am thinking of an item. You may ask questions but I can only answer yes or no.

You could guess the item in four questions, what questions could they be?

#### Working backwards

The shape below was turned three quarter of a full turn and ended up looking like this.

Progression of Skills and Knowledge				
Measurement Reception Curriculum Planning				
Nursery (Development Matters )	<b>Reception (Development Matters )</b>	Year 1 (National Curriculum)		
<ul> <li>Make comparisons between objects relating to size, length, weight and capacity.</li> </ul>	Compare length, weight and capacity.	<ul> <li>Compare, describe and solve practical problems for: <ul> <li>lengths and heights [e.g. long/short, longer/shorter, tall/short, double/half]</li> <li>mass/weight [e.g. heavy/light, heavier than, lighter than]</li> <li>capacity and volume [e.g. full/empty, more than, less than, half, half full, quarter]</li> <li>time [e.g. quicker, slower, earlier, later]</li> </ul> </li> <li>Measure and begin to record the following: <ul> <li>lengths and heights</li> <li>mass/weight</li> <li>capacity and volume</li> <li>time (hours, minutes, seconds)</li> </ul> </li> <li>Recognise and know the value of different denominations of coins and notes</li> <li>Tell the time to the hour and half past the hour and draw the hands on a clock face to show these times.</li> <li>Recognise and use language relating to dates, including days of the week, weeks, months and years.</li> </ul>		











Uses everyday language to describe length or height



Weigh objects practically with in non-standard measurements





Solve problems related to length and weight



# Using balance scales, compare and model how objects around school can be heavier or lighter than others.

Which object is heavier? Which object is lighter? The \_\_\_\_\_\_ is heavier/lighter than the

Fill in the missing gaps to make the sentences correct.



Collect different objects from around your classroom. Use a balance scale to find the heaviest object. Can you find 2 objects that are equal in mass?

Complete the sentences below.



One cake weighs roughly \_\_\_\_\_ cubes. One pineapple weighs roughly \_\_\_\_ cubes. A cake is \_\_\_\_\_ than a pineapple. *(heavier/lighter)* 

Find and weigh 4 objects, finding their mass in cubes. Order them from lightest to heaviest.

Can you order the objects from heaviest to lightest?





Arrise Janual



#### Orders two or three containers for capacity



Which toy is heavier?



If you added a toy car to the teddy, what would happen to the scales?

Explain your reasoning.

Which is heavier, a toy car or a toy dinosaur?



There are five cars in one side of the scales. The scales are balanced. What could the doll weigh?



#### Measure and begin to record the following:

Using a stopwatch, record how many times you can do the following activities in 20 seconds.

- Star jumps
- Write your name · Build a tower of cubes (how many cubes high?

Can you think of other activities you could complete in 20 seconds?

Would you measure the duration of the activities in seconds, minutes or hours? Sort the activities into three groups: seconds, minutes and hours

Brushing teeth	Reading a book	Saying the alphabet
Aeroplane flight	Playing outside	Sleeping at night

Complete the sentences using seconds, minutes or hours. Playtime is about 20 \_\_\_\_\_ Playtime is about 20 \_\_\_\_\_ long.
The school day is about 7 \_\_\_\_\_ long.



### Uses everyday language to describe capacity and volume

Children use words such as full, empty, half full and half empty when describing capacity.

#### Solve problems related to capacity



Jack, Tariq and Ellie are running a race. Here are their times. Jack 52 seconds Tariq 58 seconds Ellie Use faster and slower to complete the sentences. Jack is \_\_\_\_\_ than Tariq. Jack is \_\_\_\_\_ than Ellie. Ellie is \_\_\_\_\_ than Tariq. Can you write any more sentences to describe the race using the vocabulary slower and faster? Three aeroplanes are flying to Paris in the morning. Here are the times they arrive. A в 🕄 с 🚮 Use earlier and later to complete the sentences. Plane A is \_\_\_\_\_ than Plane B. Plane B is \_\_\_\_\_ than Plane C. Plane C is \_\_\_\_ than Plane A. Complete the sentences using < , > or = 1 minute 1 hour 30 seconds 3 hours 23 minutes 42 minutes

Using a stop watch. Can you see who can do 10 stars jumps the quickest? Take it in turns to record each other.

#### Measure and begin to record the following: Lengths/Heights:

Use standard units to measure and compare objects. For example, they place metre sticks end-to-end to find out how much wider the hall is than the classroom.







Match the times to the clocks.
Half past nine
Half past 2
Half nast three
Complete the times.
half past half past
Draw the hour hand and minute hand on clock faces to show the times:
Half past 1 Half past 6
$ \begin{array}{c} \begin{array}{c} \begin{array}{c} \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\$
half past nine five dclock half past two seven dclock
Order the months of the year and make a 12-nage classroom calendar
with pictures of each month, writing significant events underneath.
such as Diwali, Pancake Day or Midsummer's Day, or the dates of their
birthdays.
Fill in the missing days of the week and complete the sentences.
Today is Wednesday, yesterday was  Tutstay     Vesterday was
Testerray was workday, today is      Wednesday     Today is Saturday, tomorrow is
Saturday - Tomorrow is today is Wednesday.
Use a calendar to look at the names of the months.
birthdays, celebrations, holidays. Complete the sentences.
My birthday is in
In I went to