St Walburga's Catholic Primary School
Year R – Fluency and Reasoning

Number, Place Value and Rounding

Key vocab: One more, one less, order, number, count, numbers up to twenty, pictorial, answer, equals, read, write

NC Objectives:

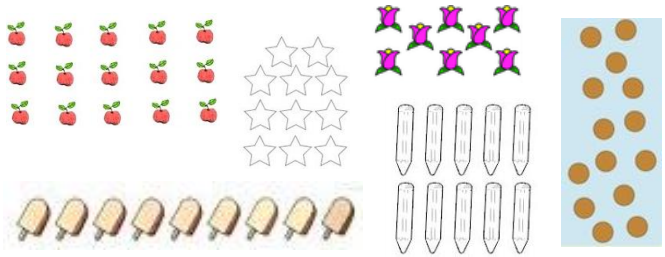
- Verbally count beyond 20, recognising the pattern of the counting system.

Concrete

- Count different objects up to and beyond 20.

Pictorial

- Count pictures of objects/dots up to and beyond 20 when they are organised in different ways.



- Count jumps on a number line.

Abstract

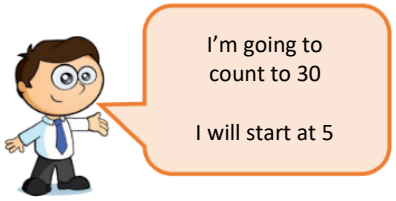
- Count out loud forwards and backwards up to and beyond 20.
- Discuss what happens to the numbers each time the next multiple of 10 is reached.
- Correct puppets who count incorrectly by missing numbers out.
- Count forwards from different starting numbers.

I Count, You Count is a game which can be used to practise counting on from different starting points. Begin by counting as you point to yourself. When you point to the children they continue the count. This is great for creating rhythmic patterns and can be extended to more than one group of children:

4 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15
3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14
12, 11, 10, 9, 8, 7, 6, 5, 4, 3, 2, 1

Reasoning

Mr Monaghan says,



Will Mr Monaghan say 11?

Explain how you know.

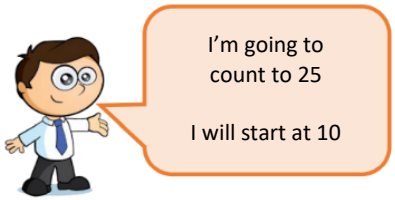
Can you prove it?

Eva is counting from 24 to 38

Will she say the number 39?
Will she say the number 29?
Will she say the number 19?

Explain how you know.

Mr Monaghan says,



Will Mr Monaghan say 28?

Explain how you know.

Can you prove it?

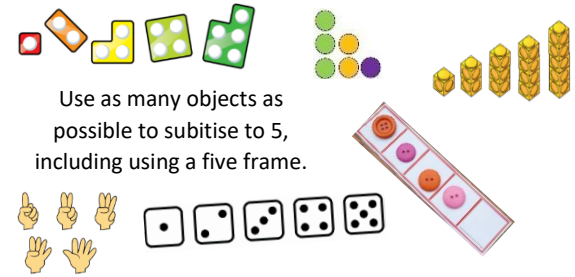
Number, Place Value and Rounding

Key vocab: One more, one less, order, number, count, numbers up to twenty, pictorial, answer, equals, read, write

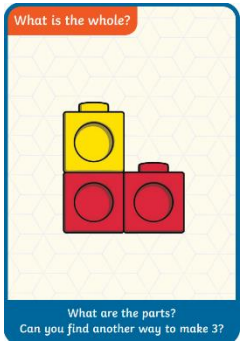
NC Objectives:

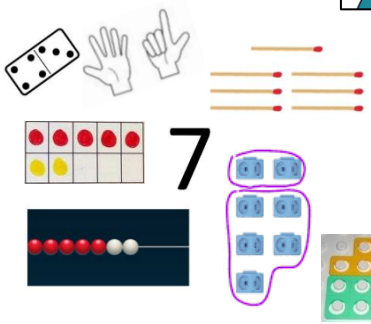
- Have a deep understanding of number to 10, including the composition of each number.
- Subitise (recognise quantities without counting) up to 5.

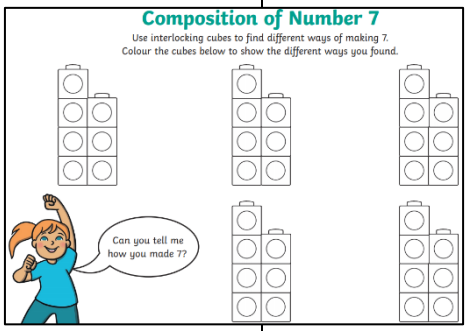
Concrete



Use as many objects as possible to subitise to 5, including using a five frame.





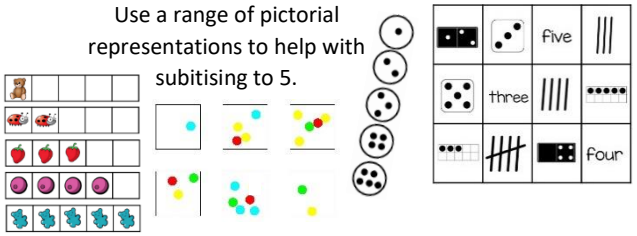


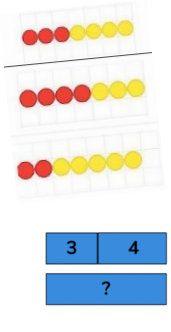
Class Book

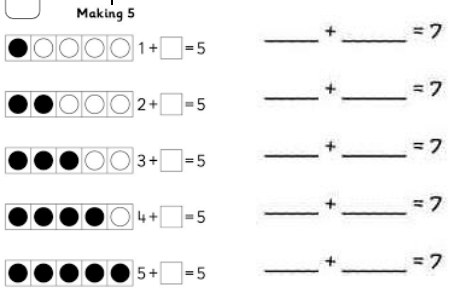
Make a class counting book with a double page spread for each number 1 to 10
Stick in drawings or photographs of objects the children have collected. Discuss the different ways the children have represented each number.

Pictorial

Use a range of pictorial representations to help with subitising to 5.







Abstract

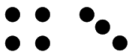
6 + 1 = 7	10 – 3 = 7
4 + 3 = 7	8 – __ = 7
7 = 2 + 5	9 – 2 = 7
5 + __ = 7	7 – 0 = 7
7 + 0 = 7	

Reasoning

Dice Magic

Give each child a dice.
Ask the children to roll the dice.
Explain that you have a secret way to work out what number is on the bottom of each dice without looking.
Tell the children what is on the bottom of all the dice and ask them to check.

Record the number of spots on the top and bottom.

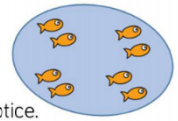


Can anyone see a pattern?
Can anyone work out how you do the trick?

Allow the children time to take turns trying the trick themselves and then to go home and try it out on their friends and family.

Composition of 6,7,8

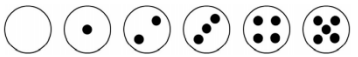
Provide each child with a blue 'pool' and 8 fish. Ask them to arrange their fish into pairs.
Ask the children what they notice.
Ask the children to arrange their fish in a different way and to discuss the different compositions of 8 that they notice.



Encourage them to explore the composition of 6 and 7 in a similar way.
You can vary the contexts. For example, cars in a car park, horses in a field, ladybirds on a log.

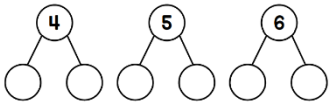
Dot Plates

Provide children with dot plates or cards from 0 to 5



Ask the children to arrange the 6 plates so that they have:

- a pair of plates with a total of 4 dots
- a pair of plates with a total of 5 dots
- a pair of plates with a total of 6 dots



Is there more than one way to solve the problem?

Number, Place Value and Rounding

Key vocab: One more, one less, order, number, count, numbers up to twenty, pictorial, answer, equals, read, write

NC Objectives:

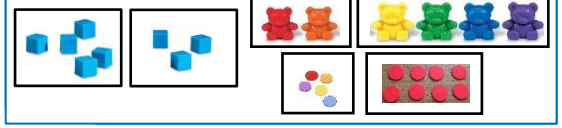
- Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity.

Concrete

Ask questions to make comparisons for a real purpose.
Are more children having sandwiches or dinners?
Which book shall we read today?
Can you place a cube to vote for your favourite?

As you read the stories, compare the quantities in different parts of the story. E.g. in Cockatoos, are more birds hiding in the bathroom or in the attic?

Compare physical quantities using different objects.

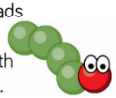


Loose Parts

Provide the children with a collection of items to sort. Encourage the children to sort the items into sets and then compare the quantity in each set. Can you find a set with more than this one? Can you find 2 sets with the same quantity?

Finger Gym

Make a caterpillar by threading some beads onto a pipe cleaner.
Ask the children to make caterpillars with more beads and fewer beads than you.
Which caterpillar is the longest?
Which is the shortest?
Can we arrange the caterpillars in order?



Mark Making

Daisy

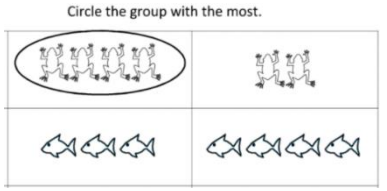
Ask the children to build or write their name. (Butterbeans with individual letters on are nice for this.) How many letters does their name have? Do they have more letters, fewer letters or the same number of letters as their friend?

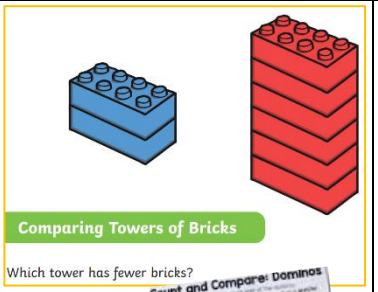
Use scales to weigh different amounts of objects to show which are greater/less then.

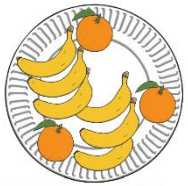
Maths Area

Provide a set of dominoes. Can the children sort them into sets of dominoes with 7 spots, more than 7 spots and fewer than 7 spots?
In pairs, play Who Has More
With the dominoes face down, choose one domino each and compare the spots. The player with the most spots can keep the pair.

Pictorial



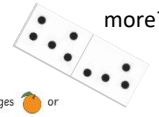


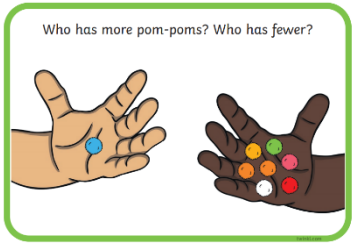


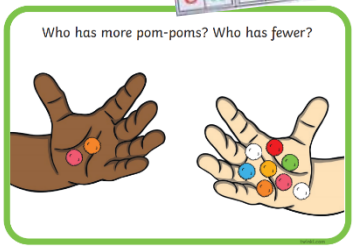
There is lots of yummy fruit on the plate.

Look carefully at the fruit on the plate. Are there more oranges or bananas?

Who has more?







Abstract

Begin to get children to make comparisons between numbers, e.g., 5 is greater than 2. Can the children use objects or pictures to show/prove how they know as well?

Reasoning

Collect and Compare

- Help your grown-up to make a collection of small items and place them inside a small bag or box. You could use buttons, coins, conkers or small items such as building bricks.
- Take it in turns to take a handful of items.
- Show your handful of items to each other.
- Who has more? Who has fewer?
- Put the items back in the bag and try again!

Can You Compare the Shoes?

- Can you sort your shoes into one group and your family member's shoes into another?
- Can you compare the groups of shoes?
- Who has the most shoes?
- Who has the fewest?
- Are there the same number in each?

Finger Count and Compare

- Play a counting game with a grown-up.
- Hide one hand behind your back and hold up a number of fingers.
- Say, "Ready, steady, go!" and show your hand to your grown-up.
- Who is holding up more fingers?
- Play the game again. Can you show a different number of fingers? Who is holding up more fingers this time?

Addition and Subtraction

Key vocab: add, subtract, addition, subtraction, adding, subtracting, number, number line, single digit, count on, count back, answer, doubling, numbers to ten, check, take away

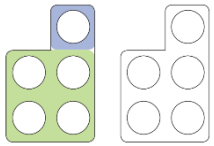
NC Objectives:

- Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts).

Concrete

Hidden Bonds

Show the children 2 buckets.
Explain that you have 5 pebbles hidden inside the buckets.
Ask the children how many pebbles could be in each bucket.
Could this bucket have 0 pebbles?
Could this bucket have 4 pebbles? How do you know?



Use Numicon to make bonds to 5.

Give the children 5 bean bags. Ask them to throw them into a hoop noticing how many land inside the hoop and how many land outside. Encourage them to record their results.
Is there ever 0 inside or outside the hoop?

Ask the children to count out 5 double-sided counters.
Shake and drop them onto the table.
How many are red? How many are yellow?
Look at your partners. Is it the same?
Drop them again. What has changed?
Could you show your counters on a 5 frame?
If you had 5 red counters, how many yellow would there be?
(Butter beans with one side painted are an alternative to double sided counters and are easily manipulated by little fingers.)

Construction

Provide cubes in 2 different colours.
Ask the children to build a tower of 5.
Compare the towers.
What is the same? What is different?
How many different towers can you build?
What if you make towers of 4 cubes?

Water

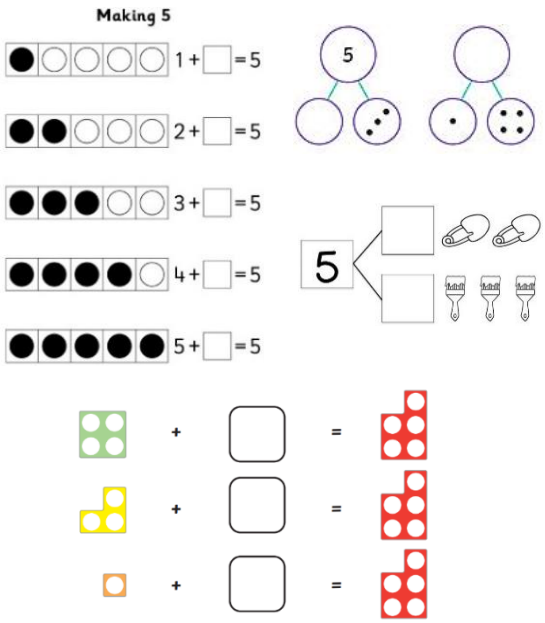
Set up a log and pool and provide 5 speckled frogs for the children to re-enact the song. Encourage the children to sing the song as they play and to count how many frogs are on the log and in the pool at the end of each verse.

Number Shapes Balance

Provide a set of balance scales and some number shapes. Explore how to balance a number shape for example 5 by putting the 5 piece on one side of the scale and exploring different combinations to make it balance.
How many different ways can they find to balance 5?
What other combinations of shapes balance?

Encourage the children to use the language of equal to, heavier than, lighter than, heaviest, lightest.

Pictorial



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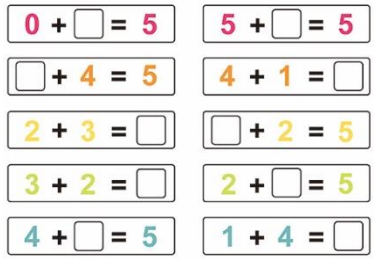


5 - 3 = ____

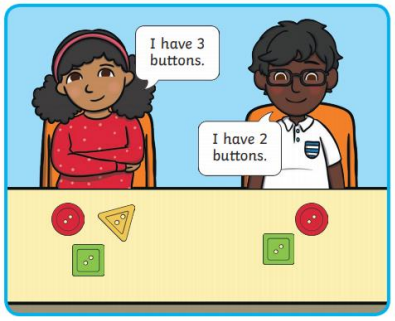
5 - 1 = ____

5 - ____ = 2

5 - ____ = 0

Reasoning

Buttons Game



- Place 5 buttons into a bag.
- Ask your grown-up to take some buttons out of the bag.
- Then, take the rest of the buttons out of the bag.
- Count how many buttons your grown-up has and how many you have.
- What number bond did you find?
- Try the game again. What other number bonds can you find?

How to Get Your Child Thinking

- How many buttons do we have altogether?
- How many buttons have I got?
- How many buttons have you got?
- What number bond did we find?
- How could we rearrange the buttons to find another way of making five?
- If I have zero buttons, how many would you have?
- Can you find another way of making five?
- I can see that you have four buttons. How many are left in the bag?

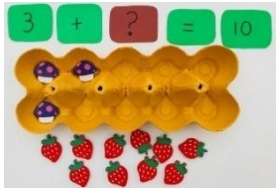
Addition and Subtraction

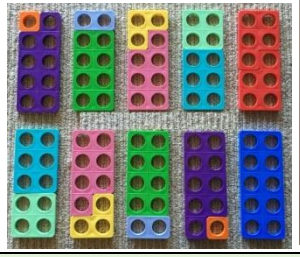
Key vocab: add, subtract, addition, subtraction, adding, subtracting, number, number line, single digit, count on, count back, answer, doubling, numbers to ten, check, take away

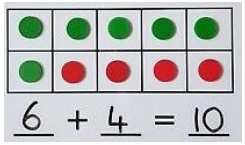
NC Objectives:

- Automatically recall (without reference to rhymes, counting or other aids) some number bonds to 10, including double facts.

Concrete





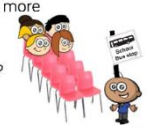


Ask the children to explore different ways of building the bonds to 10 E.g. How many ways can they find to park 10 cars in 2 car parks, place 10 fairies on 2 toadstools, 10 dinosaurs in 2 Jurassic parks.

Provide each child with a number shape. Ask them to find a partner so that their combined shapes total ten. Compare the different tens that are made.

Outdoors

Place 10 chairs into 5 rows of 2 to resemble the seats on a bus. Ask: How many passengers are there on the bus? How many more passengers could ride on the bus? How many are getting on or off at the next stop? How many are on the bus now?

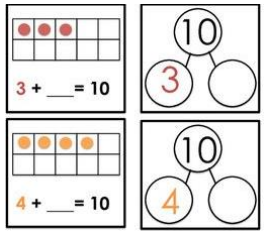


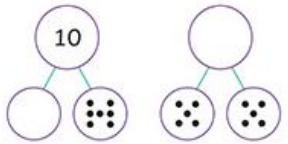
10 Hunt

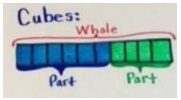
Hide 10 items (rubber ducks, beanbags etc) around the outside area and chalk a large 10 frame onto the ground. As the children find the items, they put them into the 10 frame.

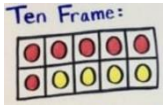
Prompt the children to use the 10 frame to help them see how many they have found and how many are still hiding.

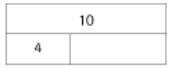
Pictorial

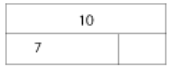




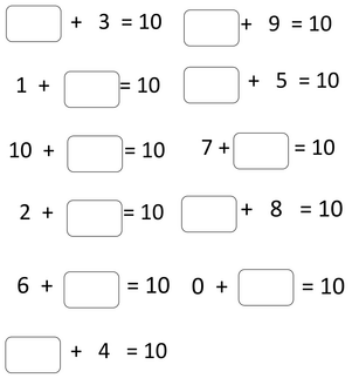








Abstract



10 - 4 = ___

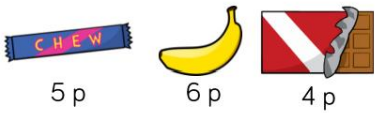
10 - ___ = 3

Reasoning

Pots to 10

Provide pots labelled with numbers 1-10 and a selection of loose parts such as beads or cubes.
Ask the children to count the correct number of beads into each pot.
Can they find 2 pots which have 10 beads in total?
Is there more than one way to do it?
Can they find a way to make 10 by combining 3 pots? How can they check they have 10?
Is there more than one possible way?
Can they draw what they found?

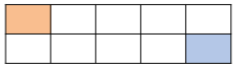
Dora has 10 p to spend.



Which two items could she buy?
How many different ways can she do it?

Tommy needs to colour in **all** of the boxes using two different colours.

One box of each colour has been done for him.



How many different ways can he colour the boxes?

Multiplication and Division

Key vocab: double, half, share, doubling, halving, sharing, grouping

NC Objectives:

- Explore and represent patterns within numbers to 10, including evens and odds.

Concrete

Outdoors

Ask the children to get into pairs ready for a game.
Are they able to do this?
Does that mean that there are an even number or an odd number of players?
If there are an odd number of players, how could the problem be solved?

Feely Bag

Place the number shapes into a bag. Ask the children to feel inside the bag and find an odd number. How did they know it was odd? Can they find an even number? Can they sort the number shapes into odd and even?
Can we line them up to see the odd, even, odd, even pattern as we count?

Ask 5 children to come to the front. Can we group the children into pairs? Does everyone have a partner? Why not? What could we do to solve this problem?

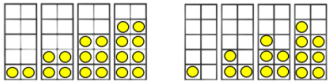
Investigate with other quantities of children. Encourage the children to notice that sometimes we can make even pairs and sometimes there is an odd one left out.

Encourage the children to investigate whether small quantities are odd or even by sharing into 2 groups and by making pairs. Prompt them to recognise that sometimes there is one left over.


6 in 2 equal groups


6 in groups of 2 (pairs)

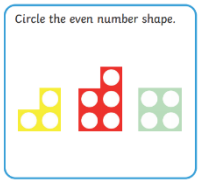
Ask the children to build pair-wise patterns on the 10 frames and sort them into those which have two equal groups (even numbers) and those which have two unequal groups (odd numbers).

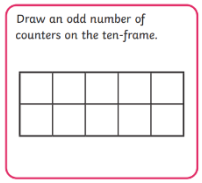


Maths Area

Provide pots of items containing quantities from 1 to 10 Ask the children to count the items in each pot and decide if there is an odd or an even quantity. How could they check? They could also make odd and even collections of their own.

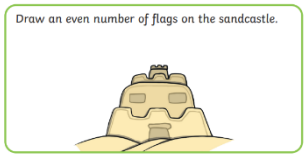
Pictorial



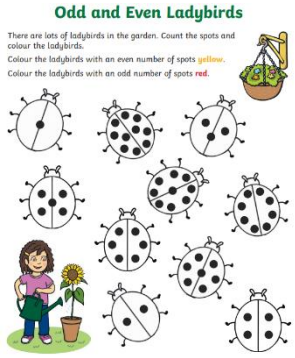


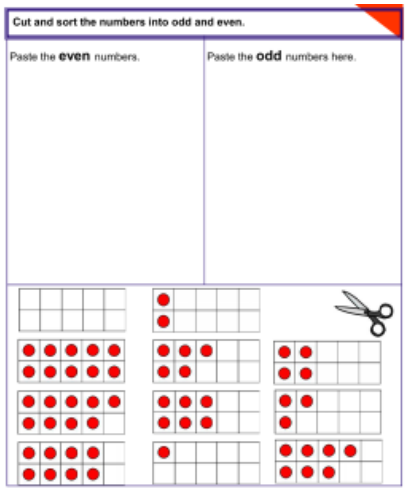
Art Area

After reading One Odd Day, encourage the children to create their own odd and even pictures. Look at the pictures together. Is this an odd or an even picture? How do you know? Encourage the children to talk about the pictures. How many odd or even features can they spot?

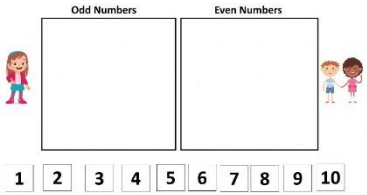


Odd and Even Ladybirds





Abstract



Continue the patterns:

2, 4, 6, __, __

1, 3, 5, __, __

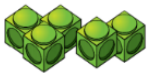
Fill in the missing numbers:

2, 4, __, 8, __

1, __, 5, 7, __

Reasoning

Odd and Even



Ask all the children to collect an odd number of cubes.
Ask them to check each others and compare the different quantities.
Are all the quantities odd? How could you check?

Now ask the children to collect one more cube and add it to their set.
How many do you have now?
Do you still have an odd number of cubes?

Ask the children to continue adding one more cube and to discuss what they notice.

What is the largest odd number you can build?
How can you check that it is odd?

Odd and Even Numbers

- How much food is there on the plate? Do you think this is an odd or an even number?
- There is one piece left over. Does this make the number odd or even?
- Now we have counted out the food on the plate, how can we check what we have found out?

Multiplication and Division

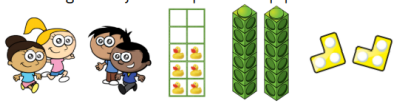
Key vocab: double, half, share, doubling, halving, sharing, grouping

NC Objectives:

- Explore and represent patterns within numbers to 10, including double facts.

Concrete

Allow the children to explore different ways to build doubles using real objects and practical equipment.



Provide sets of dominoes and ask the children to find the doubles. Show the children how to play dominoes and look at the doubles they make as they play.

Play **Match my Quantity**

The children sit opposite each other in pairs with a barrier between them and a collection of small items such as pebbles or cubes. One child sets out a quantity. They show their partner quickly and then hide again. Their partner matches the quantity. Then the barrier is removed. Check - Is it a double? Which double have we made?

Play **Doubles**

The children take turns to roll 2 dice. They score a point each time they roll a double. The first to reach 3 points wins the game.

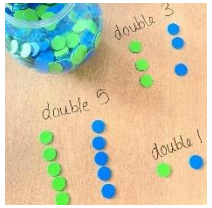
Finger Gym

Provide ladybird or butterfly templates and ask the children to use the tweezers to make doubles by adding the same number of pompoms to each side. How many different doubles can they make? Can they make one which is not a double and tell you why?

Outdoors

Have number shapes hidden around the outdoor area.

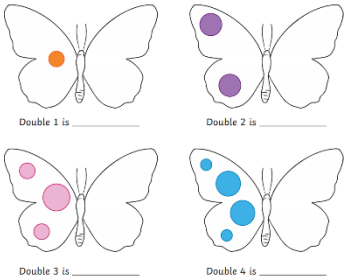
Give each child a number shape and ask them to find another one the same to make a double. Encourage them to say the double they have found, e.g. Double 5 is 10



Pictorial

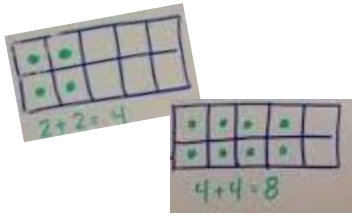
Art Area

Provide large paper with a fold down the middle. Encourage the children to make doubles by adding blobs of paint to one side of the paper only. Then fold the paper over to make the double. Can they predict how many blobs of paint there will be altogether if they start with 3 blobs?

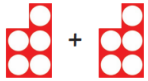


Maths Area

Play snap or matching pairs games using pictorial playing cards or dot cards. Encourage the children to say the doubles as they make them. The person with the most doubles or pairs of cards at the end wins the game.



3+3=_____



5+5=_____

4+4=_____

Abstract

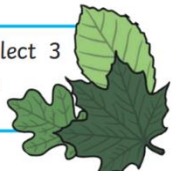
1	+	1	=
2	+	2	=
3	+	3	=
4	+	4	=
5	+	5	=

Reasoning

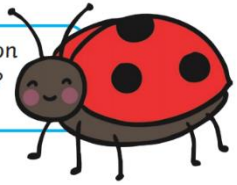
Doubling Machine

- Give yourself and your grown-up five things each.
- Place some inside your doubling machine.
- Ask your grown-up to place the same number of things into the doubling machine.
- Give your doubling machine a shake and then count how many things there are altogether. What double did you find?
- Play again with a different number of things.

Collect 3 leaves outside. Collect 3 more. How many do you have altogether?



If a ladybird has 4 spots on one side and 4 spots on the other side, how many does she have in total? Double 4.



Multiplication and Division

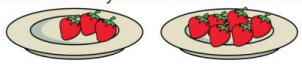
Key vocab: double, half, share, doubling, halving, sharing, grouping

NC Objectives:

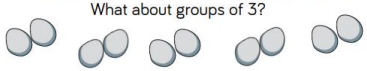
- Explore and represent patterns within numbers to 10, including how quantities can be distributed equally.

Concrete

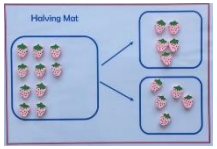
Show the children a bowl of strawberries. Explain that you are going to share them into 2 equal groups so there will be half for you and half for your friend. Put a handful straight onto each plate without counting – make sure that one plate clearly has more strawberries than the other. Ask the children if it is fair. Prompt them to show you how to share the strawberries fairly. What if another friend arrives?

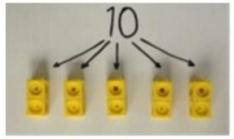


Provide opportunities for children to group objects in different contexts.
Can they give each gingerbread man 3 buttons?
Can they give each child 5 carrot sticks during snack.
Can they arrange their pebbles into groups of 2?
What about groups of 3?



Provide opportunities for the children to share items equally. They could share out the cards or dominoes before playing a game. Prompt the children to notice that sometimes they can make equal groups and sometimes they have items left over.





Small World

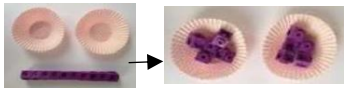
Ask the children to make groups using the small world animals.
Can they make groups of 2?
What happens if they make groups of 3?
Can they make more groups of 2 or more groups of 3?

Snack

Encourage the children to sit with their friends in small groups for snack or have a picnic outside. Provide quantities of food that can be shared onto their plates. For example a box of raisins, a handful of crackers, some sticks of carrot or slices of banana.

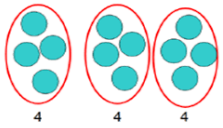
Teddy Bear Picnic

Provide teddy bears, plates and small quantities of loose parts for representing different food items. Ask the children to share out the loose parts fairly so that each teddy gets the same. Are there any items left over? What will happen if another teddy joins the picnic?

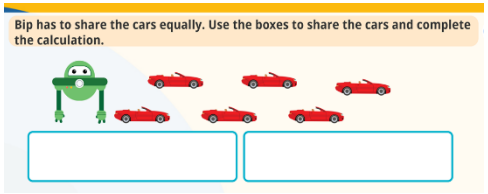


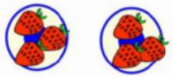
Pictorial

The teddy bears are having a picnic. Can you help them share their food so they have the **same** amount each?



12 shared between 3 is 4





Grouping Model
Mum has 6 socks. She grouped them into pairs. How many pairs did she make?

Abstract

Half of 10 =

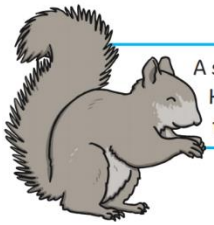
Half of 6 =

8 shared between 2 =

10 shared between 5 =

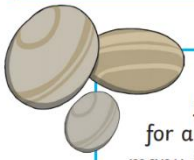
Reasoning

Abed has 3 rabbits who love eating carrots. He has 6 carrots to share between them. How many carrots will each rabbit have? Draw 3 rabbits and share out the 6 carrots to check.



A squirrel collects 10 nuts to share between her 5 babies. How many nuts will each baby have? Draw the nuts to check.

April made 6 cupcakes and ate half of them. How many did she eat? How many did she have left? Can you draw a picture of the cupcakes April had left?



Count out 10 sticks or stones. Put half into the soil for animals to hide under and put half in a wooden box for an insect home. How many do you have in the box? How many in the soil?

Draw 8 bottles of paint on a classroom shelf. Colour half the paint bottles in blue. How many are blue?