

# Introducing Zero

## Guidance

The children will already have some practical understanding of ‘nothing there’ or ‘all gone’. Here, they learn that the number name **zero** and the numeral **0** can be used to represent this idea.

The children should be given opportunities to apply this understanding within the classroom.

E.g. There are 0 children playing in the sand.

Number songs which count back help to develop the understanding that 0 is one less than one.

## Other Resources

Numberblocks Series 3 Episode 5: Zero

None the Number - Oliver Jeffers

Zero is the Leaves on the Tree – Betsy Franco

Alice the Camel

10 in the Bed

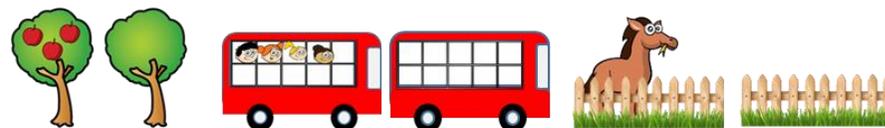
## Prompts for Learning

Use popular counting back songs such as 5 Little Monkeys Jumping on the Bed. Encourage children to take on the role of the 5 monkeys. Represent each verse with counters on a 5 frame, displaying the numerals alongside.

Ask them to predict how many monkeys will be left as each one falls off the bed. What about the last monkey? How could we show this on our 5 frame? Which numeral should we use?



Provide examples contrasting familiar numbers with 0 to support the children’s understanding that 0 represents the absence of something. How many apples on each tree? How many people on each bus? Which field has 0 horses?



Encourage the children to represent numbers including 0

Show me 3 fingers, show me 5, show me 0

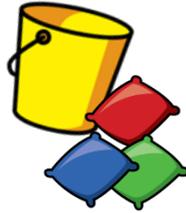
Show me 4 apples in the basket, show me 2, show me 0

Show me 4 claps, 1 clap, 0 claps.

# Introducing Zero

## Outdoors

Provide equipment for throwing and rolling games such as skittles, beanbags and buckets. Encourage the children to notice when they knock over 0 skittles or when 0 beanbags land inside the bucket. How could they record their score?

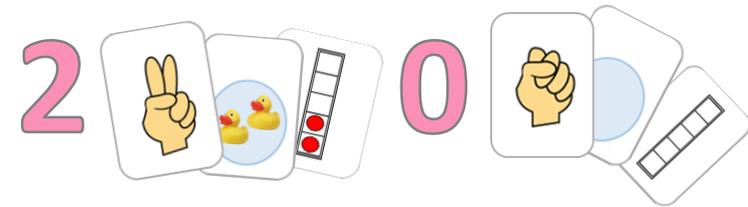


**Enhancements to areas of learning**

## Maths Area

Provide a range of loose parts and labelled pots including 0 for the children to count items into.

Picture cards and dot plates to represent different quantities including zero can also be sorted and matched to numerals.



## Outdoors

Have a bag containing numerals from 0 to 5.

As you pull out a numeral combine it with a task for the children to do. For example, if you pull out a 2, the children could take 2 giant strides or 2 tiptoes, do 2 jumps, run to the hoop and back twice, find 2 pebbles and bring them back etc.

## Small World

As the children play, prompt them to notice where they see 0

E.g. Could we park 0 cars in this car park?  
 If there are 5 horses and 2 fields, how many horses could be in each field?  
 If all 5 monkeys have fallen off the bed, how many are left on the bed?



# Comparing Numbers to 5

## Guidance

Children continue to understand that when comparing numbers, one quantity can be more than, the same as or fewer than another quantity.

Use a range of representations to support this understanding and encourage the children to compare quantities using a variety of objects and representations. Support the children to make comparisons in different contexts as they play.

## Other Resources

A Squash and a Squeeze – Julia Donaldson

Room on the Broom – Julia Donaldson



One Elephant Came Out to Play

5 Little Monkeys Swinging in a Tree

## Prompts for Learning

Show the children 3 fingers – ask them how many fingers?

Can they hold up 3?

Can they hold up more than 3 fingers?

Is there more than one way to do this?

Can they hold up fewer than 3 fingers?

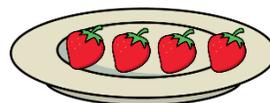
How many do they have?



Working with a small group, provide each child with a plate and give them each a handful of snack such as grapes or crackers. Does everyone have the same? Is it fair?

Encourage them to notice that some children have more snack and some have less and to share out the snack fairly.

Can they check that everyone now has the same?



Provide opportunities to compare smaller quantities of large items with larger quantities of small items to help children make the distinction between size and quantity.

E.g. 2 large balls take up more space than 3 small balls but there are more small balls.



# Comparing Numbers to 5

## Sand



Make towers of pebbles.

Who can make the tallest tower?

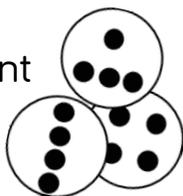
How many pebbles are in each tower?

Does your tower have more or less pebbles than your friend's tower?

Can you each make a tower using the same number of pebbles?

**Enhancements to areas of learning**

## Carpet



Provide a set of dot plates with different arrangements of 0-5 dots.

Can you find a plate with 4 dots?

With more/fewer than 4 dots?

Can you put the plates in order?

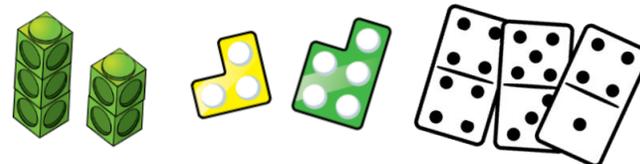
One of the plates is missing.

Can you work out which one?

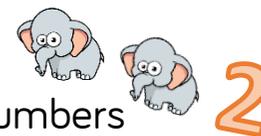
## Maths Area

Children use the number shapes, linking cubes and numeral cards to match and compare quantities.

Provide a set of dominoes to explore. Ask the children to compare the number of spots on each side of the domino. Are there the same, more or fewer dots?



## Small world



Provide children with the numbers 1 – 5 on cards and various small, similar items such as people, toy cars, plastic animals, etc.

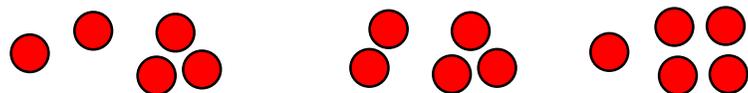
Ask them to show you fewer, the same or more than the number they choose.

# Composition of 4 and 5

## Guidance

Children will continue to develop the understanding that all numbers are made up of smaller numbers.

Allow them to explore and notice the different compositions of 4 and 5. For example 5 can be composed of 1 and 1 and 3 or 2 and 3 or 1 and 4.



Encourage them to subitise (instantly recognise these small quantities without counting).

Encourage them to notice how numbers can be composed of 2 parts or more than 2 parts.

## Other Resources

Number Blocks - The Whole of Me

The Ugly Five – Julia Donaldson

I Spy Numbers – Jean Marzello

5 Friends Counting – Oxford Owls

## Prompts for Learning

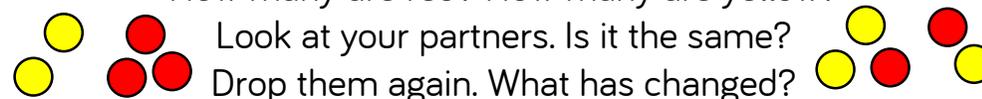
Give the children 5 bean bags. Ask them to throw them into a hoop noticing how many land inside the hoop and how many land outside. Encourage them to record their results.

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.)



### Play Bunny Ears

Using 2 hands to be the ears, how many ways can you show 4 or 5 fingers? Can you see what number I have made?

Can you make ears the same as mine?

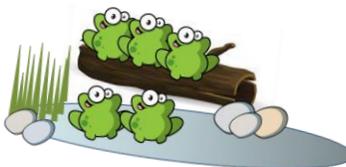
Can you make the same number in a different way?

How many different ways can we find?

# Composition of 4 and 5

## 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.



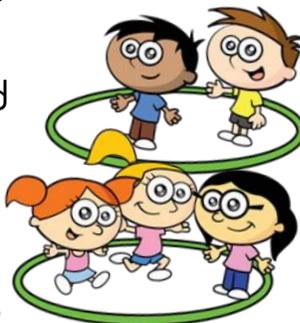
## Outdoors

Provide 4 children with 2 hoops labelled yes and no.

Children take turns to ask questions and sort themselves into the hoops. For example: Do you like carrots?

Have you got a sister?

Can you find a question which sorts the children into 4 and 0?



## Enhancements to areas of learning

## Number Shapes

Use the number shapes to investigate which smaller numbers combine to make exactly 4 or 5. Check by sitting them on top of the whole number.

Is there more than one combination?

Which number has the most combinations?



## 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?



# Digging Deeper

## How Many are Hidden?



Show the children 4 or 5 small world creatures.

Ask them to close their eyes whilst you cover some with a blue cloth to resemble a pool. Can they work out how many of the ducks you have put into the 'pool'?

Practise in different contexts for example teddies and a 'tent', horses and a 'stable' cars and a 'garage'. Encourage children to use concrete objects, draw a picture or use their fingers to help them explain how they know what is missing.

## Exploring Possibilities



Show the children an empty feely bag.

Together, count 4 pebbles into the bag.

Take out an unseen amount in your hand.

Ask the children to discuss how many **could** be in your hand and how many **could** be left in the bag.

## Key Questions

How many are hidden? How do you know?

Can you draw a picture to show me?

Can you show me with these cubes?

How many pebbles could I have in my hand?

If I have 3 pebbles in my hand, how many will be in the bag?

Could I still have 4 pebbles left inside the bag?

If there are 4 in the bag, how many will be in my hand?

Could I have 0 pebbles in my hand?

Could there be 0 in the bag?

Could I have 5 pebbles in my hand? How do you know?

## 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?