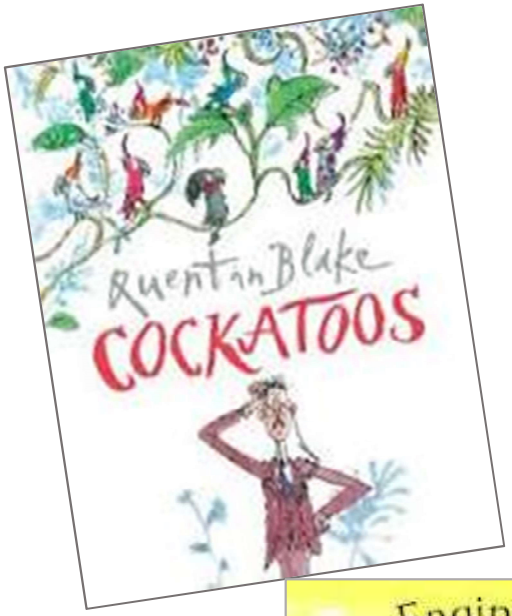
Phase 6 – Building 9 and 10

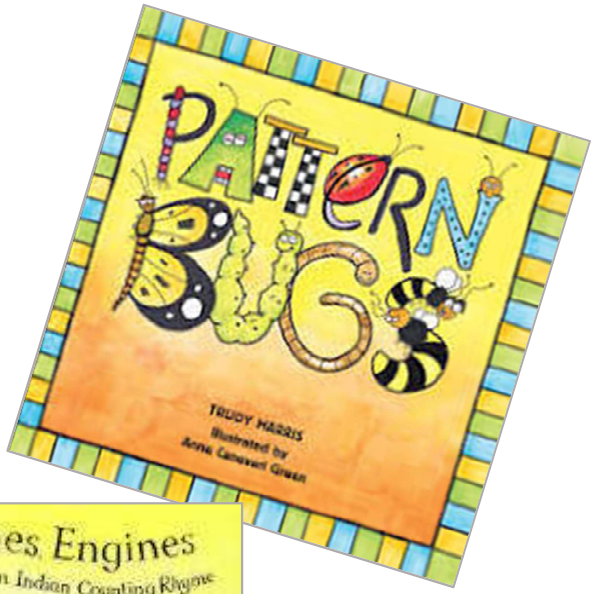
#MathsEveryoneCan

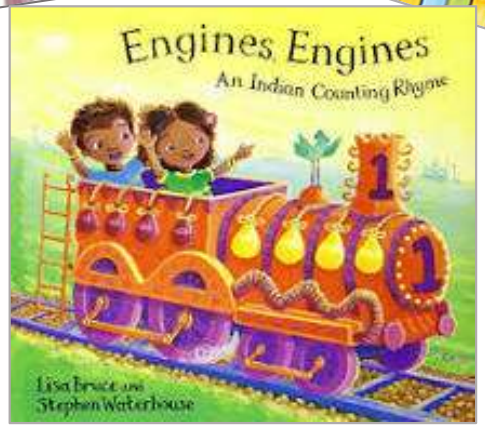
Phase 6 – Book List

How do Dinosaurs Count to 10? - Yolen & Teague
One Gorilla – Atsuko Morozumi
Mouse Count - Ellen Stoll Walsh
Nine Naughty Kittens – Linda Jenny
Feast for 10 - Cathryn Falwell
Cockatoos – Quentin Blake
Mr Magnolia – Quentin Blake
Ten Black Dots – Donald Crews
The Napping House – Audrey Wood & Don Wood
Engines Engines –L Bruce & S Waterhouse
Mouse Shapes – Ellen Stoll Walsh
Changes Changes – Pat Hutchins
Pattern Bugs – Trudy Harris
Busy Busy Busy – Haneul Ddang
Pattern Fish – Trudy Harris

Reading to children is an essential part of their development. Any of these books would be useful during the phase Building 9 & 10



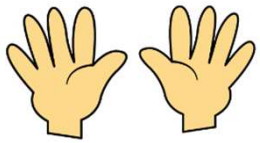




9 and 10

Guidance

Children continue to apply the counting principles when counting to 9 and 10 (forwards and backwards)
They represent 9 and 10 in different ways. Arranging 9 or 10 items into small groups will support the children to conceptually subitise these larger numbers and explore their composition. (E.g. I know it is 9 because I see 3, 3 and 3)
Children notice that a 10 frame is full when there is 10. They can use 10 frames, fingers and bead strings to subitise groups of 9 and 10

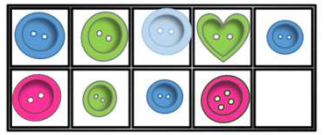


Other Resources

There are many other books which focus on counting to 10
How do Dinosaurs Count to 10? - Yolen & Teague
One Gorilla – Atsuko Morozumi
Mouse Count - Ellen Stoll Walsh
Nine Naughty Kittens – Linda Jenny
Feast for 10 - Cathryn Falwell
Numberblocks Series 2 - 9 and 10

Prompts for Learning

Note: All the prompts for counting to earlier numbers can be applied to counting to 9 and 10, in addition to these ideas.
Show me 10 fingers. Now show me 9
Did you need to count your fingers?
Show me 10 beads on the bead string. Show me 9
Show me 10 cubes on the 10 frame.
What do you notice?
Show me 9 cubes. What do you notice this time?
Could you put 9 or 10 buttons on the 10 frame without counting them?



Hold up a number card. Ask the children to show the corresponding number of fingers or to do the corresponding number of actions. Ask the children to help you order the digit cards from 1-10 and make deliberate mistakes. Can the children spot these and correct you?
If you hide a card, can they work out which number is missing?

Ask the children to count out 9 or 10 small objects. Can they find different ways to arrange their items? What do they notice?

9 and 10

Outdoors

Provide a starting line. Ask the children to take 9 giant steps, 9 tiny steps, 9 jumps, 9 tiptoes etc. How far do they travel each time? Who can travel the furthest in 9 giant steps? Who can travel the shortest distance with 9 tiny steps?

Enhancements to areas of learning

Outdoors

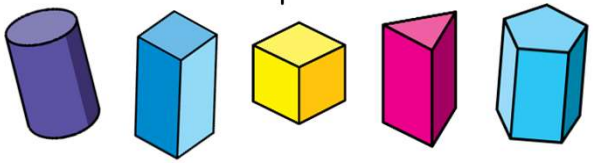
Ask the children to build a wall and set up 10 green bottles. Each time a bottle 'accidently falls' ask the children how many have fallen and how many are standing.
Do they always have 10 in total?

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.

Construction

Provide a selection of bricks in different sizes and shapes. Ask the children to make the tallest possible tower using 10 bricks.
Which bricks will they choose?
How will they place their bricks to make the tower as tall as possible?



Comparing Numbers to 10

Guidance

Children continue to make comparisons by lining items up with 1-1 correspondence to compare them directly or by counting each set carefully and comparing their position in the counting order.

As the children's sense of number develops so does their knowledge of where each number sits in relation to other numbers. They understand that when making comparisons a set can have more items, fewer items or the same number of items as another set.

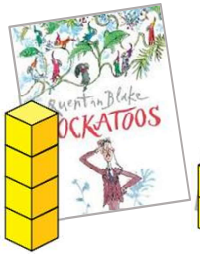
They begin by comparing 2 quantities and progress to ordering 3 or more quantities.

Other Resources

Cockatoos – Quentin Blake
Mr Magnolia – Quentin Blake
Ten Black Dots – Donald Crews
The Napping House – Audrey Wood & Don Wood
Engines Engines – Lisa Bruce & Stephen Waterhouse

Prompts for Learning

Ask questions to make comparisons for a real purpose.
Are more children having sandwiches or dinners?

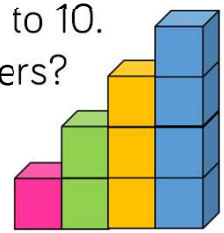


Which book shall we read today?
Can you place a cube to vote for your favourite?

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?

Grab a handful of buttons.
Ask the children to guess how many you could be holding and then count them out onto a 10 frame to see. How many buttons can they hold in one hand? Compare their handful to their friends.

Use cubes to build towers from 1 to 10.
Can the children order the towers?
What do they notice?
Can they see that each number is one more than the number before?



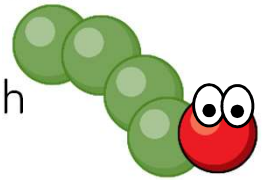
Comparing Numbers to 10

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?



Enhancements to areas of learning

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.

Mark Making

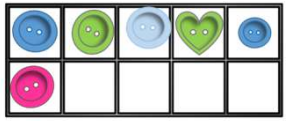
Ask the children to build or write their name. (Butterbeans with individual letters on are nice for this.) How many letters does their name have? Do they have more letters, fewer letters or the same number of letters as their friend?

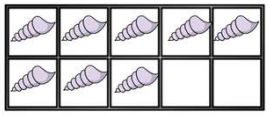
Bonds to 10

Guidance

The children explore number bonds to 10 using real objects in different contexts. E.g. There are 10 apples. How many in the tree and how many on the ground?

10 frames or egg boxes (with 10 holes) can be partially filled with objects and the children asked How many more do we need to make a full ten?





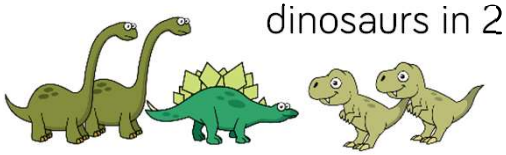
Other manipulatives such as fingers, bead strings and number shapes are also useful for exploring bonds to 10

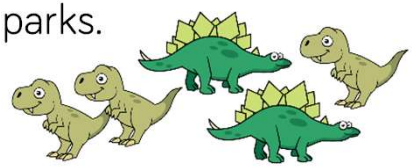
Other Resources

Number Bond Rhymes
5 Eggs and 5 Eggs
Chuck, Chuck, Chuck
Mr Willy-Nilly and Zoey's Dream – Seung-yim Bak
Farmer Pete – You Tube
Numberblocks - Blast Off!

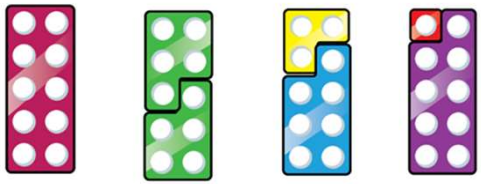
Prompts for Learning

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.

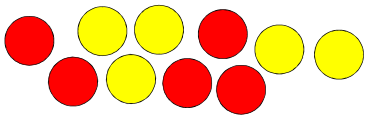




Provide each child with a number shape. Ask them to find a partner so that their combined shapes total ten. Compare the different tens that are made.



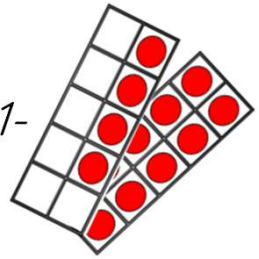
Hold up a number shape and ask the children to find the shape which goes with yours to make 10



Ask the children to count out 10 double-sided counters or butter beans. Drop their counters onto a paper plate. How many are red? How many are yellow? Repeat.
How many are red and yellow this time? Did anyone get 5 red and 5 yellow? Did anyone get all 10 red?

Bonds to 10

Carpet Games



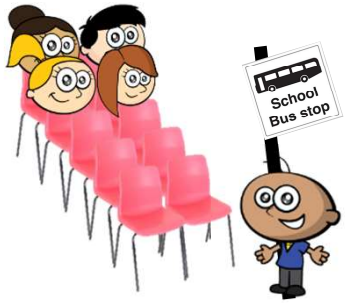
You will need: Ten frame cards showing 1-10 (5-and-a-bit and pair structure)

Memory Game: Place the cards upside down. The children take turns to turn over 2 cards. When they find a pair which add to 10, they keep the cards. The player who collects the most pairs wins.

Fish: (For 3-4 players)
Share out the cards.
The aim is to make bonds to 10 The children take turns to ask any player for a card they need. E.g. If they have a 4, they ask one of the other players for a 6
Once they have made a bond to 10, they put that pair down. The first player to put down all of their cards wins the game.

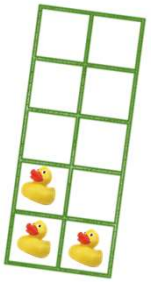
Outdoors

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?



Enhancements to areas of learning

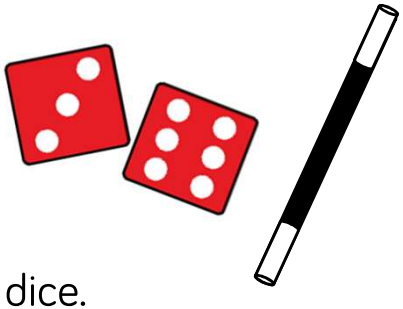
10 Hunt



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.

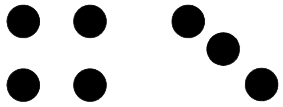
Digging Deeper

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.



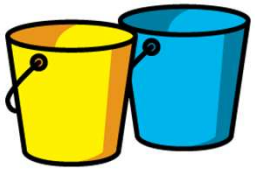
Can anyone see a pattern?
Can anyone work out how you do the trick?

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.

Key Questions

What number did you roll?
Do you get the same number on the bottom each time you roll that number?
What do you notice about the top and bottom pairs?
Can you explain how to do the trick?
Can you tell me what is on the bottom of my dice?

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?

3-D Shape

Guidance

Children will naturally explore and manipulate 3-D shapes through their block play and modelling. Prompt them to consider which shapes stack and which shapes roll and why that is.

They should be given opportunities to build using a variety of shapes and to construct their own 3-D shapes in different ways.

Children can be introduced to the names of the shapes and be given opportunities to explore similarities and differences between them as they play and to sort them according to what they notice.

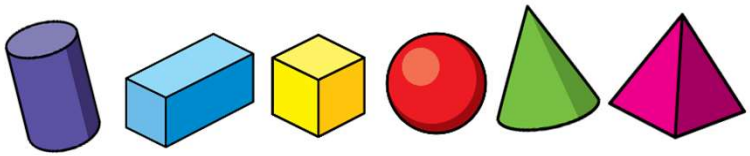
Other Resources

Mouse Shapes – Ellen Stoll Walsh
Rapunzel – Traditional
The Princess and the Pea – Traditional
Changes Changes – Pat Hutchins

Prompts for Learning

Hold up an object for example a crisp tube or a cereal box.
Which of the 3-D shapes is this like?
Why is it like this?
What other items have this shape?

Show the children a collection of 3-D shapes. Choose one of the shapes. Ask the children to tell their partner as many things as they can about the shape. Can they find another shape like this? Can they find a different shape? How is it different?

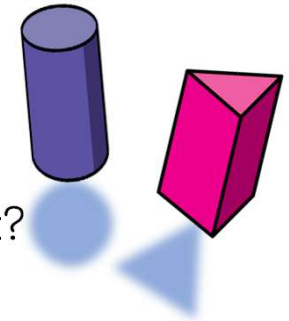


Sort the shapes into groups.
Ask: 'Why did you put these shapes together?
How is this set different to this one?
Is there another way we could sort them?'

Which shapes would you use to build Rapunzel's tower?
Can you add a staircase?
Which shapes would you use at the bottom of the tower?
Which shapes would you use at the top?

3-D Shape

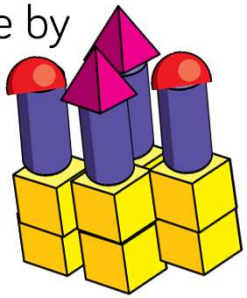
Paint



Show the children a print made from a 3-D shape. What shape is the print?
Which 3-D shape could have made this print?
Is there more than one?
Which of the 3-D shapes could you use to print a triangle or a square? Can you print a pattern using the shapes?

Construction

Provide pictures of buildings such as castles, palaces, mosques, city-scapes.
Ask the children to discuss the shapes they can see in the buildings?
Encourage the children to design their own models and to extend these by adding arches, bridges and moats.

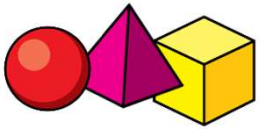


Enhancements to areas of learning

Modelling

Provide a variety of empty boxes, tubes, lids etc.
Ask the children to make a model for a particular purpose. E.g. Build a bridge for the 3 Billy Goats,
a new chair for Baby Bear.
Encourage them to tell you about their model.
Which shapes were easy to fasten together?
Which shapes were difficult to fasten together?

Dough



Ask the children to make 3-D shapes using the dough.
Ask: Which shapes are the easiest to make? Why?
Which are harder to make? Why?
How did you make the flat sides?

Pattern (2)

Guidance

Build on the children's earlier AB pattern work by introducing more complex patterns. The children explore patterns which use items more than once in each repeat for example ABB, AAB, AABB, AABBB.

Again it is important that each pattern you model has at least three full units of repeat. The more units of repeat, the easier it is to identify and continue the pattern.

Encourage the children to say each pattern aloud and to create patterns around the edge of shapes as well as in straight lines.

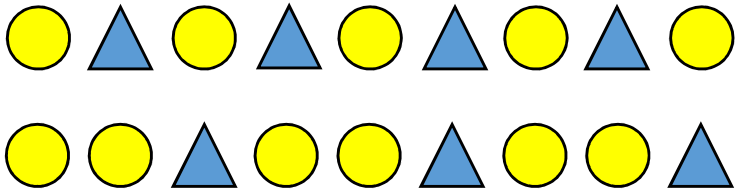
Other Resources

Pattern Bugs – Trudy Harris
Pattern Fish – Trudy Harris
Busy Busy Busy – Haneul Ddang
We Will Rock You – Queen (clapping pattern)
Go Noodle – Banana Banana Meatball

Prompts for Learning

Provide opportunities for the children to describe, continue and copy patterns including movement patterns along a line or around a circle: stand, sit, stand, sit, stand, sit
Hands on head, hands down, hands on head, hands down
Arms up, arms out, arms down, up, out, down etc.

Show the children an AB pattern and a similar AAB pattern and ask them to tell you what they notice.
What is the same and what is different?

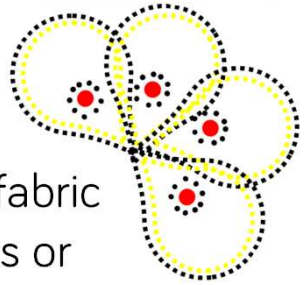


Repeat with a similar ABB pattern. What is different this time?

Introduce patterns with a deliberate error. This could include an extra item, a missing item or a muddled unit of repeat. Can the children identify the mistake and put it right?

Pattern (2)

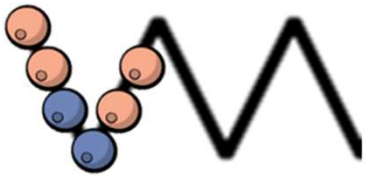
Art

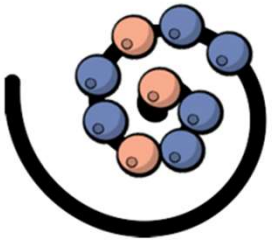


Show examples of objects, wallpaper or fabric showing patterns from different cultures or traditions. Encourage the children to discuss and recreate the patterns and then to design their own patterns in a similar style.

Loose Parts

Provide the children with a range of loose parts such as buttons, beads, pebbles, shells, or seeds. They can use these to create a variety of different patterns. You can add variety by providing wavy lines, spirals and zig-zags for them to build their patterns along.



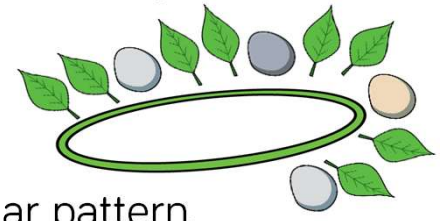


Enhancements to areas of learning

Outdoors

Go on a walk around the school grounds and ask the children to hunt for natural objects to make their patterns such as long sticks, short sticks, dandelions, daisies, leaves, pebbles etc.

They could arrange their patterns in straight lines or around the edge of a hoop to create a circular pattern.



Dough

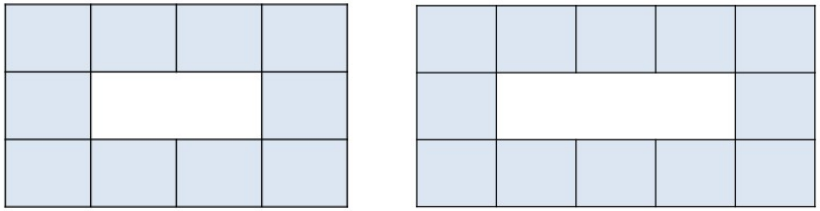
Use 3-D shapes to press patterns into the dough. Can their friends tell which shapes they used and copy the patterns?

They can also make patterns on the dough using loose parts such as shells, stones, beads or buttons.

Digging Deeper

Which Patterns Fit?

Provide frames with a set number of spaces and cubes or counters in different colours.
Ask the children to build patterns around the edge putting one item in each space. Ask them to try different patterns to investigate which will fit around the frame exactly and which won't.



Which of these patterns will fit exactly around the frames?

AB, ABC, ABB, AAB, AABB, AABBC

Key Questions

Which patterns will fit exactly into the frames?
Are there any patterns which fit exactly around both frames?
How many more spaces did you need for a pattern that wouldn't fit?
Can you test some of your own patterns in the frames?
Which of your patterns fitted exactly?
Which didn't fit?

Wrapping Paper

Have a look at some patterned wrapping paper.
What patterns do the children notice?
Provide large sheets of paper and some items for printing and designing.
Encourage the children to use repeating patterns to design and create their own wrapping paper.