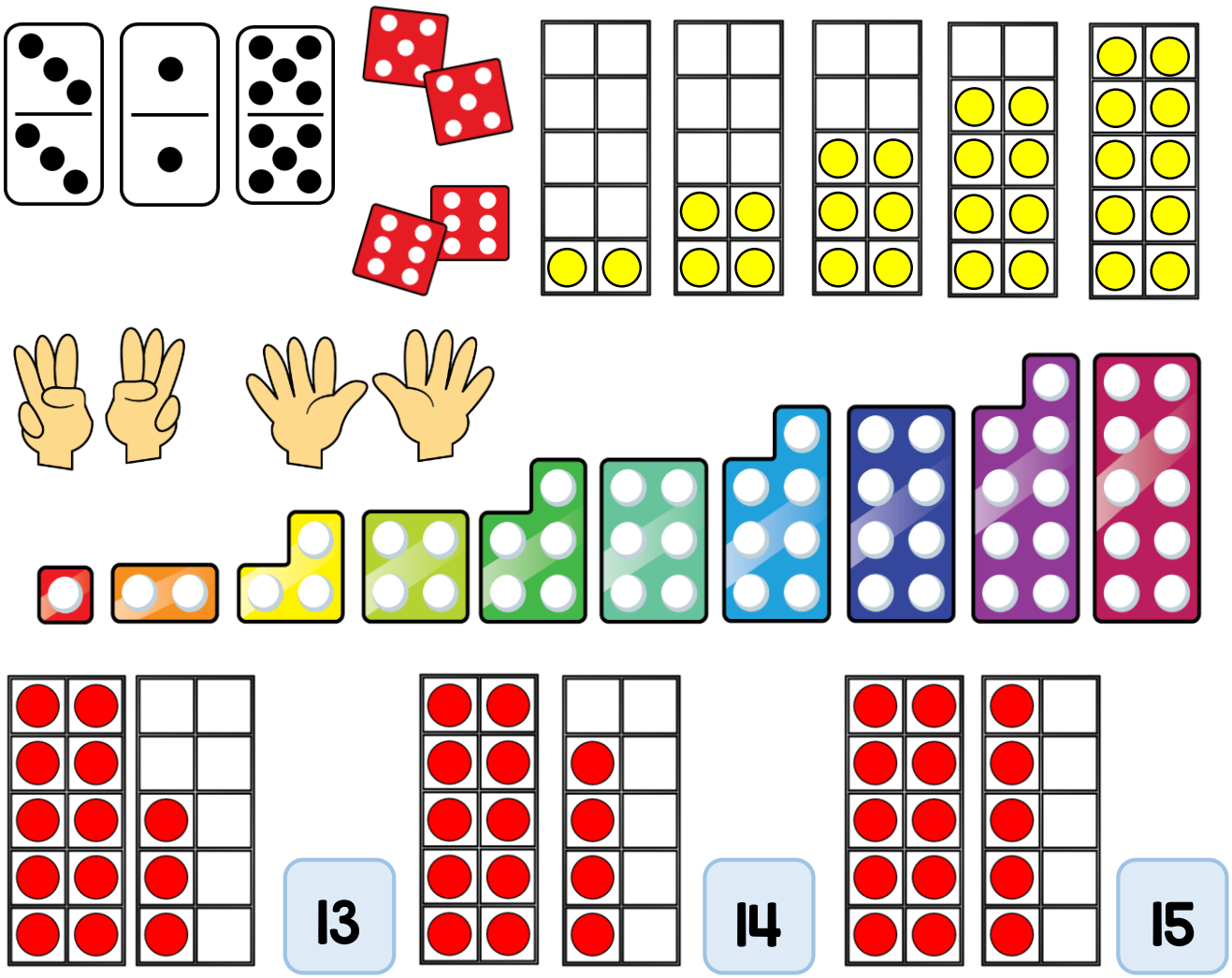
Reception Guidance

#MathsEveryoneCan

Summer Progression

Geometry	Exploring patterns	→ Making simple patterns
		→ Exploring more complex patterns
Addition and Subtraction	Change	→ Adding more
		→ Taking away
Number and Place Value	Numbers to 20	→ Counting to 20
Multiplication and Division	Numerical patterns	→ Doubling
		→ Halving and sharing
		→ Odds and evens
Measurement	Measure	→ Length, height and distance
		→ Weight
		→ Capacity

Key Representations



Notes and guidance

Ten frames can continue to be used to represent numbers to 10 (and then 20) Encourage the children to represent the first, then, now stories on the ten frames as they add more and take away.

Domino and dice games can be used to introduce children to the concept of doubles. Fingers are another good way to represent doubles. Representing the even numbers pair-wise on 10 frames supports the children to make the link between doubling and halving.

Pair-wise 10 frames and number shape pieces are useful for illustrating the odd and even pattern of numbers and for sorting into odd and even.

Numbers to 20 can be represented using the number shapes and 10 frames. Prompt the children to see that there is one full 10 and part of the next 10

Making simple patterns

Guidance

Children copy, continue and create their own simple repeating patterns. They focus on AB and ABC patterns. It is important to provide patterns with at least three full units of repeat. Encourage the children to say the pattern aloud as this helps them to identify the part which repeats and supports them to continue the pattern.

The children should be given opportunities to explore pattern in a range of contexts including shapes, colours, sizes, actions and sounds. Encourage them to build patterns both vertically and horizontally.

Other Resources

Pattern Bugs – Trudy Harris
In and Out the Dusty Bluebells circle game
Tongue twister patterns – Red lorry, yellow lorry
Clap your hands and wiggle your fingers song

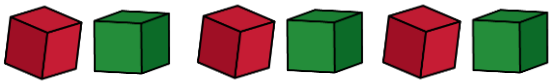
Prompts for Learning

Whole class: Demonstrate simple AB action patterns such as:
Knees, clap, knees, clap, knees, clap
Punch left, punch right, left, right, left, right
Hands up, hands down, up, down, up, down

Say the pattern aloud and encourage the children to join in with you and to suggest new action patterns of their own. Once they are confident with AB, extend to ABC e.g. tap knees, tap shoulders, tap head, knees, shoulder, head, etc.

You can also start AB or ABC 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

Word or sound patterns can be chanted together, opposites are good for this e.g. yes, no, up down, in out etc. Sounds learnt in phonics can be practised and reinforced through pattern.
sh, ch, sh, ch, sh, ch etc.



Create simple patterns such as red brick, green brick, red brick, green brick, red brick, green brick for the children to copy and continue. Challenge them to create their own patterns using the AB or ABC structures.

Making simple patterns

Outside

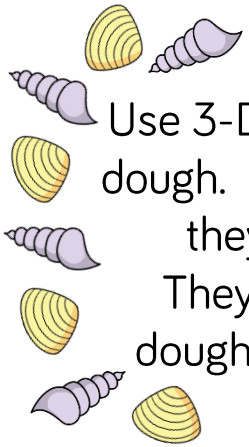
Read **We're Going on a Bear Hunt** by Michael Rosen. Encourage the children to build their own bear hunt journeys using the outside equipment and to repeat the patterned language from the story as they travel through them. They might also invent language patterns of their own.

'Squelch, squerch, squelch, squerch'

'Stumble trip, stumble trip'

Maths area

Use the maths resources such as number shapes, dice, cubes, counters, peg boards to make repeating patterns of their own. Can their friends copy and continue their patterns?



Dough area

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.

Enhancements to areas of learning

Snack

Arrange the snack in simple repeating patterns. Encourage the children to describe and continue the pattern. You can challenge children by adding a deliberate error and asking them to spot and correct it. They could make patterns of their own and challenge their friends to spot their 'mistake'

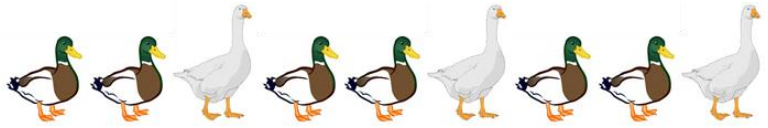
More complex patterns

Guidance

Children continue to copy, continue and create patterns. They 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



Duck, Duck, Goose circle game

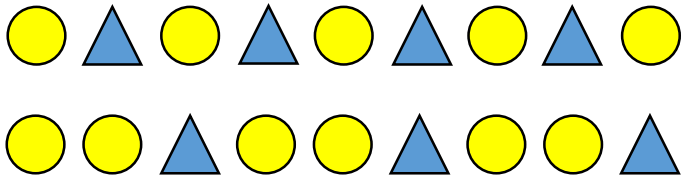
We Will Rock You – Queen (clapping pattern)

AAB Pattern Song – Musical Math (Youtube)

Prompts for Learning

Note: All the prompts in the previous step for creating patterns with actions and sounds can also be applied to more complex patterns.

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?
Here they may describe the yellow, blue pattern or the circle, triangle pattern.



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

Ask the children to make their own AB, AAB and ABB patterns using yellow and blue cubes or counters.
What other patterns could they make using two colours?
Ask the children to describe their patterns.
Can their friends continue the patterns they have made?

Encourage the children to make patterns using these structures with different objects both indoors and outside.

More complex patterns

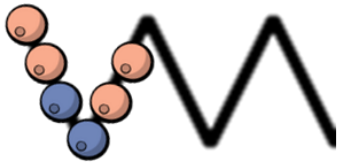
Enhancements to areas of learning

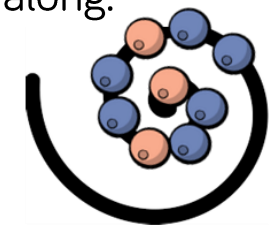
Snack

Provide a selection of fruit in small pieces such as grapes, banana slices, apple chunks etc. Allow the children to design their own fruit kebab patterns. Encourage them to compare their kebabs with their friends as they enjoy their tasty treat.

Loose parts

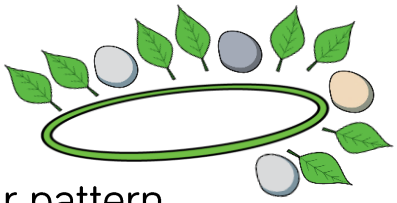
Provide the children with a range of loose parts such as buttons, beads, pebbles, shells, or seeds. They can use these to create a variety of different patterns. You can add variety by providing wavy lines, spirals and zig-zags for them to build their patterns along.





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.



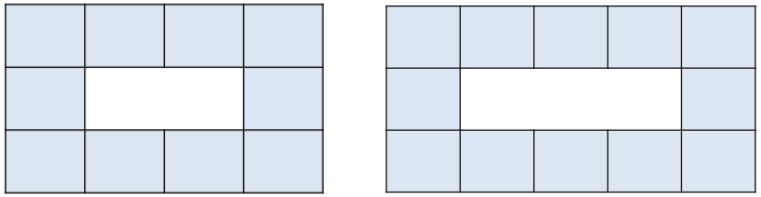
Musical Instruments

Provide a range of different instruments such as drums, beaters, shakers and encourage the children to play patterns using the instruments. This could be made into a game with one child playing a pattern whilst the rest face the other way. The listeners then try and work out which instruments were used and replicate the pattern.

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?

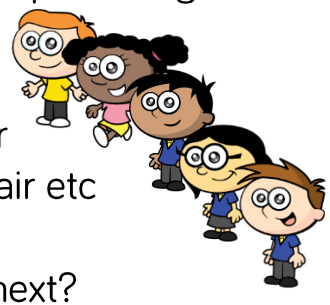
AB, ABC, ABB, AAB, AABB, AABBC

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?

What's my pattern?

Use lining up time as an opportunity to slot in some extra pattern spotting practise.
Ask one child at a time to go and line up creating a pattern such as:
Boy, girl, boy, girl, boy, girl.
Jumper, no jumper, jumper, no jumper
Short hair, long hair, short hair, long hair etc
Ask: Can you see my rule?
Who do you think could join the line next?
Ask the children to come up with their own patterns in small groups and challenge the rest of the class to work out the pattern.



Adding more

Guidance

The children will use real objects to see that the quantity of a group can be changed by adding more. The first, then, now structure can be used to create mathematical stories in meaningful contexts.

At first, the children may need to re-count all of the items to see how many they have altogether. E.g. 1, 2, 3, 4… 5, 6, 7 When they are ready, encourage them to count on E.g. 4… 5, 6, 7 Play games which practice counting from different starting points to support this step.

They could represent the number stories using 10 frames, number tracks and their fingers.

Other Resources

Mouse Count – Ellen Stoll Walsh
Mr Gumpy's Outing – John Burningham
The Shopping Basket – John Burningham

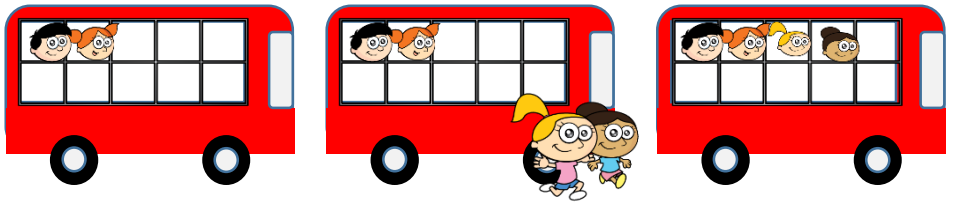
Prompts for Learning

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:

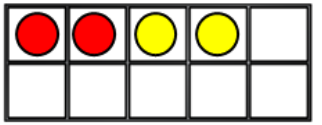
1, 2, 3, 4, 5, 6, 7, 8
1, 2, 3, 4 5, 6, 7, 8, 9
3, 4, 5, 6, 7, 8, 9, 10,

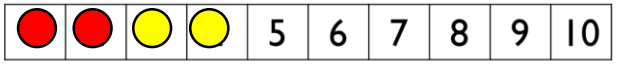
Show me 5 fingers. Now show me 2 more.
How many fingers now? How do you know there are 7?
Did you count them all 1, 2, 3, 4, 5, 6, 7?
Is there another way to count them? We know we have 5 on this hand? Can we count on? 6, 7?

Use **first, then now** to tell simple maths stories to practise adding more in real life contexts.



First there were 2 people on the bus.
Then 2 more people got on the bus.
Now there are 4 people on the bus.

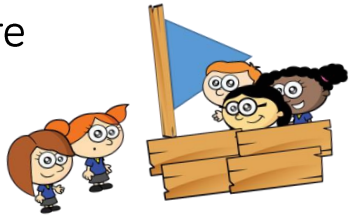




Adding more

Outside

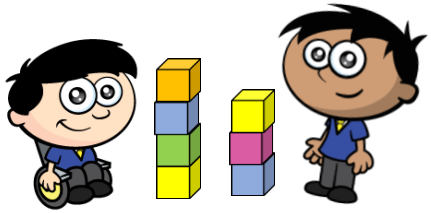
Share the story **Mr Gumpy's Outing** by John Burningham. Ask the children to build a boat and to create their own first, then, now stories as different groups of characters climb aboard. Encourage children to count how many altogether as more children join them.



Enhancements to areas of learning

Construction

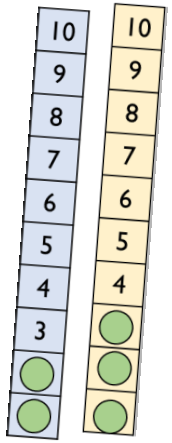
The children take turns to roll a 1-3 dice and collect 1, 2 or 3 cubes to add to their tower. If they are ready, encourage them to count on as they add their cubes each time. How high can they build their towers before they topple?



Number track race

Provide number tracks and a 1-3 dice. The children take turns to roll the die and count on 1, 2 or 3 as they move along or fill up the track. The first to reach 10 wins the game. This can also be done outside with children jumping along giant tracks.

NB: It is easier for children to fill the track by adding counters than to 'jump' a counter along the track.



Small World

Encourage the children to create their own first, then now stories using the small world resources.

E.g. First there were 5 dolls in the house.
Then 2 more dolls came home.
Now there are 7 dolls.

Taking away

Guidance

The children use real objects to see that the quantity of a group can be changed by taking items away. The first, then, now structure can again be used to create mathematical stories in meaningful contexts. Encourage the children to count out all of the items at the start, take away the required amount practically, and recount to see how many left.

Continue to encourage the children to represent the number stories using 10 frames, number tracks and their fingers.

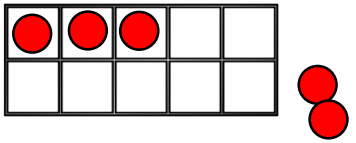
Other Resources

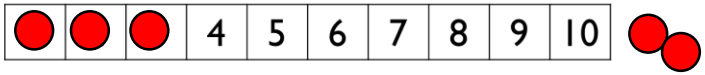
Mouse Count – Ellen Stoll Walsh
Kippers Toybox – Mick Inkpen
Incey Wincey Spider game Nrich

Prompts for Learning

Use **first, then now** to tell simple maths stories to practise taking away in familiar contexts.

First there were 5 people on the bus.
Then 2 people got off the bus.
Now there are 3 people on the bus.





Provide plenty of opportunities for children to practise counting back. (See **I count, you count** game from previous step)
Once the children can confidently count back, you can also play **Last Man Standing**. Count around the circle: **10, 9, 8, 7, 6, 5, 4, 3, 2, 1, 0** The person who says 0 sits down and the count continues around the circle, starting again from 10. Who will be left standing?

Counting choirs is a game to practice counting on and back from different starting points. Divide the children into 2 groups. The first group counts on in ones. The second group counts back in ones. You 'conduct' the choir by pointing at each group in turn.
E.g. **1, 2, 3, 4, 5, 6** 5, 4, 3, **4, 5, 6, 7, 8, 9,** 8, 7, 6, 5, 4

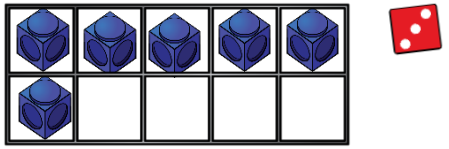
Taking away

Maths area

Encourage the children to adapt and re-enact favourite rhymes such as 10 Green Bottles by making 1, 2, or 3 fall each time. Similarly they could have 10 Currant Buns and choose to buy 1, 2, or 3 buns each time. Prompt the children to say how many are left each time.

Pass it on

Each child starts with 6 cubes. They roll a 1-3 dice and pass the corresponding number of cubes to the person on their left. The winner is the first person to give away all of their cubes. Encourage the children to count how many they have left as they pass on their cubes.

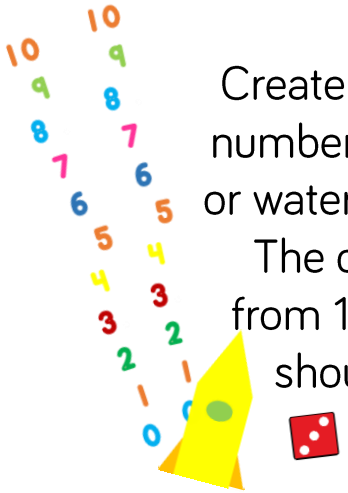


Enhancements to areas of learning

Sand area

A game for 2 children. Ask the children to line up 10 pebbles or shells. The children take turns to choose whether they take 1, 2 or 3 pebbles. The winner is the player who avoids taking the last pebble.

Outside



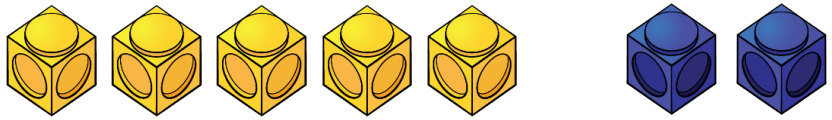
Create a countdown game by chalking numbers 10-0 leading towards a rocket or water blaster. Provide a giant 1-3 dice. The children roll the dice and jump from 10 to 0. First to reach the rocket shouts blast off to win the game.

Digging Deeper

Hidden items

Count out 5 cubes. Ask the children to check how many there are and ensure everyone knows that there are 5

Cover the cubes with a cloth, check that the children are happy there are still 5 under the cloth. Then, as they watch, place 2 more cubes under the cloth.



Ask the children to tell you how many cubes there are now. Encourage them to represent the cubes with their fingers and model counting on 5... 6, 7

This activity can also be used for subtraction. Ensure the children know how many cubes there are at the start. Cover them up and this time take some cubes out, counting while the children watch. Ask them to work out how many cubes will still be hidden.

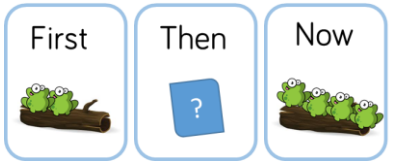
Key questions

How many cubes did we have at the start?
How many cubes did I add/take away?
How many cubes will be under the cloth now?
How did you work it out? (Children may count on their fingers or use their knowledge of number bonds)

Changing the unknown

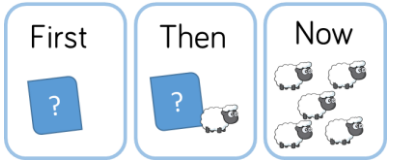
This activity can be varied by changing the part of the story which is unknown. Link to familiar rhymes and stories and use a cloth to hide the unknown part.

E.g. There were 2 frogs on the log at the start.
Then some more frogs arrived.
Now there are 4 frogs.
How many frogs joined the group?



Alternatively you could have an unknown amount at the start.

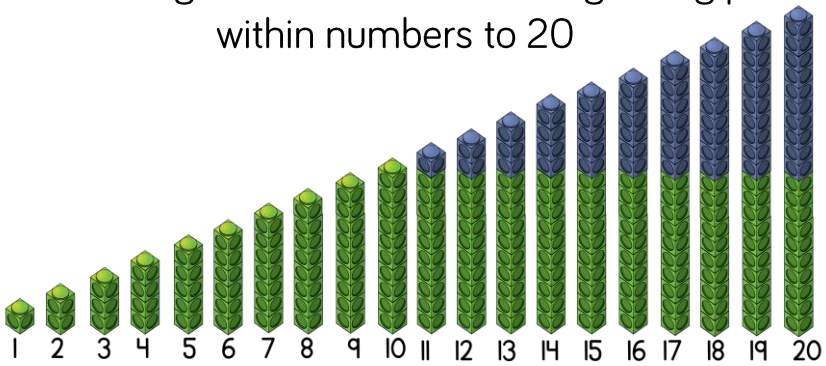
E.g. Little Bo Peep had some sheep. She found 1 more sheep and now she has 5 sheep.
How many sheep did she have at the start?



Counting to 20

Guidance

Provide opportunities for children to count beyond 10 learning the number names in order. Once children can confidently say the number names, provide opportunities for them to match them to quantities and symbols. Prompt children to recognise that as we count, each number is one more than the number before building staircases to show the growing pattern within numbers to 20



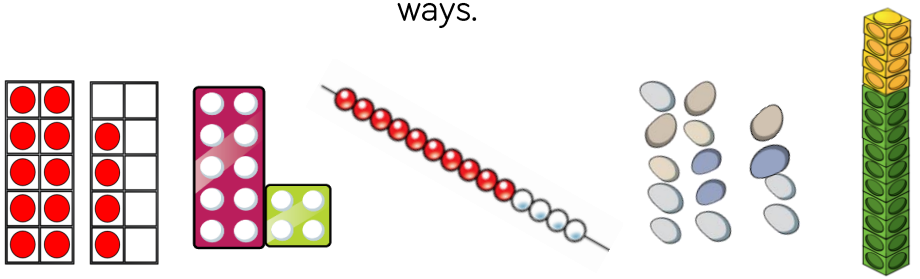
Other Resources

BBC Numberblocks Series 5:
Episode 2 On Your Head
Episode 14 I Can Count to Twenty

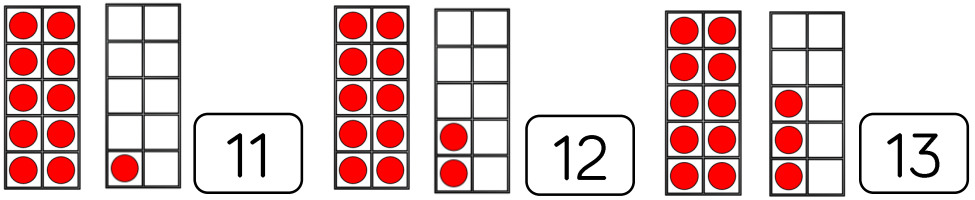
Prompts for Learning

Counting games such as **I count, you count** can be applied to numbers beyond 10. **Last man standing** can be adapted by asking children to count round the circle from 1-20 The person who says 20 sits down and the count starts again from 1 If you are playing with a large group, the children may want to choose 3 or 4 numbers which would eliminate them rather than just 1

Encourage the children to represent numbers to 20 in different ways.



Hand out cards showing pictorial representations and numerals from 11-20 Ask the children to find their partner and arrange themselves in order. Can they see any patterns in the numbers?



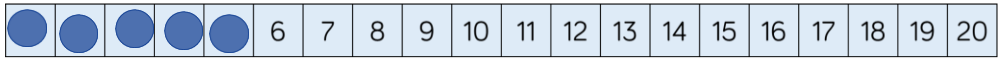
Counting to 20

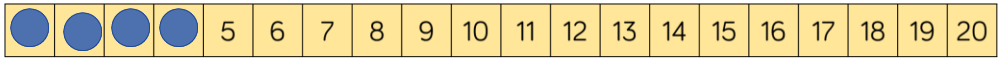
Various areas

Provide different collections of loose parts such as shells, buttons, beads or pebbles for the children to count. Encourage the children to estimate how many first and to arrange the items onto 10 frames as they count to help them see the full 10 and part of the next ten.

Race to 20

Provide a number track from 1-20 for each child. Children take turns to roll a dice. If they roll 1-5, they collect the corresponding counters to fill their track. If they roll a 6 they go back to the start.



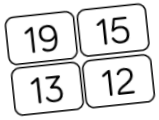


Enhancements to areas of learning

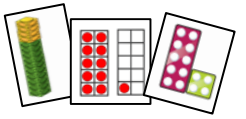
Don't say 20

A game for 2 players. On their turn, the players choose to continue the count with 1, 2 or 3 numbers. The next player continues the count. E.g if the first player counts 1, 2, the second player could count 3 or 3, 4 or 3, 4, 5
The aim is to avoid saying 20.
Two 10 frames and 20 counters could be used to build the numbers as they count.

1 2 3 4 5 6 7 8 9 10 11



Bingo



Have sets of numerals from 11 to 20 and corresponding pictorial representations. Ask the children to choose 4 picture cards each. Hold up the numeral cards one by one. If the children have a matching picture they place a counter on their card. The first player to cover all their cards wins.

Digging Deeper

Counting back

The counting choirs game can be extended to 20.
Divide the children into 2 groups.
The first group counts on in ones.
The second group counts back in ones.
You 'conduct' the choir by pointing at each group in turn.

11, 12, 13, 14, 15, 16 15, 14, 13, 16, 15, 14, 13, 12 14, 15, 16, 17,

One more, one less

Use the cubes to build a teen number.
Ask the children to identify which number you have made and discuss what one more and one less would be. Encourage them to build each number and line them up to check.
Can they continue the game beyond 20?
What patterns can they find?

Key questions

How many do I have?
Make the number which is one more than mine.
Make the number which is one less.
If I make 12, can you make one more?
What number comes after 20? And then? And then?

Spot the mistake

Make deliberate errors whilst counting up and down.
(A puppet is great for this)
Ask the children to listen carefully and stop you if they hear something wrong.
Errors can include omitted numbers, repeated numbers or numbers in the wrong place.
You could also play this game by asking children to watch carefully as you write number sequences.

12, 13, 41, 15, 16

18, 17, 16, 14, 13

Doubling

Guidance

The children will learn that double means 'twice as many'. They should be given opportunities to build doubles using real objects and mathematical equipment. Building numbers using the pair-wise patterns on 10 frames helps the children to see the doubles. Mirrors are also a fun way for children to 'double' the quantities they build.

Encourage children to say the doubles as they build them, e.g. Double 2 is 4

Provide examples of doubles and non-doubles for the children to sort and explain why.

Other Resources

Double Trouble - Nrich

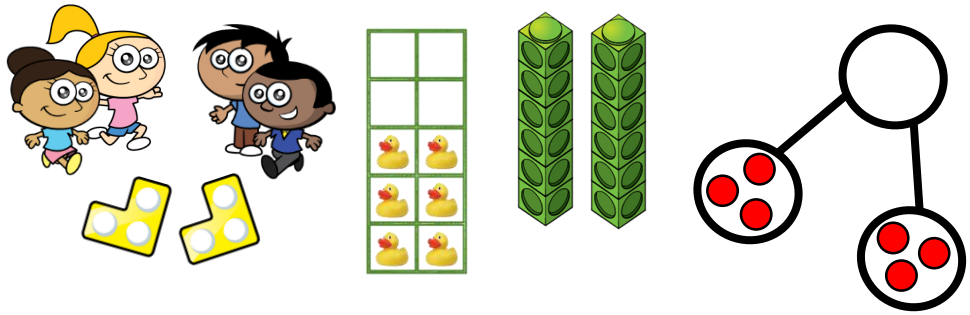
This is the Story of Alison Hubble by Allan Ahlberg

BBC Numberblocks Series 2

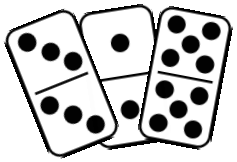
Episode 9 - Double Trouble

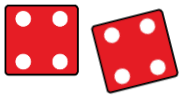
Prompts for Learning

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.

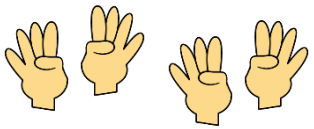


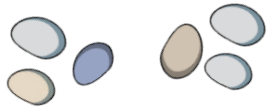


Play **Doubles**

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

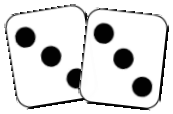
Ask the children to sit opposite each other. One child sets out a quantity of small items such as pebbles or cubes. Their partner doubles it by making the same quantity. They can also hold up fingers and their partner matches them to make a double.

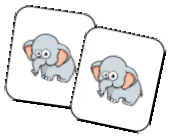




Doubling

Maths area



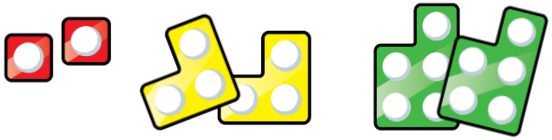


Play snap or matching pairs games using pictorial playing cards or dot cards. Encourage the children to say the doubles as they make them. The person with the most doubles or pairs at the end wins the game.

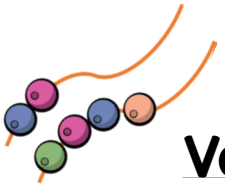
Outdoors

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



Enhancements to areas of learning

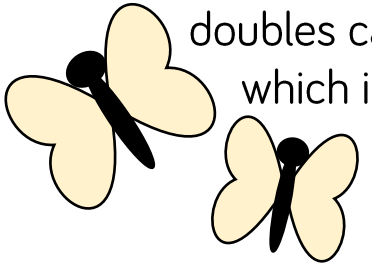


Various areas

Make towers or rows using the blocks and ask the children to build towers that are double the height or double the length. Can they thread double the number of beads? Can they find a container which holds double the amount of water or sand?

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?



Halving and Sharing

Guidance

The children will halve quantities by sharing items into 2 equal groups. The children will probably already have some experience of sharing and will be quick to point out when groups are not shared fairly.
This distinction between fair and unfair sharing can be used to emphasise the idea of half as being one of 2 **equal** parts.

Once children can confidently halve small quantities, they can explore sharing between 3 or 4 people. They will notice that sometimes there are items left over and may come up with their own suggestions for how to resolve this.

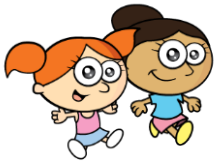
Other Resources

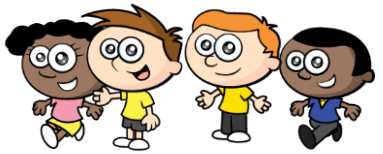
The Doorbell Rang - Pat Hutchins
Bean Thirteen - Matthew McElligott
Maths Story Time - Nrich

Prompts for Learning

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 has much more strawberries than the other. Ask the children if that is fair. Prompt them to show you how to share the strawberries fairly.

With groups of children organise relay races. Start by putting the children into 2 obviously unequal teams so that it takes much longer for one team to finish than the other.
Ask the children why the smaller team keeps winning. Is that fair?
Ask the children to create 2 equal teams so the races are fair.





Provide opportunities for the children to share into equal groups. For example, at snack time they could share bowls of grapes fairly between 3 or 4 children.
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.

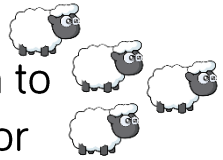
Halving and Sharing

Snack

Ask the children to come for snack in pairs and provide quantities of food that they need to share onto their plates, e.g. A box of raisins, a bunch of grapes, a handful of crackers. Progress from halving to sharing equally between 3 or 4 children.

Enhancements to areas of learning

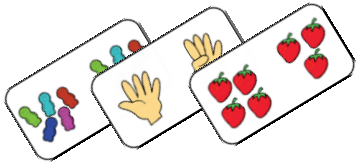
Various areas



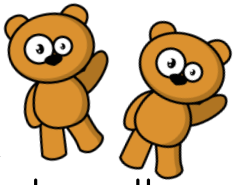
Provide opportunities for the children to share quantities into groups fairly. For example sharing out the cards or dominoes at the start of a game, sharing out the bricks or beanbags, sharing the small world animals into 2 fields.

Sorting

Have some pictures ready to show the children. Some will show equal groups and some will show unequal groups. Ask the children to discuss and sort the pictures. The children might also like to make their own examples of equal and unequal groups to sort.



Teddy bear picnic



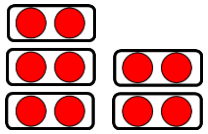
Provide 2 teddy bears, 2 plates and small even quantities of loose parts to represent different food items.

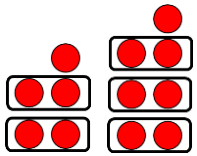
Ask the children to share out the loose parts fairly so that each teddy gets the same. What will happen if another teddy joins the picnic?

Odds and Evens

Guidance

The children begin to understand that quantities which can be shared into 2 equal groups with no items left over are even. Those which have one left over when they are shared into 2 equal groups are odd.
Encourage the children to notice this structure on the number shapes and by building pair-wise patterns on the 10 frames.
They can also explore odd and even by grouping quantities into pairs. Even quantities can be grouped into pairs and odd quantities will have one left on their own when they are grouped into pairs.



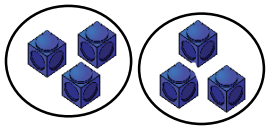


Other Resources

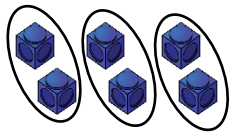
Six Dinner Sid - Inga Moore
Numberblocks Series 2 Episode 11 odds and Evens

Prompts for Learning

Encourage the children to investigate whether small quantities are odd or even by sharing into 2 groups or by making pairs. Prompt them to recognise that some numbers can be halved or grouped into pairs and some numbers will have one left over.

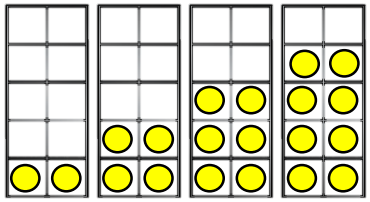


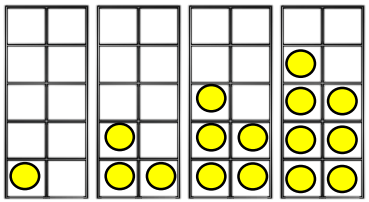
6 in 2 groups (halves)



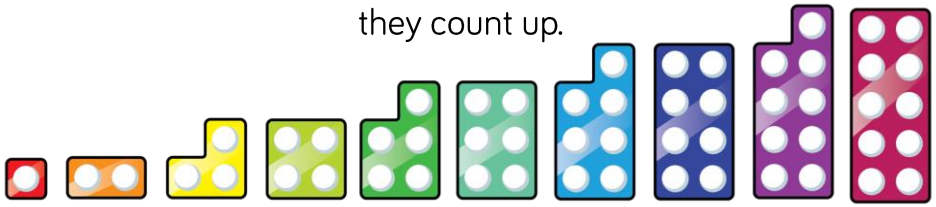
6 in groups of 2 (pairs)

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). Make links to the earlier work on doubles and halves – which 10 frame patterns show doubles and halves and which do not?





The number shapes have a similar structure and can be sorted into odd and even in a similar way. Encourage children to line them up in order to allow children to see the odd, even, odd, even pattern as they count up.



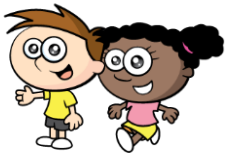
Odds and Evens

Sorting

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 might also make some odd and even sets of their own.

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?


Enhancements to areas of learning

Feely bag

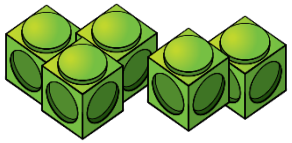
Place the number shapes into the feely bag. Ask the children to feel inside the bag and to find an odd number. How did they know it was odd? Can they find an even number?

Modelling area

Take children for a walk to look at the house numbers on a nearby street. What do they notice? Encourage them to make their own model houses and line them up in order on the odd and even sides of the street.

Digging Deeper

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?

Find half

Provide 2 teddies and plates and a selection of items for halving. Ask the children to explore which quantities will halve exactly into 2 equal groups and which will have one left over.
If you have 6, can you give both teddies the same?
What about if you start with 5?
Is this an even number or an odd number?
How do you know?
Encourage the children to draw pictures to record their findings.

Make equal groups

This time keep 12 items to share each time but vary the number of teddies and plates.
Ask the children to explore sharing the 12 items into equal groups so that each teddy gets the same.
If there are 2 teddies will they each get the same?
How many are in each group?
Are there any items left over?
What about 3 teddies? 4 teddies? 5 teddies? 6 teddies?

Length, Height, Distance

Guidance

Children begin by using language to describe length and height, e.g. the tree is tall, the pencil is short. When making direct comparisons, they may initially say something is big or bigger than something else. Encourage them to use more specific mathematical vocabulary relating to length (longer, shorter), height (taller, shorter), and breadth (wider, narrower)

They move onto make indirect comparisons using identical objects such as blocks or cubes to measure each item, e.g. The sand tray is 5 bricks long. The table is 4 is blocks long. The sand tray is longer than the table. They may also compare distances to see which is further or nearer.

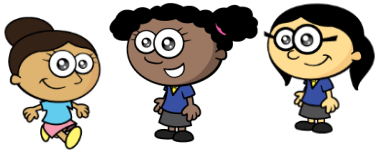
Other Resources

Titch – Pat Hutchins
Tall – Jez Alborough
Where's My Teddy – Jez Albrough

Prompts for Learning

Opportunities for comparing length or height will arise naturally through the children's talk and play. For example, they may compare the height of their towers or sandcastles, or see who has the longest scarf, or who can thread the longest string of beads.

Ask them to compare heights with their friends.
Can they find a friend who is taller than them? Shorter than them? About the same size as them? Can they measure their heights using blocks?



Provide each child with a paper 'footprint' can they find items which are longer than their foot, shorter, about the same size? Can a small group arrange their footprints in size order by making direct comparisons?

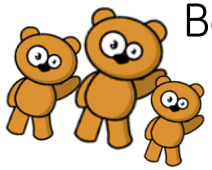
Provide pots and soil for children to plant sunflower seeds. Encourage them to measure the height of their plants using cubes as they grow.

Reception - Measurement - Measure

Length, Height, Distance

Construction

Challenge the children to build towers the same height as themselves.
How tall is the tallest tower they can build?
Can they build a short tower?
Can they build beds for Daddy Bear, Mummy Bear and Baby Bear?

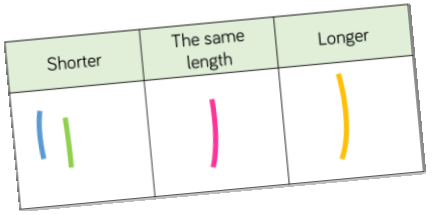


Small world

Provide materials for the children to construct bridges for the cars. They will need to consider how long, how wide and how high they want their bridges to be and select which blocks to use.
Who can push their car the furthest? How will they measure this?

Maths

Have a variety of pieces of ribbon, lace, string. Ask the children to make direct comparisons with a given length (E.g. a piece of ribbon taped to the table) and sort the lengths into the same as, longer than and shorter than the given length. They could also line the lengths up in order from longest to shortest.



Enhancements to areas of learning

Dough

Encourage the children to use mathematical language relating to length as they play.
Ask: Can you make a long snake? A short snake? A thick snake? A thin snake? Show me the longest snake you can make. How many blocks long is your snake

Weight

Guidance

Children may already have some experience of weight through carrying heavy and light items.
Encourage them to make direct comparisons using their hands to estimate which item feels the heaviest and then use the balance scales to check. Prompt them to use the language of heavy, heavier, heaviest, light, lighter, lightest to compare items starting with items which have an obvious difference in weight.
Avoid the common misconception that bigger items are always heavier by providing some small, heavier items and some large, lighter ones.
They can also use the balance scales to make indirect comparisons by measuring how many cubes or beads balance each item.

Other Resources

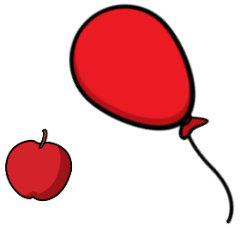
Who Sank the Boat – Pamela Allen
How Much Does a Ladybird Weigh? – Alison Limentani
Balancing Act – Ellen Stoll Walsh

Prompts for Learning

Ask the children to be human balance scales – place an item on each hand and ask them to tip to show which item is heavier and which is lighter. Use the balance scales to check the children's estimations.

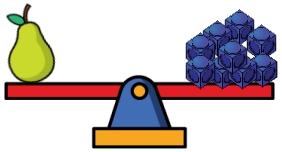
They could also hold buckets or bags in each hand and place items inside to feel which has the stronger downward pull.

Give the children an item, for example, an apple. Challenge them to find things which feel heavier and lighter than the apple and sort them into sets.



Use the balance scales to check their estimation.
Are all the heavier things larger than the apple?
Can they find anything which is larger than the apple but lighter?

Ask the children to use cubes or similar objects to balance an item by placing the item on one side and adding cubes until the scales balance.
The children may then want to count how many cubes balanced the item in question. If there are a lot of cubes, these can be arranged onto 10 frames to help the children count them.

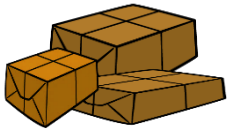


Weight

Dough

Add a set of balance scales to the dough area and encourage the children to compare the weight of different size balls. They could also use loose parts to balance the dough on the scales.

Role play - Post Office



Provide a selection of wrapped parcels of various shapes and sizes. Ask the children to compare parcels to see which are heavier and lighter than others.

Can they find the heaviest parcel?

Can they find the lightest?

Are larger parcels always heavier?

Enhancements to areas of learning

Loose parts

Provide a set of balance scales and an assortment of loose parts to explore. Encourage the children to use the mathematical vocabulary of heavier than and lighter than as they investigate.

Outside

Provide buckets with strong elastic bands attached to the handle. Ask the children to hold the elastic band and watch how far it stretches when they add an item to their bucket. What do they notice when they add a heavy item? A light item?

Capacity

Guidance

Children will already have some experience of full and empty. Encourage them to extend their understanding to show half full, nearly full and nearly empty. Provide opportunities to explore capacity using different materials such as water, sand, rice, cereal and a variety of loose parts. The will also need a variety of different sized and shaped containers to investigate. Prompt them to use the language of tall, thin, narrow, wide and shallow.

Encourage the children to make direct comparisons by pouring from one container into another. They can also use small pots or ladles to make indirect comparisons by counting how many pots it takes to fill each container.

Other Resources

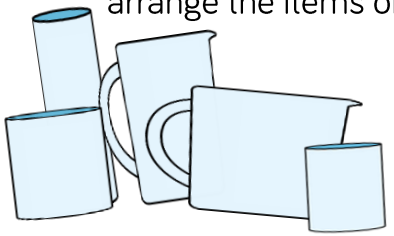
Goldilocks and the Three Bears
There's a Hole in my Bucket!

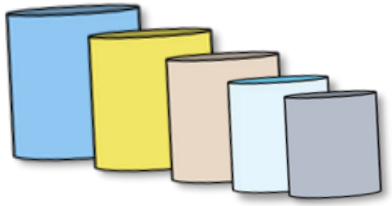
Prompts for Learning

Provide each child with a container. Ask them to make their container full, make it empty, nearly full, nearly empty, about half full. Can they find a container which holds more than their container? Can they find one which holds less?

Provide a selection of containers and ask the children to investigate which holds the most. They may do this by pouring directly from one container to another. They could also use a small cup to fill each container, counting how many small cup-fulls the containers hold. Encourage them to record their results using their own methods of recording.

They could also compare how many cubes or beads each container will hold. (For large quantities, encourage the children to arrange the items onto ten frames to help them make comparisons.)





Provide sets of similar containers in different sizes such as sets of nesting bowls or boxes. The children will enjoy comparing and ordering them and seeing how many loose parts such as beads , cubes or corks they will hold.

Capacity

Enhancements to areas of learning

Sand

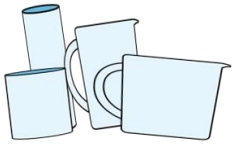
Provide each child with a bowl or cup and a selection of different sized spoons and ladles. Ask them to investigate how many small spoons it takes to fill their container. How many large spoons? How many ladles? Which sized spoon was the best? Why?

Outdoors

Provide a small matchbox for each child. Ask them to hunt for things to put inside. Points could be awarded for specific criteria such as the most items, the prettiest leaf, the smallest pebble, the largest item, the softest item, something yellow etc.

Mud kitchen

Provide a variety of pans, bowls, spoons and ladles for the children to use. Add laminated recipe cards to encourage the children to measure out ingredients. They could also design and create their own recipe cards.



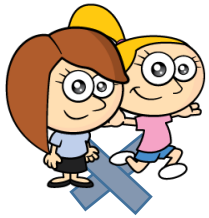
Loose parts

Create a filling station by providing a variety of loose parts and different sized and shaped containers to fill. Ask the children to estimate first before filling the containers and counting to check. Larger quantities can be arranged onto 10 frames so the children can count how many 10s the containers held.

Digging Deeper

Which is further?

This activity would be best carried out in small groups in the outdoor area or in a large space such as the hall.
Ask the children to stand at a given starting point X.
Place 2 items, such as a cone and a hoop, a short distance away.



Ask the children to find out which item is the furthest away. Encourage them to discuss and try different ways to do this. For example they could count strides or end-to-end footsteps. They could make lines of bean bags and count how many to compare the distances. Prompt them to use the language of further, nearer and closer.

How much does a ... weigh?

The book **How Much Does a Ladybird Weigh?** by Alison Limentani could be used as a stimulus for this activity.
Provide a selection of loose parts and encourage the children to use the balance scales to create their own equivalences.
For example they might find that 5 buttons weigh the same as one cork and 3 corks weigh the same as one glass bead. Ask them to record their findings using mathematical jottings.

Key questions

What weighs the same as one pebble?
If three beads weigh the same as one cork, how many beads will weigh the same as two corks?
Do all pebbles have the same weight?