Trent-Rylands Federation Maths Progression

F2 Progression in Maths

EYFS F2 Progression in Maths 2021
This document shows the White Rose Schemes of Learning for the F2.

F2 Whole Year Overview

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13	Week 14
TERM 1	Getting to Know You			Just Like Me!			It's Me 1 2 3!			Light and Dark			Consolidation	
TERM 2	Alive in 5!			Growing 6, 7, 8			Building 9 and 10			Consolidation				
TERM 3	To 20 and Beyond			First Then Now			Find My Pattern			On The Move				

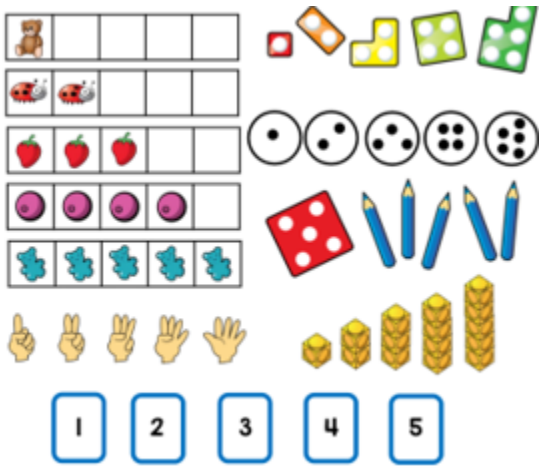
PRINCIPLES

1 **The one-one principle.** This involves children assigning one number name to each object that is being counted. Children need to ensure that they count each object only once ensuring they have counted every object.	Children will sometimes count objects more than once or miss an object out that needs to be counted. Encourage children to line up objects and touch each one as they count saying one number name per object. This will also help to avoid children counting more quickly than they touch the objects which again shows they have not grasped one-one correspondence.
2 **The stable-order principle.** Children understand when counting, the numbers have to be said in a certain order.	Children need to know all the number names for the amount in the group they a re counting. Teachers can therefore encourage children to count aloud to larger numbers without expecting them to count that number of objects immediately.
3 **The cardinal principle.** Children understand that the number name assigned to the final object in a group is the total number of objects in that group.	In order to grasp this principle, children need to understand the one-one and stable-order principle. After counting a group of objects and asking 'how many?', children should be able to recall the final number they said. Children who have not grasped this principle will recount the whole group again.
4 **The abstraction principle.** This involves children understanding that anything can be counted including things that cannot be touched including sounds and movements e.g. jumps.	When starting to count, many children rely on touching the objects in order to count accurately. Teachers can encourage abstraction on a daily basis by counting claps or clicks. They can also count imaginary objects in their head to encourage counting on, this involves the children visualising objects.
5 **The order-irrelevance principle.** This involves children understanding that the order we count a group of objects is irrelevant. There will still be the same number.	Encourage children to count objects, left to right, right to left, top to bottom and bottom to top. Once children have counted a group, move the objects and ask children how many there are, if they count them all again they have not fully grasped this principle.

F2 Autumn Overview

Week 1	Week 2	Week 3		Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Getting to Know You			Phase	Just Like Me!			It's Me 1 2 3!			Light and Dark		
Opportunities for settling in, introducing the areas of provision and getting to know the children.			Number	Match and Sort Compare Amounts			Representing 1, 2 & 3 Comparing 1, 2 & 3 Composition of 1, 2 & 3			Representing Numbers to 5. One More and Less.		
Key times of day, class routines. Exploring the continuous provision inside and out. Where do things belong? Positional language.			Shape Pattern And Measures	Compare Size, Mass & Capacity Exploring Pattern			Circles and Triangles Positional Language			Shapes with 4 Sides. Time		

F2 Autumn Representations



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Autumn Scheme of work

Match

Guidance

Provide opportunities for the children to find and match objects which are the same.
Ask: Can you find one exactly like mine?
How do you know it is the same?
Can you find one that is different to mine?
Why is this one not like mine?

Other Resources

Noah's Ark

Monkey Puzzle – Julia Donaldson

Snap card games and jigsaws

Number shapes or Pattern Block base-boards

Prompts for Learning

You will need a collection of objects made up of identical pairs. These could be socks, wellington boots, Noah's ark animals etc. Muddle up the items so that the pairs are not together and ask the children to match the objects into pairs.

Paint a collection of pebbles or wooden discs to resemble creatures such as ladybirds, bees or fish in matching pairs. Secretly hide one of the creatures and spread the rest out for the children to see. Ask the children to match the remaining creatures and work out whose partner is missing.

Picture cards in pairs are a great resource for matching, sorting and comparing and can be used in many ways. One group activity is to give each child a card and ask them to find someone who has a matching card. Once they find their partner they sit down together. This activity could also be done with number shapes or compare bears before the provision tasks on the next page.

Match

Outside

Give each child a different compare bear. Have matching compare bears placed around the outside area. Ask the children to find a bear that matches theirs. How do they know it matches? Are their bears big or small?

Enhancements to areas of learning

Loose parts

Provide a selection of different sized lids. Have a large sheet of paper with outlines of the lids drawn on. Ask the children to match each lid to the correct outline on the paper.

Maths area

Put out a selection of number shapes in matching pairs. Choose a shape and ask the children to find the shape that matches yours. Alternatively hide one of the shapes and ask the children to match the rest to find which shape is missing.

Construction

Join the children in their block play.
Can we build towers that match?
Challenge them to build towers of a matching height.
Do they look the same? Do the towers always need exactly the same blocks?

Sort

Guidance

Children learn that collections of objects can be sorted into sets based on attributes such as colour, size or shape. Sorting enables the children to consider what is the same about all the objects in one set and how they are different to the other sets.
They begin to understand that the same collection of objects can be sorted in different ways and should be encouraged to come up with their own criteria for sorting objects into sets. Lining up time is a great way to begin: If you like carrots line up, if you have a sister line up.

Other Resources

The Button Box , M Reid

Frog and Toad – A lost Button , Arnold Lobel

Which one doesn't belong: https://wodb.ca/

Prompts for Learning

Ask the children to bring in Autumnal seeds and leaves to create a seasonal collection. Encourage the children to explore different ways that these can be sorted. Start by sorting using one criteria to create 2 sets. For example leaves and not leaves, round and not round, red and not red.

Children can then progress onto sorting into more sets considering different criteria, for example red, yellow and orange leaves, smooth seeds, rough seeds. Buttons, shells, pebbles etc. also provide many varied sorting opportunities.

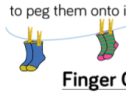
Tidy-up time is a fantastic opportunity for discussing which items belong together and sorting objects as the children put things away where they belong. Labelling the sets of resources provides an opportunity to introduce key mathematical language such as long bricks and short bricks, thick brushes and thin brushes.

Sort

Home Corner

This offers many opportunities for children to sort. Can they sort the plates, bowls, cups and cutlery by colour? Can they sort them by type? How could they sort the food? Can they find more than one way? Add a variety of socks for the children to sort and a washing line to peg them onto in sets.

Enhancements to areas of learning



Finger Gym

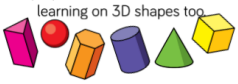
Provide a large collection of beads in different colours, shapes, sizes etc and several small pots. Encourage the children to sort the beads into the pots and explain how they have sorted them.

Loose parts

Provide a collection of loose parts – buttons are ideal and encourage the children to sort these in different ways. For example they could sort by material, shape, colour, texture. The Button Box by Margarette S Reid is an excellent starting point.

Blocks

Children can use a number of characteristics and attributes to sort blocks in the construction area. Using words such as: stack, roll, shape, large, small etc will prepare them for their future learning on 3D shapes too.



Digging deeper

Guess my rule

Begin with a large pile of items such as buttons.
Tell children you have a sorting rule but they need to guess what it is.

One at a time you can place buttons into your set. (For example buttons with 2 holes.) Continue to add different buttons to your set and encourage the children to identify your rule.
When a child thinks they know the rule they can choose a button that they think will belong to your collection. You can tell them if they are correct or incorrect.

In this activity, the children will need to ignore any differences between the items in your set and focus on the one criteria that they have in common.

Key questions

What is the same about all the items in my set?
Can you find a button which belongs in my set?
Can you find one which doesn't belong?
Why doesn't it belong?
Can you think of a different sorting rule for me to guess?

Odd one out

Create a set of up to 4 objects each having one criteria which makes it different to the others. For example in the shapes above, the circle could be the one that doesn't belong because it is a different shape to the rest. The green triangle is a different colour and the small triangle is a different size.

Encourage the children to explain their reasoning. This time, they will need to ignore the similarities and find the one attribute that makes each object different.

Compare amounts

Guidance

Once children can confidently sort collections into sets, they learn that these sets can be compared and ordered.
They understand that when making comparisons a set can have more items, fewer items or the same amount of items as another set.
It is easier for the children to make comparisons when the difference between the sets is greater. For example, start by asking the children to compare 5 and 2 rather than 5 and 6

Other Resources

A Squash and a Squeeze – Julia Donaldson

Seaweed Soup – Stuart J Murphy

The Enormous Turnip

Prompts for Learning

Once children have sorted objects into sets ask them which set has more or most items and which has fewer or fewest?
Do they have any groups which are equal?
How can they check?
Encourage the children to line up the items using 1-1 correspondence. 5 frames can support with this.

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. For example a set of 2 large balls and a set of 5 small balls.
Which set has more? Which set has fewer?

Read the story A Squash and a Squeeze. Ask children to re-enact the story using a hoop or box to represent the house. Ask them to describe how the 'house' feels as the story progresses.
Why do they think the story is called A Squash and a Squeeze? How does the house feel at the end of the story?

Compare amounts

Dough area

Provide one large ball of dough
Ask the children to share this equally to make sure everyone has the same size piece of dough.
What happens if someone else arrives?

Enhancements to areas of learning

Loose parts

Work in pairs. Grab a handful of objects such as cubes, beads or conkers.
How many can you hold?
Can your partner hold more than you, fewer than you or the same amount?
Provide 5 frames to help children to compare more easily.

Role play and snack

How many children are having breakfast?
Do we have a cup, a bowl and a spoon for everyone?
How can we make sure that everyone gets the same amount of cereal?
What if someone else joins the table?

Outside

Build a tower using large outdoor blocks, cushions or crates.
Challenge the children to make a shorter tower, a taller tower. How many crates or blocks did they use? What is the tallest/shortest tower they can build?

Compare size, mass & capacity

Guidance

The children learn that objects can be compared and ordered according to their size.
Encourage the children to use language such as big and little, large and small to describe a range of objects in the classroom. More specific language such as tall, long and short could also be introduced.
Encourage children to compare and order objects by size in the different areas of provision and to use the vocabulary to explain what they notice.

Other Resources

Where's My Teddy - Jez Alborough
It's The Bear - Jez Alborough
Dear Zoo - Rod Campbell
A New House for Mouse - Petr Horacek
Mr Big - Ed Vere
My Cat Likes to Hide in Boxes – Eve Sutton

Prompts for Learning

Start by showing the children a mystery box. This could be very small or very large or very tall and thin.
Ask the children to predict what could be inside.
Could they fit inside the box? Why not?
What else could or could not fit into the box?
Compare to a contrasting shaped/sized box.

Prepare a picnic basket for a teddy bear's picnic. Include plates, cups, spoons, hats, napkins etc. of two different sizes. You will also need 2 bears - a big bear and a little bear. Unpack the basket and discuss which size item would be best for which size bear.

Hide a selection of large balls and small balls around the outside area. Ask the children to go on a ball hunt and collect all the balls they find. What do they notice?
Can they sort the balls into 2 buckets – large balls and small balls? Which balls are easier to catch and which are harder?

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Compare size, mass & capacity

Modelling

Ask the children to create homes or containers for different sized soft toys or small world creatures. What size and shape will they need for an elephant? A giraffe? A mouse? Can their friends guess who is inside?

Enhancements to areas of learning

Sand and Water

Provide equipment in 2 distinct sizes. For example, a big bucket and a little bucket, a tall jug and a short jug. Encourage the children to compare the objects and to explore how many scoops each will hold. They could also count how many large scoops and how many small scoops a container will hold.

Outside

Set up an area where the children can dig and provide large and small spades and garden trowels. You can also provide different sized containers for the children to fill and empty. Which containers are the easiest to carry? Wheelbarrows might also prove popular!

Construction

Encourage the children to build using long and short blocks. Which type of blocks will they choose for their models? Is it easier to build a road using long or short blocks? Can they build a long road and a short road, a tall tower and a short tower. Which type of block will balance on its end most easily?

Digging deeper

Balance

Add a set of balance scales to the dough area. Encourage the children to compare the mass of different sized balls of dough.
Can they use the balance scales to help them create equal balls of dough?
How will they know when the balls are equal?

Baking cupcakes

Ask the children to measure out the ingredients for making cupcakes using one egg to balance quantities of sugar, butter and flour in turn.
Mix the ingredients together, add to bun cases and bake for 15 minutes.

Key questions

Which ball has more dough?
How do you know?
Can you balance this ball of dough?
What else weighs the same as your ball of dough.
How many spoons of sugar balance the egg?
How can we share the mixture fairly between the cases?

Feely bag

Put a selection of number shapes into a feely bag. Show the children a number shape and challenge them to put their hand into the bag to find one that is larger than yours, smaller than yours or exactly the same as yours.
Can you find more than one shape which is larger?
Can you find more than one shape which is smaller?
Ask the children to sort the shapes into larger than yours, the same as yours and smaller than yours.

Make simple patterns

Guidance

Children copy, continue and create their own simple repeating 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 AB patterns in a range of contexts including shapes, colours, sizes, actions and sounds. Encourage them to build patterns both vertically and horizontally.

Other Resources

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

Demonstrate simple AB action patterns such as:
Knees, clap, knees, clap, knees, clap
Head, shoulders, head, shoulders, head, shoulders
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.

Word or sound patterns can be chanted together, opposites are good for this.

in, out, in, out, in, out

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 repeating patterns using the AB structure.

Make simple patterns

Snack

Provide a selection of fruit cut into small pieces. Encourage the children to make an edible repeating pattern before they eat their snack. They might even like to build a fruit kebab.

Maths area

Use resources such as number shapes, dice, cubes, counters, peg boards etc. Ask the children to create their own repeating patterns. Can their friends copy and continue their patterns?

Enhancements to areas of learning

Outside

Provide access to a range of natural materials or loose parts and ask the children to design their own patterns. Encourage them to consider shape and size as they build their patterns and to say their patterns aloud. E.g. Round leaf, pointy leaf, long stick, short stick, round stone, flat stone

Construction

Ask the children to build towers or enclosures using their own repeating patterns.
Can they say their pattern aloud?
Encourage the children to use key vocabulary such as big brick, little brick, long brick, short brick, red brick blue brick etc.

Digging deeper

Spot my mistake

Show the children patterns which have a deliberate mistake. What do they notice?

Ask the children to suggest ways to sort out the problem. They might swap the items around which means they will need to continue amending the pattern until the end of the line.

Bear Hunt

'Stumble trip, stumble trip'

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. Repeat the patterned language from the story as they travel through their journey. They might like to invent word patterns of their own. You can also reinforce the positional language of over, under and through.

Key questions

Say the pattern. What do you notice?
Is this pattern correct?
How could we try to sort it out?
Does it work now?
Which instrument did you hear?
Can you make the same sound pattern?
Can you make a different sound pattern?

What's my pattern?

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

Reception – Autumn Phase 2 – 1 2 3

Representing 1 2 3

Guidance

Children identify representations of 1, 2 and 3. They subitise or count to find how many and make their own collections of 1, 2 and 3 objects. They match the number names we say to numerals and quantities. They count up to three objects in different arrangements by touching each object as they count and recognise that the final number they say names the quantity of the set.
They use their own mark-making to represent 1, 2 and 3 for example to record their score during a game.

Other Resources

Hickory Dickory Dock
1 2 3 at the Zoo - Eric Carle
I'm Number One – Michael Rosen
One Bear at Bedtime – Mick Inkpen

Prompts for Learning

Prepare a set of dot plates or cards which have 1, 2 or 3 dots in different arrangements.
Hold up the plates and ask the children how many dots. The children could match plates to the numerals 1, 2 and 3

Encourage the children to create their own collections of 1, 2 and 3 to create a central display.

Have a number hunt inside and out.
Where can they find 1, 2 and 3?
Do they count or subitise to find how many?

Ask the children to count out 1, 2 or 3 objects from a larger group. For example, we are going to play a game. You will each need 3 beanbags.

Don't forget to count sounds and movements too.
Use a drum to sound beats to count or ask the children to do 2 claps, 3 jumps, 1 twirl etc.

Reception – Autumn Phase 2 – 1 2 3

Comparing 1 2 3

Guidance

Children begin to understand that as we count, each number is one more than the number before. Similarly as we count back, each number is one less than the previous number.
Use a range of representations to support this understanding and encourage the children to represent the one more and one less patterns as they count. Support the children to make comparisons in different contexts as they play.

Other Resources

The Three Bears
The Three Little Pigs
The Little Bear and the Wish Fish – Debi Gliori
When Goldilocks Went to the House of the Bears song
Pink Tiara Cookies for Three – Maria Dismondy

Prompts for Learning

Use stories and number songs which count on and back to introduce the one more and one less patterns.
Represent the patterns using bricks or cubes to support the understanding that each number is one more/less than the number before.

Using a range of real objects in different contexts ask the children to compare sets. Which set has more? Fewer? Can you find 2 sets with the same amount?

The dot plates can also compared and ordered.
Ask: How many dots does this plate have?
Can you find a plate with more dots?
With fewer dots?
With the same number of dots?
Can you put these 3 plates in order?
What would come next?

Ask the children to compare how far they can travel in 3 giant steps and in 1 or 2. In 1, 2 and 3 tiptoes.

Reception – Autumn Phase 2 – 1 2 3

Composition of 1 2 3

Guidance

Introduce children to the idea that all numbers are made up of smaller numbers.
Allow them to explore and notice the different compositions of 2 and 3. For example 3 can be composed of 1 and 1 and 1 or 2 and 1 or 1 and 2.
Although we are focusing here on numbers to 3 the children may choose to notice and explore the composition of larger numbers in their play.
Encourage them to share what they have noticed.

Other Resources

BBC Number blocks 1, 2 and 3
The Three Billy Goats Gruff
Number Farm - Stephen Holmes

Prompts for Learning

Have 3 small word animals such as horses or cows and 2 fields. Ask the children how many animals could go in each field. Can they find different ways to do this?
What if they had 1 or 2 animals?

In a small group ask each child to count out 3 double-sided counters. Shake them in their hand and then drop them down. How many are red? How many are yellow? Can they get all red? All yellow?

Use the number shapes to investigate which smaller numbers combine to make 1, 2 and 3. Check by sitting them on top of the whole number.

Play **Bunny Ears**
Using 2 hands to be the ears, how many ways can you show 1, 2 and 3? 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?

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Digging Deeper

How many inside?

Place 1, 2 or 3 items into a feely bag.
Ask the children to feel inside the bag and try to count how many there are without looking.
Count the items out to check.

Hidden objects

With the children count out 1, 2 or 3 items and then use a cloth or a bowl to hide them. Can the children use their fingers to show you how many are hidden?
Ask the children to watch as you add one more item to the hidden group. How many will be hidden now? What if you take one out?

These tasks challenges the children to count unseen objects and to visualise one more and one less within 3. The children may use their fingers to help them predict what one more or one less will be. They could also use their own mark-making to represent the hidden objects.

You could vary the task by dropping pebbles into a bucket or pennies into a cup.
Encourage the children to count the sounds.
Ask them to predict how many there will be if you take one out or add one more and then count together to check.

Key questions

How many objects can you feel in the bag?
How many pebbles did I put in?
If I add one more how many will there be?
If I take one out how many will there be?
How many are in the bag/bucket now?
How do you know? How can we check?

Circles and Triangles

Guidance

Children learn that circles have one curved side and triangles have 3 straight sides. They begin to recognise these shapes on everyday items in the classroom and outside. Encourage the children to build their own circles and triangles.
It is important to show a variety of different sized circles and triangles in different orientations and with sides of different lengths.

Other Resources

Circle - Mac Barnett and Jon Klassen
Triangle - Mac Barnett and Jon Klassen
The Mr Men Books – Roger Hargreaves
Three Little Firefighters – Stuart J Murphy
Round is the Moon Cake – Roseanne Thong
My Hat, It has 3 Corners song

Prompts for Learning

Show the children a variety of circles and triangles in different sizes and orientations.
Choose one of the shapes. Ask the children to tell you what they notice. Are the sides straight or curved?
Can they see another shape like this?
What if we turn it around, is it still the same shape?
Can they find a different shape? Why is it different?

Show the children a picture which has been made of different shapes. E.g. a boat, a rocket, a house.
What shapes can you see in the picture?
How many triangles can you count?
Can you make your own picture using the shapes?

Go on a shape hunt. Where can you see circles and triangles on the surface of everyday objects?

Look at shapes in art such as Kadinsky's Concentric Circles or Stained in Triangle. Ask the children to discuss the images. How many shapes can they see?

Spatial awareness

Guidance

Children hear and begin to use positional language to describe how items are positioned in relation to other items.

They build life-sized journeys outdoors and travel through them, exploring them from different perspectives.
They begin to represent real places they have visited or places in stories with their models, drawings or maps.

Other Resources

We're Going on a Bear Hunt - Michael Rosen
Rosie's Walk - Pat Hutchins
Little Red Riding Hood - Traditional Tale
Mrs Wishy-Washy - Joy Cowling
Me on a Map - Joan Sweeney

Song: In and Out the Dusty Bluebells

Prompts for Learning

Positional language can be modelled and practised on a daily basis with the children through their play. Tidy-up time in particular is full of opportunities to use positional language for a real purpose. E.g. Put the bricks **into** the basket. Sit teddy **on** the shelf **next to** the books.

Many stories focus on positional language or journeys. Encourage the children to use actions to represent the language such as *over, under, around, through* as you read. Children could also build models of the story journeys and real life journeys they have made to include the places passed or visited along the way.

Outside the children can build large-scale representations of places and journeys.

Digging Deeper

Treasure Hunt

Set up a treasure hunt in your outdoor space by providing a series of pictorial clues.
As the children go to each place in the pictures, they can hunt for the next clue.
Prompt them to use positional language to explain where they need to go.
Hide some 'treasure' in the last place – this could be a special snack, a new story to read or resource for the classroom.

The children might like to continue this by designing their own treasure hunts and hiding pictorial clues for their friends to follow.

Make my match

Provide each child with a set of identical items such as 3 cubes of different colours.
Hide your cubes from the children using a barrier and describe how you arrange your set. For example put the green cube under the red cube. Put the yellow cube on top of the red cube. Now check. Does your tower match mine? Extend the use of language to include next to, beside, between, above, below.
Encourage the children to take turns in leading the game and continue the game in provision. This could be extended by adding 1 or 2 more cubes.

Key questions

Does your tower look just like mine?
Where should this cube be?
Which cube is between the green and the yellow cube?
Can you find more than one way to tell me where the green cube is?

Four

Guidance

Children count on and back to 4. They count or subitise sets of up to 4 objects to find how many and make their own collections of objects. They match the number names to numerals and quantities and are able to say which sets have more and which have fewer items. When counting, they continue to learn that the final number they say names the quantity of the set. They use their own mark-making to represent numbers to 4.

Other Resources

Pete the Cat and his 4 Groovy Buttons – Eric Litwin
Witches Four – Marc Brown
Washing Line – Jez Alborough
Anno's Counting Book – Mitsumasa Anno

Prompts for Learning

Note: All the prompts for counting to three can be applied to counting to four, plus these extra ideas.

Have a basket of something interesting to count. Ask the children to count out 4 items and arrange them on a whiteboard.

How many are there altogether?
Does your 4 look the same as mine?
Rearrange the items. How many are there now?
Can you make yours look the same as mine?
Can you arrange your 4 in a different pattern to mine?
What smaller groups can you see in your 4?

Arrange 4 items on a 5 frame – what do you notice?
Prompt the children to notice that 4 is one less than 5 so there will always be one empty space.

Circle game. Everybody stand up. Count round the circle 1, 2, 3, 4 1, 2, 3, 4 1, 2, 3, 4, etc. The person who says 4 sits down each time. Continue to count round the circle until there is only one person remaining. You can also count back 4, 3, 2, 1 and sit down on 1.

Five

Guidance

Children continue to subitise up to 5 items and to count forwards, and backwards, accurately using the counting principles. They represent up to five objects on a five frame and understand that if the frame is full then there are five.
This is a good opportunity to link to birthdays as children will soon be five. Five is also the focus of many number songs and rhymes.

Other Resources

Kipper's Birthday – Mick Inkpen
5 Little Fiends – Sarah Dyer
Five Little Men in a Flying Saucer - Dan Crisp
5 Small Stars – Ladybird
Five Currant Buns
Five Little Monkeys
One Elephant Went Out to Play

Prompts for Learning

Note: All the prompts for counting to three and four can be applied to counting to five, plus these extra ideas.

Can we count to five on our fingers? Can we count back from 5? Ask the children to show numbers to 5 using their fingers. Is there more than one way? As they become more confident encourage them to do this without counting.

Read Kipper's Birthday. How old is Kipper? How do we know?
Let's count the candles on his cake?
Stand up if you are 5 Stand up if you are 4
Do we have more 5 year olds or more 4 year olds?
Who will be 5 next?

Have a feely bag filled with cubes. Ask the children to predict how many cubes you can collect in one handful. Grab a handful and then lay them down one by one so the children can see how many. Ask who else would like to try. Can they hold the same as you? Try again. Do they get the same amount each time?

Fill five frames with a variety of objects. How many do we have? How do we know there are five without counting?

Digging Deeper

Build and count

Provide children with 5 separate connecting blocks. Encourage them to join their blocks to build a tower and then to explore other shapes they could build with 5 blocks. How many different ways can they find to join their blocks?

The children may build the same shape in different orientations so encourage them to turn their shapes around to check that they are not the same as another shape.

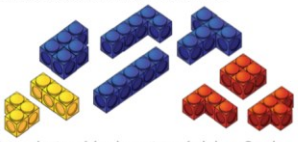
Ask the children to explore different shapes they could build using 2, 3 and 4 blocks.

There is just one way with 2 blocks, 2 ways with 3 blocks, a few with 4 blocks and many with 5 blocks.

***Numberblocks Series 1 Episode 11 Stampolines** also looks at different ways to arrange up to 5 blocks.*

Key questions

How many blocks are there?
Can you build them into a different shape?
Can you find another shape like yours?
Can you make a shape different to all the others?
How many shapes can you build with 3 blocks?
Are there more shapes with 4 blocks or 5 blocks?
How many different shapes do you think there will be with 6 blocks?
Can you create your own stampoline prints?



Put a selection of the shapes into a feely bag. Can the children find a 4 shape without looking? How did they know it was 4? If it is not 4, why not?

One more and one less

Guidance

Children continue to count, subitise and compare as they explore one more and one less. Encourage children to use a five frame to represent numbers and to predict how many there will be if they add one more or take one away. Prompt children to see the link between counting forwards and the one more pattern and counting back and the one less pattern. There are many books and rhymes to support one more and one less.

Other Resources

The Gingerbread Man- Traditional Tale
The Enormous Turnip- Traditional Tale
The Very Hungry Caterpillar- Eric Carle
Stella to Earth! – Simon Puttock

Five little speckled frogs
Five currant buns
Five Little Ducks

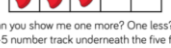
Prompts for Learning

Use the songs and stories suggested to role play one more and one less with the children e.g. Five currant buns.

How many buns are there altogether? Put the penny in the pot, how many pennies do we have? How many buns do we have now? Repeat the song and questions. Encourage the children to notice that there is one less bun each time, but one more penny.

Read The Gingerbread Man and as you read, represent the growing pattern of characters using counters or cubes. Can the children see the one more pattern building? Can they predict what will come next? What will happen when the gingerbread man is eaten?

Ask children to make a number on a five frame.



Can you show me one more? One less?
Use a 1-5 number track underneath the five frame.
Can you point to the number you made?
Can you point to one more and one less than your number?

Trent-Rylands Federation Maths Progression

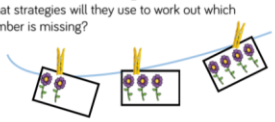
Reception – Autumn Phase 3 – Numbers to 5

Digging Deeper

Washing line

Provide children with pictures of objects to arrange on the washing line in order. As the children order the pictures encourage them to use the language of one more and one less.
What can you tell me about 3?
Prompt the children to see that 3 is one more than 2 and also one less than 4.

Hide one of the cards and ask the children to work out which number is missing.
What strategies will they use to work out which number is missing?



Key questions

Can you find 1 more than 3?
Where will you place this on the washing line?
Can you find a picture with 1 less than mine?
Can you find a picture that is 1 more than …. but 1 less than ….?
How many are in the bag?
If I add 1 more, how many will there be now?

Hidden objects

With the children count 4 items into a bag.
Ask the children to confirm how many there are inside the bag.
Put in one more or take one out. How many are in the bag now?
Once the children are confident in predicting 1 more and less, this can be extended to adding 2 or 3 more or less.
Encourage the children to use their fingers or 5 frames to represent the hidden objects.

Reception – Autumn Phase 3 – Geometry and Spatial Thinking

Shapes with 4 sides

Guidance

Children learn that squares and rectangles have 4 straight sides and 4 corners. They begin to recognise these shapes on everyday items in the classroom and outside. Encourage the children to build their own squares and rectangles. It is important to show squares and rectangles in a variety of different sizes and orientations. Can they spot any other shapes with 4 straight sides.

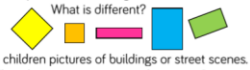
(Note for teachers: In mathematics, squares are classed as special rectangles with 4 equal sides)

Other Resources

Square - Mac Barnett and Jon Klassen
Mr Strong – Roger Hargreaves
Bear in a Square – Della Blackstone
Number blocks Series 1 Episode 6 - Four

Prompts for Learning

Show the children a variety of squares and rectangles in different sizes and orientations.
Choose one of the shapes. Ask the children to tell you what they notice.
How many corners can they see?
What if we turn it around, is it still the same shape?
Compare a square and a rectangle. What is the same?
What is different?



Show the children pictures of buildings or street scenes.
What shapes can you see in the picture?
How many squares and rectangles can you count?
Can you make your own pictures using squares and rectangles?

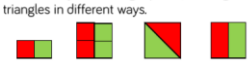
Go on a shape hunt. Where do you see squares and rectangles on everyday objects?
How many different squares and rectangles can you find inside and outside?

Reception – Autumn Phase 3 – Geometry and Spatial Thinking

Digging Deeper

Combining shapes

Ask the children to investigate which shapes they can make by combining squares, rectangles and triangles in different ways.



Can you build a small square, a medium square and a large square? You could draw outlines for the children to fill initially.

What shapes did you use to make your squares?
Is there a different way to build the same shape?

Can you build a square using rectangles?
How do you know it is square?
Can you build a rectangle using squares?
How do you know it is a rectangle?

Key questions

What shapes can you build?
Is there more than one way to make this shape?
What shapes can you make by joining 2 squares?
By joining 2 rectangles?
2 triangles?
Can you fill this shape leaving no gaps?

Matchstick shapes

Use matchsticks to build squares and rectangles.
What is the smallest square you can make?
How many matchsticks did you use?
What is the largest?
Can you count all of the matchsticks you used?

What is the smallest number of matchsticks needed to build a rectangle?

Reception – Autumn Phase 3 – Measurement - Time

Night and Day

Guidance

Children talk about night and day and order key events in their daily routines. They use language to describe when events happen e.g. day, night, morning, afternoon, before, after, today, tomorrow.
Children begin to measure time in simple ways e.g. counting the number of sleeps to an important event or using timers to measure durations of events.

Songs and Stories

Fox in the Dark – Alison Green
Peace at last- Jill Murphy
Kipper's Monster – Mick Inkpen
Day Monkey, Night Monkey – Julia Donaldson
The Dark, Dark Tale – Ruth Brown
Funnybones – Janet & Allen Allberg
Days of the week song

Prompts for Learning

Make a visual timetable of the important events in the school day. Order the events each day and talk about what we are doing 'now', 'next' and 'later'.
Refer back to the timetable throughout the day, asking the children questions relating to it.
What are we doing now? What are we going to do next?
What are we doing this afternoon?

Sing songs to sequence the days of the week – which days do we come to school and which do we stay at home?
Use a class calendar to introduce time durations and think about 'how many sleeps' there are to important events.

Use stories and non-fiction books to introduce the idea of nocturnal animals and explain that as we go to sleep, some animals are waking up and come out at night.

Use pictures to order familiar activities and stories using key language to describe the sequence e.g. making pancakes, getting ready for bed, retelling a story.

Reception – Autumn Phase 3 – Measurement - Time

Digging Deeper

Obstacle Course

Make an obstacle course in the outdoor area.
What do we do first? What comes next? Can we make picture cards to explain the instructions to other children?

Use a timer to measure how long it takes each child to complete the obstacle course.
How will we know if we get faster at completing the course? Will the number of minutes go up or down?
How can we work out who comes first? Can we count aloud to measure how long it take us to complete the course?

Encourage the children to make their own obstacle courses that take a longer or a shorter time.

Goal!

Set up some mini goal posts. Ask the children to score as many goals as they can before the timer runs out. Each time they score a goal they can collect one bean bag and take it back to their bucket.
At the end of the time ask each child to count their bean bags. How many goals did they score?
Repeat the activity – if the children want to score more goals will they need to work more quickly or more slowly? Count up again – did they beat their score?

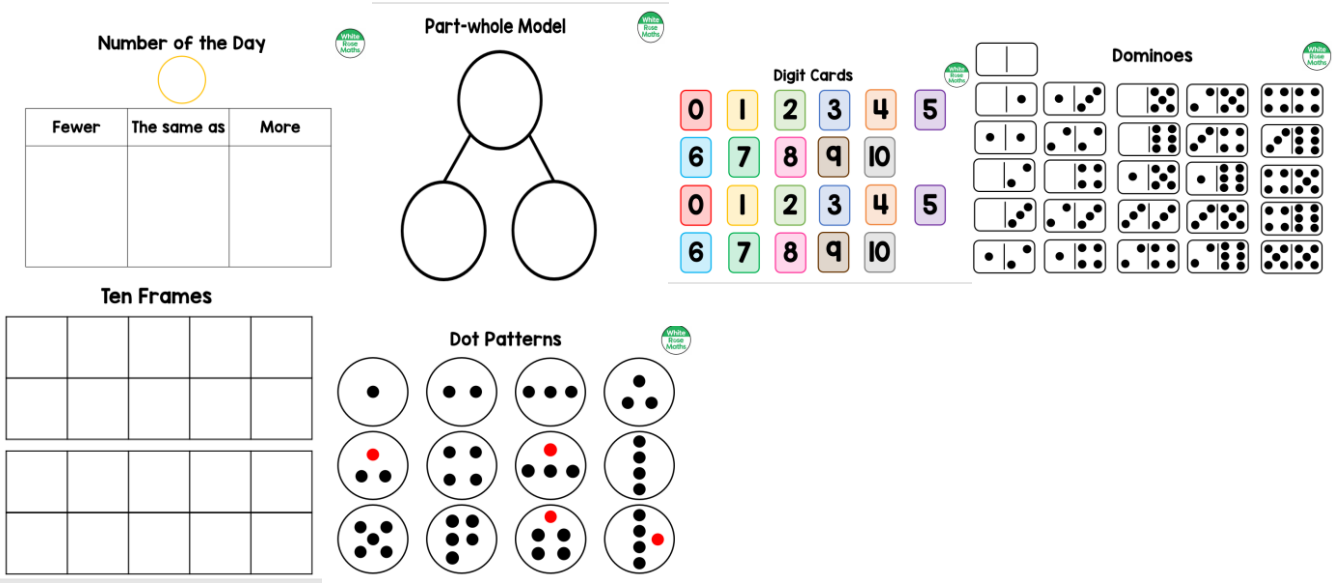
Key questions

What do we need to do first?
What do I do next/after that/then?
How many minutes did you take?
Who was the fastest? Did they take more minutes or less minutes than you?
How many goals did you score?
How could you score more goals this time?

F2 Spring Overview

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9
Phase	Alive in 5!			Growing 6, 7, 8			Building 9 & 10		
Number	Introducing zero Comparing numbers to 5 Composition of 4 & 5			6, 7 & 8 Making pairs Combining 2 groups			9 & 10 Comparing numbers to 10 Bonds to 10		
Measure, Shape and Spatial Thinking	Compare Mass (2) Compare Capacity (2)			Length & Height Time			3D-shape Pattern (2)		

F2 Spring Representations



Trent-Rylands Federation Maths Progression

F2 Spring Scheme of Work

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

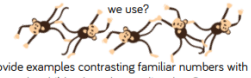
Zero is the Leaves on the Tree – Betsy Franco

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

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?

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.

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

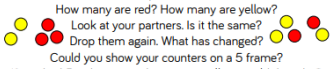
I Spy Numbers – Jean Marzello

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

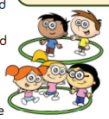
Water

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.

Enhancements to areas of learning

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?



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?

Trent-Rylands Federation Maths Progression

Reception – Spring Phase 4 – Alive in 5!

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?

Reception – Spring Phase 4 – Alive in 5!

Compare Mass (2)

Guidance

Children may already have some experience of weight through carrying heavy and light items.
Encourage them to make direct comparisons holding items to estimate which feels the heaviest then use the balance scales to check. Prompt them to use the language of heavy, heavier than, heaviest, light, lighter than, 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.

Other Resources

Who Sank the Boat – Pamela Allen

The Blue Balloon – Mick Inkpen

Balancing Act – Ellen Stoll Walsh

Prompts for Learning

Bring in a heavy case or box. Show the children that it is difficult to lift and carry because it is really heavy.
Ask if they have ever carried anything heavy?
Ask the children to discuss what could be inside.

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. The children 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?

Reception – Spring Phase 4 – Alive in 5!

Compare Mass (2)

Dough

Add a set of balance scales to the dough area and encourage the children to compare the weight of different size balls. To provide further interest, encourage the children to use loose parts to balance the dough on the scales.

Loose Parts

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

Enhancements to areas of learning

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?

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?

Reception – Spring Phase 4 – Alive in 5!

Compare Capacity (2)

Guidance

Encourage the children to build on their understanding of full and empty to show half full, nearly full and nearly empty. Provide opportunities to explore capacity using different materials such as water, sand, rice and beads. Provide 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

There's a Hole in my Bucket!

Mary Poppins clip – emptying the carpet bag

A Beach for Albert – Eleanor May

Prompts for Learning

In a small group perhaps during snack time, provide each child with a cup. Ask them to make their cup full, make it empty, nearly full, nearly empty, about half full. Can they find a container which holds more than their cup? Can they find one which holds less?

Provide a selection of containers of different shapes and sizes 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.

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.

Reception – Spring Phase 4 – Alive in 5!

Compare Capacity (2)

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?

Mud Kitchen

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

Enhancements to areas of learning

Outside

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.

Role Play

Set up a pop-up café or picnic area providing a variety of jugs and beakers. Encourage the 'waiters' to take drinks orders and bring out the drinks. Play alongside the children to model the language of nearly full, half full, nearly empty etc and enjoy your delicious drinks! (Discuss why we don't want the cups to be absolutely full!)

Reception – Spring Phase 4 – Alive in 5!

Digging Deeper

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.

Key Questions

What happens if I put a 5 piece on one side of the scale and two 3 pieces on the other?
Which is heavier, two 2 pieces or one 5 piece?
Which is the heaviest number shape? Which is the lightest?
How many ways can you find to balance 5 exactly?
Can you find ways to balance 4 or 3?

Which Holds More?

Provide a tall narrow container and a wide shallow one. Ask the children to predict which will hold more water? How could they check? Encourage the children to try different methods.
More containers could be added and the children asked to order them from smallest capacity to greatest.

Reception – Spring Phase 5 – Growing 6, 7 & 8

6, 7 and 8

Guidance

Children continue to apply the counting principles when counting to 6, 7 and 8. They represent 6, 7, and 8 in different ways and can count out the required number of objects from a larger group.
Arranging 6, 7 or 8 items into small groups will support the children to conceptually subitise and see how the numbers are made up of smaller numbers.
E.g. I know it is 8 because I see 4 and 4
Encourage the children to order and compare their representations, noticing the one more/less patterns as they count on and back to 8

Other Resources

Six Dinner Sid – Inga Moore
Kipper's Toybox – Mick Inkpen
Sidney the Silly Only Eats Six – M W Penn
Anno's Counting Book – Mitsumasa Anno
What the Ladybird Heard – Julia Donaldson

Prompts for Learning

Note: All the prompts for representing, comparing and composition to 5 can be applied to 6, 7, and 8
Begin with a story such as Six Dinner Sid. How many times do they meet 6 ? Ask the children to make houses to represent Sid's street. Can they number the doors and order the houses from 1 to 6?
What if we added another house? And another?

How many legs does a ladybird have?
How many spots?
Do you know any other creatures with 6 legs?
Use counters to add 6 spots to the other ladybirds.
Can you find more than one way to do it?

How many colours do you see in the rainbow?
Can you paint a rainbow with 7 colours?
Can you make rainbows using objects around the classroom? How many colours did you use?
Can you find the rainbow in Anno's counting book?

Reception – Spring Phase 5 – Growing 6, 7 & 8

6, 7 and 8

Maths Area

Encourage the children to think about where we see 6, 7, and 8 in everyday life and to make collections of 6, 7 and 8 objects in the classroom.
Sort these items into 6, 7 and 8
How else could you show 6, 7, and 8?

Outdoors

Go on a mini-beast hunt.
Use magnifying pots to observe the creatures carefully. How many legs can they see? Provide pictures to help them identify what they find. Ask the children to make careful drawings of the creatures they find.

Enhancements to areas of learning

Loose Parts

Provide a range of loose parts such as buttons, beads, pebbles, shells and some ten frames. Ask the children to count 6, 7, and 8 items onto the 10 frames. How many do they have? Can they see without counting? The children may also enjoy filling large 10 frames outside.

Kipper's Toybox

Provide a basket of toys for the children to use to re-enact the story. Take turns to 'hide' one of the toys. Can the children spot which toy is missing? How many toys are there now?
What if an extra toy arrives?
How many will there be now?

Trent-Rylands Federation Maths Progression

Reception – Spring Phase 5 – Growing 6, 7 & 8

Making Pairs

Guidance

Children build on their earlier work on matching to find and make pairs. They begin to understand that a pair is two. Provide collections of items which come in pairs.

Encourage the children to arrange small quantities into pairs and notice that some quantities will have an odd one left over with no partner.
Teach the children to play games which involve matching pairs for example snap or memory games.

Other Resources

Simon's Sock – Sue Hendra
10 Fat Sausages
1 2 Buckle my Shoe
Noah's Ark
Pairs! In the Garden – Smriti Prasadam-Halls
Webgames online.com/memory/

Prompts for Learning

Collect a basket of small items in pairs – have enough items for each child to have one. As the children come into the classroom ask them to collect one item from the basket. When all the children have arrived, ask them to find who has the same and sit together in a pair.

Have a basket of unsorted socks or wellies and ask the children to help you sort them into pairs.
Can they spot which pairs go together?
Why do they match?

Ask the children to get into pairs ready for a game or to line up in pairs for a Spring walk.
Do they notice any pairs on their walk?
They could also face each other in pairs and take it in turns to mirror the other's actions or play bunny ears.

Encourage children to investigate making pairs using different quantities of small world creatures, cubes or counters. Which quantities will make pairs and which will have one left out? Do they notice a pattern?

Reception – Spring Phase 5 – Growing 6, 7 & 8

Making Pairs

Maths Area

Provide a set of cards with different representations of the numbers to 8. Teach the children how to play pair games such as snap and memory matching games.
Add some blank cards and encourage the children to create their own sets of cards in pairs to use.

Enhancements to areas of learning

Small World

Encourage the children to match pairs of animals to create their own Noah's Ark procession.
Can they build their own arks?
Can they fit all the pairs of animals inside?

Outdoors

Provide collections of items that can be arranged into pairs. Encourage the children to notice which quantities make even pairs and which have an odd one left over. Do they notice a pattern?

Modelling

Follow the mini-beast hunt by providing a variety of materials for the children to create their own insect models. Encourage them to fold zig-zags to give their insects springy legs.
How many pairs of legs will they add to their creatures?

Reception – Spring Phase 5 – Growing 6, 7 & 8

Digging Deeper

Dot Plates

Show the children 6, 7 and 8 on a ten frame or in a 10-hole egg box. Can they see how many without needing to count in ones?
Encourage the children to build 6, 7 and 8 onto the 10 frames in pairs – what do they notice?
Compare the 5-wise and pair-wise patterns for each number. What's the same and what's different?

5-wise patterns
Pair-wise patterns

How Many Now?

Count out 6 cubes with the children and then cover them so they can't be seen.
Add one or two more cubes. How many are there now?
What if we took one or two cubes away?
Encourage the children to make jottings or to use their fingers to help them solve the problem.

Key Questions

How do you 6 here?
How do you see 6 now?
What do you notice when you try to make pairs with 7?

How many are hidden now? How do you know?
Can you draw a picture to show me?
Can you show me with these cubes?

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.

Reception – Spring Phase 5 – Growing 6, 7 & 8

Combining 2 Groups

Guidance

Children begin to combine 2 groups to find how many altogether. They should be given opportunities to do this in many contexts using real objects.
E.g. There are 3 frogs on the log and 4 in the pool. How many frogs altogether?
Encourage the children to subitise where possible although they may need to count in ones to find how many altogether.
The interactive whiteboard files can also be used to create pictorial scenes for the children to discuss.

Other Resources

WRM Interactive whiteboards
Dice and board games
Quack and Count by Keith Baker
The Elephant and the Bad Baby – Elfrida Vipont
Don't forget the Bacon – Pat Hutchins

Prompts for Learning

Tell your partner about the flowers. How many purple flowers can you see? How many blue flowers?
How many flowers altogether?

Spread a set of dominoes out face down.
Ask the children to pick a domino and tell their partner how many spots there are on each side. Can their partner tell them how many spots on the domino altogether?
What if my domino has 6 spots? How many could be on each side? Can you draw a domino with 6 spots?
Can you draw more than one?

Provide pictures or small world scenes which provide opportunities for combining 2 groups.
What can you see in the picture?
How many big fish can you see?
How many small fish?
How many fish altogether?
I spy a group of 3 and a group of 2. What am I looking at?

Reception – Spring Phase 5 – Growing 6, 7 & 8

Combining 2 Groups

Maths Area

Provide simple board games and pairs of dice. The children roll 2 dice and move the required number of spaces on the board. Ask: What numbers did you roll?
How many altogether?
How many do you need to win the game?
(1-3 dice could be used first before moving onto 1-6)

Enhancements to areas of learning

Small World

Provide a set of dominoes and a large 'parking area' with numbered garages. Ask the children to find the total amount of spots on the dominoes and park them into the correct garage!

Finger Gym

Provide a coat hanger and a basket of pegs. Ask the children to put the pegs onto the hanger and to explore how their numbers can be partitioned in different ways and recombined to see how many altogether.

Number Shapes

Provide an assortment of 1-5 number shapes. Ask the children to choose a number shape. Next, find a friend and combine their shapes to see what number they can make altogether? Repeat by moving to different friends.

Reception – Spring Phase 5 – Growing 6, 7 & 8

Digging Deeper

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

4 5 6

Is there more than one way to solve the problem?

Key Questions

How many dots does each plate have?
How many dots are there on these 2 plates together?
Can you find 2 plates which have (4, 5, 6) dots?
Is there more than one way to make (4, 5, 6) dots?
Can you find more than one way to arrange your 6 plates to make the given total?
What other totals can you make with your plates?

Exploring Possibilities

Jack rolled 2 dice and scored 10

Amir scored less than Jack.
One of Amir's dice showed 5.

What other number **could** Amir have rolled?
Is there more than one answer?
Are there any numbers Amir **could not** have rolled?

Reception – Spring Phase 5 – Growing 6, 7 & 8

Length and Height

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 bigger than something else. Encourage them to use more specific mathematical vocabulary relating to length (longer, shorter), height (taller, shorter), and breadth (wider, narrower)

Encourage the children to make indirect comparisons using objects such as blocks or cubes to measure items. E.g. The sand tray is 4 blocks long. The table is 5 blocks long. The sand tray is shorter than the table.

Other Resources

The Giraffe who got a Knot – John Bush
Titch – Pat Hutchins
Tall – Jez Alborough
Jack and the Beanstalk – Traditional
Jim and the Beanstalk – Raymond Briggs

Prompts for Learning

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

Support each child to make 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 a selection of measuring items for the children to explore. E.g. rulers, tape measures, trundle wheels, height charts. The children may also like to create their own height charts and tape measures and use them to measure items inside and out.

Provide pots and soil and seeds for the children to plant. Encourage them to find ways to measure, compare and record the height of their plants as they grow.

Reception – Spring Phase 5 – Growing 6, 7 & 8

Length and Height

Construction

Build a tower or a road. Challenge the children to build a tower the same height as yours, a shorter tower, a taller tower. A longer road, a shorter road.
How tall is the tallest tower they can build?
Can they build beds or chairs 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.
They could also investigate who can push their car the furthest?
How will they measure this?

Enhancements to areas of learning

Workshop

Provide a variety of ribbon, lace, string. Ask the children to cut pieces and make direct comparisons with a given length (E.g. a piece of ribbon taped to the table) Can they 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.

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?

Trent-Rylands Federation Maths Progression

Reception – Spring Phase 5 – Growing 6, 7 & 8

Time

Guidance

Children continue to order and sequence important times in their day and use language such as now, before, later, soon, after, then and next to describe when events happen.. They begin to recognise that regular events happen on the same day each week and use the vocabulary 'yesterday', 'today' and 'tomorrow' to describe when events happen.

Children are able to describe significant events in their lives and talk about events they are looking forward to. They learn through their own experience and the stories they read that some processes such as growing vegetables, take a longer time.

Other Resources

The Bad-Tempered Ladybird – Eric Carle
Mr Wolf's Week – Colin Hawkins
Jasper's Beanstalk - Nick Butterworth
5 Minutes Peace – Jill Murphy
Days of the Week Song

Prompts for Learning

Look back over the year so far with the children – use pictures or learning journeys to help them remember What have been their favourite times in Reception? What key events can they remember?

Ask the children to bring in a photograph of themselves when they were small.
Can the children guess whose picture is who?
How have they changed?

Start each day by singing the days of the week song. Read Jasper's Beanstalk. Order the days of the week and ask the children to order and match the key events in the story to the days of the week.

Challenge the children to see how many tasks they can complete in one minute. For example how many times can they write their name in one minute.
How high can they count in one minute?
How many star jumps can they do in one minute?

Reception – Spring Phase 5 – Growing 6, 7 & 8

Time

Outdoors

Provide a range of timers that measure different lengths of time. Children can choose a timer and then see what they can do in that period of time.
E.g. How many star jumps can you do in 30 seconds? How many bean bags can you throw into the hoop in one minute?

Outdoors

Provide seeds, soil and plant pots. Encourage the children to plant seeds and to look after them as they grow. Have a look each week and discuss the changes you can see. Inside you can grow cress seeds or grass heads which grow more quickly.

Enhancements to areas of learning

Snack

Support the children to make toast for snack. How does the bread change when you toast it?
How long do they need to toast the bread for to make nice golden toast?
What happens if it is toasted for too long?
What happens if it's not toasted for long enough?

Outdoors

Set up a circuit of different activities around the outdoor area. Challenge the children to see how many of each activity they can do in one minute. E.g. How many bean bags can they throw into the hoop? How many skittles can they knock down? How many bricks can they build into the tower? Provide minute timers for the children to use.

Reception – Spring Phase 5 – Growing 6, 7 & 8

Digging Deeper

How Far Can You Throw?

Give each child a small object such as a bean bag or welly. In small groups or pairs, challenge the children to throw the object as far as they can.
Who has thrown their item the furthest?
How could we check?

Encourage the children to discuss and try different ways to find this out.
For example they could count strides or heel-to-toe footsteps or use a trundle wheel.

Prompt them to use the language of further, nearer and closer. Encourage them to record their distances using their own methods.
Have another throw – did they manage to throw their item further this time?

Key Questions

Who has thrown their item the furthest?
How could we check?
Have another go – Did you throw it further this time?
How do you know?
Who is the tallest person? How do you know?
How many bricks measure the same height as you?

Towers

In a small group put the children into pairs and ask them to build a tower the same height as their partner.

Can they order their towers from shortest to tallest?

Encourage the children to draw their friends and towers and to record how many bricks there are in each tower. Prompt them to use the language of shortest, shorter than, taller than and tallest as they compare their towers and friends.

Reception – Spring Phase 6 – 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?

Reception – Spring Phase 6 – Building 9 & 10

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?

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?

Enhancements to areas of learning

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?

Reception – Spring Phase 6 – Building 9 & 10

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?

Reception – Spring Phase 6 – Building 9 & 10

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?

Reception – Spring Phase 6 – Building 9 & 10

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?

Trent-Rylands Federation Maths Progression

Reception – Spring Phase 6 – Building 9 & 10

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.

Reception – Spring Phase 6 – Building 9 & 10

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?

Reception – Spring Phase 6 – Building 9 & 10

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?

Reception – Spring Phase 6 – Building 9 & 10

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?

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?

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.

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?

Reception – Spring Phase 6 – Building 9 & 10

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?

Reception – Spring Phase 6 – Building 9 & 10

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.

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.

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.

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.

Reception – Spring Phase 6 – Building 9 & 10

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

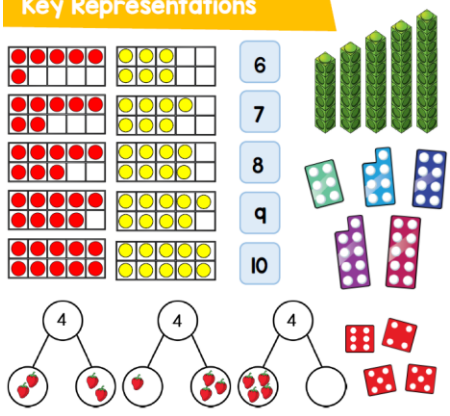
Which patterns will fit exactly into the frames?
Are there any patterns which fit exactly around both frames?
How many more spaces did you need for a pattern that wouldn't fit?
Can you test some of your own patterns in the frames?
Which of your patterns fitted exactly?
Which didn't fit?

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.

Reception - Notes and guidance

Key Representations



Notes and guidance

As children begin to count beyond 5, encourage them to build step patterns to help them see that each number is one more than the number before.

The 10 frame can be used to help them subitise these quantities and explore the 5-and-a-bit structure and the pair structure. For example, they will see 6 as five and one more or as 3 pairs of 2, both of which will be useful in their later maths work.

A key learning point here is that numbers are made up of smaller numbers. They can be made up of two parts or more than two parts. They can be made up of equal parts or unequal parts.
Encourage the children to arrange quantities in different ways to help them discover their different parts.

Part-whole models are one way to explore the number bonds which make any given number.

F2 Summer Overview

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Phase	To 20 and Beyond			First Then Now			Find my Pattern			On the Move		
Number	Building Numbers Beyond 10 Counting Patterns Beyond 10			Adding More Taking Away			Doubling Sharing & Grouping Even and Odd			Deepening Understanding Patterns and Relationships		
Spatial Reasoning	Spatial Reasoning (1) Match, Rotate, Manipulate			Spatial Reasoning (2) Compose and Decompose			Spatial Reasoning (3) Visualise and Build			Spatial Reasoning (4) Mapping		

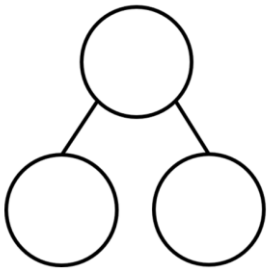
F2 Summer Representations

PHASE 7,8,9,10

Number of the day

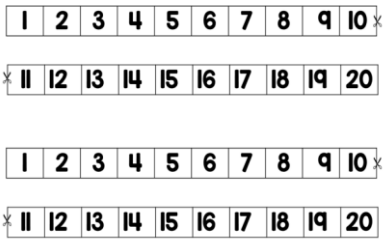
One Less		One More

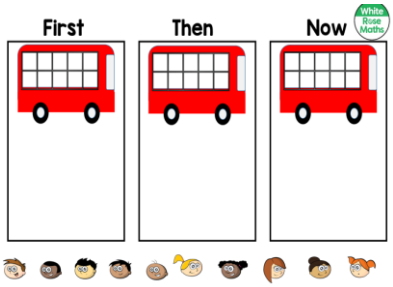
Part-whole Model

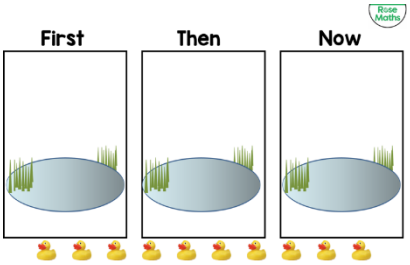


Digit Cards

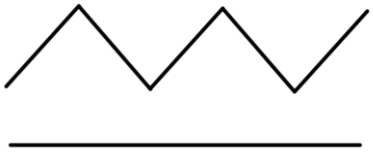
Number tracks



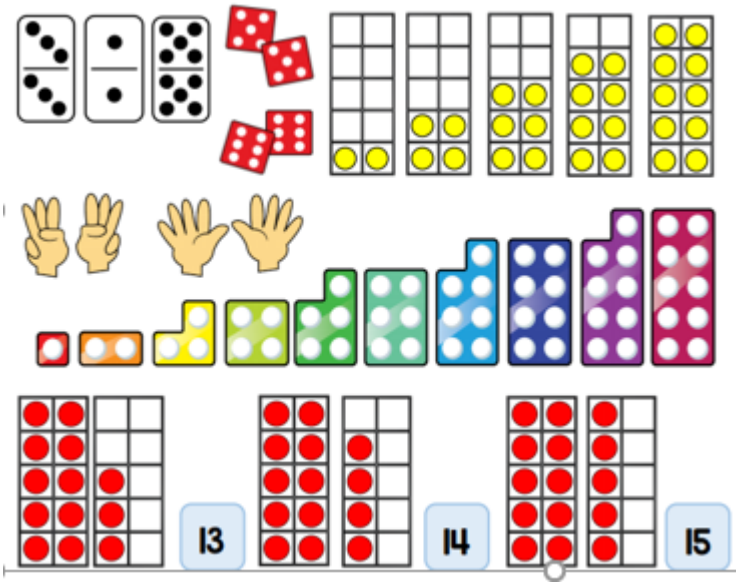




Pattern maps



Pattern maps



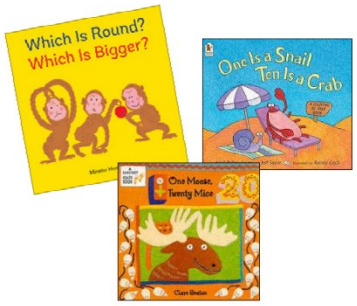
Trent-Rylands Federation Maths Progression

F2 Summer Scheme of Work

Phase 7 – Book List

Reading to children is an essential part of their development. Any of these books would be useful during Phase 7

Jack The Builder – Stuart J Murphy
One Moose, 20 Mice – Stella Blackstone
One to 10 and Back Again – Nick Sharratt
A Dozen Ducklings Lost and Found – Harriet Ziefert
Which is Round? Which is Bigger? – Mineko Marmada
1 is a Snail, 10 is a Crab – April Sayre & Jeff Sayre
1 is One – Tasha Tudor
The Real Princess – Brenda Williams
10 on a Train – John O'Leary
20 Big Trucks in the Middle of the Street – Mark Lee
Snail Trail: A Journey Through Modern Art – Jo Saxton
Which One Doesn't Belong – Christopher Danielson



Consolidating key skills

During the summer term, continue to practise and consolidate these key skills.

Subitising

Continue to provide regular opportunities for the children to instantly recognise small quantities. Dice, domino and bingo games as well as matching and comparison games will continue to support children's subitising skills. Ensure they include a variety of different representations.

Counting

Provide regular opportunities for the children to practise and consolidate counting on and back within 10.

Support the children to use the counting principles in order to find how many in a set or to count out a required number of objects from a larger group.

Composition

Continue to develop the children's understanding that all quantities are composed of smaller quantities.

Sorting and Matching

Continue to encourage the children to notice similarities and differences as they match and sort objects in new contexts.

Ask: Can you find or build one the same as this?
Can you find or build one which is different to this?
Why is it different?
Can you see how I have sorted these items?
How else could we sort them?

Comparing and Ordering

Build in regular opportunities for the children to continue comparing and ordering quantities and measures.

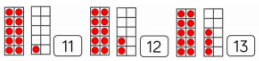
Prompt them to notice which set has more, which has fewer and when 2 sets have the same amount.

Building Numbers Beyond 10

Guidance

Encourage the children to build and identify numbers to 20 (and beyond) using a range of resources. 10 frames, number shapes, towers of cubes, rekenreks and bead strings all support the children to see that larger numbers are composed of full 10s and part of the next 10

Provide opportunities for children to recognise that the numbers 1-9 repeat after every full 10. So they have 1 full ten and 1, 1 full ten and 2, 1 full ten and 3 etc. Then 2 full tens and 1, 2 full tens and 2, 2 full tens and 3 and so on.



Other Resources

Numberblocks Series 3
One Moose, 20 Mice – Stella Blackstone
1 is One – Tasha Tudor
The Real Princess – Brenda Williams
Jack The Builder – Stuart J Murphy

Prompts for Learning

Show the children 11 using the number shapes or 10 frame. What do the children notice? Can they see which number is represented?

Now build 12. What's the same? What's different?

Continue the pattern, ask the children to predict what numbers come next and how they could represent each number.

What happens when they get to 20 and beyond?

Using one of the texts as a prompt, ask the children to build representations beyond 10 using different resources and talk about the patterns they notice.

Prepare a set of cards showing pictorial representations and matching numerals (e.g. for 11-25) Give one card to each child. Ask them to find their partner. Can they also arrange the cards in order?

Building Numbers Beyond 10

Small World

Collect 30 items, filling three 10 frames to start the game. Children take turns to roll a dice and collect the corresponding number of items. The child who takes the last item, wins the game. As the children play, prompt them to see how many they have and how many remain.

Maths Area

Provide black outlines of a cityscape for the children to fill using the number shapes. Can they see which number has filled each tower? Is there more than one way to do this? Can they design their own cityscape?

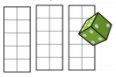
Enhancements to areas of learning

Loose Parts

Provide different collections of loose parts e.g. nuts, bolts and washers. Encourage the children to estimate how many first and to arrange the items onto 10 frames to help them see how many full tens and how many of the next ten.

10 Frame Fill

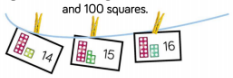
Each player starts with 3 empty 10 frames. They take turns to roll a dice and collect the corresponding number of counters or cubes. They must roll the exact number to reach 30 The first player to reach 30 wins the game.



Counting Patterns Beyond 10

Guidance

Provide regular opportunities for children to count on and back beyond 10. Representations and numerals can support children to count on and back and notice the repeating 1-9 patterns. Provide representations which clearly show the full 10s and the part of 10, for example 14 is one full ten and four. Encourage the children to count on or back from different starting points, to say what comes before or after a given number and to place sequences of numbers in order. You can also challenge them to find larger numbers on number tracks and 100 squares.



Other Resources

Numberblocks Series 3 Tween Scenes
A Dozen Ducklings Lost and Found – Harriet Ziefert
20 Big Trucks in the Middle of the Street – Mark Lee
1 is a Snail, 10 is a Crab – April Sayre & Jeff Sayre
Peg + Cat – The Teens

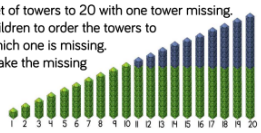
Prompts for Learning

Daily counting routines and games provide many opportunities to count regularly beyond 10. The children love to correct puppets who make counting errors.

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

Provide a set of towers to 20 with one tower missing. Ask the children to order the towers to identify which one is missing. Can they make the missing tower?



Counting Patterns Beyond 10

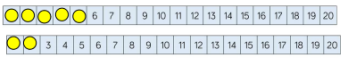
Maths Area

Provide a set of birthday cards for different ages. Ask the children to peg the cards onto a washing line in ascending and descending order. Ask them to close their eyes whilst you make one change. Can they spot what is wrong?

Enhancements to areas of learning

Race to 20 (and Beyond)

Provide a number track 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 miss a turn.



Snakes and Ladders

Show the children how to play the game. Encourage them to count on using the numbers on the board. For example, if they start on 23 and roll a 4, they count 24, 25, 26, 27. They can also use the board to race to find a given number.

E.g. Who can be first to find 72?

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

How Many is 100?

Prepare collections of objects, some with exactly 100, some with fewer and some with more.
Challenge the children to guess which sets have exactly 100 items.
Once they have made their guess, they can check by arranging the objects onto ten 10 frames. Are they surprised?
They might also like to make their own collections of 100

Encourage the children to investigate 100 in different ways:
How far can you travel in 100 steps?
How long would a paper chain with 100 links be?
How tall is a tower of 100 linking cubes?

(Building the paper chain and tower in 10s, changing the colour after each set of 10, makes it easier to keep track of the ten 10s)

Which Holds the Most?

Provide a set of containers in a range of different sizes and shapes. Ask the children to predict how many cubes each container will hold. Fill the containers using cubes and then tip them out to find how many.
Instead of counting in ones, encourage the children to arrange the cubes into ten frames to see how many full tens they have and how many ones.

Key Questions

How many cubes do you think will fit inside this container?
Do you think this one will hold more or this one?
Do tall containers always hold more cubes?
What could we do to help us remember how many cubes each container held?
Which container holds the most cubes?
Can you arrange the containers in order from smallest to largest?

Spatial Reasoning (1)

Guidance

Provide regular opportunities for the children to complete jigsaws and shape puzzles. They need opportunities to select and rotate shapes to fill a given space. Encourage them to explain why they chose a particular shape and why a different shape wouldn't fit.

Provide opportunities for the children to match arrangements of shapes, prompting them to use positional language to describe where the shapes are in relation to one another.

Ask the children to select shapes to complete picture boards or tangram outlines.

Other Resources

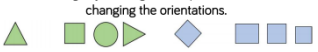
Snail Trail: A Journey Through Modern Art – Jo Saxton
Which One Doesn't Belong – Christopher Danielson
Jigsaws and shape puzzles & Tangrams
Pattern blocks & Cuisenaire rods
Geo boards
Numicon and base board overlays

Prompts for Learning

Find My Match.

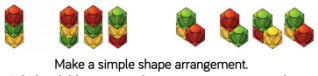
Show the children a set of shapes and ask them to find the shape which matches the one you hold up.

Add challenge by making the shapes more similar and changing the orientations.



Extend to arrangements of linking cubes.

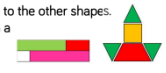
Can they find the set which matches yours? Talk about the position of the cubes in relation to one another.



Make a simple shape arrangement.

Ask the children to match your arrangement exactly, thinking about which shapes to select and where to place them in relation to the other shapes.

This can also be done on a larger scale outside.



Trent-Rylands Federation Maths Progression

Spatial Reasoning (1)

Funky Fingers
Use the geoboards and elastic bands. Challenge the children to make as many different triangles as they can. How do they know they are all triangles? How many 4-sided shapes can they make? Does the geoboard work for making circles?

Construction
Provide simple models or pictures of models. Ask the children to select the shapes they need and position them to replicate the model. Can they design a model for their friend to replicate?
This can be done on a larger scale outside.

Enhancements to areas of learning

Maths Area
Provide outlines of the number shapes in different orientations. Ask the children to select the shape to match each outline.
Provide baseboard overlays or number shape outlines for the children to match and fill.
Encourage the children to use positional language as they build.

Small World
Set up a small world scene or provide pictures of scenes for the children to replicate. Encourage them to talk about where things are in relation to other things. Can they design their own scenes for a friend to replicate? Can they draw a map of their scene?

Reception – Summer Phase 7 – To 20 and Beyond

Digging Deeper

Build it
Provide a set of pattern blocks or similar and picture templates.
The children can progress from matching shapes with coloured pictures, to pictures with outlines only. They will need to look carefully to select the correct shapes and rotate them to fit the outline.

Design it
Encourage the children to design their own picture using the pattern blocks.
Can they create a template to help them remember their design?
Can their friends use the template to recreate their design?

Key Questions
Which shape will you start with?
How many triangles will you need?
Can you find a shape like this?
Does that shape fit? Do you need to turn it round?

Tell me about your shape picture.
What will your design be?
Which shapes will you use?
How could we remember your design?
Can you make a picture to help you make your design again?

Which One Doesn't Belong?
Using the book as a prompt, ask the children to explain which shape is different to all the rest.
Can they find more than one answer?
Challenge them to find a reason why each of the images could be different to the rest.

Phase 8 – Book List

Reading to children is an essential part of their development. Any of these books would be useful during Phase 8

Mouse Count – Ellen Stoll Walsh
Mr Gumpy's Outing – John Burningham
Rosie's Zoo – Ailie Busby
One Ted Falls Out of Bed – Julia Donaldson
Quack and Count – Keith Baker
My Granny Went to Market - Stella Blackstone
Tad – Benji Davis
The Shopping Basket – John Burningham
Monster Math – Anne Miranda
Elevator Magic – Stuart J Murphy
Grandpa's Quilt – Betsy Franco
Jack and the Flumflum Tree – Julia Donaldson
Pezzettino – Neo Lionni

Consolidating Key Skills

During the summer term, continue to practise and consolidate these key skills.

Subitising
Continue to provide regular opportunities for the children to instantly recognise small quantities. Dice, domino and bingo games as well as matching and comparison games will continue to support children's subitising skills. Ensure they include a variety of different representations.

Counting
Provide regular opportunities for the children to practise and consolidate counting on and back within 10. Support the children to use the counting principles in order to find how many in a set or to count out a required number of objects from a larger group.

Composition
Continue to develop the children's understanding that all quantities are composed of smaller quantities.

Sorting and Matching
Continue to encourage the children to notice similarities and differences as they match and sort objects in new contexts.
Ask: Can you find or build one the same as this?
Can you find or build one which is different to this?
Why is it different?
Can you see how I have sorted these items?
How else could we sort them?

Comparing and Ordering
Build in regular opportunities for the children to continue comparing and ordering quantities and measures. Prompt them to notice which set has more, which has fewer and when 2 sets have the same amount.

Reception – Summer Phase 8 – First Then Now

Adding More

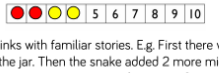
Guidance
The children will use real objects to see that the quantity of a group can be changed by adding more. The first, then, now structure can be used to create mathematical stories in meaningful contexts.
At first, the children may need to re-count all of the items to see how many they have altogether.
E.g. 1, 2, 3, 4… 5, 6, 7 When they are ready, support them to count on E.g. 4… 5, 6, 7
Encourage the children to 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
Rosie's Zoo – Ailie Busby
One Ted Falls Out of Bed – Julia Donaldson
Quack and Count – Keith Baker
My Granny Went to Market - Stella Blackstone

Prompts for Learning
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.



Make links with familiar stories. E.g. First there were 3 mice in the jar. Then the snake added 2 more mice. How many mice are in the jar now?

Reception – Summer Phase 8 – First Then Now

Adding More

Outdoors
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

Outdoors
Provide a trellis or tape a grid onto the playground. Each player has one column to fill. Children roll a dice and fill their column with the corresponding number of small items (beanbags, pebbles etc.)
The first to fill their column wins.

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. How high can they build their towers before they topple?

Small World
Encourage the children to create their own first, then, now stories using the small world resources.
E.g. First there were 3 dinosaurs.
Then 2 more dinosaurs came along.
Now there are 5 dinosaurs altogether.

Reception – Summer Phase 8 – First Then Now

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 then subitise or recount to see how many are left.

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

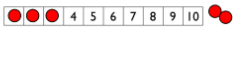
Other Resources
Incey Wincey Spider game – Nrich
Tad – Benji Davis
Mouse Count – Ellen Stoll Walsh
The Shopping Basket – John Burningham
Monster Math – Anne Miranda
Elevator Magic – Stuart J Murphy

Prompts for Learning
Ask the children to show you 5 fingers and then to show you 4. Prompt them to notice that one less is the same as taking away one. Extend to taking away 2 fingers or 3 and noticing how many are left each time.

Practise taking away in different contexts which could link to familiar stories. Encourage the children to physically remove the items they are taking away and then count or subitise to see how many are left.

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.



Reception – Summer Phase 8 – First Then Now

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. Prompt the children to say how many are left after each verse.

Enhancements to areas of learning

Outdoors
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.

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.

Race To Zero
Each child collects 20 items which can be arranged to fill two 10 frames. They take turns to roll a dice and remove the corresponding number of items. They must reach exactly zero to win the game.

Trent-Rylands Federation Maths Progression

Reception – Summer Phase 8 – First Then Now

Digging Deeper

How Many Did I Add?

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. Then, add a hidden amount of cubes to the cubes under the cloth.

Show the children how many cubes there are now. Challenge them to work out how many cubes you added. Encourage them to represent the cubes with their fingers, counters or a picture.

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. Uncover the remaining cubes and ask them to work out how many cubes you removed.

Key Questions

How many cubes did we have at the start?
How many cubes do we have now?
Do we have more cubes or fewer cubes now?
How many cubes did I add/takeaway?
How did you work it out?
Can you represent what we did using the counters?
Can you draw a picture to show what we did?

Pirate Treasure

Pick a number card and count out the corresponding number of gold coins. One player covers their eyes whilst the second 'steals' some of the coins, hiding them in their hand.
The first player then has to work out how many coins have been stolen.

Spatial Reasoning (2)

Guidance

Children understand that shapes can be combined and separated to make new shapes. Provide opportunities for the children to fit shapes together and break shapes apart and to notice the new shapes they have created.

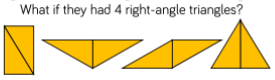
Investigate how many different ways a given shape can be built using smaller shapes.
Encourage the children to explore the different shapes they can make by combining a set of given shapes in different ways.

Other Resources

Grandpa's Quilt – Betsy Franco
Jack and the Flumflum Tree – Julia Donaldson
Pezzettino – Neo Lionni
Shape puzzles & Tangrams
Pattern blocks & Cuisenaire rods

Prompts for Learning

Show the children 2 identical right-angled triangles which have been made by cutting a rectangle in half diagonally. How many new shapes can they make by fitting the triangles together? Can they make shapes with 3 sides? With 4 sides? Can they make a rectangle again? A tall thin triangle? A short fat triangle?
What if they had 4 right-angle triangles?



Using square tiles or pieces of card, how many different squares and rectangles can they build?
How many tiles do they need for the smallest possible rectangle? Can they build a long thin rectangle? A short wide rectangle?
How many tiles do they need to build a larger square?
How do they know it is a square?

Reception – Summer Phase 8 – First Then Now

Spatial Reasoning (2)

Maths Area

Provide a set of Cuisenaire rods.
How many different ways can the children arrange the rods to build a square?
Can they make another square the same size using different rods? How do they know they are square? What do they notice about the rods as they build?

Grandpa's Quilt

Ask each of the children to design one square using different shapes. Put all of the individual squares together to make a new quilt for Grandpa. Can we arrange the squares to make a long thin rectangle, a short fat rectangle?

Enhancements to areas of learning

Maths Area

Provide some paper rectangles, squares and triangles. Encourage the children to predict which new shapes will be made if the shapes are folded or cut in different ways and then investigate to see.

Carpet Area

Provide an outline of a 6 by 6 square for each child and some number shapes. Children take turns to roll a dice and select the corresponding number shape which they place in their square. The winner is the first player to fill their square exactly.

Reception – Summer Phase 8 – First Then Now

Digging Deeper

Triangles

Provide a set of pattern blocks or similar and challenge the children to build as many different triangles as they can. Who can build the largest triangle? The smallest?

How many different ways can they find to build the same sized triangle? (Cardboard templates with a cut out triangle for the children to fill will provide support)

Stars

Provide a set of pattern blocks or similar and a cut out star template. Challenge the children to find different ways to build a star. Encourage them to talk about the shapes they choose and what they notice. How many ways can they build a star using the same shape? Using different shapes?

Key Questions

Can you make a triangle using the blocks?
Can you make a different triangle? Why is it different?
Can you build a larger/smaller triangle than this one?
How many blocks did you use?
Can you make a triangle using 2 blocks?
3 blocks? 4 blocks?
Is there more than one way to do this?

What other shapes can you build?
Can you make them in more than one way?

Tangrams

Encourage the children to explore the different arrangements and shapes they can build using a tangram.
Can they use some of the pieces to make a triangle?
Can they join some of the pieces to build a square?
Is there more than one way to do this?

Phase 9 – Book List

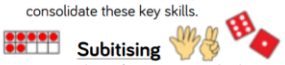
Reading to children is an essential part of their development. Any of these books would be useful during Phase 9

This is the Story of Alison Hubble - Allan Ahlberg
Two of Everything – Lilly Hong
Double Dave – Sue Hendra
Double the Ducks – Stuart J Murphy
The Doorbell Rang - Pat Hutchins
The Gingerbread Man - Traditional
Bean Thirteen - Matthew McElligott
One Hungry Cat – Joanne Rocklin
Ness the Nurse – Nick Sharratt
One Odd Day – Doris Fisher
Pete the Cat and the Missing Cupcakes – K & J Dean
Underwater Counting – Jerry Pallotta
What the Ladybird Heard - Julia Donaldson
Rosie's Walk – Pat Hutchins
Mr Gumpy's Motor Car – John Burningham

Consolidating Key Skills

During the summer term, continue to practise and consolidate these key skills.

Subitising



Continue to provide regular opportunities for the children to instantly recognise small quantities. Dice, domino and bingo games as well as matching and comparison games will continue to support children's subitising skills. Ensure they include a variety of different representations.

Counting

Provide regular opportunities for the children to practise and consolidate counting on and back within 10. Support the children to use the counting principles in order to find how many in a set or to count out a required number of objects from a larger group.

Composition

Continue to develop the children's understanding that all quantities are composed of smaller quantities.

Sorting and Matching

Continue to encourage the children to notice similarities and differences as they match and sort objects in new contexts.
Ask: Can you find or build one the same as this?
Can you find or build one which is different to this?
Why is it different?
Can you see how I have sorted these items?
How else could we sort them?

Comparing and Ordering

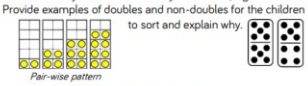
Build in regular opportunities for the children to continue comparing and ordering quantities and measures. Prompt them to notice which set has more, which has fewer and when 2 sets have the same amount.

Reception – Summer Phase 9 – Find My Pattern

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 and barrier games are a fun way for children to see doubles as they build and to explore early symmetry. 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.



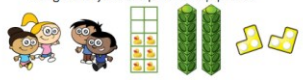
Pair-wise pattern

Other Resources

Double Trouble - Nrich
This is the Story of Alison Hubble - Allan Ahlberg
Two of Everything – Lilly Hong
Double Dave – Sue Hendra
Double the Ducks – Stuart J Murphy
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 **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.

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 of cards at the end wins the game.

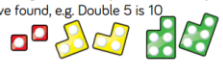
Enhancements to areas of learning

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?

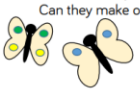
Outdoors

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



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?



Trent-Rylands Federation Maths Progression

Sharing and Grouping

Guidance

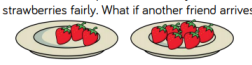
The children will probably already have some experience of sharing and will be quick to point out when items are not shared fairly. During snack time or group activities, encourage them to check that the items are shared equally and that everyone has the same. The children should also be given opportunities to recognise and make equal groups. For example can you put 3 crackers on each plate or plant 2 flowers into each pot.
What groups do they notice on a bead string?
The children will notice that sometimes there are items left over when they share or group. Encourage them to come up with their own suggestions for how to resolve this.

Other Resources

The Doorbell Rang - Pat Hutchins
Nrich – Maths Story Time
The Gingerbread Man - Traditional
Bean Thirteen - Matthew McElligott
One Hungry Cat – Joanne Rocklin
Ness the Nurse – Nick Sharratt

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 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.

Sharing and Grouping

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.

Enhancements to areas of learning

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?

Funky Fingers

Provide some threading beads or coloured pasta and encourage the children to thread the items in groups to create a necklace.
Do all of the necklaces have equal groups?
Compare the necklaces.
What's the same? What's different?

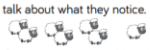
Teddy Bear Picnic

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?

Even and Odd

Guidance

The children begin to understand that some quantities will share equally into 2 groups and some won't. They may also notice that some quantities can be grouped into pairs and some will have one left over. Provide opportunities for them to explore these ideas in different contexts as they play and to talk about what they notice.



Encourage the children to notice the odd and even structure on the number shapes and by building pair-wise patterns on the 10 frames.

Other Resources

Numberblocks Series 2 Episode 11 Odds and Evens
One Odd Day – Doris Fisher
Pete the Cat and the Missing Cupcakes – James Dean
Underwater Counting – Jerry Pallotta
10 Fat Sausages song

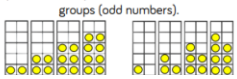
Prompts for Learning

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.

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).



Even and Odd

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.

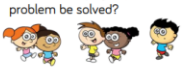
Enhancements to areas of learning

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?

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?



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?

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?
Are these even or odd numbers? 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?

Spatial Reasoning (3)

Guidance

Children understand that places and models can be replicated and need to experience looking at these from different positions. Provide opportunities for children to replicate simple constructions, models, real places and places in stories. Prompt them to use positional language to describe where objects are in relation to other items. The use of gesture to accompany the positional language can also support understanding.

Encourage children to visualise simple models by playing barrier games and providing verbal instructions for them to follow as they build.

Other Resources

Rosie's Walk – Pat Hutchins
What the Ladybird Heard - Julia Donaldson
We're Going on a Bear Hunt – Michael Rosen
Mr Gumpy's Motor Car – John Burningham
Cockatoos – Quentin Blake

Prompts for Learning

Set up a small world scene and ask the children to describe where things are in relation to other things. Then ask them to move around and look at it from a different view point. Does it look the same? What do they notice?

During class visits, walks around the local area, or when playing outdoors, encourage the children to notice and describe where things are in relation to others. Encourage the children to recreate the places they have visited.

Provide each child with a set of items the same as yours.
Provide verbal instructions as you arrange your items.
Prompt the children to arrange their set in exactly the same way.
Compare the finished arrangements to see if they look the same.
Repeat with different children taking on the role of leader.

Add a barrier. Give verbal instructions as you arrange your blocks behind the barrier. The children follow your instructions to try to recreate the same arrangement. Once the models are complete, remove the barrier and compare.

Spatial Reasoning (3)

Outdoors

Take photographs of the outdoor area from unusual viewpoints. For example, under the tree or from very high up or low down. Challenge the children to identify where the photographer was standing. Can they take their own photos from different viewpoints?

Loose Parts

Encourage the children to build identical constructions and arrangements. Take turns to be the designer who gives instructions and the followers who recreate the same arrangement. Barriers can be added to provide additional challenge.

Enhancements to areas of learning

Outdoors

Support the children to recreate real places they have visited or places in stories using the large scale loose parts and outdoor resources. Prompt them to consider the scale needed in their constructions.
For example, how big do we need to build Mr Gumpy's motor car so that we can all fit inside?

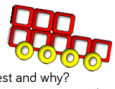
Art Area

Provide a range of papers and materials. Encourage the children to create their own collage representations of real places or places in stories. Can they tell you about their picture? Prompt them to describe where things are in relation to other things.

Digging Deeper

Can You Build a...

Ask the children to take photographs of their models and display them in the construction area.



Encourage the children to talk about the pictures.
What do they notice?
Which model do they like best and why?
Can they use the pictures to recreate a model?
Which pieces do they need to collect?
Could they ask the designer for help?

After building, prompt them to compare their models to the pictures.
Ask: Is there anything else you would like to add to your model?
Could you make a different model using the same pieces?

How Many Cubes?

Show the children a simple arrangement made from interlocking cubes. Ask them to talk about what they notice.

Can they recreate the same arrangement?
How many cubes will they need?
Are any of the cubes hidden?
Can you design a different arrangement for us to build using these cubes?
Do same colour models make this task easier or harder?

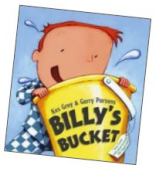
You can add extra challenge by just allowing the children quick peeps of the model as they build and then encouraging them to compare their models to the original afterwards.

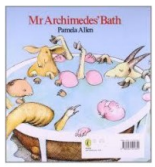
Trent-Rylands Federation Maths Progression

Phase 10 – Book List

Reading to children is an essential part of their development. Any of these books would be useful during Phase 10

Mr Gumpy's Outing – John Burningham
Billy's Bucket – Kes Gray
Mr Archimede's Bath – Pamela Allen
Who Sank the Boat – Pamela Allen
How Many Legs – Kes Gray
Pattern Bugs & Pattern Fish - Trudy Harris
The Secret Path – Nick Butterworth
Me on the Map – Joan Sweeney
Little Red Riding Hood – Traditional
If I Built a House – Chris Van Dusen
Once Upon a Time Map Book – B.G. Hennessy
In Every House on Every Street – Jess Hitchman





Consolidating Key Skills

White Rose Maths

During the summer term, continue to practise and consolidate these key skills.

Subitising

Continue to provide regular opportunities for the children to instantly recognise small quantities. Dice, domino and bingo games as well as matching and comparison games will continue to support children's subitising skills. Ensure they include a variety of different representations.

Counting

Provide regular opportunities for the children to practise and consolidate counting on and back within 10. Support the children to use the counting principles in order to find how many in a set or to count out a required number of objects from a larger group.

Composition

Continue to develop the children's understanding that all quantities are composed of smaller quantities.

Sorting and Matching

Continue to encourage the children to notice similarities and differences as they match and sort objects in new contexts.

Ask: Can you find or build one the same as this?
Can you find or build one which is different to this?
Why is it different?
Can you see how I have sorted these items?
How else could we sort them?

Comparing and Ordering

Build in regular opportunities for the children to continue comparing and ordering quantities and measures. Prompt them to notice which set has more, which has fewer and when 2 sets have the same amount.

Reception – Summer Phase 10 – On The Move

White Rose Maths

Deepening Understanding

Guidance

Children need time and opportunities to engage in extended problem solving and develop their critical thinking skills. These problems can be linked to familiar stories or come from the children's suggestions or real problems that arise as they play.

Encourage the children to discuss different possible starting points. Children might need support to carry out their plans and to make adaptations as they go along. Afterwards, encourage the children to review and discuss their strategies. Which were the most successful, which didn't work and why?

Other Resources

Mr Gumpy's Outing – John Burningham
Billy's Bucket – Kes Gray
Harry and his Bucketful of Dinosaurs – Ian Whybrow
Who Sank the Boat – Pamela Allen
Mr Archimede's Bath – Pamela Allen

Prompts for Learning

Familiar stories provide a great starting point for problem solving. Mr Gumpy's Outing is one example. Show the children a page from the story and explain that Mr Gumpy has a problem. There are too many legs in his boat. Everyone's legs are getting tangled up.

Ask the children to work out how many legs there are. Could they draw a picture to help them work it out?

What if there are 3 characters inside the boat? How many legs could there be? What if there are 14 legs in the boat? How many characters could there be? Ask the children to explore the different possibilities.

Billy's Bucket can be used as a starting point for comparison and number stories. Set up a small world scene in a tuff tray and ask the children to talk about what they can see. What number stories can they make using the different combinations like Billy? Can they create their own bucket scene and number stories?

Reception – Summer Phase 10 – On The Move

White Rose Maths

Deepening Understanding

Construction Area

Show the children some photographs of bridges and talk about what they notice. Encourage the children to work together to build the longest bridge they can. How will they measure it? What about the strongest bridge? How could they measure it's strength?

Enhancements to areas of learning

Water Area

Provide a range of different sized and shaped containers and some pebbles. Ask the children to half-fill their containers with water. What happens to the water if they add pebbles to their container? How many pebbles will they need to add to make the container overflow like Mr Archimedes' bath?

Water Area

Ask the children to make boats out of a given material such as tin foil or modelling clay. How many marbles will their boat hold whilst staying afloat?
Whose boat will hold the most marbles?
Could they adapt their design so their boat holds more marbles?

Outdoors

Challenge the children to solve problems on a large scale: The playground is a crocodile-infested swamp! How could we rescue teddy without putting our feet on the ground?
Can you build a shelter to keep everyone dry?
How could we fill the bucket with water when all of our containers have holes? Which team can fill their bucket first?

Reception – Summer Phase 10 – On The Move

White Rose Maths

Patterns & Relationships

Guidance

Children should be given opportunities to explore and investigate relationships between numbers and shapes. Classroom resources based around a standard unit such as Cuisenaire rods, pattern blocks and the unit construction blocks are particularly good for exploring these relationships.

Children should also continue to copy, continue and create a widening range of repeating patterns and symmetrical constructions. Draw children's attention to patterns in stories from a range of cultures.

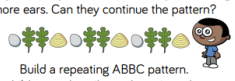
Other Resources

Ants Rule The Long and Short of it – Bob Barner
Pattern Fish – Trudy Harris
Pattern Bugs - Trudy Harris
The Leopard's Drum – Jessica Souhami
Jamil's Clever Cat – Fiona French

Prompts for Learning

Show the children a set of Cuisenaire rods
How many green blocks measure the same as one blue block? What other relationships can they find?
Can they find a block which is double the length of another block? How could they check?

Show the children one rabbit. How many ears do they see? Add another rabbit. How many ears now? Continue to add rabbits and count the ears each time. Encourage the children to notice that each rabbit has two ears, every time they add one rabbit they are adding two more ears. Can they continue the pattern?



Build a repeating ABBC pattern.
Ask the children to describe and continue the pattern. Can they identify the unit of repeat? Challenge them to create a different pattern using the same ABBC structure. Can they represent their pattern using drawings or symbols? Can they make their pattern continue around a circle?

Reception – Summer Phase 10 – On The Move

White Rose Maths

Patterns & Relationships

Construction Area

Ask the children to explore the different relationships they can find between the unit construction blocks. For example, how many short blocks do they need to match 4 long blocks? How could they use the blocks to make a set of stairs?

Enhancements to areas of learning

Outdoors

Provide quoits or beanbags to throw and hoops or buckets. Encourage the children to devise their own scoring systems where the harder targets score more points.
Encourage them to keep a tally of their points as they play. How many different ways are there to score 6 points?

Maths Area

Ask the children to build a staircase pattern using the Cuisenaire rods?
Can they make it go up then down?
Can they make it go down then up?
Compare the different staircase patterns. What do they notice? Can they make a staircase pattern which uses different steps?

Outdoors

Use the natural materials and loose parts to create repeating patterns. Encourage the children to make different patterns which have the same structure? Can they build a circular repeating pattern which continues around the circle? Is there more than one way to describe this pattern? What starting point would you use?

Reception – Summer Phase 10 – On The Move

White Rose Maths

Spatial Reasoning (4)

Guidance

The children understand that we can make maps and plans to represent places and use these to see where things are in relation to other things.

Provide a range of maps and plans for the children to look at and discuss. What can they see on the map? Where would we put the carpet area on a map of our classroom? Provide opportunities for them to create their own maps to represent the models they build, familiar places and places in stories.

Other Resources

The Secret Path – Nick Butterworth
Me on the Map – Joan Sweeney
Little Red Riding Hood – Traditional
If I Built a House – Chris Van Dusen
In Every House on Every Street – Jess Hitchman
Once Upon a Time Map Book – B.G. Hennessy

Prompts for Learning

Show the children some different maps, lots of books have maps of the story settings. What can they see on the maps? Which map do they like best? Why do we need maps? Can they draw their own map of the places in the story? Could they change the story and design a new map? What if Little Red Riding Hood didn't go to Grandma's house?

Ask the children what they pass on the way to school. Can they draw a simple linear map to show their home, their street, the school and some of the landmarks they pass on the way? What do they pass first, next etc.

Provide a large piece of paper in the shape of the classroom with the doors and windows already marked on. Explain that you are going make a map of the classroom. Have some simple pictures to represent the classroom items. Ask the children to discuss where to place them on the map.

Reception – Summer Phase 10 – On The Move

White Rose Maths

Spatial Reasoning (4)

Outdoors

Provide a simple map of an obstacle course. Encourage the children to use the map to build the obstacle course, checking where things need to be in relation to others. They might also like to design their own obstacle course and draw a map to help them remember their design.

Enhancements to areas of learning

Art Area

Ask the children to draw or paint maps of familiar journeys or places in stories. For example the mouse's journey in The Gruffulo or the island in Pirates Love Underpants.

Construction Area

Provide some pictorial mazes for the children to explore. Can they trace their finger through the maze? Encourage them to use blocks to build their own mazes. Can they help a character to find a way out like in The Secret Path?

Maths Area

Encourage the children to design their own new room and to draw a plan like Jack in If I Built a House. Ask them to talk about their designs. What have they included? Prompt them to use positional language as they describe their rooms.

Reception – Summer Phase 10 – On The Move

White Rose Maths

Digging Deeper

How Many Legs?

The book How Many Legs? by Kes Gray provides many starting points for exploring counting problems.

Ask the children to work out how many legs there are in the different scenarios described in the story.
The children will need to consider a wide variety of many-legged animals as well as items which don't have any legs at all.

Encourage the children to create their own nonsense scenarios in the style of the story and calculate how many legs there would be.

These could be collated and made into a class How Many Legs? book.

X Marks the Spot!

Prepare a simple map or plan with a route marked on for the children to follow. At the end of the route, hide some treasure for the children to discover and mark the spot with an X!

Can the children follow the map and find the hidden treasure?

Counting Towers

Challenge the children to build a tower as tall as they can before the timer runs out. How many blocks did they manage to build?
What if each block was worth 2 points?
How many points did they score?

Challenge them to have another go and to see if they can score more points.