Autumn

Scheme of learning

Reception

White Rose MATHS

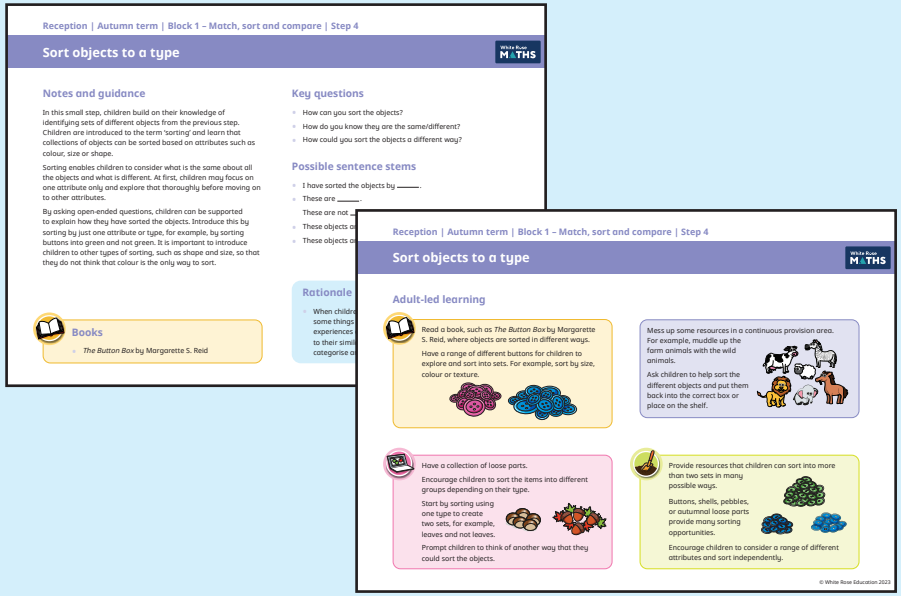
The **White Rose Maths** schemes of learning

Reception guidance

The schemes cover the DfE statutory framework for the EYFS and Educational Programme for Mathematics and will support you to deliver a curriculum that embeds mathematical thinking and talk.

Our schemes support the ethos of the EYFS whilst at the same time enabling teachers to create a mathematically rich curriculum. Additionally, they allow for key mathematical concepts to be revisited and developed throughout the year.

The guidance has been divided into 18 blocks and provides a variety of opportunities to develop the understanding of number, shape, measure and spatial thinking.



Teaching and learning

Our reception schemes support you in teaching the key aspects of the EYFS curriculum. The scheme supports specific teaching through small steps with adult-led activities and continuous provision. The focus is on building up the numbers slowly, so children gain a deep understanding of them and how they are composed. However, this does not mean children should not be counting and discussing larger numbers in routines such as lining up. It is also important that teachers are aware of, and children are supported in gaining an understanding of, the counting principles.

1. The one-to-one principle.
2. The stable-order principle.
3. The cardinal principle.
4. The abstraction principle.
5. The order-irrelevance principle.

These principles are covered in more detail on the following pages.

Reception – Notes and Guidance

The Counting Principles

Following research from Gelman and Gallistel in 1978, it is vital that teachers understand the five counting principles. (Gelman, R. & Gallistel, C. (1978) The Child's Understanding of Number. Cambridge, MA. Harvard University Press.)

1 The one-to-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-to-one correspondence.

1 2 3 4 5

The Counting Principles

2 The stable-order principle.

Children understand that, 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 are 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-to-one and stable-order principle. From a larger group, children select a given number and count them out. When asked '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.

Reception – Notes and Guidance

The Counting Principles

4 The abstraction principle.

This involves children understanding that anything can be counted, including things that cannot be touched, such as 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 in which we count a group of objects is irrelevant. There will still be the same number.

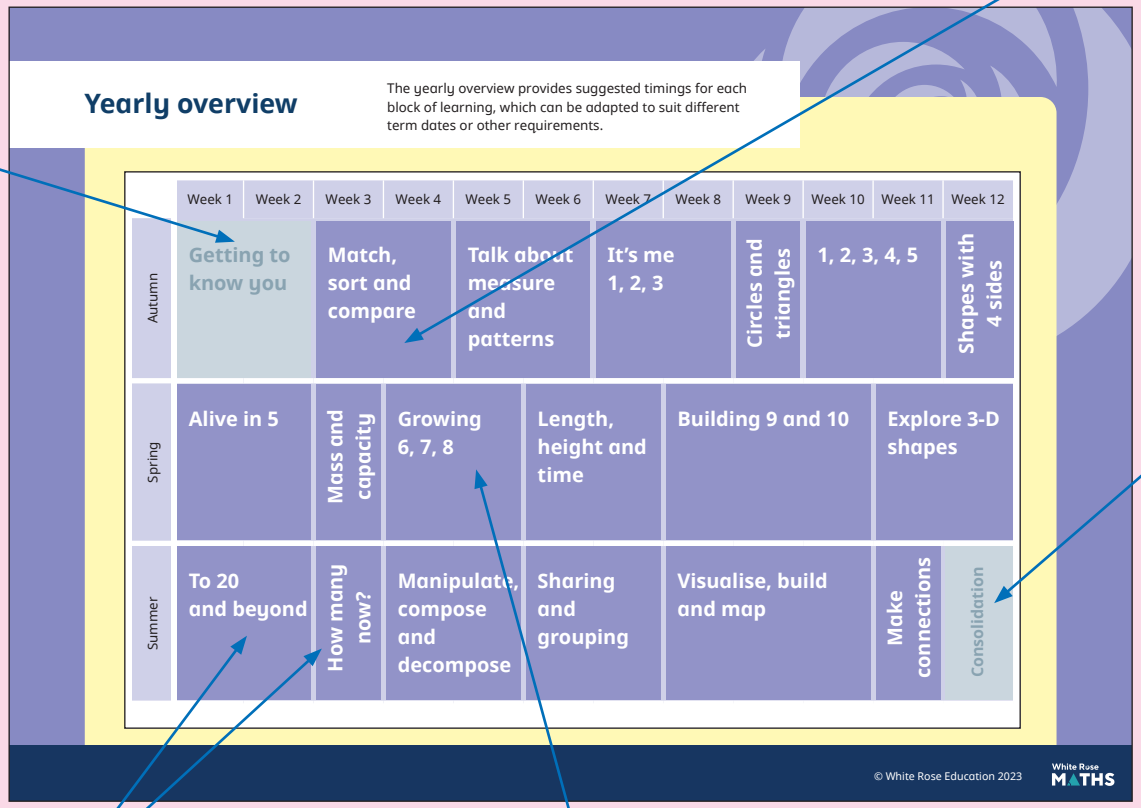
Encourage children to count objects, left to right, right to left, top to bottom and bottom to top. Once children have counted a group, move the objects and ask children how many there are. If they count them all again they have not fully grasped this principle.

Yearly overview

Overview with suggested weekly timings. Block titles are clear and show progress through number and spatial reasoning.

Early blocks focus on use of provision to support key early maths and routines.

The first 2 weeks are for you to get to know children, develop routines and give you the flexibility to complete baseline assessments.



Consolidation weeks allow for a degree of flexibility in the suggested block lengths or to consolidate learning based on the needs of your children.

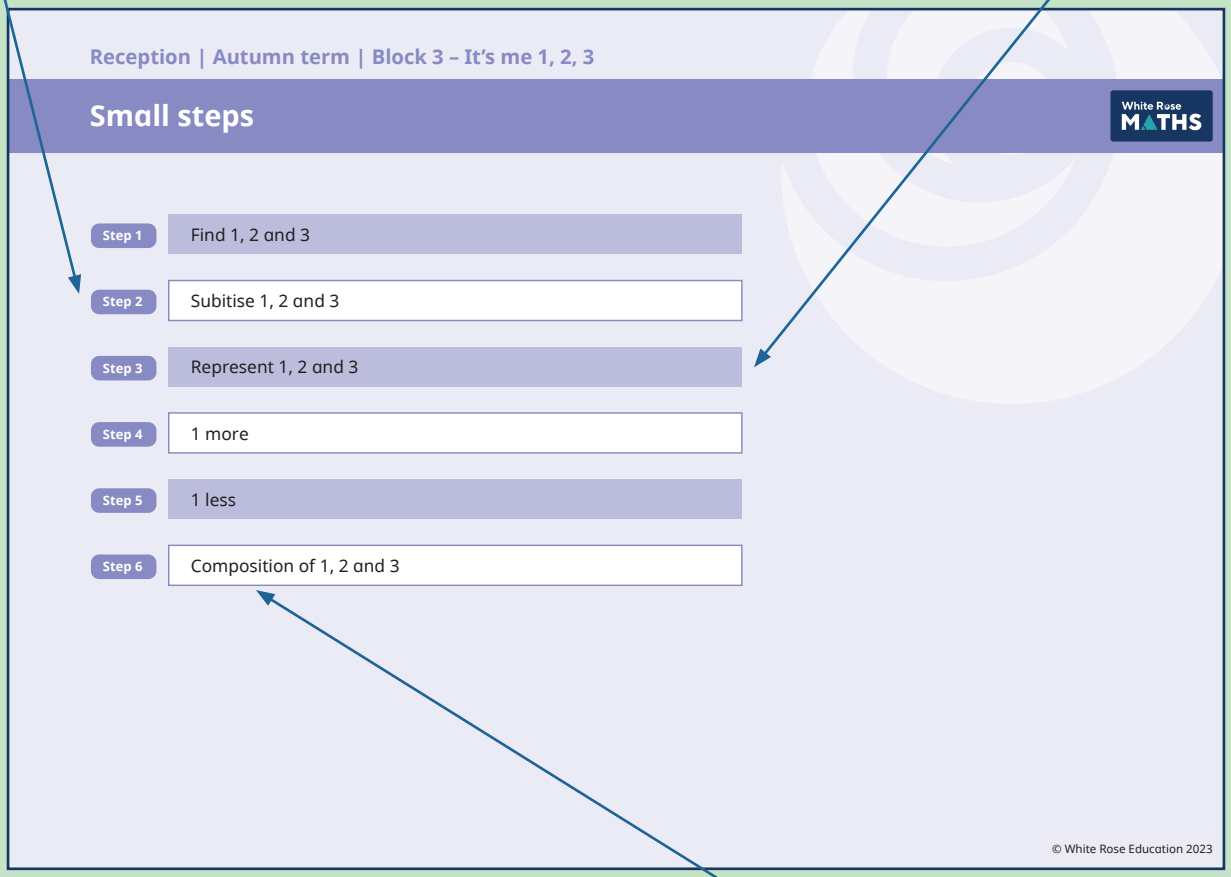
Content is consolidated so all concepts are explicitly taught before assessment for ELG.

Subitising is taught both perceptually and conceptually through the blocks. Concepts such as doubling and 1 more / 1 less is focused on in the progression of the numbers.

Small step breakdown

Each block has sequenced small steps.

Step titles are in the same sequence to help embed learning.



Step titles clearly explain what the teaching focus is.

Activities and symbols

An activity introduced by a reading from a fiction or non-fiction book.

Show children the illustrations from pages 1, 2 and 3 of the story *Anno's Counting Book* by Mitsumasa Anno.

Encourage them to look at the pictures and identify where they can see the different representations of 1, 2 and 3

Where do they see each representation?

How do they see it?

A suggested daily routine to be supported by a teacher.

Daily routine

- When lining up in the day, ask children to join the line depending on different attributes, for example, line up if you have a sister.

An activity that has accompanying teaching slides to support adult-led learning as part of a premium subscription.

Prepare a set of dot plates or number cards which have 1, 2 or 3 dots in different arrangements.

Hold up the dot plates and ask the children how many dots.

Can children show the correct number of fingers?

Ask children if they can match the numerals 1, 2 and 3 to the dot plates.

An activity which includes a rhyme or musical instrument.

Have a pile of beanbags.

Beat a drum either 1, 2 or 3 times.

Children listen carefully and count out 1, 2 or 3 beanbags from a larger group to match the number of beats.

An outside activity or one that uses resources from nature.

Go outside and model how to make simple large-scale patterns, such as stick, leaf, stick, leaf, stick, leaf.

Support children to copy the patterns and see if they can continue them. Encourage children to use loose parts to make simple patterns for a partner to copy and continue.

A digging deeper activity to deepen children's understanding is provided for each small step.

Wrap up a range of boxes, each with a different mass.

Ensure that some of the small boxes are heavy and some of the large boxes are light.

Pick up a box and ask children to predict if it will be heavy or light.

Ask them to test their predictions using a balance scale.

Are all small boxes light?

Teacher guidance

Teacher guidance pages are provided at the start of each block of learning.

Suggested resources that will support children's learning throughout the block, although other resources can be used.

A suggested list of books that can be used to support and spark learning within the block.

Useful ideas to consider when teaching this block to give a practical helping hand.

Reception | Autumn term | Block 3 – It's me 1, 2, 3

Teacher guidance

White Rose MATHS

Key books

- *Anno's Counting Book* by Mitsumasa Anno
- *How to Count to One* by Caspar Salmon
- *Goldilocks and the Three Bears*
- *The Gingerbread Man*
- *A Squash and a Squeeze* by Julia Donaldson
- *The Three Billy Goats Gruff*

Key resources

Top tips

- Having a set of teacher resources available for children in provision will encourage them to independently demonstrate their learning.
- A great alternative to double-sided counters are dried butterbeans. Spray these on one side or decorate as minibeasts for activities in checkpoint 1
- Blank paper plates could be left out for children to design their own dot plates.
- If you do not have a 1-3 dice, you can use a standard 1-6 dice and cover the numbers 4, 5 and 6

Small step guidance

An overview of the content that provides key vocabulary to introduce, relevant subject knowledge and advice on progression.

Reception | Autumn term | Block 3 – It's me 1, 2, 3 | Step 2

Subitise 1, 2 and 3

White Rose MATHS

Notes and guidance

In this small step, children perceptually subitise. This form of subitising refers to instantly recognising the number of objects or items in a group without needing to count them.

Encourage children to subitise groups of 1, 2 and 3 items. This will allow them to develop an understanding of what each number looks like, and what it is made up of. Use images and stories that include groups of 1, 2 and 3 characters or objects to point out and encourage children to subitise. Dice and spinners with dots are useful in helping support children to develop their subitising skills. It is important that they see the dots or other objects in different arrangements so that they don't think a number representation such as 3 always appears in the same way.

Rhymes

- *When I Was One, I Banged My Thumb*

Books

- *How to Count to One* by Casper Salmon

Key questions

- How many can you see?
  How do you know?
- How many are there in each group?
- What can you show me?
- What can you see?

Possible sentence stems

- There are _____ dots altogether.
- There is 1 _____ .
- There are 2/3 _____ .
- I can see _____ without counting.
- I can subitise _____

Links to the curriculum

- *Development Matters* – Reception – Subitise
- *Birth to 5 Matters* – Range 5 – Subitises one, two and three objects (without counting)

Key questions that can be used to develop children's mathematical talk and reasoning skills.

Key sentence stems to further support children's mathematical talk and the use of mathematical vocabulary.

Indicate the statement(s) from Development Matters and Birth to 5 Matters that are covered in the small step.

Adult-led learning

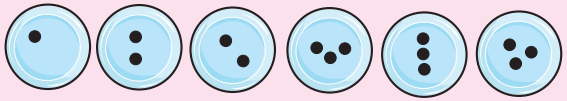
The adult-led learning section provides suggested activities that can be used when teaching this small step. These activities could be delivered to the whole class or in small groups.

Reception | Autumn term | Block 3 – It's me 1, 2, 3 | Step 2

Subitise 1, 2 and 3

Adult-led learning

Prepare a set of dot plates or number cards which have 1, 2 or 3 dots in different arrangements.



Hold up the dot plates and ask the children how many dots.

Can children show the correct number of fingers?

Ask children if they can match the numerals 1, 2 and 3 to the dot plates.

Share stories such as *How to Count to One* by Casper Salmon.

Encourage them to subitise and notice where they see 1, 2 and 3

Where can they see 1, 2 and 3 groups of objects or characters from the story?

Can they show you 1, 2 and 3?

Play a simple track game with small world creatures or characters.

Children take it in turns to roll a 1-3 dice, or a spinner, and subitise the number of dots.

They move the creature or character the corresponding number of jumps.

Who will be the first to reach the finish?

Represent 1, 2 and 3 using small objects.

Cover each amount with a bowl or cup.

Quickly reveal one group of objects and ask children how many there are.

Swap the positions around.

When you stop, can they point to the bowl with 3?

Lift the bowl and see if the children can instantly say whether they are correct.

Continuous provision

This section provides suggested ways that continuous provision could be used or enhanced to consolidate children's learning from the block.

Reception | Autumn term | Block 3 – It's me 1, 2, 3

Continuous provision

Support children to make their own representation cards.

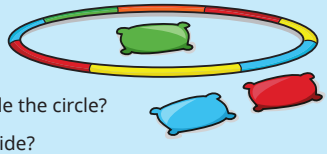
Provide them with a piece of paper and allow them to paint, draw or use collage materials to represent the numbers 1, 2 and 3

Children can create their own dots, dice patterns, or create a picture of something that interests them.

These can then be used to play games such as 'Snap'.

Place a hoop on the ground.

Ask the children to collect 3 beanbags and to take turns to throw them into a circle.



How many land inside the circle?

How many land outside?

Provide an easel or clipboard so that they can record their own scores.

Make dough. Use a recipe that involves measuring using 1, 2 or 3 cups.

Ask children to measure out the ingredients and count the cups.

2 cups of plain flour
1 cup of salt
2 cups of water
2 tablespoons of oil
1 teaspoon of cream of tartar
3 drops of food colouring

Provide a collection of various loose parts or natural objects and some small pots labelled 1, 2 and 3 for children to fill.

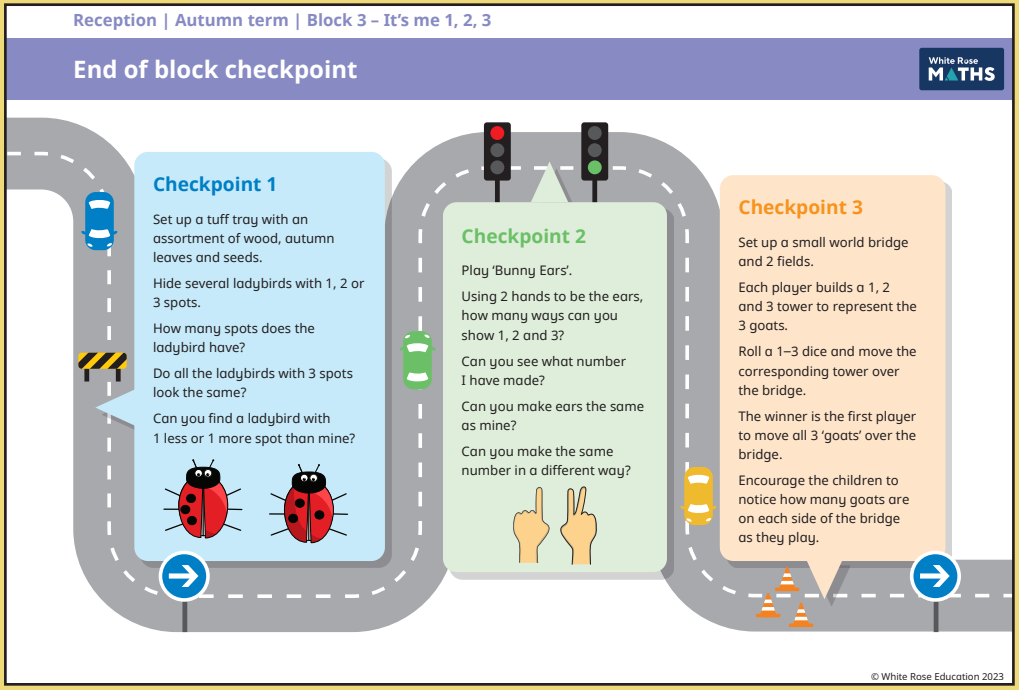
Include some unlabelled pots and encourage children to make their own labels to show how many they put inside.

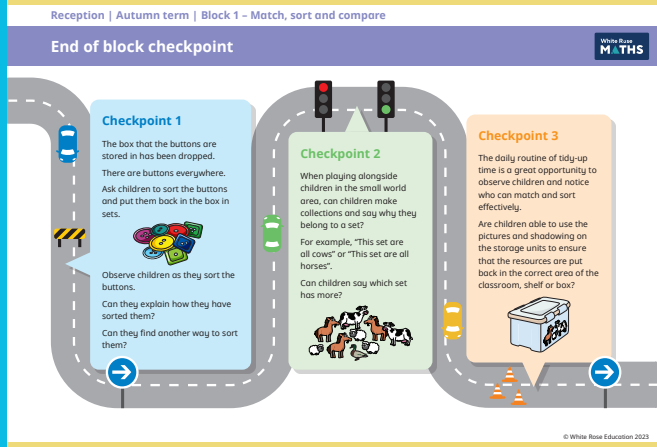
End of block checkpoint

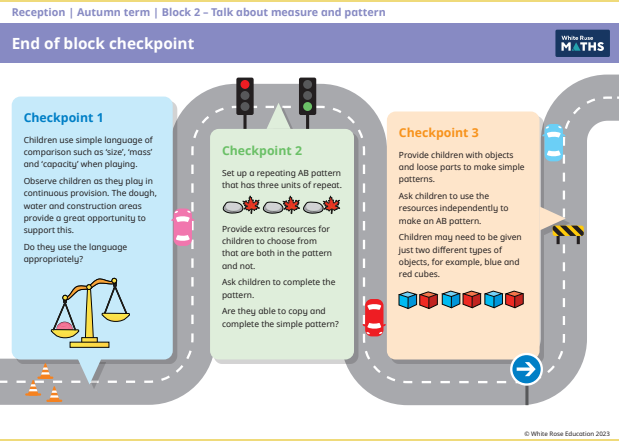
This section provides suggested activities that can be used to assess children's learning from the block.

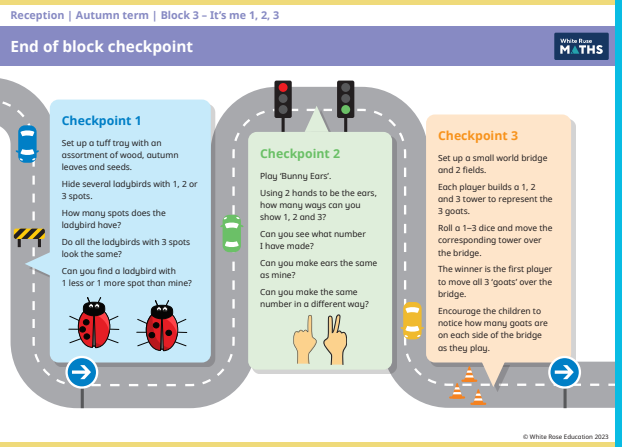
Each block has three end of block checkpoints where adults can observe children demonstrating the knowledge they have gained. These are designed to be fun games or activities to support play-based practical learning.

The end of block assessments from each block can be printed out and joined together on display to show the children's learning journey.







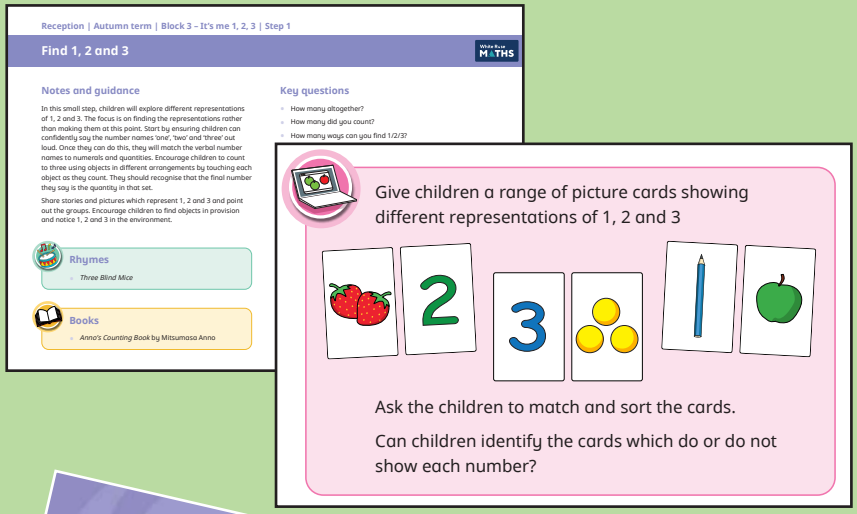


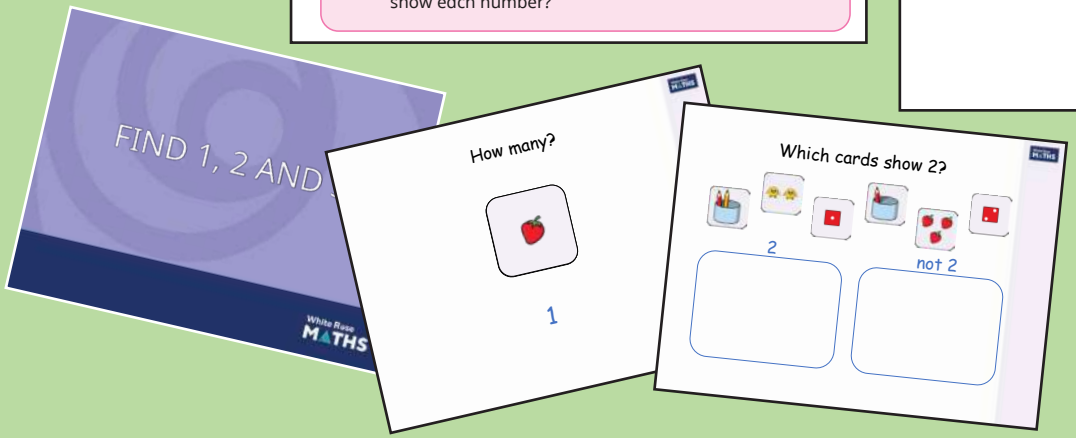
Premium supporting materials

Within the Reception premium resources, there are teaching slides that can be used to support children's learning in each small step. These teaching slides can be used alongside concrete resources.

Within the Reception premium resources, there are also daily starters available to help children revisit and consolidate previous learning.

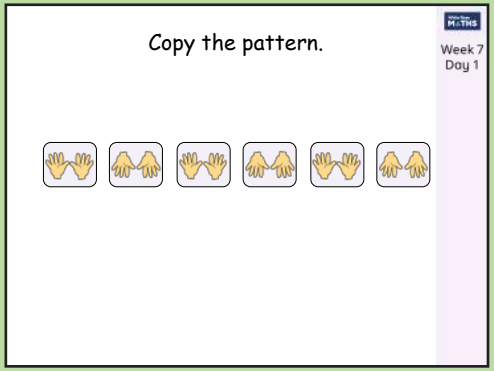
Premium resources – Teaching slides

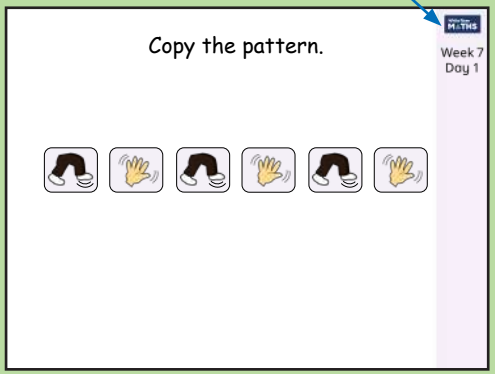




Each set of starters revisits the previous week's learning to support consolidation.

Premium resources – Starter slides





Autumn book list

These books are within the White Rose Maths Reception schemes of learning.
They are not an exclusive but support the learning in each step.

Block 1 – Match, sort and compare

- *A Pair of Socks* by Stuart J. Murphy
- *Seaweed Soup* by Stuart J. Murphy
- *The Button Box* by Margarette S. Reid
- *Beep Beep, Vroom Vroom!* by Stuart J. Murphy

Block 2 – Talk about measure and pattern

- *Where's My Teddy?* by Jez Alborough
- *It's the Bear!* by Jez Alborough
- *The Blue Balloon* by Mick Inkpen
- *Dear Zoo* by Rod Campbell
- *My First Book of Patterns* by Bobby and June George
- *We're Going on a Bear Hunt* by Michael Rosen
- *A-B-A-B-A – A Book of Pattern Play* by Brian P. Cleary

Block 3 – It's me 1, 2, 3

- *Anno's Counting Book* by Mitsumasa Anno
- *How to Count to One* by Casper Salmon
- *Goldilocks and the Three Bears*
- *The Gingerbread Man*
- *A Squash and a Squeeze* by Julia Donaldson
- *The Three Billy Goats Gruff*

Block 4 – Circles and triangles

- *Circle, Triangle, Elephant! A Book of Shapes and Surprises* by Kenji Oikawa and Mayuko Takeuchi
- *Triangle* by Mac Barnett and Jon Klassen
- *Shapes, Shapes, Shapes* by Tana Hoban
- *We're Going on a Bear Hunt* by Michael Rosen
- *Rosie's Walk* by Pat Hutchins

Block 5 – 1, 2, 3, 4, 5

- *Witches Four* by Marc Brown
- *Five Little Fiends* by Sarah Dyer
- *Pete the Cat and his Four Groovy Buttons* by Eric Litwin
- *Kipper's Birthday* by Mick Inkpen
- *The Very Hungry Caterpillar* by Eric Carle
- *Stella to Earth!* by Simon Puttock and Philip Hopman
- *Anno's Counting Book* by Mitsumasa Anno

Block 6 – Shapes with 4 sides

- *Bear in a Square* by Stella Blackstone
- *Square* by Mac Barnett and Jon Klassen
- *Shapes, Shapes, Shapes* by Tana Hoban
- *Night Monkey, Day Monkey* by Julia Donaldson
- *The Fox in the Dark* by Alison Green

Autumn Block 1

Match, sort and compare

White Rose MATHS

Teacher guidance

Key books

- *A Pair of Socks* by Stuart J. Murphy
- *Seaweed Soup* by Stuart J. Murphy
- *The Button Box* by Margarette S. Reid
- *Beep Beep, Vroom Vroom!* by Stuart J. Murphy

Key resources

Top tips

- Providing children with a wide range of the same objects allows them to explore sorting and matching at a deeper level.
- Think about colour, size, shape and texture of objects to support children's language development and descriptions. When looking at buttons, think about the number of holes.
- Use practical 'chance observations' in provision to see where children have sorted, matched and compared.
- Continue to praise children for taking sorting and matching ideas further and point out when they use their skills beyond this first block.

Small steps

Step 1	Match objects
Step 2	Match pictures and objects
Step 3	Identify a set
Step 4	Sort objects to a type
Step 5	Explore sorting techniques
Step 6	Create sorting rules
Step 7	Compare amounts

Match objects

Notes and guidance

In this small step, children are introduced to the concept of matching. They will start by matching physical objects with other physical objects.

Provide many opportunities for children to recognise the attributes of familiar objects and point out how they are the same. Encourage children to say why they match and how they know. For example, children should recognise that two cars in the small world area are the same because they are both the same colour and have the same number of wheels.

It is important to also identify objects that do not match using the language 'same' and 'different' to extend children's vocabulary.

Opportunities for matching will naturally occur in all areas of the classroom. Through observations and play both inside and outside, recognise where children naturally match objects and point this out to the children.

Daily routine

- Point out to children where objects such as water bottles or book bags belong around the classroom to help with routines of the day.

Key questions

- Can you find a match?
- Why do the objects match?
- How do you know that they match?
- What is the same about these objects?
- What is different about these objects?
- Can you find one that is different to mine?

Possible sentence stems

- The _____ matches the _____.
- The _____ are the same.
- The _____ are different.
- The _____ does not match because ...

Rationale

- Matching is a simple form of sorting and is the beginning of logical thinking. Through matching, children learn one-to-one correspondence.

Match objects

Adult-led learning

Set up a feely bag with lots of different classroom objects inside it, for example, a car, book, dice, pen, cow, pig or pencil.

Duplicate the resources that are in the bag and line them up where all children can see them.

Take one item at a time out of the bag.

Ask children which object it is the same as.

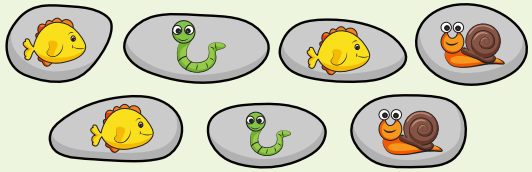
Provide children with a collection of objects.

Ensure there are multiple examples of each object, such as three buttons or four pencils.

Mix up the items so that the objects are not together.

Ask children to match the objects.

Paint a collection of pebbles, wooden discs or butter beans with duplicates of creatures such as worms, snails or fish.



Ask children to match the creatures and explain why they match and why others do not match.

What is the same about the creatures?

What is different about them?

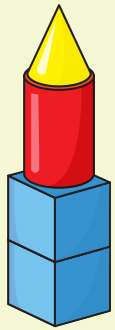
Prompt children to build towers in the construction area.

Encourage them to challenge each other to build towers that are the same.

Do the towers match?

How do you know?

Do they look the same?



Match pictures and objects

Notes and guidance

In this small step, children move from matching objects with other physical objects to matching objects with pictures, before matching pictures with pictures.

Having labelled resources in the classroom will support children in developing this skill as they can match the resources they are using to the photographs on the shelves. Shadowing equipment is also useful, where children can match objects to a picture outline or silhouette.

Quality adult interactions during tidy-up time are a great opportunity for children to practise this skill.

Daily routine

- At tidy-up time, encourage children to match resources to pictures to ensure that they are put away in the correct place. Where does this belong?

Books

- *A Pair of Socks* by Stuart J. Murphy

Key questions

- Which object matches the picture?
- How do you know that the picture matches the object?
- What is the same about the picture and the object?
- Why is the picture different from the object?

Possible sentence stems

- The _____ matches the _____.
- The _____ are the same.
- The _____ are different.
- The _____ does not match the _____ because …

Rationale

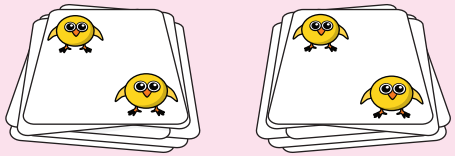
- Matching is a simple form of sorting and is the beginning of logical thinking. Through matching, children learn one-to-one correspondence. Matching objects to pictures develops children's understanding that objects can be represented by pictures.

Match pictures and objects

Adult-led learning

Provide each child with a pile of different picture cards.

Encourage children to each turn over their cards one by one.



When two of the pictures match, children shout "match" and place their hand on top of the cards.

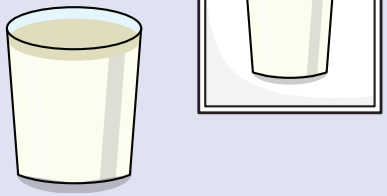
The child who shouts "match" first wins the cards placed in the piles.

Prepare a set of pictures of different objects from around the classroom. Have the resources that match the pictures in front of the children.

Show children a picture.

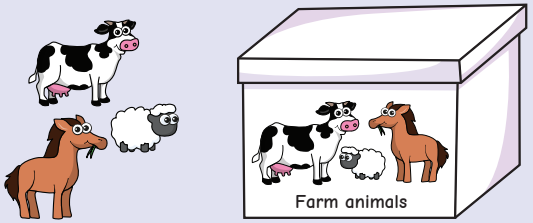
Which object does this match?

Repeat for the other pictures.



Support children to ensure that tidy-up time is effective.

Give each child an object, and ask them to match it to the place it belongs in provision.



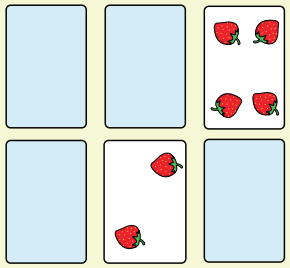
Play a memory game.

Give out six picture cards face down on the table.

Children take turns to turn over two cards.

If the two cards have the same pictures, then they keep the cards, otherwise they turn the cards face down again.

The winner is the child with the most cards when all the cards have been taken.



Identify a set

Notes and guidance

In this small step, children are introduced to the concept of identifying sets of different objects. Encourage them to see groups of objects as sets by pointing these out in images, stories and in the classroom provision.

Model making sets with children in daily routines such as snack time. Children learn that we can make sets of objects and pictures through practical activities and games. For example, we all need a spoon and bowl for cereal, and we all need a knife, fork and plate for lunch.

It is important for teachers to model making these sets correctly at first but then to make deliberate mistakes, which children should correct. For example, you could tell children you need a bowl and a knife to eat ice cream.

A great way to continue this is to use domestic role-play and arrange resources in sets to then tidy up.

Key questions

- How do you know this is a set?
- Why is this not a set?
- What else do you need to make it a set?
- Is this set correct?
- Does your set match mine?
- What is the same about these sets?

Possible sentence stems

- The _____ and the _____ are a set because…
- The _____ and the _____ are not a set because…
- This set is the same/different because…

Books

- *Seaweed Soup* by Stuart J. Murphy

Rationale

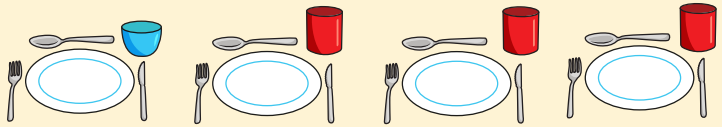
- Identifying and making sets is a precursor to counting. Children need this for the basis of the counting principles of cardinality and one-to-one correspondence.

Identify a set

Adult-led learning

Show children the illustrations in stories such as *Seaweed Soup* by Stuart J. Murphy.

Children look at the pictures and identify where they can see sets of objects that are the same and sets that are different.



Encourage children to notice which set does not match.

Where have they gone wrong?

Have a collection of buttons on a table or tuff tray.

Can everyone find a red, blue and yellow button?

Have you got your set? How do you know?

Have we all got the same?

What other sets can we make? How can we check?

Children should tell a friend what sets they have made.

Task children to pack a lunch box so that everyone has a lunch consisting of the same set of items.

Children should ensure that each lunch box has a sandwich, a drink and a piece of fruit.

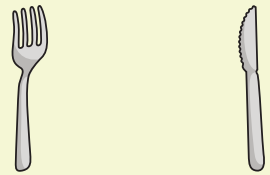
Present children with an incorrect lunch box.

Why is this set wrong? What do we need to do to make it right?

Provide children with images of different sets.

Some of the sets should have objects missing from the set.

Ask children to identify which sets have missing objects.



How do they know?

Encourage children to create other sets.

Sort objects to a type

Notes and guidance

In this small step, children build on their knowledge of identifying sets of different objects from the previous step. Children are introduced to the term 'sorting' and learn that collections of objects can be sorted based on attributes such as colour, size or shape.

Sorting enables children to consider what is the same about all the objects and what is different. At first, children may focus on one attribute only and explore that thoroughly before moving on to other attributes.

By asking open-ended questions, children can be supported to explain how they have sorted the objects. Introduce this by sorting by just one attribute or type, for example, by sorting buttons into green and not green.

It is important to introduce children to other types of sorting, such as shape and size, so that they do not think that colour is the only way to sort.

Books

- *The Button Box* by Margarette S. Reid

Key questions

- How can you sort the objects?
- How do you know they are the same/different?
- How could you sort the objects a different way?

Possible sentence stems

- I have sorted the objects by _____.
- These are _____.

  These are not _____.
- These objects are the same because…
- These objects are not the same because…

Rationale

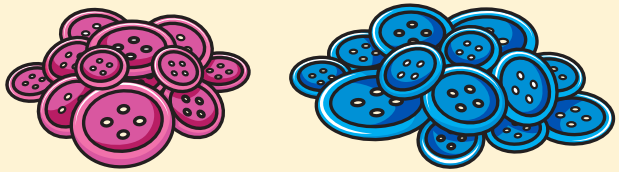
- When children sort objects, they are learning that some things are alike, and some are different. Early experiences of sorting objects into groups according to their similarities helps children to learn how to categorise and is a precursor to classifying.

Sort objects to a type

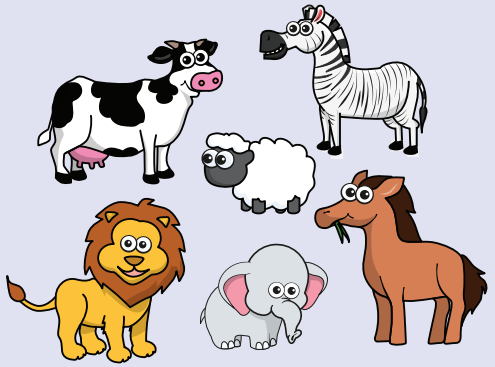
Adult-led learning

Read a book, such as *The Button Box* by Margarette S. Reid, where objects are sorted in different ways.

Have a range of different buttons for children to explore and sort into sets. For example, sort by size, colour or texture.



Mix up some resources in a continuous provision area. For example, muddle up the farm animals with the wild animals.



Ask children to help sort the different objects and put them back into the correct box or place on the shelf.

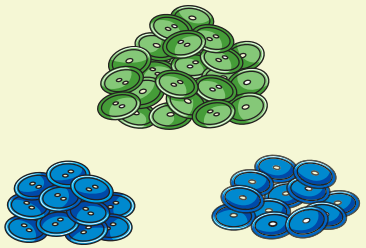
Have a collection of loose parts.

Encourage children to sort the items into different groups depending on their type.

Start by sorting using one type to create two sets, for example, leaves and not leaves.

Prompt children to think of another way that they could sort the objects.

Provide resources that children can sort into more than two sets in many possible ways.



Buttons, shells, pebbles, or autumnal loose parts provide many sorting opportunities.

Encourage children to consider a range of different attributes and sort independently.

Explore sorting techniques

Notes and guidance

Within this small step, children will use the simple sorting skills they have developed so far to now explore different sorting techniques. Encourage children to sort objects and discuss how they have sorted them. Ask children if they can sort the same set of objects in a different way.

Support children to sort using more than one attribute, for example, big and round. It is important to model to children that the same set of objects can be sorted in lots of different ways and by different attributes. Spend time with children sorting objects and discussing their different sorting techniques.

Daily routine

- When lining up during the day, ask children to join the line depending on different attributes, for example, line up if you have a sister.

Books

- *The Button Box* by Margarette S. Reid

Key questions

- How could you sort the objects?
- Is there a different way to sort them?
- How have you sorted the objects?
- How can you sort the objects in a different way?
- Have you sorted the objects the same way as your partner?
- Can you sort the objects the same way as me?

Possible sentence stems

- I could sort my objects by…
- I have sorted my objects like this because…
- Another way to sort my objects is…
- All my objects are…

Links to the curriculum

- *Birth to 5 Matters* – Range 6 – Spots patterns in the environment, beginning to identify the pattern "rule".

Explore sorting techniques

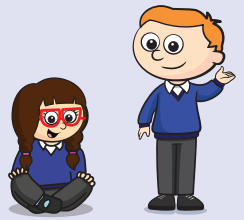
Adult-led learning

Present children with a collection of different buttons.

Explain to children how you have sorted the buttons, for example by the number of holes.

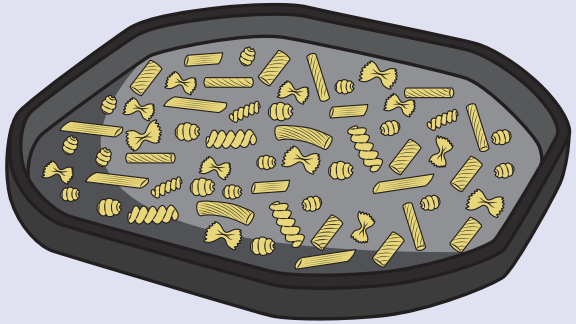
Encourage children to have a go at thinking of different ways we could sort the same buttons. Are there more than two ways to sort them?

Encourage children to sort themselves into different groups with different attributes, for example, if you are wearing a jumper, if you have your hair tied up or if you are wearing glasses.



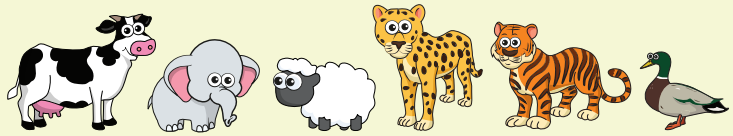
Discuss the fact that children may have more than one of the attributes, so may fit into more than one group.

Provide children with different kinds of pasta shapes, such as penne, fusilli and macaroni, in a tuff tray.



Encourage children to sort the pasta in different ways.

In the small world area, set children a challenge to sort the animals.



How many ways can they be sorted?

Prompt the other children to guess or explain how they think the animals have been sorted.

Who can find the best or funniest sorting technique?

For example, the animals can be sorted into those that roar and those that do not roar.

Create sorting rules

Notes and guidance

In this small step, children will use what they have learned about sorting techniques to now create their own sorting rules. Model games such as 'Guess my rule', where children must figure out why certain objects have been sorted into a group.

Encourage children to ignore the differences between the items in a shown set and just focus on the one aspect they have in common.

In classroom provision, demonstrate different sorting rules to children and ask them to challenge you by making up their own.

Show children collections containing one incorrect item so that they can spot the odd one out and correct you.

Make a display of photographs of children's sorted collections to showcase their sorting rules. Ask other children to explain the different rules.

Key questions

- What is your rule for sorting the objects?
- Is there another way you could have sorted the objects?
- Can you guess my rule?
- How do you know that is my rule?
- Which is the odd one out?

Possible sentence stems

- I have sorted my objects like this because …
- This does not belong in my set because …
- All the objects in my rule have …
- My rule is …

Books

- *The Button Box* by Margarette S. Reid

Links to the curriculum

- *Birth to 5 Matters* – Range 6 – Spots patterns in the environment, beginning to identify the pattern "rule".

Create sorting rules

Adult-led learning

Introduce the game 'Guess my rule'.

Begin with a large pile of items, such as buttons.

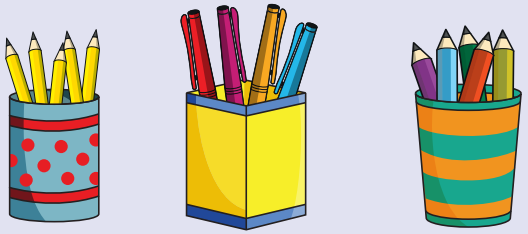
Tell children you have a sorting rule, and that they need to guess what it is.

One at a time, place buttons into your set, for example, buttons with four holes.

Continue to add different buttons to your set and encourage children to suggest what the rule could be.

With children, redesign an area of the classroom.

Encourage children to come up with different rules for the specific area, for example the mark-making area.



How could we sort the pencils and pens? What will the rule be?

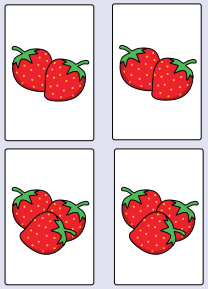
Encourage children to reason and explain why the objects are sorted in that way.

Encourage children to sort some picture cards into sets.

How have they sorted the cards?

How do they know that they are the same?

How do they know they are different?



Choose four objects, each with one attribute that makes it different from the others.

Encourage children to suggest which object could be the odd one out and explain their reasoning to a friend.

Compare amounts

Notes and guidance

In this small step, children should build on their previous skills of sorting. They will learn that sets can be compared and ordered. Children use the language 'more' and 'fewer' when comparing sets of objects.

Explain to children that, when making comparisons between some pairs of sets, one can have more items, fewer items or the same amount of items as another.

The focus of this small step is on comparing sets of objects specifically, but if comparing other sets, such as amounts of liquid, children should use the language 'more' and 'less'.

It is easier for children to make comparisons when the difference between the sets is greater. Start by asking children to compare sets of 5 and 2 objects rather than sets of 5 and 6 objects. This can be done through daily routines when tidying up or through opportunities at snack time.

Key questions

- Which set has more?
- Which set has fewer?
- Which sets have the same?
- How do you know?

Possible sentence stems

- This set has _____ objects than this set.
- These sets have _____.
- This set has _____ because …

Books

- *Beep Beep, Vroom Vroom!* by Stuart J. Murphy

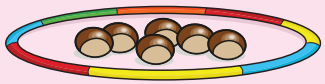
Links to the curriculum

- *Development Matters* – Reception – Compare numbers.
- *Birth to 5 Matters* – Range 5 – Compares two small groups of up to five objects, saying when there are the same number of objects in each group.

Compare amounts

Adult-led learning

Provide objects for children to sort into two sets.



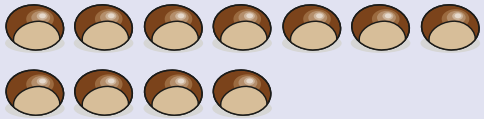
Ask children which set has more. Which set has fewer?

Can children make two sets which are the same?

How do they know they are the same?

Encourage children to line the objects up to check.

In pairs, children grab a handful of objects, such as cubes, beads or conkers.



Can your partner hold more than you, fewer than you or the same amount as you?

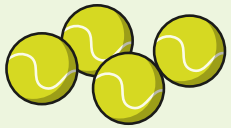
Support children to line up their objects, with one line underneath the other.

Hide a selection of balls of varying sizes around the outdoor area, for example, footballs and tennis balls.

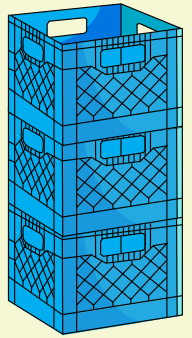
Challenge children to hunt for as many balls as they can find.

Ask children to sort them into two groups by size.

Provide more tennis balls than footballs to avoid children confusing size with quantity.



Encourage children to build a tower using large outdoor blocks, cushions or crates.



Challenge children to make a shorter tower or taller tower.

Encourage children to compare towers with their friends.

Who has used the most objects?
Who has used the fewest?

Do more objects always make a taller tower?

Continuous provision

Provide children with a selection of different-sized lids.

Have a large sheet of paper with outlines of the lids drawn on.

Ask children to match each lid to the correct outline on the paper.

This can also be done with different-sized containers and lids, where children have to match the lid to the correct container.

In the home corner, provide children with a range of plates, bowls, cups, cutlery and food.

Explore sorting them in different ways.

Can they find more than one way?

Lunch boxes could also be added for children to make a packed lunch.

Do all the boxes have the same set of items?

Provide a large collection of beads in a range of colours, shapes and sizes. Children will also need several small pots.

Encourage children to sort the beads into the different pots and explain how they have sorted them.

Provide children with a large amount of dough and encourage them to break it up and roll it into balls.

Ask children to share the balls of dough.

Encourage them to compare their amounts.

Who has more? Who has fewer?

Can they share it so that they both have the same amount?

End of block checkpoint

Checkpoint 1

The box that the buttons are stored in has been dropped.

There are buttons everywhere.

Ask children to sort the buttons and put them back in the box in sets.

Observe children as they sort the buttons.

Can they explain how they have sorted them?

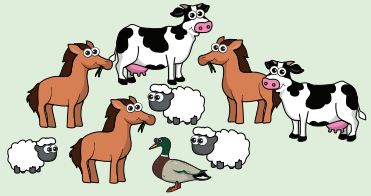
Can they find another way to sort them?

Checkpoint 2

When playing alongside children in the small world area, can children make collections and say why they belong to a set?

For example, "This set are all cows" or "This set are all horses".

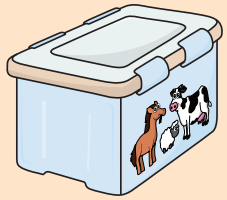
Can children say which set has more?



Checkpoint 3

The daily routine of tidy-up time is a great opportunity to observe children and notice who can match and sort effectively.

Are children able to use the pictures and shadowing on the storage units to ensure that the resources are put back in the correct area of the classroom, shelf or box?



Autumn Block 2

Talk about measure and pattern

White Rose MATHS

Teacher guidance

Key books

- *Where's My Teddy?* by Jez Alborough
- *It's the Bear!* by Jez Alborough
- *The Blue Balloon* by Mick Inkpen
- *Dear Zoo* by Rod Campbell
- *My First Book of Patterns* by Bobby and June George
- *We're Going on a Bear Hunt* by Michael Rosen
- *A-B-A-B-A – A Book of Pattern Play* by Brian P. Cleary

Top tips

- Point out unusual places we can find patterns, such as in the first pages of story books.
- Embed vocal and sound pattern making in daily routines, such as carpet times or lining up. Point out the AB, AB, AB structure.
- Celebrate children's pattern making by taking photographs and displaying them for other children to comment on and copy.

Key resources

Small steps

Step 1	Compare size
Step 2	Compare mass
Step 3	Compare capacity
Step 4	Explore simple patterns
Step 5	Copy and continue simple patterns
Step 6	Create simple patterns

Compare size

Notes and guidance

In this small step, children learn that objects can be compared and ordered by size. At this stage, the difference in size should be noticeable so that comparisons can be made by eye and not through measure. Model the use of language such as 'big', 'little', 'large' and 'small' and encourage children to describe what they notice. Moving the objects they are comparing close together can support understanding.

Once children can recognise and describe differences, support them to use more specific language, such as 'tall' and 'short' when describing height and 'long' and 'short' when comparing length. Provide opportunity for children to compare size in a range of different contexts in all areas of provision.

Rhymes

- *Big Fish, Little Fish, Cardboard Box*

Books

- *Where's My Teddy?* by Jez Alborough
- *It's the Bear!* by Jez Alborough

Key questions

- Which is smaller/bigger?

  How do you know?
- Which is taller/longer/shorter?

  How do you know?

Possible sentence stems

- The _____ is bigger/smaller than the _____ .
- The _____ is larger/smaller than the _____ .
- The _____ is longer/shorter than the _____ .
- The _____ is taller/shorter than the _____ .

Links to the curriculum

- *Development Matters* – 3 and 4-year-olds – Make comparisons between objects relating to size, length, weight and capacity.
- *Birth to 5 Matters* – Range 4 – Explores differences in size, length, weight and capacity.

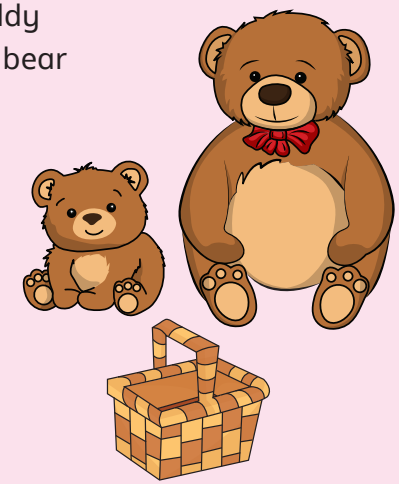
Compare size

Adult-led learning

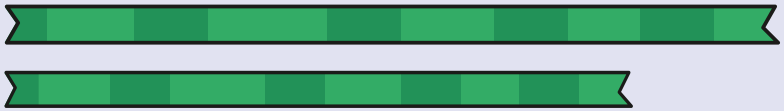
As a class, prepare for a teddy bears' picnic with one large bear and one small bear.

Unpack a picnic basket of plates, cups, spoons and food items of two different sizes.

Discuss which size item would be best for each bear, using the language 'little' and 'big', and 'large' and 'small'.



Give children a variety of different length ribbon or string.

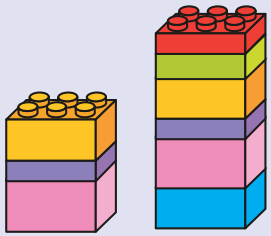


Ask children to find someone who has a longer or shorter piece of ribbon than them.

Build in the construction area using a variety of large, small, long and short blocks.

Encourage children to make big houses, little houses, tall towers and short towers.

Ask children what size of animal or person could live in their house or tower.



Provide children with wrapping paper, tape, scissors and a range of different objects to wrap.

Encourage them to cut the paper to an accurate size to wrap the object.

Is their piece of wrapping paper big enough to wrap their object?

Compare mass

Notes and guidance

In this small step, children are introduced to the vocabulary of mass and learn that objects can be compared and ordered by their mass. Children may be more familiar with the word 'weight', and there is no harm in using the words interchangeably at this stage.

Model use of language such as 'heavy' and 'light' and give children the opportunity to pick up different objects to develop their understanding of the words.

When introducing balance scales, children should develop the understanding that the heavier object is lower on the balance scale and the lighter object is higher. It is important to model this to children and point out that the objects have the same mass if the scale is balanced.

To avoid misconceptions, give children the opportunity to explore large objects that are light and small objects that are heavy.

Books

- *The Blue Balloon* by Mick Inkpen

Key questions

- Which object is heavier? How do you know?
- Which object is lighter? How do you know?
- What has happened to the balance scale?
- Are large objects always heavier than small objects?

Possible sentence stems

- The _____ is heavier than the _____ .
- The _____ is lighter than the _____ .
- The heavier object is _____ on the balance scale.
- The lighter object is _____ on the balance scale.

Links to the curriculum

- *Development Matters* – 3 and 4-year-olds – Make comparisons between objects relating to size, length, weight and capacity.
- *Birth to 5 Matters* – Range 5 – In meaningful contexts, finds the longer or shorter, heavier or lighter and more/less full of two items.

Compare mass

Adult-led learning

Give one child a reasonably heavy suitcase.

Give another child a balloon.

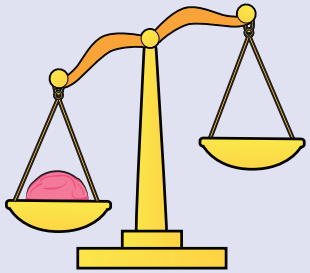
What do they notice?

Introduce the words 'heavy' and 'light'.

Encourage children to pick up a range of other objects, decide whether they are heavy or light and compare them.

Add a balance scale to the dough area. Model to children how the balance scale works.

Encourage children to make different-sized balls of dough and compare their mass using the language 'heavier' and 'lighter'.



As a class, select two objects from around the classroom. Ask children to predict which object will be heavier and which will be lighter.

Invite one child to come and be a human balance scale.

Encourage them to hold one object in each hand and describe which is heavier and which is lighter.

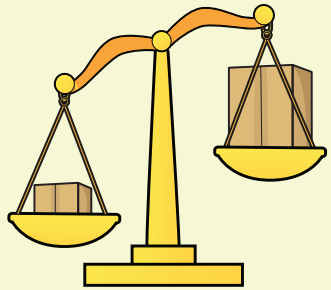
Wrap up a range of boxes, each with a different mass.

Ensure that some of the small boxes are heavy and some of the large boxes are light.

Pick up a box and ask children to predict if it will be heavy or light.

Ask them to test their predictions using a balance scale.

Are all small boxes light?



Compare capacity

Notes and guidance

In this small step, children learn that objects can be compared and ordered by their capacity. Provide children with a wide range of opportunities to explore different containers and boxes and their capacity.

Begin by exploring practically the idea that capacity is the maximum amount that something can hold. Initially they will use the language 'this holds the most' and 'this holds the least' to explain what they notice about capacity. Explore how containers look when full and empty.

Ensure that children experience a range of different-sized and different-shaped containers and encourage them to begin to make basic comparisons. Filling different containers in the water area and exploring junk modelling with different-sized boxes are great ways to support children to compare capacity.

Books

- *Dear Zoo* by Rod Campbell

Key questions

- Which holds more/the most? How do you know?
- Which holds less/the least? How do you know?
- Does this container hold more or less? How can you find out?
- Would the _____ fit inside the box?

Possible sentence stems

- The _____ holds more.
- The _____ holds less.
- The _____ has the same capacity as the _____ .

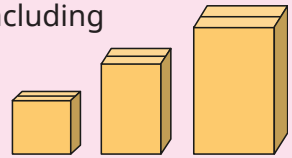
Links to the curriculum

- *Development Matters* – 3 and 4-year-olds – Make comparisons between objects relating to size, length, weight and capacity.
- *Birth to 5 Matters* – Range 5 – In meaningful contexts, finds the longer or shorter, heavier or lighter and more/less full of two items.

Compare capacity

Adult-led learning

Have a range of different boxes including some small, large, tall and thin.



Show children one of the boxes and ask what could be inside.

Could they fit in the box? Why or why not?

Present a range of objects from around the classroom.

Could these objects fit in the box?

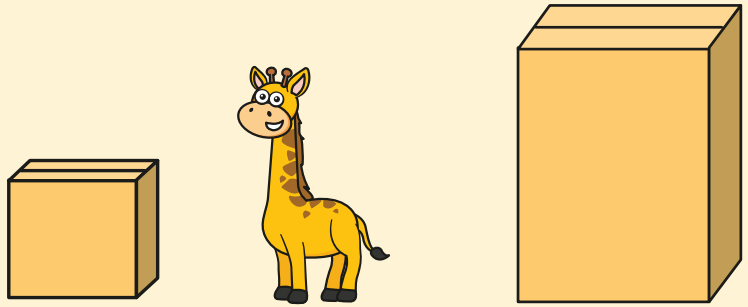
Set up an area outside where children can dig soil, sand or bark.

Provide children with different-sized spades and garden trowels, and different-sized containers such as plant pots, buckets or a wheelbarrow.

Encourage children to fill the containers.

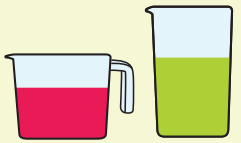
Which container holds the most/least?

After reading stories such as *Dear Zoo* by Rod Campbell, provide children with a range of different-sized junk modelling boxes and small world creatures.



Ask children to pick an animal or creature and make a home for them using the boxes.

Provide children with some coloured water and different-sized containers in a water tray to make different potions.



Encourage children to compare the different containers and investigate which containers hold less/more.

Explore simple patterns

Notes and guidance

In this small step, children are introduced to patterns and explore simple examples to develop their understanding of both the word and the concept. Prompt children to recognise that a pattern is a repeated unit. They will explore different patterns and learn that patterns can be both visual and auditory (involving sound). Provide children with many opportunities to see and explore a range of simple patterns. Point out where patterns can be seen in the environment. This may be patterns on clothes, such as checks or stripes, or different patterns around school and at home.

Encourage children to join in with sound patterns and rhymes and to notice the patterns in stories where words are repeated.

Rhymes

- *In and Out the Dusty Bluebells*

Books

- *My First Book of Patterns* by Bobby and June George
- *We're Going on a Bear Hunt* by Michael Rosen

Key questions

- What pattern can you see?
- What pattern can you hear?
- What do you notice?
- What words do you hear?
- What sounds do you hear?

Possible sentence stems

- I can see a _____ pattern.
- I can hear a _____ pattern.
- This is a _____ pattern.

Links to the curriculum

- *Development Matters* – 3 and 4-year-olds – Talk about and identify the patterns around them.
- *Birth to 5 Matters* – Range 5 – Explores and adds to simple linear patterns of two or three repeating items.

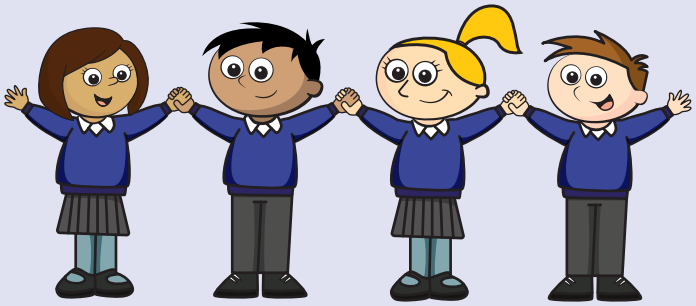
Explore simple patterns

Adult-led learning

Display a range of different patterns for children to look at. Encourage them to identify the patterns.

Explore pattern images from books such as *My First Book of Patterns* by Bobby and June George. Point out patterns such as when lines are repeated to make stripes or when dots are repeated to make spots.

Play the circle game and sing the song *In and Out the Dusty Bluebells*. Children hold hands and raise their arms upwards to make arches.

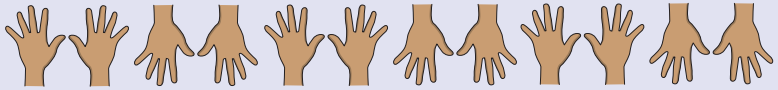


Encourage children to notice the patterns in the song as they are weaving in and out.

Demonstrate simple action patterns for children to copy.

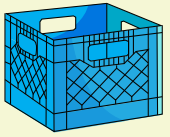
- jump, clap, jump, clap, jump, clap

- hands up, hands down, hands up, hands down, hands up, hands down



Say the pattern aloud and encourage children to join in.

Provide children with large construction materials, such as crates, tyres and den-making materials.



Encourage children to set up their own version of the journey from *We're Going on a Bear Hunt* by Michael Rosen. Prompt them to repeat the pattern language as they travel along their journey.

Copy and continue simple patterns

Notes and guidance

In this small step, children move from exploring the features of simple patterns to being able to copy and continue basic patterns. At this stage, introduce children to AB patterns, which are patterns with only two parts repeating, such as red/green or dog/cat.

Support children to copy AB patterns with sounds as well as objects. Activities such as drumming 'my turn, your turn' help to embed sound patterns and keeping a beat. If children need additional support, first encourage them to copy small sections of patterns before combining to copy the full pattern. Children can then identify the pattern and attempt to continue it. Encourage them to say the pattern out loud to embed the AB structure.

When showing and modelling patterns to children, ensure that there are three full units of repeat for them to be able to copy and continue. Ensure that children are exposed to visual patterns that build both vertically and horizontally.

Rhymes

- Tongue twister patterns such as *Red Lorry, Yellow Lorry*

Key questions

- Copy my pattern – what do you hear?
- Copy my pattern – what do you see?
- How does the pattern continue?
- What do we need to copy this pattern?

Possible sentence stems

- The _____ comes next in the pattern.
- The pattern is _____ , _____ .

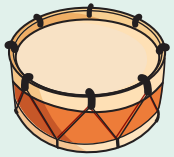
Links to the curriculum

- *Development Matters* – Reception – Continue, copy and create repeating patterns.
- *Birth to 5 Matters* – Range 5
  - Explores and adds to simple linear patterns of two or three repeating items.
  - Joins in with simple patterns in sounds, objects, games and stories, dance and movement, predicting what comes next.

Copy and continue simple patterns

Adult-led learning

Provide children with a range of musical instruments. Use a drum or tambourine to tap out a simple beat, for example: tap, shake.



Encourage children to copy the beat after you.

Pick different children to be the leader and allow them to tap out a simple beat for the rest of the class to copy and follow.

Show children a range of AB patterns in images and with real-life objects.

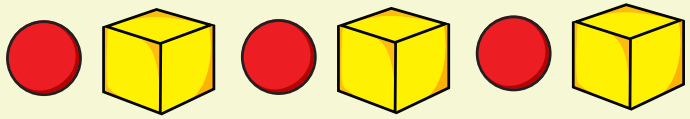
Encourage children to say what they see.

Prompt children to carry on the pattern and encourage them to say what would come next.

Go outside and model how to make simple large-scale patterns, such as stick, leaf, stick, leaf, stick, leaf.

Support children to copy the patterns and see if they can continue them. Encourage children to use loose parts to make simple patterns for a partner to copy and continue.

Set out a variety of AB patterns with items such as cubes, counters and loose parts.



Challenge children to independently copy and continue the patterns.

Encourage children to consider the shape and size as they build their patterns and prompt them to say their patterns aloud.

Create simple patterns

Notes and guidance

In this small step, children move on to being able to create their own simple AB patterns, first with some guidance and then independently. Encourage children to make their own patterns with objects. These could relate to children's interests to make them more meaningful.

Children should be given opportunities to make AB patterns in a range of contexts, including shapes, colours, actions and sounds. Once children are confident in making patterns, create further challenge by asking them to spot an error in an AB pattern. Start with an extra item added to the pattern, then progress to there being an item missing from the pattern. Children can then be prompted to fix the problem.

Rhymes

- *Clap Your Hands and Wiggle Your Fingers*

Books

- *A-B-A-B-A – A Book of Pattern Play* by Brian P. Cleary

Key questions

- What pattern have you made?
- What are you going to use to make your pattern?
- What mistake can you see in my pattern?
- How could you fix the mistake in my pattern?

Possible sentence stems

- I have used _____ to make my pattern.
- Next, I need _____ to continue my pattern.
- I need _____ to finish my pattern.
- The _____ is in the wrong place.

Links to the curriculum

- *Development Matters* – Reception – Continue, copy and create repeating patterns.
- *Birth to 5 Matters* – Range 5 – Creates their own spatial patterns showing some organisation or regularity.

Create simple patterns

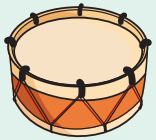
Adult-led learning

With children, model following an action pattern using images which represent actions, such as jump or clap.

Provide a range of action images. Prompt children to select their own images to make an action pattern with a friend.

Act out the pattern together.

Provide children with a set of musical instruments, such as a drum, maracas, tambourine and triangles.



Ask children to make a sound pattern using the instruments.

Provide a selection of fruit cut into small pieces, such as bananas and strawberries.

Encourage children to make an edible repeating pattern and prompt them to describe the pattern before they eat their snack.

This can be extended to children making their own fruit kebabs with a repeating pattern.

Make a range of AB patterns for children to see and ensure that you make deliberate mistakes in the patterns created.

Explain to children that we have a problem – the pattern isn't correct.

Ask children to suggest ways to fix the problem. Children might swap the items around, which means that they will have to continue amending the pattern until the end of the line.

Continuous provision

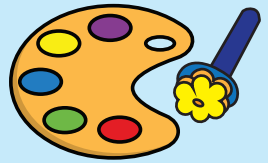
In the sand or water areas, provide children with equipment in two distinct sizes.

For example, a big bucket and a little bucket or a tall jug and a short jug.

Encourage children to compare the objects and to explore how many scoops each will hold.

They could also compare how many large scoops and how many small scoops a container will hold.

Provide children with large paper and a range of tools for them to print with to create repeating patterns.



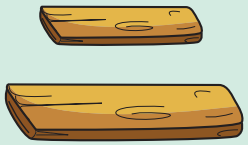
Talk to children as they explore different colours, shapes and forms. Discuss how they can make a pattern.

Children could then extend this printing to making patterned wrapping paper for a birthday present.

Provide lots of different examples of wrapping paper and then ask children to create their own.

Outside, provide children with large blocks, planks, crates and/or cushions.

Encourage children to build towers, models and roads.



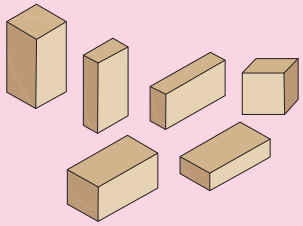
What is the tallest or shortest tower that they can build?

Can they build another tower that is taller/shorter?

Can they build a long road and a short road?

In the construction area, ask children to build towers and enclosures using their own repeating patterns.

Can they say their pattern aloud?



Encourage children to use key vocabulary such as ‘big brick’, ‘little brick’, ‘short brick’, ‘red brick’, ‘blue brick’, etc.

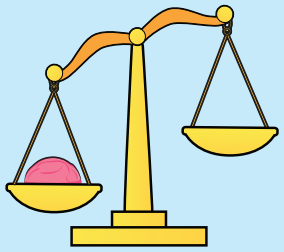
End of block checkpoint

Checkpoint 1

Children use simple language of comparison such as 'size', 'mass' and 'capacity' when playing.

Observe children as they play in continuous provision. The dough, water and construction areas provide a great opportunity to support this.

Do they use the language appropriately?



Checkpoint 2

Set up a repeating AB pattern that has three units of repeat.

Provide extra resources for children to choose from that are both in the pattern and not.

Ask children to complete the pattern.

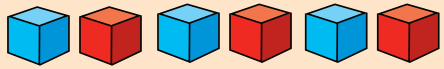
Are they able to copy and complete the simple pattern?

Checkpoint 3

Provide children with objects and loose parts to make simple patterns.

Ask children to use the resources independently to make an AB pattern.

Children may need to be given just two different types of objects, for example, blue and red cubes.



Autumn Block 3

It's me 1, 2, 3

White Rose MATHS

Teacher guidance

Key books

- *Anno's Counting Book* by Mitsumasa Anno
- *How to Count to One* by Caspar Salmon
- *Goldilocks and the Three Bears*
- *The Gingerbread Man*
- *A Squash and a Squeeze* by Julia Donaldson
- *The Three Billy Goats Gruff*

Top tips

- Having a set of teacher resources available for children in provision will encourage them to independently demonstrate their learning.
- A great alternative to double-sided counters are dried butterbeans. Spray these on one side or decorate as minibeasts for activities in checkpoint 1
- Blank paper plates could be left out for children to design their own dot plates.
- If you do not have a 1-3 dice, you can use a standard 1-6 dice and cover the numbers 4, 5 and 6

Key resources

Small steps

Step 1	Find 1, 2 and 3
Step 2	Subitise 1, 2 and 3
Step 3	Represent 1, 2 and 3
Step 4	1 more
Step 5	1 less
Step 6	Composition of 1, 2 and 3

Find 1, 2 and 3

Notes and guidance

In this small step, children will explore different representations of 1, 2 and 3. The focus is on finding the representations rather than making them at this point. Start by ensuring children can confidently say the number names 'one', 'two' and 'three' out loud. Once they can do this, they will match the verbal number names to numerals and quantities. Encourage children to count to three using objects in different arrangements by touching each object as they count. They should recognise that the final number they say is the quantity in that set.

Share stories and pictures which represent 1, 2 and 3 and point out the groups. Encourage children to find objects in provision and notice 1, 2 and 3 in the environment.

Rhymes

- *Three Blind Mice*

Books

- *Anno's Counting Book* by Mitsumasa Anno

Key questions

- How many altogether?
- How many did you count?
- How many ways can you find 1/2/3?
- Where can you see 1/2/3?

Possible sentence stems

- I counted _____
- There is 1 _____ .
- There are 2/3 _____ .
- There are _____ altogether.
- I can see...

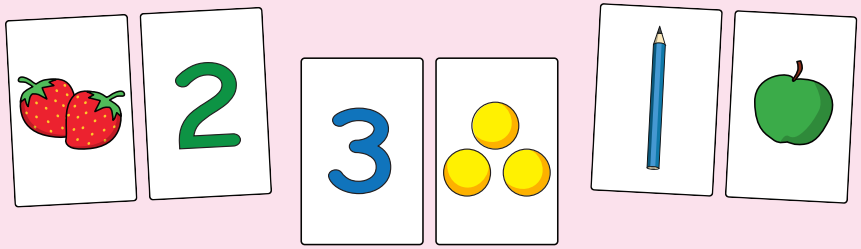
Links to the curriculum

- *Development Matters* – Reception – Count objects, actions and sounds. Link the number symbol (numeral) with its cardinal number value.
- *Birth to 5 Matters* – Range 5 – Links numerals with amounts up to 5 and maybe beyond.

Find 1, 2 and 3

Adult-led learning

Give children a range of picture cards showing different representations of 1, 2 and 3

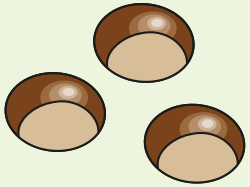


Ask the children to match and sort the cards.

Can children identify the cards which do or do not show each number?

Take children on a number hunt.





Where can they find 1, 2 and 3?

Do they count to find how many?

Allow time to sort the different objects into different groups based on their quantity.

Encourage children to create their own collections of 1, 2 and 3

Show children the illustrations from pages 1, 2 and 3 of the story *Anno's Counting Book* by Mitsumasa Anno.

Encourage them to look at the pictures and identify where they can see the different representations of 1, 2 and 3

Where do they see each representation?

How do they see it?

Give children a set of number cards.

Some cards should show 1, 2 and 3 as numerals.

The other cards should show different representations of 1, 2 and 3

Ask children to find each number.

Get them to check each other's answers.

Subitise 1, 2 and 3

Notes and guidance

In this small step, children perceptually subitise. This form of subitising refers to instantly recognising the number of objects or items in a group without needing to count them.

Encourage children to subitise groups of 1, 2 and 3 items. This will allow them to develop an understanding of what each number looks like, and what it is made up of. Use images and stories that include groups of 1, 2 and 3 characters or objects to point out and encourage children to subitise. Dice and spinners with dots are useful in helping support children to develop their subitising skills. It is important that they see the dots or other objects in different arrangements so that they don't think a number representation such as 3 always appears in the same way.

Rhymes

- *When I Was One, I Banged My Thumb*

Books

- *How to Count to One* by Casper Salmon

Key questions

- How many can you see?

  How do you know?
- How many are there in each group?
- What can you show me?
- What can you see?

Possible sentence stems

- There are _____ dots altogether.
- There is 1 _____ .
- There are 2/3 _____ .
- I can see _____ without counting.
- I can subitise _____

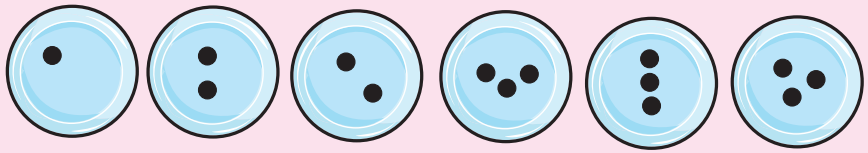
Links to the curriculum

- *Development Matters* – Reception – Subitise
- *Birth to 5 Matters* – Range 5 – Subitises one, two and three objects (without counting)

Subitise 1, 2 and 3

Adult-led learning

Prepare a set of dot plates or number cards which have 1, 2 or 3 dots in different arrangements.



Hold up the dot plates and ask the children how many dots.

Can children show the correct number of fingers?

Ask children if they can match the numerals 1, 2 and 3 to the dot plates.

Share stories such as *How to Count to One* by Casper Salmon.

Encourage them to subitise and notice where they see 1, 2 and 3

Where can they see 1, 2 and 3 groups of objects or characters from the story?

Can they show you 1, 2 and 3?

Play a simple track game with small world creatures or characters.

Children take it in turns to roll a 1-3 dice, or a spinner, and subitise the number of dots.

They move the creature or character the corresponding number of jumps.

Who will be the first to reach the finish?

Represent 1, 2 and 3 using small objects.

Cover each amount with a bowl or cup.

Quickly reveal one group of objects and ask children how many there are.

Swap the positions around.

When you stop, can they point to the bowl with 3?

Lift the bowl and see if the children can instantly say whether they are correct.

Represent 1, 2 and 3

Notes and guidance

In this small step, children build on their learning from the earlier steps as they create their own different representations of 1, 2 and 3 using different objects. Provide opportunities for children to match their different representations to cards showing the numerals.

Encourage children to count and subitise as a way of checking their representations. Remind them to touch each object as they count, and remind them that the final number they say is the quantity of the set.

This idea can be extended further to include groups of 1, 2 and 3 sounds or movements. For example, children could use a drum to count sound beats. Alternatively they could jump or clap up to 3

Rhymes

- *Hickory Dickory Dock*

Books

- *Goldilocks and the Three Bears*

Key questions

- How many? How many now?
- How many different ways can you find 1, 2 and 3?
- How many did you count? How do you know?
- How many altogether?

Possible sentence stems

- There is 1 _____ .
- There are 2/3 _____ .
- We jumped/clapped/twirled _____ times.
- There are _____ altogether.
- I counted _____

Links to the curriculum

- *Development Matters* – Reception – Count objects, actions and sounds. Link the number symbol (numeral) with its cardinal number value.
- *Birth to 5 Matters* – Range 5 – Links numerals with amounts up to 5 and maybe beyond.

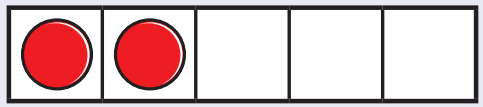
Represent 1, 2 and 3

Adult-led learning

Give each child a five frame and 3 cubes or counters.

Clap twice.

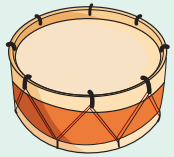
Ask children to show the number of claps on their five frame.

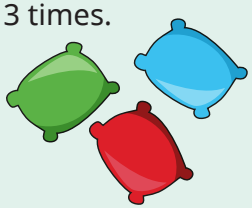


Then, get children to come up to the front and represent either 1, 2 or 3 using sounds or actions for others to show on their five frame.

Have a pile of beanbags.

Beat a drum either 1, 2 or 3 times.





Children listen carefully and count out 1, 2 or 3 beanbags from a larger group to match the number of beats.

Encourage the children to help you prepare for Baby Bear's 3rd birthday.

How many cups, bowls and spoons are needed so that Mummy, Daddy and Baby Bear all have one each?

How many candles are needed on the cake?

Does it matter which object we start counting from?

Place 1, 2 or 3 items into a feely bag.

Ask children to feel inside the bag and try to count how many there are without looking.

Count the items out to check.

Encourage children to have a go themselves and ask each other to count how many, changing the amounts placed in the bag each time.

1 more

Notes and guidance

In this small step, children are introduced to the concept of 1 more, still working only with the numbers 1, 2 and 3. They begin to understand that as they count, each number they say is 1 more than the previous number. Children should notice how numbers and amounts increase in value when 1 more is added.

They should recognise that the order of the numbers when counting does not change. This is the stable order principle. Use a range of representations to support this understanding including stories, songs and rhymes that include finding 1 more. Encourage children to represent the 1 more pattern as they count and use manipulatives such as cubes to show this. Support children to notice the 1 more pattern and make comparisons as they play in provision.

Rhymes

- *One Elephant Went Out to Play*

Books

- *The Gingerbread Man*

Key questions

- How many?
- How many now?
- What is 1 more than _____ ?
- What is the number after _____ ?

Possible sentence stems

- There are _____
- There are _____ altogether.
- _____ is 1 more than _____

Links to the curriculum

- *Development Matters* – Reception – Understand the 'one more than/one less than' relationship between consecutive numbers.
- *Birth to 5 Matters* – Range 5 – Beginning to recognise that each counting number is one more than the one before.

1 more

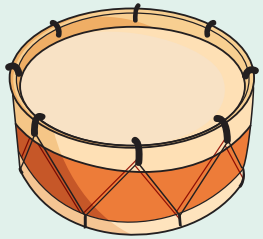
Adult-led learning

After reading the story *The Gingerbread Man*, support children to build the 1 more pattern by bringing in each character using images or the children themselves as characters, to introduce 1 more each time.

Extend this by building the pattern with cubes, adding 1 cube for each character.

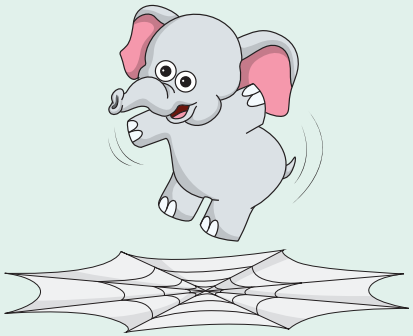
Drum with the children and get them to copy your beats.

Once children can copy, ask them to do 1 more beat than you with 1, 2 or 3 beats.



Model the rhyme *One Elephant Went Out to Play* with the children.

Use children and props at the front of the class to emphasise the 1 more pattern and the amount increasing.



Children can then build towers with cubes to represent the elephants.

What happens to the tower when we get to 3?

Play *What's the Time Mr Wolf?* to 3

Mr Wolf says '1 more than' 1, 2 or 3

Children then have to walk 1 more step than the number given.

1 less

Notes and guidance

In this small step, children are introduced to the concept of 1 less, still only working with the numbers 1, 2 and 3. Children begin to understand that as we count back, each number is 1 less than the number before. Children should notice that when they find 1 less, the numbers and amounts reduce because they are taking 1 away. They should recognise that the order of the numbers when counting does not change. This is the stable order principle. Use a range of representations including stories, songs and rhymes that include finding 1 less. Encourage children to represent the 1 less pattern as they count and use manipulatives such as cubes to show this. Support children to notice the 1 less pattern and make comparisons as they play in provision.

Rhymes

- *Three Little Speckled Frogs*

Books

- *A Squash and a Squeeze* by Julia Donaldson

Key questions

- How many?
- How many now?
- What is 1 less than _____ ?
- What is the number before _____ ?

Possible sentence stems

- There are _____
- There are _____ altogether.
- _____ is 1 less than _____

Links to the curriculum

- *Development Matters* – Reception – Understand the 'one more than/one less than' relationship between consecutive numbers.
- *Birth to 5 Matters* – Range 5 – Positive relationships – Emphasise the *one more, one less* pattern in rhymes and traditional tales, asking children to predict the next number.

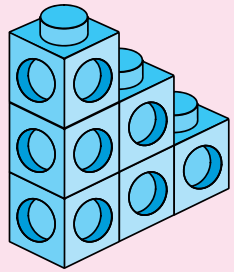
1 less

Adult-led learning

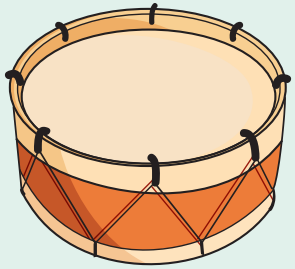
Use 1 less pattern stories to model the pattern of 1 less.

Enact the story with the children removing one character at a time.

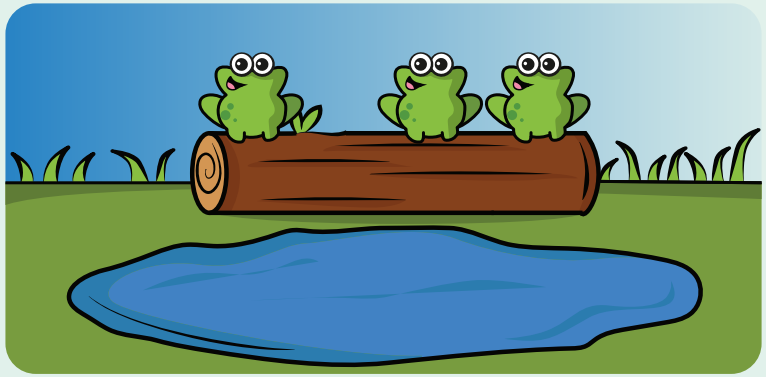
Extend this by building the pattern with cubes and then removing a cube for each character that leaves.



Drum with the children and get them to copy your beats. Once children can copy, ask them to do 1 less beat than you with 1, 2 or 3 beats.



Model the rhyme *Three Little Speckled Frogs* with the children. Use both children and props at the front of the class to emphasise the 1 less pattern and the amount decreasing. Children can then build towers with cubes to represent the frogs and when they are jumping into the pool.



Task the children with dropping pebbles into a bucket or into a cup. Encourage them to count the sounds. Ask them to predict how many pebbles there would be if you took one out. Count together to check. This can also be used for reinforcing 1 more.

Composition of 1, 2 and 3

Notes and guidance

In this small step, children are introduced to the idea that all numbers are made up of smaller numbers, and these are referred to as the parts of the number. Learning to see a whole number and its parts at the same time is a key development in children's number understanding.

Give children practical opportunities to explore a range of ways to partition a whole number, so they can find different parts which make the same whole. Then show children how to explore the different ways that numbers can be partitioned into more than two parts. For example, 3 can be composed of 1 and 1 and 1

Although the focus of this step is on numbers to 3, children may choose to notice and explore the composition of greater numbers in their play.

Rhymes

- *Three Little Ducks*

Books

- *The Three Billy Goats Gruff*

Key questions

- How many different ways can you make 1/2/3?
- How can you show 2/3 in a different way?
- How many did you count? How do you know?
- What number have I made?

  Can you make the same number in a different way?

Possible sentence stems

- I can see _____ is made up of _____ and _____
- I can see _____ is made up of _____, _____ and _____
- There is _____ here and _____ there so there must be _____ altogether.

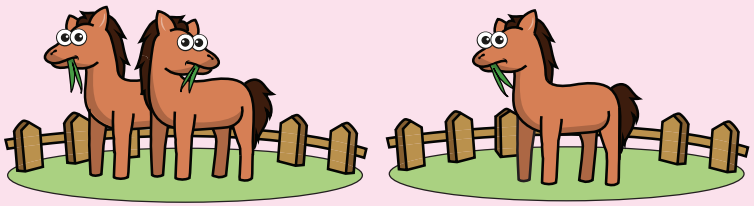
Links to the curriculum

- *Development Matters* – Reception – Explore the composition of numbers to 10
- *Birth to 5 Matters* – Range 5 – Separates a group of three or four objects in different ways, beginning to recognise that the total is the same.

Composition of 1, 2 and 3

Adult-led learning

Set up a small world scene with 2 fields or pens.



Ask children how many animals could go in each field.

Can they find different ways to do this?

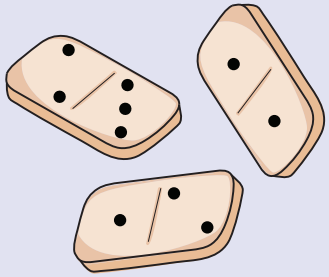
This could also be linked to the story *The Three Billy Goats Gruff*.

Provide a set of dominoes.

Ask children to find all the dominoes with 1, 2 or 3 spots.

Are they all the same?

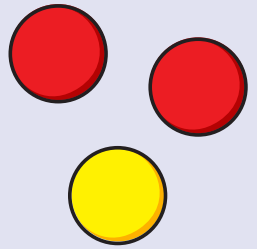
How many dominoes can they find with 1, 2 or 3 spots on one side?



Ask children to count out 3 double-sided counters, shake them in their hand and drop them down.

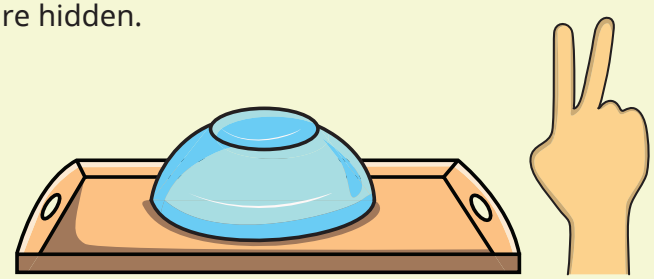
How many are red? How many are yellow?

Can they get all red or all yellow?



With children, count out 1, 2 or 3 items and hide them.

Ask children to use their fingers to show how many are hidden.



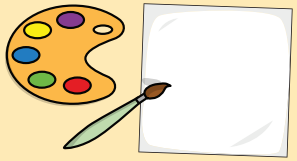
Ask children to watch as you add 1 more item to the hidden group.

How many are hidden now? What if you take one out?

Continuous provision

Support children to make their own representation cards.

Provide them with a piece of paper and allow them to paint, draw or use collage materials to represent the numbers 1, 2 and 3

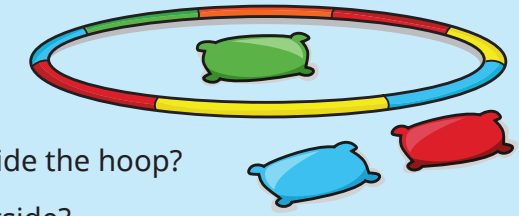


Children can create their own dots, dice patterns, or create a picture of something that interests them.

These can then be used to play games such as 'Snap'.

Place a hoop on the ground.

Ask the children to collect 3 beanbags and to take turns to throw them into the hoop.



How many land inside the hoop?

How many land outside?

Provide an easel or clipboard so that they can record their own scores.

Make dough. Use a recipe that involves measuring using 1, 2 or 3 cups.

Ask children to measure out the ingredients and count the cups.

2 cups of plain flour

1 cup of salt

2 cups of water

2 tablespoons of oil

1 teaspoon of cream of tartar

3 drops of food colouring

Provide a collection of various loose parts or natural objects and some small pots labelled 1, 2 and 3 for children to fill.

Include some unlabelled pots and encourage children to make their own labels to show how many they put inside.

End of block checkpoint

Checkpoint 1

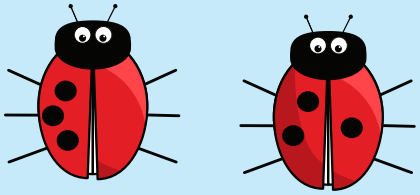
Set up a tuff tray with an assortment of wood, autumn leaves and seeds.

Hide several ladybirds with 1, 2 or 3 spots.

How many spots does the ladybird have?

Do all the ladybirds with 3 spots look the same?

Can you find a ladybird with 1 less or 1 more spot than mine?



Checkpoint 2

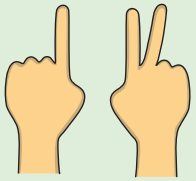
Play 'Bunny Ears'.

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?



Checkpoint 3

Set up a small world bridge and 2 fields.

Each player builds a 1, 2 and 3 tower to represent the 3 goats.

Roll a 1–3 dice and move the corresponding tower over the bridge.

The winner is the first player to move all 3 'goats' over the bridge.

Encourage the children to notice how many goats are on each side of the bridge as they play.

Autumn Block 4

Circles and triangles

White Rose MATHS

Teacher guidance

Key books

- *Circle, Triangle, Elephant! A Book of Shapes and Surprises* by Kenji Oikawa and Mayuko Takeuchi
- *Triangle* by Mac Barnett and Jon Klassen
- *Shapes, Shapes, Shapes* by Tana Hoban
- *We're Going on a Bear Hunt* by Michael Rosen
- *Rosie's Walk* by Pat Hutchins

Key resources

Top tips

- Parents and children can be encouraged to bring in loose parts, such as bottle tops and lids, to support activities and learning in this block. What different sizes can they find? These can be used as discussion points as you make a collection together.
- Ensure that the resources used for exploring shapes are of varied sizes and shown in different orientations.
- Having a tablet available next to the maths area will encourage children to take photographs of their own shape arrangements and show adults and other children what they have created.

Small steps

Step 1	Identify and name circles and triangles
Step 2	Compare circles and triangles
Step 3	Shapes in the environment
Step 4	Describe position

Identify and name circles and triangles

Notes and guidance

In this small step, children notice circles and triangles all around them and begin to describe their properties. Children may use informal language such as 'pointy' or 'sharp' to describe what they notice. They should also be introduced to mathematical language for describing the properties of circles and triangles, such as 'sides', 'straight', 'corners' and 'round'.

Children learn that triangles are flat shapes with three straight sides and three corners, and that circles are flat shapes which are perfectly round. When using physical representations of 2-D shapes, ensure that they are as thin as possible to support children's understanding about them being flat.

Rhymes

- *My Hat, It Has Three Corners*

Books

- *Circle, Triangle, Elephant! A Book of Shapes and Surprises* by Kenji Oikawa and Mayuko Takeuchi

Key questions

- What do you notice about your shape?
- Can you see another shape that is the same/different?
- How do you know they are the same/different?

Possible sentence stems

- This shape is a _____.
- I know this shape is a _____ because…
- This shape is the same/different because…

Links to the curriculum

- *Development Matters* – 3 and 4-year-olds – Talk about and explore 2D and 3D shapes (for example, circles, rectangles, triangles and cuboids) using informal and mathematical language.
- *Birth to 5 Matters* – Range 6 – Uses informal language and analogies, (*e.g. heart-shaped and hand-shaped leaves*), as well as mathematical terms to describe shapes.

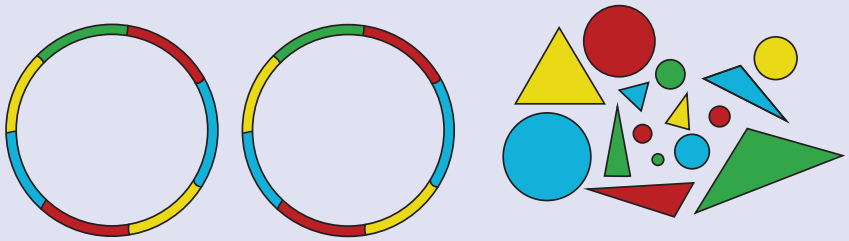
Identify and name circles and triangles

Adult-led learning

Show children a selection of circular and triangular shapes.

What do they notice about the shapes?

Can they sort them into two groups?



What is the same and what is different about the shapes in each group?

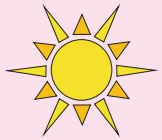
Display works of art featuring circles and triangles, such as Kandinsky's *Circles in a Circle* and *Stained in Triangle*.

Encourage children to use mathematical language to describe the shapes that they find.

In small groups, support children to create their own art in a similar style.

Explore shape pictures with circles and triangles.

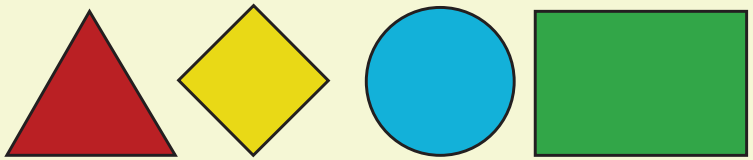
How many circles can children see?
How many triangles can they see?



Prompt children to describe how they know that they have found a circle or a triangle.

Together, make a class shape picture using circles and triangles.

Have a feely bag with a range of circular and triangular shapes inside. You could include other shapes too.



Show children either a circle or a triangle.

Without peeking inside the bag, ask children to find a shape that is the same as yours. Before they pull out a shape, prompt them to explain how they know that it is the same as yours.

Compare circles and triangles

Notes and guidance

In this small step, children use what they have learned about the properties of circles and triangles to support them to compare shapes. Children also draw on learning from earlier blocks to use the language of size when comparing shapes.

It is important that children are shown circles of different sizes, and different types of triangles that vary in size and orientation. Support children to talk about the properties of the shapes and to explain how they know it is the same shape, even if the orientation or the size is different.

Within this step, introduce children to non-examples or 'almost' circles and 'almost' triangles. Examples of 'almost' circles would be a biscuit or a pancake, while examples of 'almost' triangles would be a slice of pizza, a musical instrument triangle and a cheese triangle with rounded corners. Support children to explain why they are not circles and triangles.

Books

- *Triangle* by Mac Barnett and Jon Klassen

Key questions

- Can you find a shape that is the same as mine?
- Can you find a different shape to mine?
- How have you sorted the shapes? Is there another way?

Possible sentence stems

- This shape is the same/different because…
- I know this shape is a _____ because…
- These shapes have been sorted by _____.

Links to the curriculum

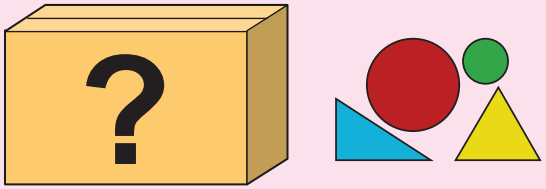
- *Development Matters* – 3 and 4-year-olds – Talk about and explore 2D and 3D shapes (for example, circles, rectangles, triangles and cuboids) using informal and mathematical language.
- *Birth to 5 Matters* – Range 6 – Uses informal language and analogies, (*e.g. heart-shaped and hand-shaped leaves*), as well as mathematical terms to describe shapes.

Compare circles and triangles

Adult-led learning

Have a mystery box with lots of circles and triangles inside.

Ensure that the shapes are of different sizes and represent different types of triangles.



Ask children to select a shape from the box and talk about what they notice.

Explore how shapes can be sorted by size and type.

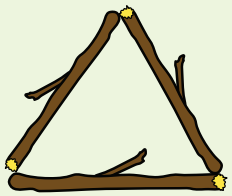
Explore circles and triangles on a tuff tray.

Ensure that the shapes have different sizes and orientations and that there are different types of triangles.

Select a shape and ask children what they notice.

Prompt children to find another shape that is the same as yours or a shape that is different to yours.

Use planks, sticks or ropes to create large 'almost' triangles.

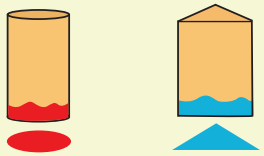


How many of each object will they need?

How could they make a larger triangle?

What is the same or different about the triangles they have made?

Ask children to print with the flat faces of 3-D shapes. Children could print using paint or they could explore pressing the 3-D shapes into dough to see what shape it makes.



Encourage children to predict which 3-D shapes will print a triangle.

Which will print a circle?

Shapes in the environment

Notes and guidance

In this small step, children build on the learning from the two previous steps and progress onto noticing shapes in the environment.

Provide different opportunities for children to notice circles and triangles in the classroom, outside and on walks around the local area.

Children could also hunt for shapes at home and share photographs of what they find.

Encourage children to talk about the properties of the shapes they can see and to compare the shapes. For example, "This shape has straight sides but that shape is round".

As there are examples of 'almost' circles and triangles in the environment, such as the 'almost' circle of the top of a tree trunk, it is important to support children to talk about why these are not quite circles or triangles.

Books

- *Shapes, Shapes, Shapes* by Tana Hoban

Key questions

- How do you know it is a circle/triangle?
- Where can you see small shapes?
- Where can you see large shapes?

Possible sentence stems

- I can see a _____.
- This shape is the same/different because…
- I know this shape is/is not a _____ because…

Links to the curriculum

- *Development Matters* – 3 and 4-year-olds – Talk about and explore 2D and 3D shapes (for example, circles, rectangles, triangles and cuboids) using informal and mathematical language.
- *Birth to 5 Matters* – Range 6 – Uses informal language and analogies, (*e.g. heart-shaped and hand-shaped leaves*), as well as mathematical terms to describe shapes.

Shapes in the environment

Adult-led learning

As a class, look at different photographs of shapes in the environment.

What shapes can children see?

How many circles can they see?

How many triangles can they see?

Where can they see large/small shapes?

Go on a walk around the local environment and hunt for shapes.

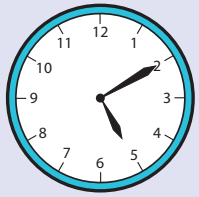
How many circles can children find?

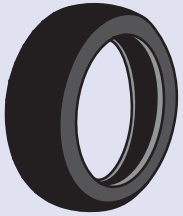
How many triangles can they find?

Children could take photographs of the shapes they see on the walk and these could be used to make a shape display when you get back to school.

Go on a shape hunt around school.

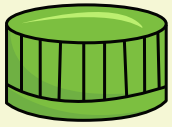
Prompt children to notice circles and triangles on the surface of everyday objects.

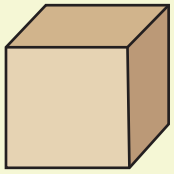




On your shape hunt, children could use both informal and mathematical language to talk about what they notice.

Provide children with a range of items, such as bottle tops, jam jar lids, beads and cubes.





Ask children to press the items into dough.

Which items print circles or 'almost' circles in the dough and which do not?

To add even more challenge, ask children to find objects that will print a triangle or 'almost' triangle into the dough.

Describe position

Notes and guidance

In this small step, children hear and begin to use positional language such as 'in', 'on', 'under', 'over', 'beside', 'between', 'in front of', 'around', 'through' and 'behind' to describe how items are positioned in relation to other items. Model using these words in play.

Story time is a great opportunity to focus on positional language and journeys. While reading stories, use gestures to emphasise what the vocabulary means. Once children are familiar with these stories, they can be used as hooks into activities about position.

Encourage children to use positional language on a larger scale outside, building large-scale models of stories and journeys. Children could take photographs of each other in different places outside and the class could then describe where they are standing.

Books

- *We're Going on a Bear Hunt* by Michael Rosen
- *Rosie's Walk* by Pat Hutchins

Key questions

- Where is the _____?
- How are you going to move around the _____?
- Where are you going to go next?

Possible sentence stems

- The _____ is _____ the _____.
- Go _____ the _____.
- Next, go _____ the _____.

Links to the curriculum

- *Development Matters* – 3 and 4-year-olds
  - Describe a familiar route.
  - Discuss routes and locations, using words like 'in front of' and 'behind'.
- *Birth to 5 Matters* – Range 5 – Responds to and uses language of position and direction.

Describe position

Adult-led learning

Play 'Where's my teddy?' with the class.

Hide a teddy in different positions around the classroom or outside.

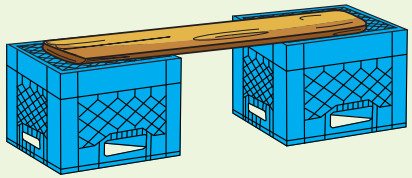
Encourage children to hunt for the teddy and to use positional language to describe where they find it.

Many stories, such as *We're Going on a Bear Hunt* by Michael Rosen and *Rosie's Walk* by Pat Hutchins, focus on positional language and journeys.

Read one of these stories with children, using gestures as you read to emphasise the positional language.

Provide children with resources to build the scenes from the story in the small world area or on a large scale outside. Prompt them to recreate the journey that the characters go on.

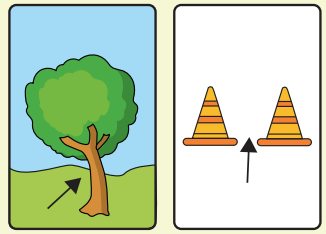
Set up an obstacle course around the outdoor area.



Children work in pairs, where one child gives directions to their partner as the other child moves around the course. Prompt them to give instructions such as "Go over the bridge", or "Go through the tunnel".

Design a treasure hunt for children in the outdoor area with a series of pictorial clues.

Give children their first clue and prompt them to go to the place in the picture, for example, between the cones or behind the tree, to look for their next clue.

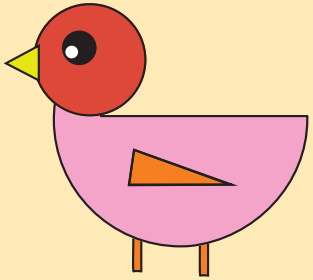


Encourage children to use positional language to tell you where they need to go.

Continuous provision

Show children a collection of shape pictures and ask them to make their own.

Give children shapes to make a collage or provide them with shapes to draw around and cut out.



Prompt them to talk about why they are using those shapes for the different parts of their picture.

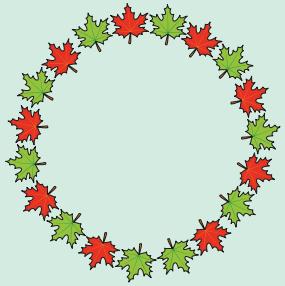
In the small world area, set up a scene of a journey that is familiar to children. This could be a journey from a story, or their journey to school.

Prompt children to move small world characters around and to use positional language to retell the story or to describe the journey.

Children could then have a go at creating their own small world journey.

Display photographs of art where the artist has used natural materials to create shape artwork.

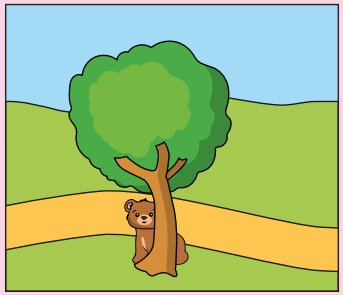
Provide children with a range of loose parts for them to use to make their own circle shape artwork.



Children could also make triangle artwork in the same style.

Set up a bear hunt outside.

Give children verbal instructions about where they need to go to find the bear. Include a variety of positional language in your instructions.



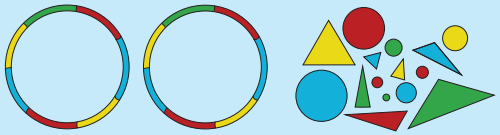
Challenge children to play this game together.

End of block checkpoint

Checkpoint 1

Hide different-sized circles and triangles around the classroom and outdoor area.

Place two hoops on the carpet.



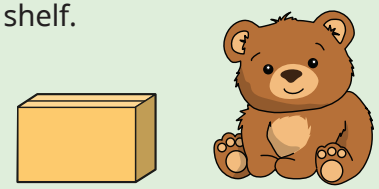
Can children identify the triangles and circles and sort the shapes by placing them into the hoops?

Are they able to explain why they have placed each shape in the chosen hoop?

Checkpoint 2

Place a toy, such as a bear, on top of your head. Where is the bear?

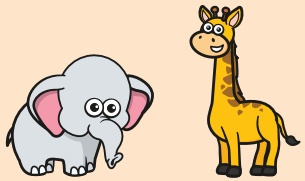
Position the bear in different areas of the classroom, for example, under the chair, next to the box and on the shelf.



Are children able to identify where the bear is positioned in relation to other objects?

Checkpoint 3

Set up a small world area related to children's interests. While playing, check that children are able to follow and use the language related to position, for example, "The cow is walking around the pond", or "The elephant is standing next to the giraffe".



Give children different instructions to follow, and encourage them to give you instructions.

Autumn Block 5

1, 2, 3, 4, 5

White Rose MATHS

Teacher guidance

Key books

- *Witches Four* by Marc Brown
- *Five Little Fiends* by Sarah Dyer
- *Pete the Cat and his Four Groovy Buttons* by Eric Litwin
- *Kipper's Birthday* by Mick Inkpen
- *The Very Hungry Caterpillar* by Eric Carle
- *Stella to Earth!* by Simon Puttock and Philip Hopman
- *Anno's Counting Book* by Mitsumasa Anno

Top tips

- Having a rhyme area in the classroom enables children to practise their skills with all aspects of this block. It will also help to embed the counting principles. Children love to act out rhymes, especially if given props to do so.
- Collections of five characters, such as frogs, elephants and bears, as toys (or as a laminated printable) are resources that can be reused year after year.
- Birthdays are a great way of supporting children's knowledge of the numbers to 5 as many children turn 5 in Reception year.

Key resources

Small steps

Step 1	Find 4 and 5
Step 2	Subitise 4 and 5
Step 3	Represent 4 and 5
Step 4	1 more
Step 5	1 less
Step 6	Composition of 4 and 5
Step 7	Composition of 1–5

Find 4 and 5

Notes and guidance

In this small step, children will explore finding different representations of 4 and 5. Ensure that children can confidently say the number names 'one' to 'five'. Once they can do this, encourage them to match the verbal number names to numerals and quantities.

Throughout this small step, support children with the counting principles. Encourage them to count 4 and 5 objects by touching each object as they count to support one-to-one correspondence. Support children to recognise that the final number they say tells them the total number of objects in the set, to develop their understanding of cardinality.

Share stories and pictures which show 4 and 5 and count the groups. Encourage children to find objects in provision and notice 4 and 5 in the environment. A number hunt around the school or outdoor area is a great activity to support this.

Books

- *Witches Four* by Marc Brown
- *Five Little Fiends* by Sarah Dyer

Key questions

- How many are there altogether?
- How many did you count?
- How many different ways can you find 4/5?
- Where can you see 4/5?

Possible sentence stems

- I counted _____
- There are 4/5 _____.
- There are _____ altogether.
- I can see...

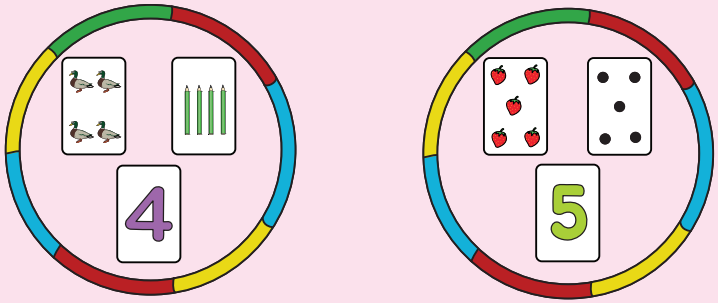
Links to the curriculum

- *Development Matters* – Reception – Link the number symbol (numeral) with its cardinal number value.
- *Birth to 5 Matters* – Range 5 – Points or touches (tags) each item, saying one number for each item, using the stable order of 1, 2, 3, 4, 5.

Find 4 and 5

Adult-led learning

Provide children with a range of picture cards showing different representations of 4 and 5 and two hoops.



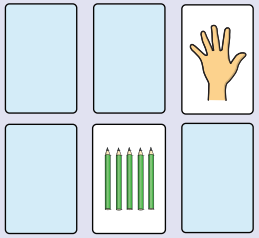
Prompt children to sort the cards and place them in the correct hoop.

Place six picture cards showing 4 or 5 items face-down on the table. Children take turns to turn over two cards each.

If the two cards show the same quantity, they can keep the cards. Otherwise, they turn the cards face-down again.

The winner is the child with the most cards when all the cards have been taken.

Once children know the rules, leave out resources for them to lead their own game.

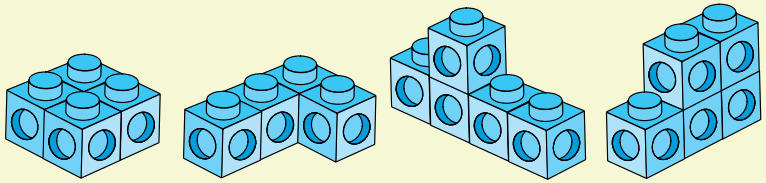


Read stories and show children the illustrations from books such as *Witches Four* by Marc Brown and *Five Little Fiends* by Sarah Dyer.

Children look at the pictures and identify where they can see the different representations of 4 and 5

Children then create their own collections to represent 4 and 5

Join 4 or 5 multilink cubes together in different ways. Place them in a feely bag.



Ask children to find a 4-cube shape without looking.

How do they know whether it has 4 or 5 cubes?

Subitise 4 and 5

Notes and guidance

In this small step, children continue to develop the skill of perceptual subitising. This form of subitising refers to instantly recognising the number of objects or items in a group without needing to count them.

Encourage children to subitise groups of 4 and 5 items. This will allow them to develop an understanding of what each number looks like, and what it is made up of.

Use images and stories that include groups of 4 and 5 characters or objects and point out the groups. Talk about what children see and how they see it. Simple geometric shapes that are all the same size and the same colour, such as dots, are the easiest for children to subitise. Simple activities and games using dot patterns are ideal. It is important that children see these in different arrangements, so that they do not think that 4 is always in a square as it is on a dice, for example.

Key questions

- How many can you see?

  How do you know?
- How many are there in each group?
- What can you show me?
- What can you see?

Possible sentence stems

- There are _____ dots altogether.
- There are 4/5 _____.
- I can see _____ without counting.
- I can subitise _____

Books

- *Pete the Cat and his Four Groovy Buttons* by Eric Litwin

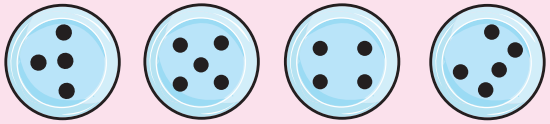
Links to the curriculum

- *Development Matters* – Reception – Subitise.
- *Birth to 5 Matters* – Range 6 – Engages in subitising numbers to four and maybe five.

Subitise 4 and 5

Adult-led learning

Hold up dot plates that show 4 and 5 in different arrangements. Ask children how many dots they see. Children show the correct number of fingers to match the dots.



Give children a dot plate each and encourage them to find someone with the same arrangement as them.

Share stories such as *Pete the Cat and his Four Groovy Buttons* by Eric Litwin with children. Encourage them to subitise and notice where they see 4 without having to count.

Show them a five frame with 4 or 5 buttons. Prompt them to copy it and explain how they know it is 4 or 5

Arrange the numerals 1–5 on cards around the outdoor area.

Give each child a swatter.

Hide a quantity of up to 5 bean bags under a bucket and then reveal.

Encourage children to subitise how many bean bags they can see and run to swat the correct number card.

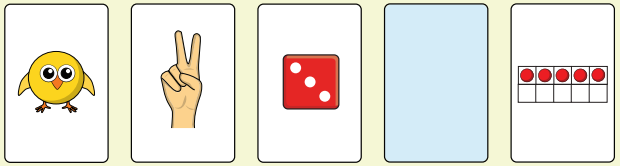
Provide children with picture cards from 1 to 5

Ask children to put the cards in order from 1 to 5

Prompt the group to close their eyes or turn away.

Turn over one of the cards to hide it.

Children look at the picture cards and identify which card is missing.



Represent 4 and 5

Notes and guidance

In this small step, children build on their learning from the earlier steps as they create their own representations of 4 and 5 using different objects. Provide opportunities for children to match their different representations to numerals.

Encourage children to count and subitise as a way of checking their representations. When counting, support children with the counting principles such as one-to-one correspondence, stable order and the cardinal principle.

Prompt children to represent up to 5 objects on a five frame. Support them to understand that if the frame has 1 empty space, there are 4 objects. If the frame is full, there are 5 objects. This is a good opportunity to link to children's birthdays, as they may be turning 5 years old soon.

Rhymes

- *1, 2, 3, 4, 5, Once I Caught a Fish Alive*

Books

- *Kipper's Birthday* by Mick Inkpen

Key questions

- How many are there? How many are there now?
- How many different ways can you show 4/5?
- How many did you count? How do you know?
- How many are there altogether?

Possible sentence stems

- There are 4/5 _____.
- I know there are _____ because...
- There are _____ altogether.
- I counted _____

Links to the curriculum

- *Development Matters* – Reception – Count objects, actions and sounds. Link the number symbol (numeral) with its cardinal number value.
- *Birth to 5 Matters* – Range 5 – Links numerals with amounts up to 5 and maybe beyond.

Represent 4 and 5

Adult-led learning

Provide children with interesting objects to count, such as shells. Ask children to count out 4 or 5 items and arrange them on the floor in front of them.

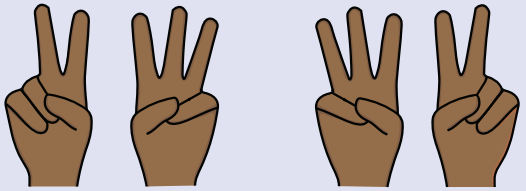
How many are there altogether? Does your group of 4 look the same as mine?

Encourage children to arrange their objects in a different pattern.

Prompt children to count to 5 on their fingers and count back from 5

Encourage children to show 4 or 5 using their fingers.
Is there more than one way?

Is it possible to show 4 or 5 using two hands rather than just one?



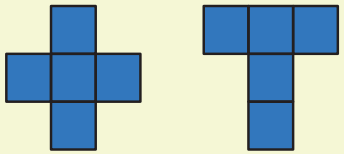
Make cakes out of dough and prompt children to place the correct number of candles in the cake for Kipper's birthday.

Have some birthday cards showing ages from 1 to 5, muddled up.

Encourage children to make cakes with the correct number of candles to match each birthday card.

Provide children with 4 or 5 square tiles.

Prompt them to place the tiles together to make different shapes.



How many different shapes can they make?

1 more

Notes and guidance

In this small step, children are introduced to the concept of 1 more, working with numbers up to 5

They begin to understand that as they count forwards, each number they say is 1 more than the previous number. Children notice how numbers increase in size when 1 more is added.

Prompt children to recognise that the order of the numbers when counting does not change. This is the stable order principle. Use a range of representations to support this understanding, including stories, songs and rhymes that include finding 1 more. Encourage children to represent the '1 more' pattern as they count, using manipulatives such as cubes to model this.

Rhymes

- *One Man Went to Mow*

Books

- *The Very Hungry Caterpillar* by Eric Carle

Key questions

- How many are there?
- How many are there now?
- What is 1 more than _____?
- What is the number after _____?

Possible sentence stems

- There are _____
- There are _____ altogether.
- _____ is 1 more than _____
- 1 more than _____ is _____

Links to the curriculum

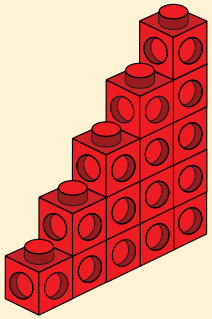
- *Development Matters* – Reception – Understand the 'one more than/one less than' relationship between consecutive numbers.
- *Birth to 5 Matters* – Range 5 – Beginning to recognise that each counting number is one more than the one before.

1 more

Adult-led learning

Read the story *The Very Hungry Caterpillar* by Eric Carle. Prompt children to notice that each day he eats 1 more item.

Encourage children to use cubes to represent the food he ate over the week and notice the '1 more' pattern.



Provide children with their own blank book with 5 pages. Children represent the '1 more' pattern by drawing their favourite food items.

Provide children with five frames, 1–5 number tracks and objects to count with.

Give children a number to make on their five frame.

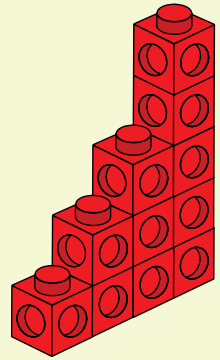
Prompt children to point to the number they have made on the number track. Encourage them to show 1 more. How many are there now?

Create a 'bus route' around the outdoor area with chalk and have different bus stops around the route.

Ask one child to stand at each stop. When the bus stops, one more child gets on the bus.

Encourage children to say how many are on the bus altogether and prompt them to see that there is '1 more' each time.

In the construction area, encourage children to build their own staircase towers. How many blocks have they used for each step?



Ask children to close their eyes and then take one of the towers away. Are they able to identify which tower is missing using the language 'one more'?

Children may also use the language 'one less'.

1 less

Notes and guidance

In this small step, children are introduced to the concept of 1 less, with the numbers up to 5

Children begin to understand that as we count back, each number is 1 less than the number before. Children should notice that the numbers get smaller because they are taking 1 away. They should recognise that the order of the numbers when counting does not change. This is the stable order principle.

Use stories, songs and rhymes that include finding 1 less. Encourage children to represent the '1 less' pattern as they count and use manipulatives such as cubes to show this. Support children to notice the '1 less' pattern as they play in provision.

Rhymes

- *Five Currant Buns*
- *Five Little Men in a Flying Saucer*

Books

- *Stella to Earth!* by Simon Puttock and Philip Hopman

Key questions

- How many are there?
- How many are there now?
- What is 1 less than _____?
- What is the number before _____?

Possible sentence stems

- There are _____
- There are _____ altogether.
- _____ is 1 less than _____
- 1 less than _____ is _____

Links to the curriculum

- *Development Matters* – Reception – Understand the 'one more than/one less than' relationship between consecutive numbers.
- *Birth to 5 Matters* – Range 5 – Positive relationships – Emphasise the *one more, one less* pattern in rhymes and traditional tales, asking children to predict the next number.

1 less

Adult-led learning

Sing and act out the rhyme *Five Currant Buns* together as a class.

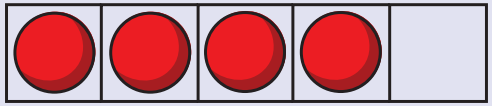
Pick 5 children to come and buy the buns. They give a 1 pence coin to the baker as they take the bun.

Stop at regular intervals to encourage children to notice that, as a bun is taken away, there is 1 less each time.

Model by using a five frame and counters. Start with 5 counters and remove 1 each time a bun is taken.

Model the rhyme *Five Little Men in a Flying Saucer* with children. Provide props for them to use to help them notice the '1 less' pattern.

Support children to build towers or use a five frame so they can see the amount decreasing.

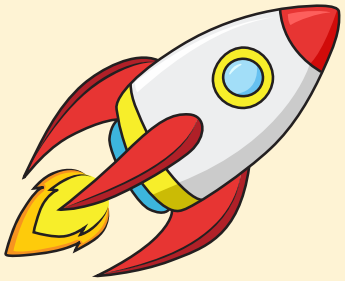


Encourage them to independently act out the rhyme.

After reading books such as *Stella to Earth!* by Simon Puttock and Philip Hopman, prompt children to pretend to be rockets and count backwards.

Encourage children to use their fingers as they count back to support them.

"5, 4, 3, 2, 1, blast off!"



With children, count 4 items into a bag.

Ask them to confirm how many there are in the bag.

Put 1 cube in or take 1 out.
How many are in the bag now?

Once children are confident in predicting 1 more and 1 less, this can be extended to 2 more or 2 less.

Encourage children to use their fingers or five frames to represent the hidden objects.

Composition of 4 and 5

Notes and guidance

In this small step, children are introduced to the idea that all numbers are made up of smaller numbers and that these are referred to as *parts*. Learning to see a whole number and its parts at the same time is a key development in children's number sense.

At this stage, give children practical opportunities to explore a range of ways to partition a whole number into two parts. Prompt them to find different ways, for example, 4 can be composed of 2 and 2 or 3 and 1

Although the focus of this step is on numbers to 5, children may choose to notice and explore the composition of greater numbers in their play.

Rhymes

- *Five Little Speckled Frogs*

Books

- *Anno's Counting Book* by Mitsumasa Anno

Key questions

- How many ways can you make 4/5?
- How can you show 4/5 in a different way?
- What parts can you see?
- What is the whole?

Possible sentence stems

- _____ is a part and _____ is a part.
- If _____ is a part, then the other part must be _____
- _____ is a part of _____
- The whole is _____

Links to the curriculum

- *Development Matters* – Reception – Explore the composition of numbers to 10.
- *Birth to 5 Matters* – Range 6 – Shows awareness that numbers are made up (composed) of smaller numbers, exploring partitioning in different ways with a wide range of objects.

Composition of 4 and 5

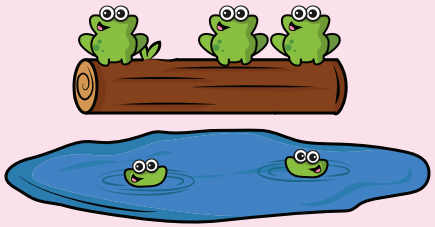
Adult-led learning

Act out the rhyme *Five Little Speckled Frogs* using props. Encourage children to talk about the parts that they can see each time.

How many frogs are on the log?

How many frogs are in the pool?

What is the whole?

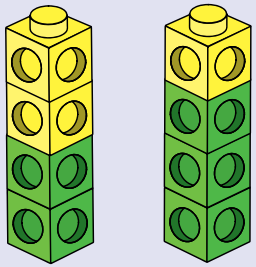


Use a five frame and double-sided counters to represent the frogs on the log in one colour and the frogs in the pool using the other colour.

Provide cubes in two different colours.

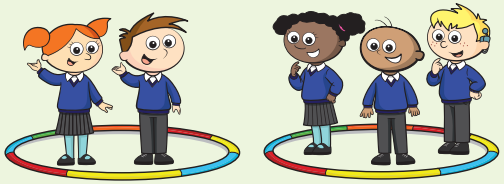
Ask children to build different towers of 4 or 5 using both colours.

Encourage children to compare the towers and talk about the parts that they can see.



Put children into groups of 4 or 5 and provide them with two hoops, labelled 'yes' and 'no'.

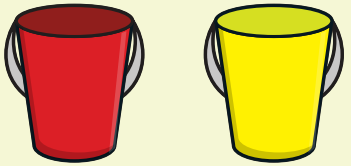
Ask children questions, for example, "Do you like apples?" Prompt children to move into the 'yes' or 'no' hoop.



How many children are in each hoop?

Hide 4 or 5 pebbles between two buckets.

Tell children how many pebbles there are altogether.



Prompt them to explore different possibilities of how many pebbles could be in each bucket.

How many different ways can they find?

To extend this, you could use three buckets.

Composition of 1–5

Notes and guidance

In this small step, children build on the learning from the previous step and progress onto exploring the composition of numbers 1 to 5

Children consolidate their understanding of numbers being made up of smaller numbers, and confidently talk about the parts they can see. They understand that these smaller numbers can be combined to make the whole.

Give children practical opportunities to partition numbers into two parts, in a range of contexts. Encourage children to find different ways to partition the same number.

Prompt children to represent the parts they see using concrete manipulatives or through mark-making.

Rhymes

- *Five Little Teddy Bears*

Books

- *Anno's Counting Book* by Mitsumasa Anno

Key questions

- How many ways can you make...?
- How can you show the same number in a different way?
- What parts can you see?
- What is the whole?

Possible sentence stems

- _____ is a part and _____ is a part.
- If _____ is a part, then the other part must be _____
- _____ is a part of _____
- The whole is _____

Links to the curriculum

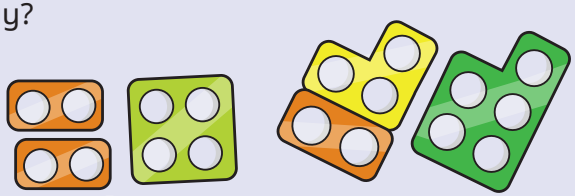
- *Development Matters* – Reception – Explore the composition of numbers to 10.
- *Birth to 5 Matters* – Range 6 – Shows awareness that numbers are made up (composed) of smaller numbers, exploring partitioning in different ways with a wide range of objects.

Composition of 1–5

Adult-led learning

Give children a range of number shapes representing 1 to 5

Encourage them to investigate combining two smaller numbers to make a whole. Children could check by sitting the two parts on top of the whole number. Is there another way?

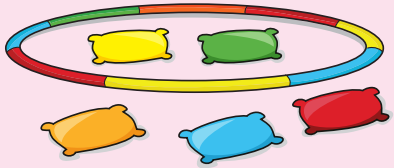


Explore pages representing 1 to 5 in texts such as *Anno's Counting Book* by Mitsumasa Anno. Prompt children to talk about the parts that they see on each page.

For example, when exploring 5, we can see 2 children on one page and 3 children on the other page.

Provide children with five beanbags and one hoop.

Ask children to select some of the beanbags: this number is the whole. Throw them towards the hoop. Encourage children to talk about the parts they can see.



How many beanbags land inside the hoop?
How many land outside?

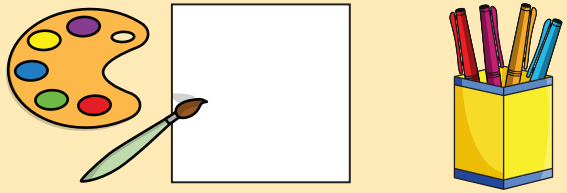
Act out the rhyme *Five Little Teddy Bears*.

Ask children to close their eyes while you hide some of the teddy bears under a blanket.

Prompt them to work out how many teddy bears are hidden. Provide children with manipulatives or encourage them to mark-make to help them explain how they know.

Continuous provision

Provide a range of collage and mark-making materials.



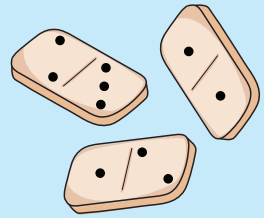
Prompt children to make their own picture cards for the numbers 4 and 5

Children can link these to their own interests.

Provide children with a large blank domino template. Children select a number card from 1 to 5

Prompt them to print the corresponding number of dots onto their domino using a dabber or sponge.

Encourage children to talk about how many dots they will put on each side of the domino to make the total.



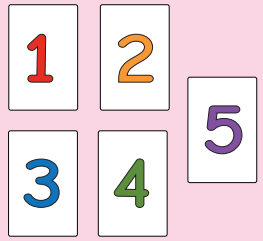
Provide children with buckets with the labels 1 to 5 on the front and a range of natural objects.

Encourage children to put the correct number of objects in each bucket.

Ask a friend to check that each bucket has the correct number.

Give each child a set of digit cards labelled 1–5 and a spinner labelled 1–4

Children spin the spinner.



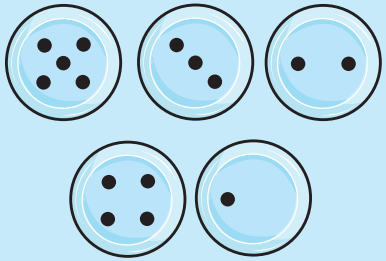
They choose to turn over the card that is either 1 more or 1 less than the number the spinner lands on.

The winner is the first person to turn over all of their cards.

End of block checkpoint

Checkpoint 1

Show children a range of dot plates with different arrangements of 1, 2, 3, 4 and 5 dots.



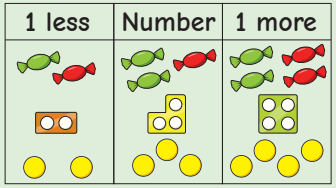
Are they able to subitise how many they can see and represent the amount on their fingers?

Is there more than one way to show the number using both their hands?

Checkpoint 2

Provide digit cards labelled from 1–5 and a range of objects to count with.

Prompt children to pick a digit card and represent the amount with objects.

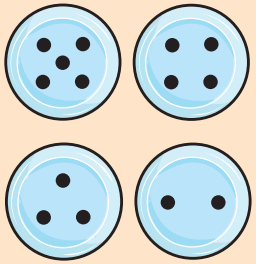


Are they able to find 1 more and 1 less than the number using different representations?

Checkpoint 3

Lay a selection of dot plates showing 1–5 on the floor.

Show children a digit card from 1 to 5. Prompt them to take it in turns to find dot plates that make that number.



Autumn Block 6

Shapes with 4 sides

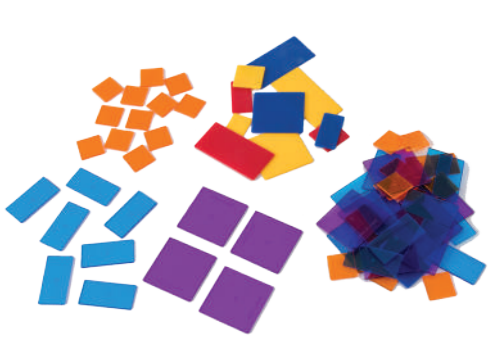
White Rose MATHS

Teacher guidance

Key books

- *Bear in a Square* by Stella Blackstone
- *Square* by Mac Barnett and Jon Klassen
- *Shapes, Shapes, Shapes* by Tana Hoban
- *Night Monkey, Day Monkey* by Julia Donaldson
- *The Fox in the Dark* by Alison Green

Key resources



Top tips

- Pre-cut gummed paper shapes are a great resource to support children both in making shape pictures and combining shapes to make other shapes. The sticky surface allows them to stay in place.
- Encourage children to fold paper and look at the creases they have made. This helps support the idea that shapes can be made from other shapes. Children can then cut the shapes they have folded to make mini jigsaws.

Small steps

Step 1	Identify and name shapes with 4 sides
Step 2	Combine shapes with 4 sides
Step 3	Shapes in the environment
Step 4	My day and night

Identify and name shapes with 4 sides

Notes and guidance

In this small step, children notice squares and rectangles all around them and begin to describe their properties.

They should be introduced to mathematical language for describing the properties of squares and rectangles, such as 'sides', 'straight' and 'corners'.

When introducing the properties of the shapes, children begin to understand that both rectangles and squares have 4 straight sides and 4 corners.

They also begin to understand that squares are a special kind of rectangle, where each of the 4 sides are equal in length.

When using physical representations of 2-D shapes, ensure that they are as thin as possible to support children's understanding that 2-D shapes are completely flat.

Books

- *Bear in a Square* by Stella Blackstone

Key questions

- What do you notice about your shape?
- Which shapes are the same as yours? Which are different?
- How do you know they are the same/different?

Possible sentence stems

- This shape is a _____.
- This shape is the same/different because...
- This shape has _____ sides/corners.

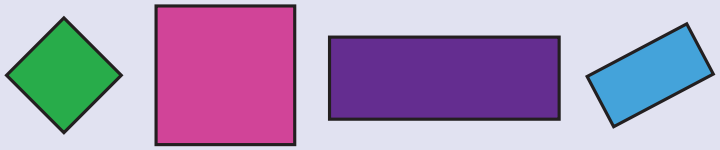
Links to the curriculum

- *Development Matters* – 3 and 4-year-olds – Talk about and explore 2D and 3D shapes (for example, circles, rectangles, triangles and cuboids) using informal and mathematical language.
- *Birth to 5 Matters* – Range 6 – Uses informal language and analogies, (e.g. *heart-shaped and hand-shaped leaves*), as well as mathematical terms to describe shapes.

Identify and name shapes with 4 sides

Adult-led learning

Show children a selection of squares and rectangles.



Encourage children to explore the shapes and talk about what they notice.

Ensure that the shapes are shown in different orientations.

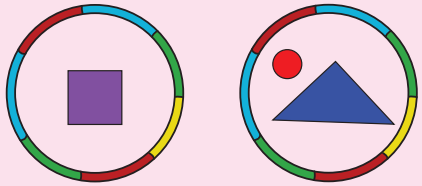
Read shape books such as *Bear in a Square* by Stella Blackstone and pay particular attention to the square and rectangle pages.

Encourage children to identify the different shapes on each of the pages.

Where can you see a square? Where can you see a rectangle? Prompt children to talk about the properties of each shape.

Hide a range of squares, rectangles, circles and triangles for children to find. Prompt them to find, identify and name the shapes.

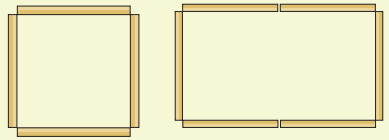
Provide two hoops and encourage children to sort the shapes into those that have 4 sides and those that do not have 4 sides.



As children are sorting, ask them to explain why they are placing each shape in that group.

Use craft matchsticks to build squares and rectangles.

Ask children to predict how many matchsticks they will need to make each shape.



What is the smallest square they can make? What is the largest?

How many matchsticks did they use?

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

Combine shapes with 4 sides

Notes and guidance

In this small step, children build on their prior learning on properties of shapes by investigating how shapes can be combined to make new shapes.

Prompt children to investigate which shapes they can make by combining different sizes of squares and rectangles. For example, two rectangles can be put together to make a larger rectangle or a square. Get children to fold paper squares and rectangles, predicting what shape they will find. Emphasise that these shapes are flat to develop children's understanding of 2-D shapes.

Point out that a shape can have other shapes within it, just as numbers can be made up of other numbers. In provision activities, point out how shapes can be joined and partitioned in everyday contexts, such as preparing sandwiches for snack time.

Children may take this investigation further to combine other shapes they are familiar with, such as two identical right-angled triangles to make a rectangle or a square.

Books

- *Square* by Mac Barnett and Jon Klassen

Key questions

- What do you notice about your shape/shapes?
- Which shape could these two/three shapes make?
- What shape could this make when you fold it?
- How many different shapes can we make by folding the paper?

Possible sentence stems

- The shapes make a _____.
- I can fold this shape to make a _____.
- I need _____ to build a square/rectangle.

Links to the curriculum

- *Development Matters* – Reception – Compose and decompose shapes so that children recognise a shape can have other shapes *within* it, just as numbers can.
- *Birth to 5 Matters* – Range 5 – Enjoys partitioning and combining shapes to make new shapes with 2D and 3D shapes.

Combine shapes with 4 sides

Adult-led learning

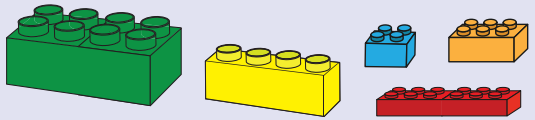
Have a range of flat paper squares and rectangles for children to explore. Ask children to investigate which new shapes they can make by combining different combinations of the shapes.

Task children to make a large, medium or small square or rectangle.

Is there a different way to make the same size shape?

Provide paper, paint and small plastic bricks for children to print with.

Ensure that there are a range of sizes.



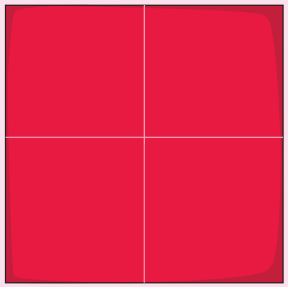
Which bricks make the best square and rectangle pictures?

Encourage children to fill the paper edge-to-edge with their squares and rectangles.

Provide children with paper shapes to explore.

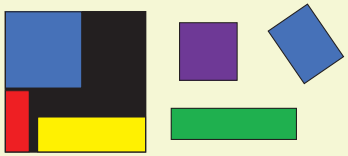
Demonstrate to children how, when we fold a shape, we can see the shapes inside the shape.

Encourage children to predict what shapes they will make when they fold their own shapes.



Give children a shadow or outline for them to fill using different sizes of 4-sided shapes.

Can they fill the whole space without overlapping their shapes?



If there are any gaps, what shape are the gaps?

Encourage children to talk about their pictures.

Shapes in the environment

Notes and guidance

In this small step, children use their knowledge from the previous two small steps to identify squares and rectangles in the environment.

As in earlier blocks, there will be examples of 'almost' shapes in the environment. It is important to discuss with children why cream crackers, for example, are not square.

Provide different opportunities for children to notice shapes on the flat surface of objects in the classroom, outside and on walks around the local area. Encourage them to find shapes within other shapes.

Reinforce that 2-D shapes are flat and encourage children to talk about the properties and make comparisons between the shapes they find. Encourage children to find the shapes within shapes in the environment, such as windows or doors. For example, a 'No entry' sign has a rectangle inside a circle.

Books

- *Shapes, Shapes, Shapes* by Tana Hoban

Key questions

- What shapes can you see?
- How do you know it is a square/rectangle?
- Where can you see small/large shapes?
- Where can you see shapes within shapes?

Possible sentence stems

- I can see a _____.
- This shape is the same/different because …
- I know this shape is/is not a _____ because …

Links to the curriculum

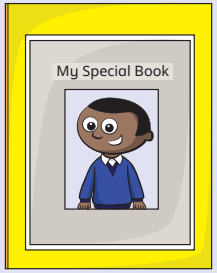
- *Development Matters* – Reception – 3 and 4-year-olds – Talk about and explore 2D and 3D shapes (for example, circles, rectangles, triangles and cuboids) using informal and mathematical language.
- *Birth to 5 Matters* – Range 5 – Shows awareness of shape similarities and differences between objects.

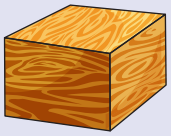
Shapes in the environment

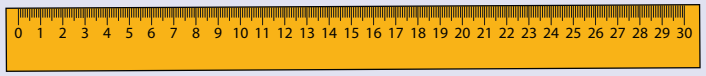
Adult-led learning

Go on a shape hunt around school.

Ask children to point out where they see squares and rectangles on the surface of everyday objects.







Challenge children to say what is the same and what is different about the shapes they find. Ask children to explain how they know it is that shape.

Provide a selection of real-life scenes to show children, such as buildings or street scenes.

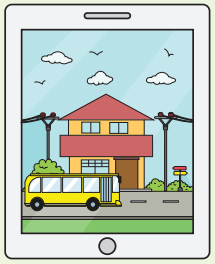
Task children to find the squares and rectangles in the pictures.

Where can they see shapes within shapes?

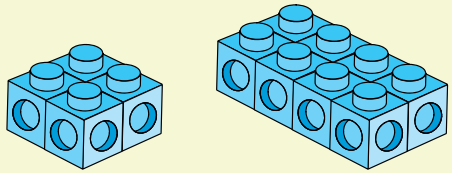
Go on a walk around the local area and hunt for shapes.

Children could take photographs of the shapes they see on the walk.

These could be used to make a shape display when you get back to school.



Show children how four linking cubes can be joined so that two of the faces are square.



Task children to find other quantities of cubes that will join to make square faces or rectangular faces.

My day and night

Notes and guidance

In this small step, children will begin to distinguish and talk about the difference between the key events in their daily routine. They will recognise what occurs during the day compared to at night. They will use language such as 'first', 'then', 'after', 'before', 'day', 'night', 'morning', 'afternoon', 'today' and 'tomorrow' to describe different events.

Children begin to measure time in simple ways by counting how many days or sleeps are left until an important event. The concept of time can often be difficult for children to understand. Building blocks can be used to represent the number of days or sleeps there are until an event, removing one each day to support children's understanding.

Rhymes

- *This Is the Way We Brush Our Teeth*

Books

- *Night Monkey, Day Monkey* by Julia Donaldson
- *The Fox in the Dark* by Alison Green

Key questions

- What are we going to do now/next/later/this afternoon?
- What do you do during the day?
- What do you do at night-time?

Possible sentence stems

- First/then we will...
- Before/after _____ we will...
- There are _____ days/sleeps until...
- During the day we...
- At night-time/lunchtime we...

Links to the curriculum

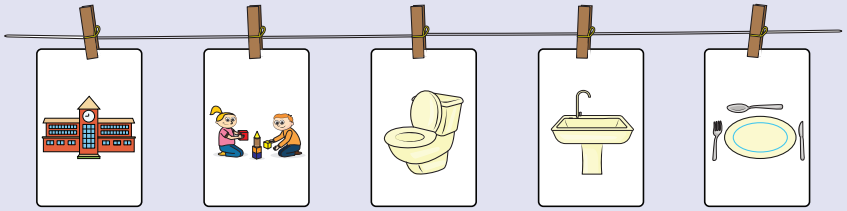
- *Development Matters* – 3 and 4-year-olds – Begin to describe a sequence of events, real or fictional, using words such as 'first', 'then ...'
- *Birth to 5 Matters* – Range 6 – Is increasingly able to order and sequence events using everyday language related to time.

My day and night

Adult-led learning

Make a visual timetable of important events in the school day.

Order the events each day and talk about what we are doing 'first', 'next', 'then', 'after' and 'later'.

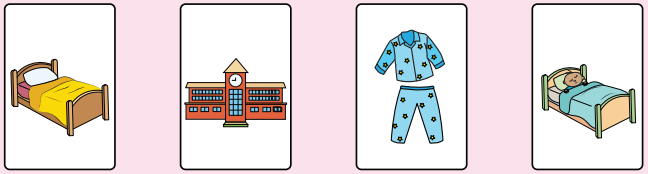


Refer to the timetable throughout the day, asking children questions relating to it.

Use stories and non-fiction books, such as *Night Monkey, Day Monkey* by Julia Donaldson or *The Fox in the Dark* by Alison Green, to introduce the idea of nocturnal animals.

Explain that as we go to sleep, some animals are waking up because they come out at night.

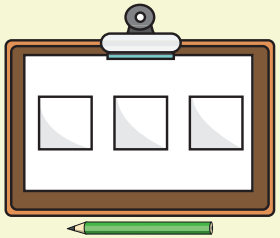
Provide children with different pictures illustrating things that we do during the day and at night.



Encourage children to sort the images into two piles and talk about what we do in the day and at night.

Provide children with a blank visual timetable.

Prompt them to draw and sequence activities that they do at home or after school.



Prompt them to discuss the fact that some days are different to others, and compare what they do on a weekday with what they do on a weekend.

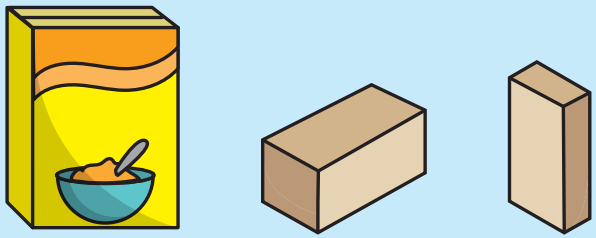
Continuous provision

Display pictures of buildings or street scene images.

Discuss the different types and shapes of homes and buildings. Provide a variety of boxes and ask children to build their own models to create a street scene.

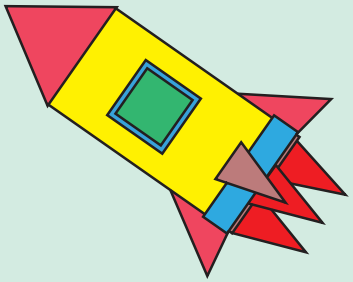
Encourage them to add square and rectangular windows and use torches to light the buildings up from the inside.

Provide children with a range of small construction blocks and everyday objects, such as cereal boxes, with which they will be able to print.



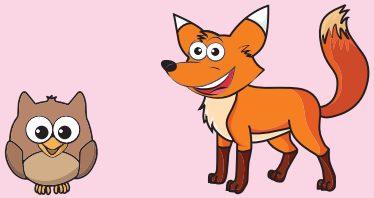
Task children to print with objects and identify the different shapes they make.

Support children to make different shape pictures with squares and rectangles and use their prior knowledge of circles and triangles.



Encourage children to talk about and describe their picture.

Introduce nocturnal animals to the small world area.



Encourage children to make homes for the animals.

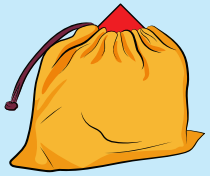
Talk about the names of the animals and where and when they might like to go to sleep.

End of block checkpoint

Checkpoint 1

Hide a range of flat 2-D shapes in a feely bag or underneath a cloth.

Partially reveal a shape, encouraging children to say what different shapes it could be or could not be and why.



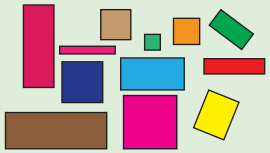
Pull the shape out further.
Do they still think it could be the same shape?

What has changed about the shape? What is the same?

Checkpoint 2

Provide children with a selection of paper squares and rectangles in various sizes and colours.

Prompt them to combine two shapes to make a rectangle or a square.



Are they able to combine three or four shapes?

Which ways will work?

Which ways will not work?

Checkpoint 3

Label a daytime and night-time area outside.

Call out an activity familiar to children and ask them to run to the daytime or night-time area. For example, stars appear, we put on our pyjamas, we get dressed, we eat lunch or owls wake up.

Encourage children to suggest some of their own daytime and night-time activities.