

Northern Territory Preschool Maths Games

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Shaping minds, shaping the world



Northern Territory Preschool Maths Games

These games have been developed by The University of Melbourne to support the implementation of the Northern Territory Preschool Curriculum. The games build on and extend the Northern Territory LearningGames® and in so doing, acknowledge that families are children's first teachers. The games are designed to assist preschool teachers enacting differentiated teaching and learning while maintaining important learning objectives for individual children that are informed by observation-based evidence.

The games are designed to be fun for children and easy to use for teachers. The games focus on encouraging active participation, mathematical thinking and reasoning, and back-and-forth conversations. Games are designed for use with small and large groups, acknowledging that play expands thinking and high-level thinking skills are encouraged during interactions with peers and adults.

Step-by-step instructions guide the educator through each game. Responding to educators' concerns about 'how to do maths talk', important words to model are provided. Explicit learning objectives assist educators to assess child learning, recognising that children demonstrate understanding in different ways. Extension and drop-back options are provided for each game.

The games strengthen opportunities for preschool teachers to respond to the diverse mathematical competencies and language that children demonstrate as they transition into preschool, planning for current and future learning, and enacting the planning cycle.

*Department of Education. (2013). Northern Territory LearningGames®.
Darwin, NT: Department of Education.*



Numbers
and Counting



Data Collection,
Representation and
Analysis



Shapes and
Spatial Thinking



Measurement



Patterns
and Structure





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Numbers and Counting

Show one, two, three or more!



Play this game with one or two children at the same time. Draw three circles on the ground. The circles help to focus attention on the set. Place one leaf in one circle, two leaves in another circle and three leaves in the third circle.

Count the leaves in one circle slowly, touching each leaf as you say each number (number words). Say how many leaves are in each circle. Encourage the children to count with you.

Support children saying the number words in order, tagging each object while saying each number word. Emphasise the last number because this tells us how many leaves are in the circle altogether: 'one, two, **three!**' Play many times.

If you are playing indoors, use paper plates or hula-hoops for circles. Put one button on one plate, two buttons on another plate and three buttons on the third plate.

Why this is important

The children learn to associate spoken numbers with quantities.

Children learn the counting principles. They learn that each object counted gets one number word, number words are always used in the same order (one, two, three, four...) and the last number word spoken is special because it tells us 'how many' objects there are.

When you put different objects in the circle (a leaf, a gumnut and a rock), children learn that the objects can be different and they can be counted in a different order, but the answer to the 'how many altogether?' question will stay the same as long as each object is given one number word, each object is counted once and the number words are used in the right order.

You will need

- Paper plates, hula-hoops or circles drawn on the ground
- Objects to count

Learning Objectives

For the children to:

1. Learn number words.
2. Associate one number word with each leaf without giving one leaf two number words or skipping a leaf.
3. Use number words in the correct order.
4. Observe that the same counting rules apply, no matter what we count.
5. Show understanding that the last number word spoken tells us 'how many'.

Important words to use

- Number words (*one, two, three, etc.*)
- Altogether
- More than
- Less than
- Same as



Numbers and Counting

Show one, two, three or more!

What the educator does

1. Place one leaf in one circle, two leaves in the second circle, three leaves in the third circle, etc. As you add more circles, increase the quantity of leaves by one for each additional circle.
2. Ask the children to tell you how many leaves are in each circle. Watch how the children count. Do they touch each object as they say the number word? Do they say how many without counting each object? If they make mistakes, gently step in to help, encouraging them to count with you as you touch and move each leaf.
3. Ask the children which circle contains 'more' leaves and which contains 'less'. Ask them to explain how they worked out their answer.
4. Count to check their answers. After counting, emphasise the total quantity inside each circle. (If a circle is empty, the quantity will be zero.)
5. Invite the children to point to the circle with one leaf, two leaves, etc. Ask them to explain how they worked out their answer.



Drop back ideas

1. Sing counting songs to reinforce the correct number word sequence.
2. Practise counting fingers on one hand together.
3. Practise reciting the number words '1, 2, 3, 4, 5', before playing the game.

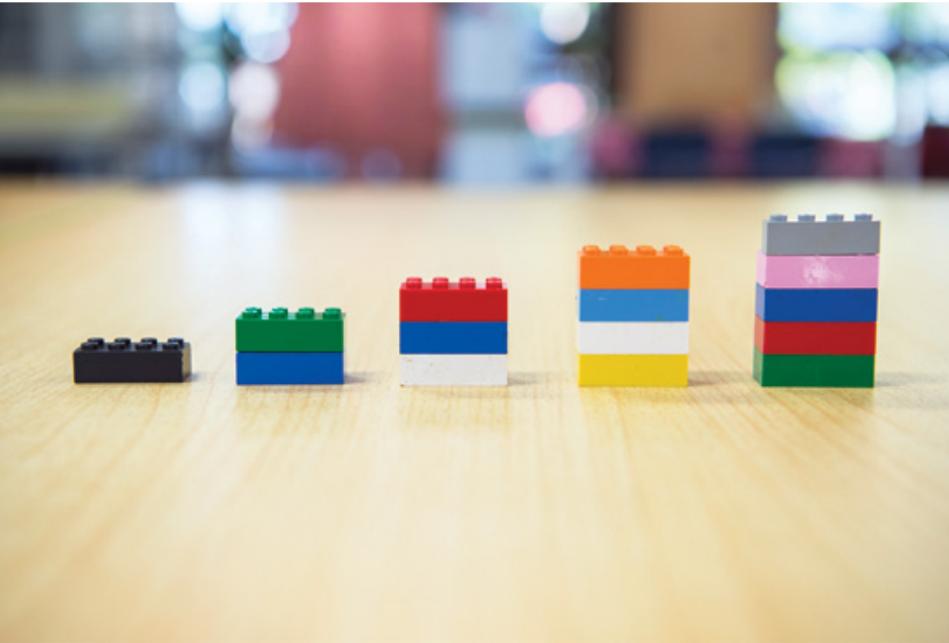
Extension ideas

1. Rearrange the leaves inside the circle or use other objects, like shoes and socks. Show the children that as long as each object is counted only once, and the number words are used in the correct order, the set size will remain the same no matter what we count or the order in which we count them.
2. Play the game with big circles and a few children. Say a number, and ask the children to jump into circles. For example, when you say 'one', one child jumps into a circle. When you say 'three', three children jump into a circle.
3. As the children are able to count further, draw another circle and add another leaf. Encourage the children to place four objects in the circle, then five, then six. Aim for 20. Count to check.
4. Ask the children to collect a specific number of objects to place in the circles. 'Let's collect (four) leaves...'
5. Have the children work in pairs: one child asks for 'two objects', and the other child collects that quantity. The children count together to check how many.
6. Make numeral cards with the children (for example, write 'one', 'five' or 'eight' on a card). Invite the children to collect that number of objects and place them on the card. Children associate number symbols and quantities.



Numbers and Counting

Counting building blocks



Invite two or three children to build using blocks of a variety of shapes and sizes. You can also use small cardboard boxes and cans.

To start, ask the children how many blocks they will each need. Count out the blocks with each child, demonstrating the counting principles. Use words and phrases like 'more', 'less', 'the same as' and 'altogether' as you share the blocks amongst the children. Encourage the children to count with you. This shows that counting has a purpose.

As children's counting skills increase, increase the number of blocks that are counted to encourage children to count further.

Why this is important

Playing with blocks encourages children to explore shapes and to be creative. Counting the blocks shows that counting has a purpose. It also helps children to match number words with quantities. Children will be motivated to learn number words as they ask for more blocks. Children learn that each block has one number word. Children also learn that number words must be used in the same order ('one, two, three, four...'). Children learn that the last number word they say is special because it tells 'how many' blocks they have.

You will need

- A box of blocks, small cardboard boxes or cans (various shapes, sizes and colours)

Learning Objectives

For the children to:

1. Use object counting for a purpose.
2. Learn more number words.
3. Match one number word with each block without giving one block two number words or skipping a block.
4. Use number words in the correct order.
5. Recognise that the last number word spoken tells us 'how many'.
6. Observe that the same counting rules apply, no matter what we count.
7. Compare quantities.

Important words to use

- Number words (one, two, three, etc.)
- Altogether
- More than
- Less than
- Same as



Numbers and Counting

Counting building blocks

What the educator does

1. Put a box of blocks of various sizes, shapes and colours in front of you.
2. Ask each child how many blocks they would like to play with. Count the blocks out, one by one. Encourage the children to count with you.
3. Emphasise the last number word: 'Six! You have six blocks!'
4. After each child has some blocks, ask 'Who has the most blocks?' Ask, 'Who has the least blocks?' Ask the children how they know this. Count the blocks to check if their answers were correct.
5. Encourage the children to build a *high* tower or a *long* train. Sing, 'Build it up, build it up, build it higher' or, 'Make it long, make it long, make it longer.' Encourage children to talk about what they are building.
6. Ask children how many blocks they have used. Repeat the number, using it in a sentence: 'You have made (something) with four blocks.' This reinforces the cardinal principal – the last number is special as it tells us how many objects are in the whole set.
7. Show the children how to count the blocks: 'Let's count them (pointing). One, two, three, four.'
8. Ask the children to look at a particular child's building, and practice counting the number of blocks the child used together.
9. Play again and ask individual children how many blocks they have used in their new constructions. Encourage the children to practise their number and counting skills.

Drop back ideas

1. Start with fewer blocks so that each child receives two or three blocks.
2. Move fingers, stomp feet, and swing your body to make counting visible and fun. Our number system is based on 10. Singing lots of number songs helps children to master the words we need for counting up to 10.
3. Count out blocks for yourself first. Emphasise how many you have taken by repeating the last number word. Then ask a child how many he or she needs. Count the blocks and encourage the child to say the number words with you.

Extension ideas

1. As children's counting skills increase, increase the number of blocks. Encourage children to count further and to practice the number words between 10 and 20 (and beyond).
2. Ask children to put blocks of the same shape or the same colour into groups. Count how many in each group. Talk about what makes the blocks the same shape – do they have curved or straight edges? Are they cylinders (like a can), round like a ball, cubes (like dice) or rectangular cuboids (like bricks)?





Numbers and Counting

Giving one to each



Invite two children to help you set the table. Together, count how many chairs are at the table. Discuss how many people will sit at the table. Give one child the plates. Ask the child to put one plate at each place, counting as they go. Give another child the cups. Ask the child to put one cup at each place, counting as they go. Tell the child that each person needs to have one biscuit and ask the child to put one biscuit on each plate, counting as they go. Setting the table gives the children practical experience with giving one number word to one object.

Why this is important

This activity shows that counting has a purpose – it is not just about saying a list of words. The activity helps children learn about giving one number word to each object that we count. Children also learn that number words are counted in a fixed order ('one, two, three, four...'). Counting different objects and stopping at the same number helps children to understand that different objects can be counted. They practise using the last number word to see how many objects there are.

You will need

- Plates (one per person)
- Cups (one per person)
- Other objects that people use at meal times, like forks or spoons
- Food (like biscuits, fruit and bread)

Learning Objectives

For the children to:

1. Recognise that counting has a purpose.
2. Learn more number words.
3. Match one number word with each plate (or cup) without giving one plate, two number words or skipping a plate.
4. Use number words in the correct order.
5. Demonstrate understanding that the last number word spoken tells us 'how many'.
6. Observe that the same counting rules apply, no matter what we count.
7. Compare quantities.

Important words to use

- Number words (one, two, three, etc.)
- Altogether
- More than
- Less than
- Same as
- Group



Numbers and Counting

Giving one to each

What the educator does

1. Before you start, make sure you have enough plates, cups and biscuits for each person at the table to receive one of each.
2. Explain that you need the children to help you set the table.
3. Ask the children how many people will sit at the table. (Hint: ask them to count the chairs to work this out.)
4. Ask one child how many plates s/he will need to give each person one plate. Ask him/her to put one plate at each seat. Ask him/her to count the plates to check his/her answer.
5. Ask the second child how many cups s/he will need to put one cup at each plate. Ask him/her to put one cup at each plate. Ask him/her to count the cups to check his/her answer.
6. Once the tables are set, tell the children that each person needs to have one biscuit on their plate. How many biscuits will be needed? Ask them to place the food on the plates. Ask the children to count the biscuits to check their answers.
7. Discuss that if we know the number of objects in one set (how many chairs are at the table), then we know how many objects we need to make a matching set.

Drop back ideas

1. Children collect leaves. Each child lays their leaves in a straight line and counts them.
2. Ask the children to collect little rocks so that they can place one rock on each leaf. Before they collect rocks, ask questions like, 'How many leaves do you have? How many rocks will you need?'
3. After each leaf has a rock, count the rocks. Explain that if we know the number of objects in one set (how many leaves we have), then we know how many rocks we need to make a matching set.

Extension ideas

1. Encourage children to count things that they can't see. Say, 'How many wheels do you think there are on that big truck?' Help them to imagine and count the wheels. Then go and take a look. Talk about whether there were more or less than the child counted.
2. If children count accurately up to 10, gradually introduce the numbers between 10 and 20. Look for opportunities to use counting to solve problems. You could say, 'There are eight children here today. I wonder how many shoes they have. Let's count.'
3. Count body movements. Say, 'Let's jump 12 times.' Count each jump. Invite each child to choose a number to jump.
4. Children take turns saying how many times we should clap our hands. Everyone claps carefully together up to that amount.





Numbers and Counting

What's the time Mr Dingo?



This game is suitable for small or large groups of children to play together.

One child is Mr Dingo. The other children are lined up with you, some distance away from Mr Dingo. Mr Dingo stands facing away from the other children. The children chant together, 'What's the time Mr Dingo?'

Mr Dingo does not turn around. Mr Dingo chooses a time. Mr Dingo may call out, 'one o'clock.' The children then take just one step forward, saying 'one!' aloud.

Then the children chant again, 'What's the time, Mr Dingo?' Still, Mr Dingo does not turn around. Mr Dingo chooses a time. Mr Dingo may say, for example, 'Eleven o'clock.' The children then take 11 steps forward, counting each step aloud until they reach 11. By counting as a group, children who count correctly model this to the children who are learning to count.

Then the children chant again, 'What's the time, Mr Dingo?' As the children get closer to Mr Dingo they need to be ready to run. Suddenly, Mr Dingo will surprise them by saying, 'Dinner time!' Then Mr Dingo turns around and tries to catch a child as they all run back to the starting line. The child who is caught becomes the next Mr Dingo.

You will need

- Lots of space indoors or outdoors

Learning Objectives

For the children to:

1. Learn more number words.
2. Match one number word with each step without taking an extra step or skipping a step.
3. Use number words in the correct order.
4. Recognise that the number word spoken by Mr Dingo, is the number to stop counting up to.

Important words to use

- Number words (one, two, three, etc.)
- Altogether
- More than
- Less than
- Same as

Why this is important

Children practice the counting words when they play counting games and sing counting songs. The numeral system is based on 10. Many opportunities to practice counting to 10 and then beyond 10, help children to learn the whole number system.



Numbers and Counting

What's the time Mr Dingo?

What the educator does

1. Encourage the children to count slowly and to tag each step with one number word.
2. Talk about the numbers: 'Only one o'clock? That's just one step.' Or, 'Eleven o'clock? That's a lot of steps.'
3. Encourage the children to repeat the last number word as they reach the final step: 'One!' or 'Eleven!' in this example.
4. Most children enjoy having a turn to be Mr Dingo. You may need to make sure that everyone has a turn.
5. Check the children are counting and moving the correct number of steps.

Once the children have mastered the rules of this game, they will be able to play it independently.



Drop back ideas

1. Practice counting objects, such as pegs, crayons or leaves. Start by counting to five and then progressively add more numbers.
2. Count steps as you climb them.
3. Sing and do the finger actions to 'One, two, three, four, five. Once I caught a fish alive.'

Extension ideas

1. Challenge the children to count backwards using one hand. Say, 'three, two, one, GO!' Then start with five. Then start with 10.
2. Challenge the children to count on and count back when they are walking. As children's counting skills improve start with five: 'five...six, seven, eight, nine, 10.' Or start with a number between 10 and 20: '12, 13, 14, 15...'
3. Create new counting songs and rhymes.



Shapes and Spatial Thinking

Drawing around solid things to make flat shapes



Invite a few children to trace around plastic containers or cans on sheets of paper. They could also use a stick to trace around a shape on the sand. Help the children to name the shapes they have drawn and to describe the defining characteristics of the shapes. Compare children's drawings by looking at their size and shape.

Why this is important

Tracing objects helps children to understand that all objects have a shape. With your help, children will start to notice differences between the containers (or other objects) and the shapes. One important difference to talk about is that the pictures they have drawn are flat, but the objects they traced around are solid.

Looking at shapes and learning their names helps children to describe things in the world around them. Using drawing tools helps children to develop the muscles of their hands. These muscles are important when they learn how to write.

You will need

- Containers or solid objects
- Crayons and pencils
- Paper
- Playdough/wet sand

Learning Objectives

For the children to:

1. Trace around objects using the small muscles of their hands.
2. Explore the similarities and differences between the objects they have traced around and the drawings on the paper.
3. Identify defining characteristics of shapes.
4. Say the names of the shapes.
5. Explore differences between shapes by counting the number of sides and comparing the sizes.

Important words to use

- Names of shapes. Flat: circle, rectangle, triangle, square. Solid: cube, sphere (ball), rectangular cuboid, cylinder (tube)
- Side, surface, angle
- Same or similar
- Different
- Compare
- Bigger or smaller



Shapes and Spatial Thinking

Drawing around solid things to make flat shapes

What the educator does

1. Put out paper, crayons and small containers for children to trace around.
2. Encourage children to feel a shape with their hands and describe it before they trace the shape of one side.
3. Show the children how to hold a shape with one hand and trace around it with the other hand. Say, 'Now you have a go.'
4. Name the shapes they have drawn. Talk about the straight sides or the curves. Talk about the pointy angles.
5. Compare the solid object and the flat shape traced from it.
6. Ask the children to choose a different object to trace and compare the sizes and shapes of their tracing with the previous shape. Encourage children to look at each other's work and talk about the shapes.



Drop back ideas

1. Trace around hands or feet on the paper. Talk about the 'pictures' of the hands and feet.
2. Press toys into playdough or wet soil. Look at the marks made by the toys. Talk about the prints and compare the prints made by different toys.

Extension ideas

1. Children find objects in the environment to trace. Prompt them to talk about the things they have chosen: talk about colour, size, and texture. Is the object hard or soft? Will it be easy to trace? Why?
2. Talk about the shapes made by objects from nature - are their shapes like the shapes made by things that people have made? Ask the children to explain their answers.
3. Look for shapes in the world around us. Talk about the shapes- are they flat or solid? How many sides do they have? How many pointy angles do they have? Are they bigger or smaller than the shapes we have traced on the paper?
4. Sort objects into groups according to their shapes. Children explain the rule they used to sort the shapes.
5. Count the objects aloud and say how many are in each group.



Shapes and Spatial Thinking

In, out and around



Invite two or three children to play with you. You will use objects to help children learn position words such as 'in', 'on', 'out', 'under', 'behind' and 'in front'.

In this game, toys are put on the paper, under the paper and in the box. Children will take turns to lead the play, asking their friends to follow directions.

Why this is important

The children will learn that position words can be used with the names of things and people to talk about where they are.

When children use their bodies to experience position words, it helps them to learn about spatial relationships. Using words that explain position helps children to describe where objects are in relation to themselves and in relation to other objects.

You will need

- A box, a few small toys and a large piece of newspaper
- A chair or another piece of furniture

Learning Objectives

For the children to:

1. Show they understand position words by following your instructions.
2. Use position words accurately.

Important words to use

- In and out
- Around
- On (top) or under(neath)
- Beside and next to
- Above or below
- Up and down



Shapes and Spatial Thinking

In, out and around

What the educator does

1. Demonstrate how the game works: wrap a small toy in the newspaper. Say, 'I am wrapping the paper *around* the toy.'
2. Explain that you will take the first turn to be the leader. Put a small toy on the box. Say, 'I am putting the toy *on* the box.' Ask one of the children to climb on the trampoline. Ask the children to say what the child did: 'She climbed *on* the trampoline'
3. Give each child a turn to be the leader. Help children with giving instructions and following instructions: 'You need to hide *behind* the chair!'

Drop back ideas

1. Invite one child to play with the building blocks with you. Ask the child if you can copy their building. As you copy what the child builds, use position words to describe your actions. Say, 'You put the green block on top of the red block. Look, I am going to put my green block on top of my red block.'
2. If you have enough blocks, you could ask two children to copy your construction. Use position words as you describe what they are doing. Say, 'I put my yellow block next to my green block. Look, you have put your yellow block next to your green block too!'
3. Encourage the children to say the words with you.

Extension ideas

1. Use words describing position to direct the children's attention to spatial relationships in the environment. Say, 'Look at the bird sitting on top of the fence pole!' and 'Look at your mum, sitting next to her friend!'
2. Add more position words to expand the children's spatial vocabulary. For example, suggest 'inside' as another word for 'in'. Add words to describe the relative sizes and shapes of objects: 'Look at the small green truck in front of the big yellow truck'.
3. Say a position word and ask the children to think of a way to show what the word means by moving their bodies in space. For example, say 'next to' and the children move next to each other or next to something in the room. Say 'below' and the children move under a table.





Shapes and Spatial Thinking

A fun path



Talk about the children's actions as they move along a path of objects by stepping over, crawling under, jumping in and climbing on them. The children's physical agility and their awareness of space and position words will increase as they play this game.

You will need

- Objects to make an obstacle course (e.g. rope, towels, newspaper, boxes, small stools, blanket secured across two tables etc.)

Learning Objectives

For the children to:

1. Demonstrate understanding of spoken position words.
2. Use position words to describe position in space.
3. Learn that position words can describe the relationships between objects and space.

Important words to use

- In or out
- Around
- On (top) or under(neath)
- Beside or next to
- Up or down

Why this is important

Following the path of obstacles encourages children's physical development, and will build their understanding of the position of their bodies in space. When you use position words to describe their actions they will begin to learn the new vocabulary.



Shapes and Spatial Thinking

A fun path

What the educator does

1. Create an obstacle course. For example, use a cardboard box open at both ends to make a tunnel, a small stool to climb on and jump off, etc.
2. Say, 'Show me what you can do!' Stand nearby as the children move through the course. Use position words to talk about their movements. 'You are crawling *under* the bench. You're stepping *over* the newspaper'.
3. Stop and review the position words you have used. Ask the children to say the position words back to you.
4. Continue playing. Ask the children to say the position words as they move through the course.
5. Change the path occasionally using new objects each time. Ensure that the course is safe and matched to the children's level of physical ability and agility.
6. Be flexible. Allow the children to step off the path if they choose. They may choose to follow the sequence, or to take different routes.



Drop back ideas

1. Play 'Follow the Leader'. Start with a child 'Leader'. Encourage the children to practice saying the position words as they follow the leader, one by one: 'Jackie is climbing *over* the swing'. You could use a piece of rope to guide the children through the obstacle course, if required.
2. Make yourself the leader to introduce new ways to move through the course. Remember to use the position words as you move!

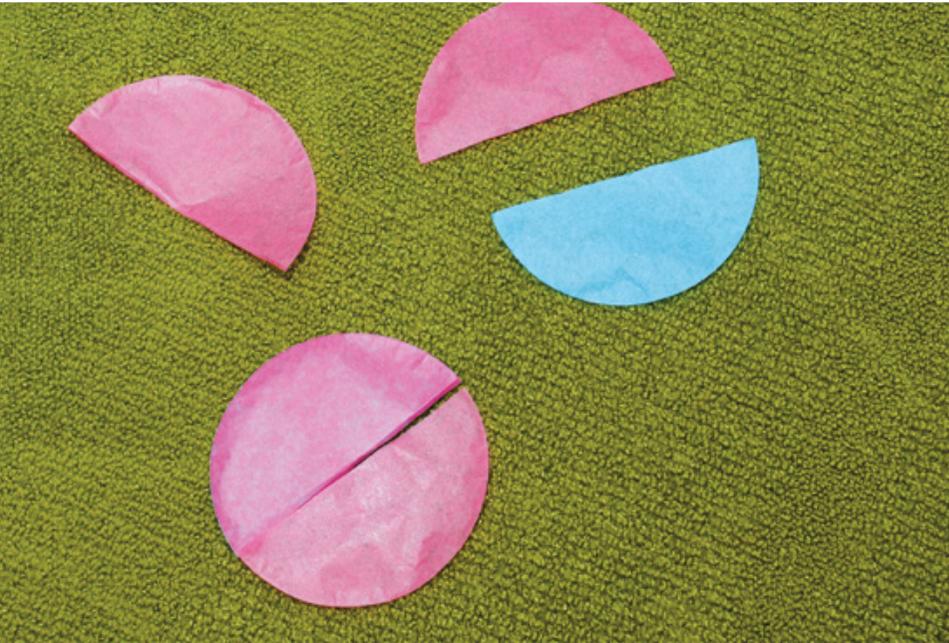
Extension ideas

1. Add more position words to expand the children's spatial vocabulary, e.g. introduce 'left' and 'right'.
2. Ask the children to create an obstacle course for you to move through. As you move through the course, ask the children to use the correct position words to describe the moves you make. Alternatively, the children could create obstacle courses for one another.
3. Talk about the sizes and shapes of the objects. Talk about the ease or difficulty of particular course designs, 'Can anyone suggest why this obstacle course is difficult for me but easy for you?'



Shapes and Spatial Thinking

Restore the circle



Cut large paper circles into two pieces. Provide each child with the pieces to make one complete circle. Ask them to fit the two pieces together to form the circle again. The children will see that shapes can be divided and restored.

You will need

- Paper
- Scissors
- Apple (drop back)
- Glue (extension)

Learning Objectives

For the children to:

1. Learn that the parts of a divided shape can be restored to make a whole.
2. Use words to describe the properties of shapes and shape names.

Important words to use

- Circle and round
- Words associated with the round shape of a circle, e.g. plate, sun, curved edge
- Divide
- Whole
- Half or quarter (extension)
- Other shape names

Why this is important

Being able to visualise the whole from its parts is necessary for many tasks. The children will learn to recognise that actions, such as dividing a circle, can be reversed. Letters and numbers are typically made from parts such as lines and curves, so this game helps to get the children ready to recognise number and letter symbols.



Shapes and Spatial Thinking

Restore the circle

What the educator does

1. Cut out large paper circles (at least one circle per child).
2. Invite the children to play a new game with you.
3. Show them one of the circles and talk about what makes it a circle: 'This is a circle. Look at its round shape.'
4. Hold a circle out to each child. Let each child trace their finger around the edge of the circle. You may choose to place the circle on the table in front of them and hold their hand to help them to trace the entire edge of the circle.
5. Use words such as 'plate', 'pie' and 'circle' to describe the round shape.
6. Cut the circle in half. Show the children each curved piece.
7. Give each child two halves to make one complete circle.
8. Ask the children to put their circle back together. Then, ask them to trace their complete circle with their finger. 'You made it a whole circle again!'
9. Encourage the children to talk about what they have done.



Drop back ideas

1. Prepare a set of cards that show a circle, a square and a triangle. Teach the children the names of these shapes and describe and compare the shapes together. Using the cards, ask the children to name the shapes that you show.
2. Provide shapes (e.g. blocks or shape sets) that the children can manipulate. Ask them to make a picture with the shapes by tracing the blocks.
3. Show the children how you can cut a whole apple in half, or into quarters. Then, put the pieces of apple back together to make 'one whole apple' again.

Extension ideas

1. Use words such as, half, quarter and whole circle to describe the parts that make up a complete circle. Draw comparisons between the sizes of the parts, and as the whole shape.
2. Try cutting the circle into more pieces, or use other shapes (e.g. squares and triangles), to make the game more challenging. Ensure that you stop the game when the children become less engaged.
3. Help the children to glue their pieces of circle onto a piece of cardboard to make their circles permanently whole. Ask them to colour in each piece of their circle a different colour. Display the circles in the room. Encourage the children to explain their work to their friends.



Shapes and Spatial Thinking

Sort any way you like



Offer the children a variety of coloured paper shapes to sort any way they choose. Talk about the shapes and their colours and ask the children to tell you about the many ways that they have grouped their shapes. The children will begin to see that things can be grouped in many different ways, such as by colour, or by shape. Be sure to provide shapes in different sizes. Explain the difference between 'defining' attributes of shapes and other attributes. For example, all triangles have three sides (a defining characteristic) but they can be any colour.

Why this is important

Sorting shapes with minimal direction from you encourages children to think of many different ways that the shapes can be grouped by paying attention to the attributes of the shapes. This game will give them experience in thinking creatively and considering several possible solutions. There are no correct answers in this game of exploration. The children will begin to learn new words to describe the colours, shapes and their groupings.

You will need

- Coloured construction paper (thick enough for sturdy shapes)
- Scissors
- Shape sets (drop back)

Learning Objectives

For the children to:

1. Learn words to describe defining attributes of shapes and shape names.
2. Learn that shapes can be compared and grouped according to various attributes.
3. Match shapes.
4. Explain their thinking.

Important words to use

- Group
- Small(er) or large(r)
- Words to describe colour and size
- Other shape names (extension)



Shapes and Spatial Thinking

Sort any way you like

What the educator does

1. Use three different colours of construction paper and cut two big circles and two small circles of each colour (three x four circles).
2. Spread out the 12 circles on the floor and say, 'We can put these circles into groups in a lot of ways. Who can show me one way?'
3. Observe quietly as the child groups the circles. Then, give positive feedback and prompt the child to explain how they grouped the circles: 'You worked very carefully with the circles, well done. Tell me about this group...'
4. Mix the shapes up again and invite a different child to find another way to group the circles. To start with, children are likely to group the circles by size or colour. With practice, they will begin to identify more ways of grouping the circles.
5. Summarise at the end of each round, and talk about the ways that the children chose to put the circles together.

Drop back idea

1. Practice matching shapes and provide an explanation about the matching process. Sit in a circle together and give each child a familiar shape from a shape set. Ask the children to name the friend who has an exact match for the shape that you hold. Then ask the child with the matching shape to 'prove' that it matches by holding their shape next to yours. Have the children show each other their shapes and practice naming the shapes together. Then, ask them to find a person with a matching shape. Observe and assist as the children play.

Extension idea

1. Expand this game by adding multi-coloured wrapping paper, more sizes of circles or more colours. Add other shapes, such as squares, rectangles and triangles and include three-dimensional objects.





Shapes and Spatial Thinking

Experiencing area and perimeter



Give the children finger paint and a surface to cover and ask them to cover the surface with the paint. Use language to describe the area covered by the paint to help the children understand the concept of covering. Introduce the concept of perimeter by asking the children to paint with a different colour around the edges of the object.

Why this is important

The concepts of area and perimeter are often experienced during play, for example, children often cover things, or go around things, as they play. Educators can use these experiences to foster basic understandings of area and perimeter. Emphasis should be placed on familiarising the children with each concept and the basic language used to describe each.

You will need

- Tabletop or other surface
- Finger paint
- Art smocks to protect the children's clothing
- Large mat or picnic rug and smaller mat (drop back)
- Table cloth and table (drop back)
- Farm animals and fence materials (extension)

Learning Objectives

For the children to:

1. Learn words to describe an area being covered.
2. Talk about the sizes of the surfaces of various objects.
3. Describe the edge of an object (perimeter).
4. Understand the difference between concepts of perimeter and area.
5. Understand how area and perimeter can be used to describe the differences in the sizes of two objects.

Important words to use

- More than
- Less than
- Smaller or bigger
- Cover or spread
- Fit
- Too much
- Enough



Shapes and Spatial Thinking

Experiencing area and perimeter

What the educator does

1. Provide finger paint and a few tables or other surfaces to cover. Ask the children to cover the whole surface of the table with the paint. As the children play, use words to describe the area of the table covered at various stages, for example, more or less, enough, whole area and cover.
2. Now, provide a smaller surface for the children to cover with the paint. Ask the children which table needs more paint to cover its whole area. Encourage the children to explain their thinking and discuss their ideas.
3. Ask the children which table they think will take longer to walk around (perimeter), then have them test their prediction. (Clap the walk and count the claps to measure the time.) Talk about the time it took to walk around each object. Does the table with the bigger surface (area) take longer to walk around (perimeter)?
4. Provide a different colour paint and ask the children to use this colour to paint around the edges of the tables. Talk about the different lengths of each edge as they paint.
5. Now give each child a piece of newspaper. Encourage them to cover its surface and its edge with different colours. You could use this as a patterning activity. Display their work around the classroom.

Drop back ideas

1. Use a large mat and a small mat to introduce these concepts. Ask the children to walk around each mat and think about how long it takes. Use words such as, longer and shorter (distance), faster or slower (to get around). Ask, 'Can we all fit on the large mat?' Test it out and ask the children to predict whether they can all fit on the smaller mat. Ask, 'Can we all fit on the smaller mat?' Test it out and ask the children to predict whether they can all fit on the smaller mat. Test it out.
2. Provide a tablecloth and a table and ask the children to predict whether the tablecloth will fit over the whole surface of the table. Explore covering the table with other objects such as paper or leaves without leaving gaps.

Extension idea

1. Provide a set of farm animals and fences (or blocks and icy pole sticks) and pose the question: 'How many fence poles (or icy pole sticks) are needed to enclose all the animals?' Talk about the area covered by the animals and compare it with the edge and length of the fence.





Patterns and Structure

Pairing and sorting pictures



Randomly display pairs of picture cards on the floor. Ask the children to find matching pairs among the group of pictures and, as they find a correctly matching pair, to place the pair on the floor side-by-side. Encourage the children to help one another to sort the pairs. Ask the children to explain how they know two cards match.

You will need

- At least two pairs of pictures per child
- Cereal boxes can be recycled to make cards on which you glue identical magazine or photocopied pictures

Learning Objectives

For the children to:

1. Notice similarities and differences.
2. Sort cards and match pairs.
3. Practice explaining their thinking.

Important words to use

- Pair
- Match(ing)
- Same or similar
- Different
- Sort

Why this is important

Playing with sets of picture cards gives the children practice sorting and matching pairs. They will need to pay attention to the similarities and differences between the pictures on each card. The ability to examine pictures carefully and notice their similarities and differences will prepare them to recognise numbers and letters by their different shapes.



Patterns and Structure

Pairing and sorting pictures

What the educator does

1. Make a collection of pairs of pictures so that you have at least two pairs for each child in your class.
2. Ask the children to sit in a semi-circle close enough to see the matching pictures that you will soon lay out on the floor.
3. Show the children two pictures that make a pair because 'They are the same; they match'. Point out details in one picture, and encourage children to find those characteristics in the other picture. Say, 'Here is a car with red wheels, who can find me another car with red wheels?'
4. Show the children three pictures, two of them matching.
5. Ask a child to find the matching pair. Ask the child to explain how they decided these two cards made a pair.
6. Mix two sets of pictures and encourage another child to look for the two matching pairs. You could prompt by asking, 'Can you find one that looks just like this?' Ask the child to explain how they decided two cards made a pair.
7. Progressively add pairs to the game as the children begin to find the matching pairs successfully.
8. Have the children mix up all the pairs on the floor, and then play again by finding all the matching pairs.
9. Encourage the children to find new ways to categorise and sort the picture cards. Discuss how they are sorting the picture cards and encourage the children to share ideas.

Drop back ideas

1. Point out everyday objects that are alike – like books and shoes. Point out what makes them alike. Point out what makes them different.
2. Draw children's attention to objects outside or in the classroom, that are the same and different (like trees or schoolbags). Use some objects that are small enough to be held by the children. Help the children to explain similarities and differences. Help the children understand how to use these words correctly.

Extension idea

1. Use the picture cards to practice counting in ones. Some children may be able to skip-count in twos with your assistance.





Patterns and Structure

Choosing and threading



Collect objects that children can thread onto a ribbon. Show the children how to thread objects onto ribbon to make a simple sequential pattern (A B A B pattern). Then, let the children continue your pattern, copy your pattern, or choose objects to thread to make their own patterns. Talk about the texture, colour, size and shape of the objects. Encourage the children to explain their patterns. Tie the ends of the children's ribbons together to make necklaces that the children can wear.

Why this is important

Patterns relate to regularity and structure. When children recognise the regularity and structure in a pattern, they learn to identify what is missing and/or what comes next. In play, children may use objects to represent something else – having one thing represent something else is the beginning of algebraic thinking. Visual patterns of number as you may see on dice (eg what does the structure of four look like?) also helps with subitising skills.

You will need

- Thread (e.g. ribbon or thick wool)
- Safe objects to thread (e.g. curtain rings, plastic or wooden beads, coloured pieces of cardboard cut into shapes)

Learning Objectives

For the children to:

1. Recognise and copy, extend or create patterns.
2. Use words to describe objects and patterns.

Important words to use

- Pattern
- Repeat
- Compare
- Similar or the same
- Different
- Words to describe objects (e.g. words relating to the colour, size, shape and texture of objects)



Patterns and Structure

Choosing and threading

What the educator does

1. Collect objects that can be threaded onto ribbon – ensure that these objects are safe for independent play.
2. Prepare ribbons for each child to use in this game by tying a large object near the end of each ribbon. This will prevent objects slipping off the end of the ribbons as the children thread from the other end.
3. Demonstrate how to thread an object onto a ribbon and help the children to do this.
4. Talk about the objects chosen – discuss and ask questions about the size, colour, shape and feel of both the objects and the ribbons. Talk about the objects, modelling language to help the children to identify and share ideas about similarities and differences.
5. Ask the children to choose another object to thread onto their ribbon, and show them how they can make a pattern of alternating objects (e.g. A B A B, or blue yellow blue yellow etc.) on the ribbon.
6. Tie the ends of completed necklaces together to create necklaces that the children can choose to wear if they wish.



Drop back idea

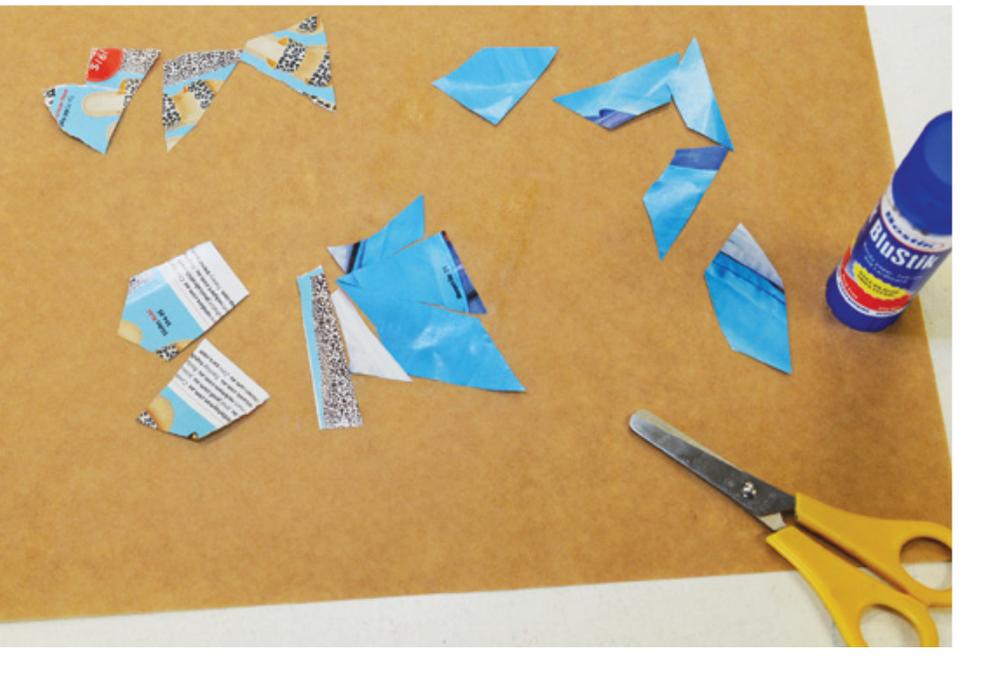
1. Show the children a finished necklace that you have made, as a model for them to see what you are asking them to create. Help them to identify the repeated pattern within your necklace before showing them another pattern.

Extension idea

1. Suggest and encourage the children to think of other ways to create a repeated pattern or sequence (e.g. A B C A B C or A B C D etc.). Help them to understand that there are many patterns that can be created. Make a pattern with a missing element. Ask the children to identify the location of the missing element within the pattern. See whether they can work out how to 'fix' the pattern by identifying the missing element. Provide assistance by prompting, if necessary. Ask the children to add in the missing object to correct the sequence.

Patterns and Structure

Fun with mosaics



Provide the children with magazines that they can cut up to create mosaics. Show the children how they can create sequential patterns by pasting pieces of paper onto card. Talk about the colour, size and shapes used to make patterns. Encourage children to create a pattern using paper and/or other available materials. Encourage them to describe the structure of their patterns.

You will need

- Magazines
- Scissors
- Glue
- Cardboard

Learning Objectives

For the children to:

1. Recognise and describe simple sequential patterns.
2. Create new patterns.
3. Use language to describe patterns.

Important words to use

- Patterns
- Repeat
- Compare
- Similar or the same
- Different
- Words to describe objects (e.g. words to describe the colour, shape, size and texture of objects)

Why this is important

Patterns relate to regularity and structure. When children recognise the regularity and structure in a pattern, they learn to identify what is missing and/or what comes next. With multiple opportunities to engage in this learning experience, children may begin to be able to identify and fill in the missing elements of patterns to make complete sequences. They may also begin to develop and describe more complicated patterns.



Patterns and Structure

Fun with mosaics

What the educator does

1. Collect magazines. Either prepare by cutting up the pages into circular and square pieces that are large enough for the children to handle, or encourage the children to rehearse their scissor skills by cutting shapes themselves.
2. Show the children how to create a sequence by alternating two different shapes of paper in an A B A B type of pattern.
3. Ask the children to choose pieces of magazine to copy your alternating pattern (e.g. A B A B or A A B B A A B B, etc.)
4. Encourage children to create other patterns and to describe the repeating unit in the structure of the pattern. Prompt the children by suggesting other ways to create patterns, such as by colour or size.
5. Help children glue their pattern on a piece of cardboard to display in the room.
6. Discuss the various patterns that have been created by the children.

Drop back idea

1. Show the children a finished (simple linear) mosaic you have made. Help them to identify the simple repeated pattern within your mosaic. Then, let them explore making a mosaic of their own. Ask them to tell you about the patterns they have created in their mosaic. Discuss each child's creation together.

Extension idea

1. Create a repeating pattern or sequence (e.g. A B C A B C or A B C D A B C D) with a missing element in the pattern. Ask the children to find the missing element from a selection of pieces to make the pattern complete. Challenge the children to create a pattern with a missing element for a friend to complete. Provide assistance as required – remember that it should be a fun puzzle to solve.



Patterns and Structure

Can you copy me?



Challenge the children to copy the patterns in a series of actions and/or sounds you make. Begin with simple patterns, and then incorporate other movements to make more complex patterns. You could also make auditory patterns by clapping and/or singing rhythms and beats. Show the children how to design their own patterns and rhythms for others to copy.

Why this is important

The children will be consolidating the ability to recognise, extend, copy and follow simple patterns and linear sequences. As the children progress through this activity, they will develop creative new ways to express patterns through movement and sound.

1 Claves. Pronounced klar-veys.

You will need

- Spacious area
- Claves¹ or rhythm sticks (drop back)

Think of other instruments you could use to make interesting patterns with sound.

Learning Objectives

For the children to:

1. Learn how to make a pattern with their body (using movement).
2. Learn how to make a pattern with sound (auditory rhythms).
3. Learn new words and language to talk about patterns and rhythm.

Important words to use

- Pattern or sequence
- Repeating
- Rhythm
- Compare
- Similar
- Different
- Words to describe sounds and actions



Patterns and Structure

Can you copy me?

What the educator does

1. Stand in a circle with the children. Explain that you are going to make a pattern by moving your body. Say, 'Watch carefully because I am going to ask you to copy what I do!'
2. Begin with a simple linear sequence, such as two jumps, two hops, two jumps, two hops, two jumps, two hops.
3. Now try another pattern, this time incorporating hand clapping, e.g. clap clap, bob down, clap clap, bob down, clap clap, bob down.
4. Invite a child to teach the group a pattern for everyone to copy. Help the child to explain their pattern.
5. Take turns to copy each other's patterns.
6. Draw children's attention to the repeating elements of the pattern.



Drop back idea

1. *Sit in a circle with the children and give each child a pair of claves. Ask the children to copy your pattern. Start with a simple pattern. For example: you tap once, they tap once, you tap once, they tap once etc. Gradually progress the children toward more difficult sequences using the claves.*

Extension ideas

1. *Explore the patterns in music by talking about rhythms and beats in familiar songs.*
2. *Ask questions to promote extended thinking: 'Which movement came first in the pattern? Does the pattern have a start and an end? How do you know?'*



Measurement

Capacity and volume: water play



Play this game with small groups of children. Working over a large washing up bowl will help to prevent water being wasted. The size of the water bowl will guide your decision about how many children can play at the same time as each child will need some space over the bowl. Show the children how to pour the water carefully from one container into another. Children will use containers of differing shapes and sizes to explore the concept of capacity (how much a container can hold). How much water the containers *actually* hold is called the volume of water in the container.

Why this is important

While the children pour water from one container into another, they will explore concepts of more and less, and empty and full. They will learn the words we use to describe these concepts. They will learn that small containers can be used to measure the volume of water in large containers. For example, a teapot may contain six cups of water. Pouring water from one cup into another cup with no water left over, tells us that both cups held the same amount of water.

Children explore which containers hold 'the most', 'more', 'same', 'less' or 'the least' water by pouring water from one container into another.

You will need

- A bucket/washing up bowl
- Containers
- Water (you may choose to add food colouring to the water)

Learning Objectives

For the children to:

1. Compare the capacity of vessels of various shapes and sizes.
2. Discover that capacity of containers varies.
3. Discover that capacity and volume can be measured.
4. Observe that containers of lesser capacity can be used to measure the capacity of larger containers.
5. Use new words when comparing capacity and volume.

Important words to use

- More than, less than or same as
- Smaller or larger (container)
- Empty, half-full, full
- Same or different
- Capacity
- Volume



Measurement

Capacity and volume: water play

What the educator does

1. Always supervise children around water.
2. Offer a range of containers of different sizes.
3. Show the children how to pour the water carefully from one container into another.
4. Use words such as empty, half-full, nearly full and full. Support children using these words accurately. Talk about the amount of water that each container can hold and compare the capacities of the containers together. Encourage the children to use these words while they play.
5. Encourage the children to compare the capacity of the different containers by asking questions: Which is the smaller one? How much water do you think this container will hold? Will you have enough water to fill that container to the top? Is it full yet? How can we work it out?
6. Ask the children to empty the containers of water back into the bucket. Then have them work together to position the containers in a line in order of capacity: least to most.
7. Demonstrate how to measure the number of cups of water needed to fill a container, counting as you go. Encourage each child to choose a container and to follow your example. Help the children to count the number of cups required to fill their container.



Drop back ideas

1. Provide a large can and have the children work together to fill it with water from the bucket, taking turns to add another cup of water. Help the children to measure (count) how many cups of water it takes to fill the can to the top.
2. Give each child a bowl to fill. Ask them to count the number of cups required to fill their bowl with water. Discuss the differences between the capacities of the different containers.

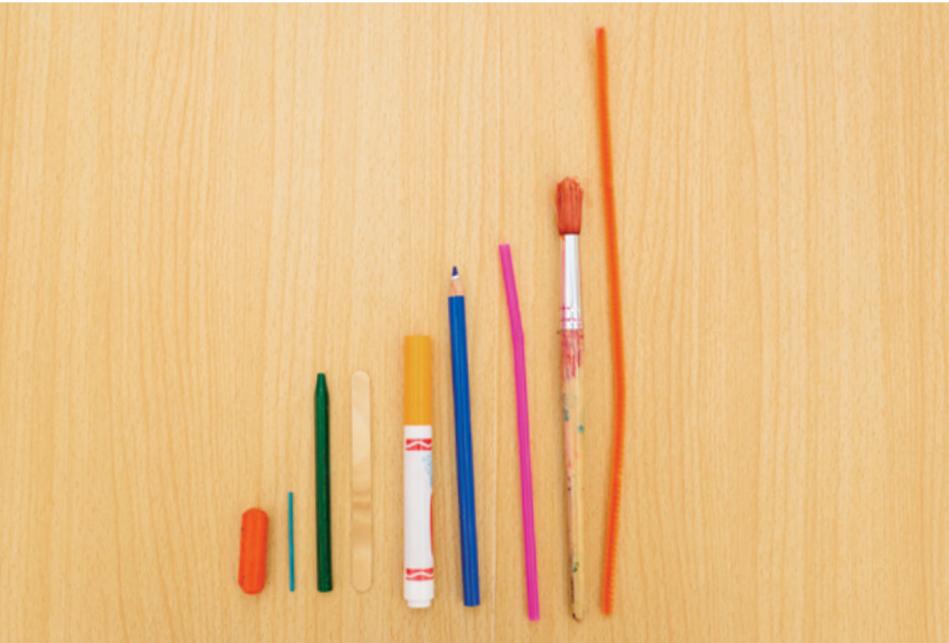
Extension ideas

1. The children choose two (or three) containers and count how many cups of water are needed to fill each container to the top. The children record the number of cups using numerals or by drawing pictures of the cups. Make a graph using this information. (See 'My Favourite Book' for an example.)
2. The children place the containers in order of increasing capacity (how many cups of water each container can possibly hold). Discuss how the number of cups relates to the order of the containers.
3. Measuring with cups and cans is 'informal' measurement. You could introduce 'formal' measurement. Show the children how to use a measuring cylinder to measure the amount of water that will fit in each container. Compare the measurements together.
4. If the children do not fill the container to the top, we need to talk about 'volume'. The volume of water in a container may be less than the total amount of water the container is able to hold (the 'capacity' of the container).
5. This learning experience can be presented in the sand pit, using containers of different capacity for children with sand.



Measurement

Length: comparing how long things are



This game should be played with two or three children at the same time. Children collect objects in the environment. They will compare the lengths of the objects they have found and work out which is the longest and which is the shortest.

Why this is important

When adults help children to compare lengths, children learn that there are important rules to remember: objects must start at the same point and they must be lined up straight.

Children learn that objects can be ordered according to their length.

Children will explore concepts like 'longer than', 'shorter than' and 'same length as' and learn the words that describe these concepts.

You will need

- Objects collected in the environment: pens, small toys, leaves and sticks
- 'Measuring sticks' (these could be sticks found outdoors or a pencil)

Learning Objectives

For the children to:

1. Sort objects by length.
2. Place the objects in order from shortest to longest.
3. Compare the length of the objects.
4. Say which is the shortest and which is the longest.
5. Explain how they worked out which object was shortest or longest.

Important words to use

- Long
- Short
- Tall
- Longer than
- Shorter than
- Same as
- Lower
- Higher



Measurement

Length: comparing how long things are

What the educator does

1. Ask each child to find a 'measuring stick'. This may be a straight stick that they find outdoors, or it may be a pencil.
2. Ask the children to lay their sticks on the ground.
3. Make sure that the sticks are lined up in a row and that they are laying straight. Help the children to discuss which is the longest stick and which is the shortest stick.
4. Encourage the children to find other objects in the environment. The children lay their 'measuring sticks' beside the object and discuss which is longer and which is shorter than their stick.

Drop back ideas

1. Look for many opportunities to approach these ideas informally.
2. When children are using wax crayons for drawing, lay two crayons side by side and ask children which crayon is 'longer' and which crayon is 'shorter'. Draw children's attention to the way you are lining up the objects so that the start of each object is on a straight line.
3. When children are playing with wooden blocks or Unifix blocks (connecting blocks), talk about which row of blocks is shorter and which is longer.
4. During painting activities, draw attention to the lengths of the lines children have painted.

Extension ideas

1. Ask some of the children to line up in height order from shortest to tallest. Compare the children's heights, introducing new words like 'taller', 'shorter', 'tallest' and 'shortest'.
2. Write the names of the children on a sheet of paper in order of height. Use a ruler or measuring tape to measure children's height. Write their heights (in cm) on the paper. Is the order correct?
3. Join in with the play: let the children use a tape measure or a ruler to measure your height. You may need to lie down for them to do this safely. Discuss where your name will go on the list. Encourage the children to explain their thinking.





Data Collection, Representation and Analysis

Classifying natural objects



Play this game with small groups of children. The children collect objects from the environment and sort the objects into groups, using different attributes of the objects such as size, shape or colour to sort them. This game also supports children's counting skills as they determine the number of objects in each group.

Discuss and compare the textures, colours, sizes and shapes of the objects collected. Encourage the children to share ideas about the ways in which the objects could be classified. For example, leaves, sticks and rocks. When the children have decided on 'rules' for the groups, each child chooses an object from the collection, describes the object and then adds it to the appropriate pile. Then the children compare the number of objects in each group.

Why this is important

In order to classify and sort objects, children first observe and describe the attributes of each object. As a final step, children count the number of objects in each group and decide which group has the most objects and which has the least objects. Sometimes, a small pile of objects (such as leaves) may have more objects than a large pile of objects (such as rocks).

With practice, children may learn to simultaneously group and count objects.

You will need

- Natural objects collected from the environment

Learning Objectives

For the children to:

1. Make observations about the attributes of objects using new words.
2. Sort objects into groups.
3. Use number words to count objects.
4. Compare set sizes by identifying which groups have more than, less than and the same as.

Important words to use

- Number words (e.g. one, two, three, etc.) to count objects
- Group, sort or classify
- Larger or smaller (number)
- Words to describe the attributes of natural objects (e.g. flat, long, thin, rough, smooth)



Data Collection, Representation and Analysis

Classifying natural objects

What the educator does

1. Each child collects five objects. The children sit facing you, with their collection in front of them.
2. Invite each child to show the group the objects they collected and to describe them: 'This leaf is long, thin and flat.'
3. After describing the objects, the children place them in the centre of the circle.
4. The educator chooses two objects from the big pile (such as a leaf and a gumnut). Draw children's attention to the shape of the leaf and the gumnut. Ask questions like, 'Do you think the leaf is longer or shorter than the gumnut? How do you know?' Or, 'How could you describe the shape of the gumnut? Is it round or long and thin like the leaf?'
5. Start a group of leaves, a group of gumnuts and a group of rocks (your groups will differ).
6. Ask the children to estimate which group will contain the most objects. Ask the children to explain their thinking.
7. Encourage the children to take turns to choose an object from the collection and add it to the group it matches. Ask children to explain why they decided to place the object in that group. Other children may suggest an object belongs in a different group – ask them to explain why, and have a discussion about which group is the right group.
8. The object may belong to two groups. This may mean that some groups overlap.
9. Count the number of objects in each group and compare the sizes of the groups. Check which group contained the most objects, the least, etc.

Drop back idea

1. After Step 2 (above), ask the children to line up the objects in order of size, i.e. from the shortest to the longest object. Use words such as same as, similar (nearly the same as), different, longer or shorter, round, flat. Encourage the children to explain why they chose to put the objects in this sequence. If the sequence could be improved, ask the children if they can point out changes that would improve the shortest to longest sequence.

Extension ideas

1. Ask the children to think of a different way to group the objects. Ask the children to explain their thinking. Invite the children to work in pairs and group their objects according to a rule they choose (such as colour, shape, texture).
2. Challenge the children to classify the objects in each group according to another attribute. For example, ask the children re-organise the objects in the 'large group' according to colour. At each stage, encourage the children to count their groups and compare group sizes.
3. This activity lends itself to measuring objects and weighing objects – the measurements provide further data for analysis and discussion.





Data Collection, Representation and Analysis

My favourite book



In early childhood, data collection is a way to find answers to simple questions such as, 'Which book should we read?' Activities that support data collection are often more effective when a few children take part.

In this game, children vote for the book they would like to read and work out which book is the most popular.

You will need

- Books
- Bowls
- Pebbles, rocks or blocks

Learning Objectives

For the children to:

1. Find the answer to a simple question by collecting data.
2. Use symbols (gumnuts, rocks or blocks) to represent information.
3. Use number words to count objects.
4. Use words to compare quantities.

Important words to use

- Number words (e.g. one, two, three)
- More
- Less
- Most
- Least

Why this is important

The children will practice making a decision when given several options. They will use objects to represent the children who choose each book. This is an interactive, playful way for children to practice collecting, representing and analysing data. Using these visual representations of quantity, children will be able to answer questions about the most popular book.



Data Collection, Representation and Analysis

My favourite book

What the educator does

1. Display a collection of books and give the children a few minutes to discuss which book they would like you to read.
2. Ask the children how they could decide which book is the most popular. Place a bowl in front of each book while the children consider your question.
3. Provide each child with a pebble (gumnut or block).
4. Ask the children to place their pebble (gumnut or block) in the bowl in front of the book that they would like you to read.
5. Invite children to suggest ways to answer the question. You may prompt the children by asking, 'Which bowl has the most pebbles?'
6. Ask a child to put the pebbles from one bowl in a row. Ask a different child to put the pebbles from the other bowl in a row beneath the first row.
7. Invite the children to guess which row has the most pebbles.
8. Count the pebbles to check. The bowl with the most pebbles was the most popular. (Be sure to read the book!)

Drop back ideas

1. *Instead of using pebbles to represent the data, ask children to raise their hands. Count their hands.*
2. *Ask children to stand in a row in front of their favourite book. Ask the children to work out which book received the most votes. This helps to demonstrate that as the quantity (and the count) increases, the value of the count increases – four children are visually more than one child.*

Extension ideas

1. *Ask similar questions throughout the daily program: Shall we have sandwiches or fruit at lunchtime? Which colour do you like best – green or yellow? Use gumnuts, pebbles or blocks to represent the data. Analyse the data with the children to answer the question.*
2. *Introduce more complicated questions, such as 'We have many types of fruit on the fruit platter. Which is the most popular?'*
3. *Play games that involve scoring. For example, Ten Pin Bowling. If a child knocks down four pins, they take four pebbles. At the end of one round, children work out who knocked down the most pins by counting the pebbles they took.*
4. *Using a sheet of paper, record the number of pebble votes for each book. Compare the number symbols to work out which was the most popular. Ask the children to explain their thinking. (This will require knowledge of the sequence of numerals.)*



