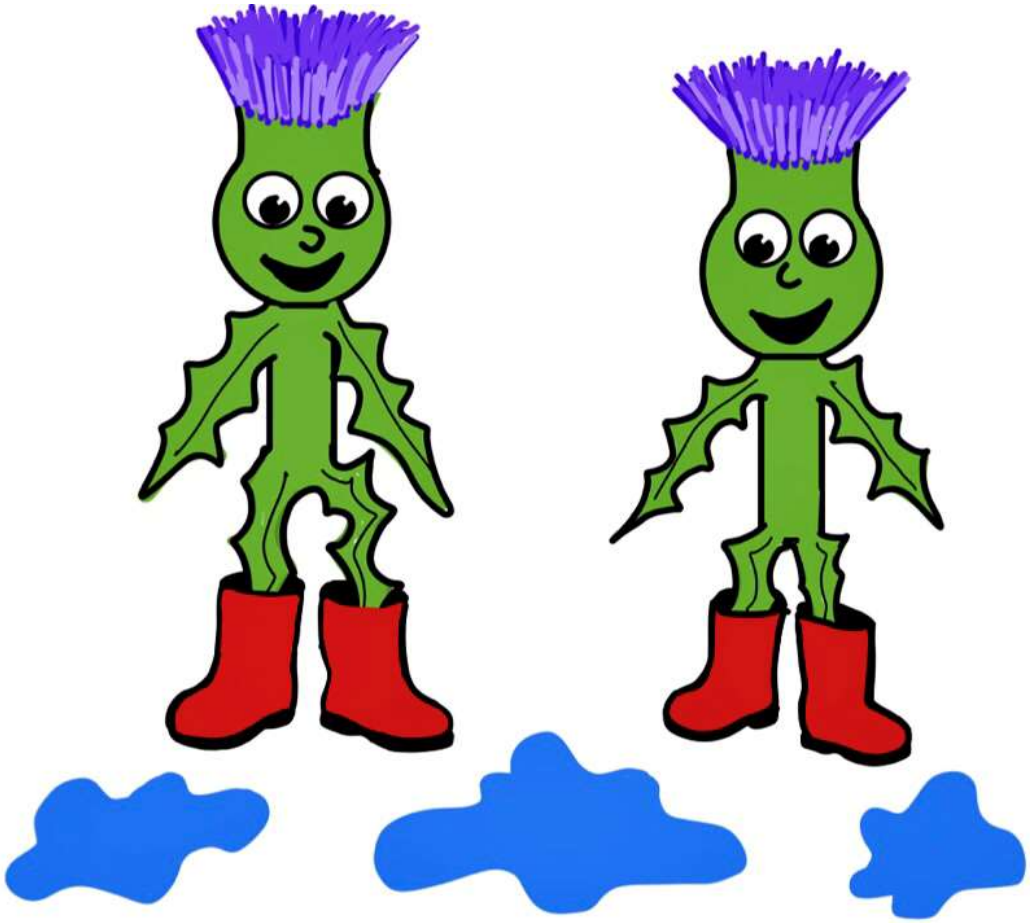
Glasgow Outdoors: Glasgow Counts



Early Level

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Glasgow Outdoors: Glasgow Counts

Welcome to Glasgow Outdoors: Glasgow Counts. This resource has been created to support the learning and teaching of numeracy within outdoor spaces and is comprised of suggested experiences and interactions linked to the numeracy organisers, in line with the CfE Experiences and Outcomes.

This resource has been designed to be used alongside the Glasgow Counts Framework . Each organiser has around 3 outdoor experiences per box, depending on the nature of the concept. As with all Glasgow Counts materials, please note that guidance on experiences, interactions and resources are not exhaustive . Practitioners should adapt and develop the learning experiences to best support the learners within their setting. This resource currently includes experiences for page 1 of Early Level Tracker 1, page 2 will be launched at a later date.

Progression in numeracy relies on learners developing an understanding of the links across the organisers. As such, it is essential that progression within each organiser is not achieved in isolation of the others. Planning may, therefore, focus on developing progressive learning experiences that draw from several of the organisers.

All children will follow a unique pathway in attaining concepts, therefore, when planning in advance, or in the moment, it is important to ensure each individual child's prior learning and next steps are catered for through effective questioning, extension of resources etc.

Practitioners should provide a balance of responsive, spontaneous and intentional learning opportunities. Please be flexible in your approach to ensure you can best plan for high quality learning and teaching.

We would like to acknowledge contributions from the Leaders of Early Learning and Lead Practitioners of Attainment working across the city.
Inspiration and guidance has also been taken from Education Scotland, NRich and Messy Maths.

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Why Glasgow Outdoors?

Within Scotland, children's right to daily opportunities for outdoor play is enshrined in national policy and guidance e.g.

- *Curriculum for Excellence Through Outdoor Learning* – "All staff at every level of involvement with the education of children and young people have a responsibility to make the most of the outdoor environment to support the delivery of the experiences and outcomes of Curriculum for Excellence."
- *Health and Social Care Standards* – "As a child, I play outdoors every day and regularly explore a natural environment" (HSCS 1.32).
- *Learning for Sustainability Action Plan* – "All learners should have an entitlement to Learning for Sustainability."

Benefits of taking learning outdoors:

- Rich stimulus for creativity, enquiry and problem solving
- Improved mental, emotional and physical health
- Development of language and communication skills
- Application of literacy and numeracy in meaningful contexts
- Instils a connectedness with, and appreciation of nature

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Why Glasgow Outdoors?

Risk-benefit analysis - COVID-19:

This resource has been created considering research evidence that suggests:

"…outdoor environments can limit transmission, as well as more easily allow for appropriate physical distancing between children"

Scottish Government; 21/08/20. Coronavirus (COVID-19): guidance on reopening early learning and childcare services

*****Please ensure you remain up to date with current COVID-19 guidance and follow your setting's individual risk assessment when engaging with this resource.*****

Care Inspectorate statement on risk in play

"The Care Inspectorate supports care service providers taking a positive approach to risk in order to achieve the best outcomes for children. This means moving away from a traditional deficit model that takes a risk-averse approach, which can unnecessarily restrict children's experiences... to a more holistic risk-benefit model".

30 October 2015, cited in My World Outdoors, p.18

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Glasgow's Improvement Challenge - Leaders of Early Learning

Glasgow Outdoors: Glasgow Counts - Numeracy Early Tracker 1

Navigate to home slide

Early Level Tracker 1

Organiser

Click the link to take you to the experience for that box within the organiser

Estimation & Rounding		Knows they can check estimates by counting within 0-10 E1.1-3 E1.2-3 E1.3-3		Can apply subitising skills to estimate the number of items in a set E2.1-1		Uses the language of estimation, including more than, less than, fewer than and the same E3.1-3 E3.2-3 E3.3-3		
Awareness of Number – Counting, Quantities & Number Structures	No. word seq.	Say short forward and backward number word sequences within 0-10 No1.1-1		Uses ordinal numbers in real life contexts e.g. I am first/second/third in the line' No2.1-2 No2.2-2		Recalls the number sequence forwards and backwards within 0-10 No3.1-2 No3.2-2		
	Numerals	Recognise numerals e.g. points to the number from 0-10 N1.1-2 N1.2-2	Identify (name) numerals e.g. can respond to question 'what is that number?' from 0-10 N2.1-5 N2.2-5 N2.3-5 N2.4-5 N2.5-5	Explains zero is represented as 0 N3.1-2 N3.2-2	Orders numerals forwards and backwards within 0-10 N4.1-4 N4.2-4 N4.3-4 N4.4-4	Identifies number before, after and missing numbers in a sequence within 0-10; beginning to use the language before, after and in-between N5.1-3 N5.2-3 N5.3-3		
	Subitising	Identifies 'how many?' in regular dot patterns e.g. dot arrangement/on fingers/five frames/10 frames/dice without counting up to 6 S1.1-3 S1.2-3 S1.3-3		Identifies 'how many?' in irregular dot patterns e.g. dot arrangement/on fingers/five frames/10 frames/dice without counting up to 6 S2.1-2 S2.2-2		Represents amounts in different arrangements e.g.dot arrangement/on fingers/five frames/ 10 frames/dice without counting up to 6 S3.1-4 S3.2-4 S3.3-4 S3.4-4		
	Counting	When counting objects understands the order in which we say the numbers is always the same (stable order) C1.1-3 C1.2-3 C1.3-3	Touch counts one item when each number word is said (1-to-1 correspondence) C2.1-3 C2.2-3 C2.3-3	When counting objects understands that the number name of the last object counted is the name given to the total number of objects in a set (cardinal principle) C3.1-3 C3.2-3 C3.3-3	When counting objects understands that the number of objects is not affected by position (order irrelevance) C4.1-2 C4.2-2	Counts objects in a set recognising that the appearance of the objects has no effect on the overall total within 0-10 (conservation) C5.1-2 C5.2-2	Counts anything e.g. objects at a distance/in a book/sounds/claps within 0-10 (abstract principle) C6.1-3 C6.2-3 C6.3-3	
	Place Value	Explains that zero means there is none of a particular quantity PV1.1-3 PV1.2-3 PV1.3-3			Partitions quantities to 10 into 2 or more parts and recognises that this does not affect the total e.g. 6 as 3 and 3/2 and 2 and 2 PV2.1-3 PV2.2-3 PV2.3-3			
Addition and Subtraction		Sorts & classifies objects using quantity as an attribute e.g. sets of 1, 2 within 0-10 AS1.1-3 AS1.2-3 AS1.3-3	Compares 2 sets to decide which has the fewest/most within 0-10 AS2.1-2 AS2.2-2	Finds the total when 1,2 or 3 is added to an existing amount e.g. a number line or height chart (augmentation) AS3.1-3 AS3.2-3 AS3.3-3	Finds the total when 2 sets are added together within 0-10 (aggregation) AS4.1-2 AS4.2-2	Finds out how many are left when 1 or 2 are taken away within 0-10 AS5.1-3 AS5.2-3 AS5.3-3	Compares to find the difference between sets as a quantity within 0-10 AS6.1-1	Beginning to count on and back in ones to add and subtract with objects or number line within 0-10 AS7.1-3 AS7.2-3 AS7.3-3
Multiplication and Division		Shares out a group of items into 2 equal sets within 0-10. Groups objects into matching or natural sets of 2 e.g. shoes within 0-10 M&D1.1-3 M&D1.2-3 M&D1.3-3			Begin to identify halves and doubles using concrete materials within 0-10 M&D2.1-3 M&D2.2-3 M&D2.3-3			
Fractions, Decimals and %		Identifies wholes and halves in a social context and uses appropriate language e.g. 'I have eaten half of my banana' FD%1.1-3 FD%1.2-3 FD%1.3-3		Splits a whole into smaller parts and explains that equal parts are the same' FD%2.1-2 FD%2.2-2		Understands that a w can be shared equally and unequally FD%3.1-2 FD%3.2-2		

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Organiser

Main focus of experience is highlighted in yellow

Secondary focus of experience is highlighted in green

Navigate to home slide

Experience code referenced on tracker page

Information explaining why this concept/skill is important in early mathematical development

Suggested vocabulary from Glasgow Counts Framework backpages

Concepts explored from other Numeracy organisers

Numerals	Recognise numerals e.g. points to the number from 0-10	Identify (name) numerals e.g. can respond to question 'what is that number?' from 0-10	Explains zero is represented as 0	Orders numerals forwards and backwards within 0-10	Identifies number before, after and missing numbers in a sequence within 0-10; beginning to use the language before, after and in-between

N2.3-5 N4.2-4

Ten-ness of Ten

A numeral is a symbol or name that stands for a number, e.g. 3, 49 and 352 are all numerals. A digit is a single symbol used to make numerals. 0, 1, 2, 3, 4, 5, 6, 7, 8 and 9 are the ten digits we use in everyday numerals.

Aim: *To respond correctly when asked to identify (name) a numeral.*

Suggested Experiences and Interactions:

- Number buckets or tubs with 0 – 10.
- Children select a bucket. Encourage them to recognise and identify the numeral on it. The children should then find items to fill up the bucket with the identified numeral e.g. 3 leaves in the tub numbered 3, 8 stones in the tub numbered 8.
  "Can you read me the number on this bucket?"
  "I wonder if you can point to the bucket that has 5 leaves in it?"
- Children should then 'check' that the number of objects matches with the numeral on their bucket using 1-1 correspondence.
  "I wonder how many you have…"
  "Do you have 8 stones in your bucket?"
  "Can you point to the bucket with number 3 and count on to 8?
- Challenge children by asking,
  "what number comes after…."
  "What number comes before…"
  "I wonder what number is one more than 5?"
- Finally children could order the buckets 0-10.
- A digital camera / iPad can be used to capture photos that depict the X-ness of a number e.g. a house with 3 chimneys, 4 wheelie bins. Children then match the numeral cards to the pictures. (Adult should take the photos to prevent multiple people touching the equipment).

Language: - number, numeral, count (forwards/backwards, up/down, on/back, to/from), zero, one, two, three, …ten, order, increasing, decreasing.

Resources:

- Numbered buckets (or tubs)
- A variety of stones, sticks, shells etc. to fill the buckets
- iPad/ camera
- Numeral cards 0-10

Other concepts explored:

- Principles of counting - stable order, 1-1 correspondence, cardinality
- Number word sequence

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Differentiation

Knowledge and experience of working with children in early years has been used to create this resource. However, the planners are intended as a starting point and are in no way exhaustive. This resource should be adapted to meet the needs of the children in each setting. There are many ways these planners can be differentiated.

What is meant by differentiated learning?
Differentiated learning is not a single approach, but includes a number of elements involving adapting learning, teaching and assessment to meet individual children's needs. By differentiating learning, practitioners develop multiple starting points and pathways which are tailored to children's individual learning needs.
Adapted from "A Knowledge Into Action resource for practitioners and education staff differentiated learning in numeracy and mathematics" (2015)

The main ways this can be achieved is by considering the following four aspects of learning; **Content**, **Process**, **Product** and **Learning Environment**.
Looking further at these four concepts some examples of way the resource can be differentiated are:
- **Content** - variety of learning materials to support learning, contexts to meet child's interest, relevant to their world around them
- **Process** - provision of different starting points, child led, altering the intended outcome and success criteria in reference to tracker, effective interactions with practitioners
- **Product** - use a variety of questions to ascertain understanding, choice of how to present findings for children
- **Learning Environment** - well planned and organised resources within a safe outdoor space

Assessment
Assessment is a vital component of differentiated learning as this allows us to build on prior learning and plan for next steps. This resource is clearly aligned with the Glasgow Counts tracker and they should always be used in conjunction with each other.

In some of the experiences and interactions suggestions of challenge are presented. Practitioners are expected to offer elements of challenge or support to these activities with consideration of knowledge of the whole child in their care.

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Glasgow Outdoors: Glasgow Counts
Early Level

Number, Money & Measure

- Number Overview
- Experiences and Interactions
- Money & Measure Overview
- Experiences and Interactions
- Still to come…

Shape, Position & Movement

- Overview
- Experiences and Interactions
- Still to come…

Information Handling

- Overview
- Experiences and Interactions
- Still to come….

Glossary

Resource List

Suggested Resource List

Loose parts e.g. stones, sticks, shells, pinecones, buttons	Standard and non-standard containers e.g. boxes, bags, baskets, bottles, plastic tubs	Dice, large and small with dot patterns and numerals	Outdoor abacus
Blank paper or card	Sand, water and mud	Wellies	Musical instruments
Pegs	Tarpaulin	Chalk	Editable dice
iPad or camera	Guttering	Cards with regular and irregular dice patterns and arrays	Outdoor bricks/Construction
Fishing rod or net	Wheels/tyres/hoops/discs	Cards with dot pattern, numeral and number name	Lego bricks
Numicon	Measuring tape	Whiteboards, pens and sponges	Mirrors
Ribbon, string, wool, rope	Metre stick	Clipboards and pens	Subitising stones
Tape - masking, duct, insulating	Outdoor scales	Balls	Bean bags
Fabric	Arrays – 10 frame, 5 frame, egg boxes, ice cube trays, muffin tin	Wooden discs with arrays	Cones
Padlocks and keys (with array keyrings)	Numeral cards 0-10	Cardboard spinner	Hoist
Nuts and bolts	Number sets 0-9 e.g. plastic, wooden, mirrored, pebbles, wood slices	Resources with a scale e.g. measuring jugs, cylinders, measuring cups	Photos of numbers in the world around e.g. registrations, road signs buses, houses, post boxes,
Stopwatches, sand timers and clocks	Number lines and blank tracks	Sticky numbers	Small world resources e.g. dinosaurs, vehicles, mini beasts

Glossary of terms (1)

Abstraction Principle	It does not matter what you count, the way you count stays the same. Any set of objects can be counted as a set, regardless of whether they are the same colour, shape, size, etc. This can also include non-tangible things such as sounds, actions, and objects at a distance.	**Concrete (materials)**	Using everyday objects and learning materials such as counters, blocks, beads, to develop an understanding of numerical and mathematical concepts.
Addition	The process of calculating the total of two or more numbers or amounts	**Consecutive numbers**	Numbers that are next to one another in numerical order.
Aggregation	Addition as bringing together or combining two numbers and sets.	**Conservation (of number)**	Recognition that, no matter what order, or how displayed, a given set has the same number of items in it.
Array	A rectangular arrangement of objects used to represent a number in a way that illustrates multiplication and division. Objects are arranged in rows and columns. E.g. egg boxes and 10 frames.	**CPA - The acronym for Concrete, Pictorial, Abstract,**	A system of learning that uses physical and visual aids to build a child's understanding of concepts. It is important to realise that these are not stages gone through once, but a continuum. There will be occasions when a child will use concrete, pictorial and abstract representations all in one activity.
Augmentation	Finding the total when 1,2 or 3 is added to an existing amount e.g. a number line or height chart.	**Division**	Division is sharing or grouping a number into equal parts.
Bar Graph	A graph using bars to donate quantity or numbers.	**Empty number line**	A number line which can have any starting number. It can be used to add or subtract in steps that the learner finds comfortable.
Cardinality	The number given to the total amount of items in a set where the items are counted in order. The last count word in the counting sequence represents the total number of items in the collection.	**Grouping**	In the context of division, grouping is splitting a quantity into groups of a given size e.g. splitting 12 counters into groups of 3 (there are 4 groups).
Conceptual understanding	Knowing more than just isolated facts and procedures. It is hoped that if learners have a deep understanding of concepts, they will find it easier to transfer this knowledge into new or unknown situations and apply it to new contexts.	**Multiplication**	A mathematical operation where a number is added to itself several times.

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Glossary of terms (2)

Number/ Numeral identification	When shown a number, say which number it is e.g. what number is this?	**Place value**	The relative value of different digits within a number. It is the position of a digit within a number that determines what value that digit represents. The use of zero as an empty place value holder is important.
Number/ Numeral recognition	In a group of numbers, find the requested number e.g. where is the 3?	**Partitioning**	To split a number into its component parts. This is useful when performing mental calculations. It is important to partition numbers in a variety of ways, not simply into tens and ones
1-1 correspondence	When counting, each object must be counted only once and as the number name is identified.	**Sharing**	In the context of division, sharing is splitting a quantity into a number of equal/unequal shares.
		Subtraction	To take one quantity away from another.
Ordinal numbers	These describe a position in an ordered set e.g. first, sixth…	**Sum**	The result of adding two or more numbers.
Part-part-whole	The process of splitting numbers into parts, such as splitting 8 into 6 and 2. This allows learners to see the relationship between a number and its component parts. This can result in learners making connections between addition and subtraction.	**Subitising**	Recognising a quantity without counting.
Pictorial (representations)	Visual diagrams such as dots, number lines and grids to develop an understanding of numerical and mathematical concepts.	**Stable Order**	When counting objects, the order in which numbers are said is always the same.

Adapted from Education Scotland, Numeracy and Mathematics Glossary, 2016
https://education.gov.scot/media/rallfbmy/plr-glossarynumeracy.pdf

Tracker 1

Number Progression Pathways: Early Level

Tracker 2

Estimation and Rounding		Knows they can check estimates by counting within 0-10 Can apply subitising skills to estimate the number of items in a set	Uses the language of estimation, including more than, less than, fewer than and the same		Checks estimates by counting	Demonstrates skills of estimation in the context of number
Awareness of Number – Counting, Quantities & Number Structure	**No. word sequences**	Say short forward and backward number word sequences within 0-10	Uses ordinal numbers in real life contexts e.g. I am first/second/ third in the line'	Recalls the number sequence forwards and backwards within 0-10	Recalls the Number sequence forwards and backwards, from zero to at least 20, from any given number. Orders numbers forwards & backwards to at least 20. Identifies the number before, after and missing numbers in a sequence.	
	Numerals	Recognises and identifies numerals within 0-10 Explains that zero is represented by the numeral '0' Orders numerals forwards and backwards within 0-10 Identifies number before, after and missing numbers in a sequence within 0-10; beginning to use the language before, after and in-between			Recognises number names and numerals to at least 20. Orders numbers forwards & backwards within the range 0-20. Identifies the number before, after and missing numbers in a sequence.	
	Subitising	Identifies and represents regular and irregular dot patterns in different arrangements e.g.dot arrangement/on fingers/five frames/ 10 frames/dice without counting up to 6			Identifies 'how many?' in regular & irregular dot patterns, arrays, five frames, ten frames and dice without having to count – SUBITISING.	
	Counting	Uses the 5 principles of counting to count objects within 0-10 Counts objects in a set recognising that the appearance of the objects has no effect on the overall total within 0-10 (conservation)			Uses 1-to-1 correspondence to count a given number of objects to at least 20. Uses ordinal numbers in real life contexts.	Counts in jumps (skip counts) in 2s, 5s and 10s and begins to use this as a useful strategy to find how many in a larger group.
	Place Value	Explains that zero means there is none of a particular quantity Partitions quantities to 10 into 2 or more parts and recognises that this does not affect the total e.g. 6 as 3 and 3/2 and 2 and 2			<u>Partitions single digit numbers into two or more parts and recognises that this does not affect the total.</u>	<u>Demonstrates understanding of all possible partitions of numbers to at least 10.</u>
Addition and Subtraction		Compares 2 sets to decide which has the fewest/most within 0-10 Sorts, classifies partitions, orders and compares sets that have the same and differing quantities Beginning to count on and back in ones to add and subtract with objects or number line within 0-10			Counts on and back in ones to demonstrate understanding of addition and subtraction.	Use appropriately the mathematical symbols +, -, =. Links number families when explaining mental strategies for addition & subtraction. Solves simple missing number equations, for example, 3 + ● = 10. Uses a range of strategies to add and subtract mentally to at least 10.
Multiplication and Division		Shares out a group of items into 2 equal sets within 0-10 Groups objects into matching or natural sets of 2 e.g. shoes within 0-10 Begin to identify halves and doubles using concrete materials within 0-10			Shares out a group of items equally into smaller groups	Doubles numbers to a total of at least 20.
Fractions, Decimals and %		Identifies wholes and halves in a social context and uses appropriate language e.g. 'I have eaten half of my banana'	Splits a whole into smaller parts and explains that equal parts are the same size Understands that a whole can be shared equally and unequally		Splits a whole into smaller and explains that 'equal parts' are the same size. Uses appropriate vocabulary to describe each part, to at least halves and quarters.	

Early Level Tracker 1

Estimation & Rounding		Knows they can check estimates by counting within 0-10 E1.1-3 E1.2-3 E1.3-3		Can apply subitising skills to estimate the number of items in a set E2.1-1		Uses the language of estimation, including more than, less than, fewer than and the same E3.1-3 E3.2-3 E3.3-3	
Awareness of Number – Counting, Quantities & Number Structure	**No. word seq.**	Say short forward and backward number word sequences within 0-10 No1.1-1		Uses ordinal numbers in real life contexts e.g. I am first/second/third in the line' No2.1-2 No2.2-2		Recalls the number sequence forwards and backwards within 0-10 No3.1-2 No3.2-2	
	Numerals	Recognise numerals e.g. points to the number from 0-10 N1.1-2 N1.2-2	Identify (name) numerals e.g. can respond to question 'what is that number?' from 0-10 N2.1-5 N2.2-5 N2.3-5 N2.4-5 N2.5-5	Explains zero is represented as 0 N3.1-2 N3.2-2	Orders numerals forwards and backwards within 0-10 N4.1-2 N4.2-2	Identifies number before, after and missing numbers in a sequence within 0-10; beginning to use the language before, after and in-between N5.1-2 N5.2-2	
	Subitising	Identifies 'how many?' in regular dot patterns e.g. dot arrangement/on fingers/five frames/10 frames/dice without counting up to 6 S1.1-3 S1.2-3 S1.3-3		Identifies 'how many?' in irregular dot patterns e.g. dot arrangement/on fingers/five frames/10 frames/dice without counting up to 6 S2.1-2 S2.2-2		Represents amounts in different arrangements e.g.dot arrangement/on fingers/five frames/ 10 frames/dice without counting up to 6 S3.1-4 S3.2-4 S3.3-4 S3.4-4	
	Counting	When counting objects understands the order in which we say the numbers is always the same (stable order) C1.1-3 C1.2-3 C1.3-3	Touch counts one item when each number word is said (1-to-1 correspondence) C2.1-3 C2.2-3 C2.3-3	When counting objects understands that the number name of the last object counted is the name given to the total number of objects in a set (cardinal principle) C3.1-3 C3.2-3 C3.3-3	When counting objects understands that the number of objects is not affected by position (order irrelevance) C4.1-2 C4.2-2	Counts objects in a set recognising that the appearance of the objects has no effect on the overall total within 0-10 (conservation) C5.1-2 C5.2-2	Counts anything e.g. objects at a distance/in a book/sounds/claps within 0-10 (abstract principle) C6.1-3 C6.2-3 C6.3-3
	Place Value	Explains that zero means there is none of a particular quantity PV1.1-3 PV1.2-3 PV1.3-3			Partitions quantities to 10 into 2 or more parts and recognises that this does not affect the total e.g. 6 as 3 and 3/2 and 2 and 2 PV2.1-3 PV2.2-3 PV2.3-3		
Addition and Subtraction		Sorts & classifies objects using quantity as an attribute e.g. sets of 1, 2 within 0-10 AS1.1-3 AS1.2-3 AS1.3-3	Compares 2 sets to decide which has the fewest/most within 0-10 AS2.1-2 AS2.2-2	Finds the total when 1,2 or 3 is added to an existing amount e.g. a number line or height chart (augmentation) AS3.1-3 AS3.2-3 AS3.3-3	Finds the total when 2 sets are added together within 0-10 (aggregation) AS4.1-2 AS4.2-2	Finds out how many are left when 1 or 2 are taken away within 0-10 AS5.1-3 AS5.2-3 AS5.3-3	Compares to find the difference between sets as a quantity within 0-10 AS6.1-1	Beginning to count on and back in ones to add and subtract with objects or number line within 0-10 AS7.1-3 AS7.2-3 AS7.3-3
Multiplication and Division		Shares out a group of items into 2 equal sets within 0-10. Groups objects into matching or natural sets of 2 e.g. shoes within 0-10 M&D1.1-3 M&D1.2-3 M&D1.3-3			Begin to identify halves and doubles using concrete materials within 0-10 M&D2.1-3 M&D2.2-3 M&D2.3-3		
Fractions, Decimals and %		Identifies wholes and halves in a social context and uses appropriate language e.g. 'I have eaten half of my banana' FD%1.1-3 FD%1.2-3 FD%1.3-3		Splits a whole into smaller parts and explains that equal parts are the same' FD%2.1-2 FD%2.2-2		Understands that a whole can be shared equally and unequally FD%3.1-2 FD%3.2-2	

Estimation & Rounding	Knows they can check estimates by counting within 0-10	Can apply subitising skills to estimate the number of items in a set	Uses the language of estimation, including more than, less than, fewer than and the same

E1.1-3 E3.1-3

Scavenger Hunt

Estimation is finding a number that is close enough to the answer. It requires understanding of awareness of number and measure. Developing skills in estimation helps children check the closeness of their estimate and can lead to better understanding of place value and mathematical processes (addition, subtraction, multiplication and division). Opportunities to explore estimation should be sought regularly and embedded throughout all other strands.

Aim: *To estimate and check how many objects by counting.*

Suggested Experience and Interactions:

- Invite children to take part in a nature scavenger hunt to find a variety of objects within your outdoor space i.e. pinecones, leaves, sticks etc. Label containers to allow children to sort and classify the objects that they find. When all objects are placed in the correct baskets encourage children to discuss the amount of objects in each container using the vocabulary; more than, fewer than, same as, to compare objects i.e.
  "Do you think there are more stones than leaves?"
  "Which container has the fewest objects?"
  "Which container has the most objects?"
- Practitioners should then manipulate containers to work with quantities of objects from 0-10 (challenge could be provided by placing more than 10 objects within a container). Invite children to estimate how many objects they think are in each container.
  "How many sticks do you think there are?"
  "What makes you say that?"
  "Do you think there are more than 5?"
  "Do you think there are fewer than 10?"
- Answers could be recorded on white boards or with chalk on the ground.
- Children should then count objects to check if their estimate is close to the actual amount in each container.
  "I wonder if we should count to check?"
  "Was your estimate close enough to the answer? Why?"

Language: estimate, same as, more than, fewer than, big enough, small enough, too many, too few, just right, just the right amount, few/fewest, more/most

Resources:

- Clear containers or baskets
- Variety of loose parts

Other concepts explored:

- Sorting and classifying
- Stable order principle, 1-1 correspondence, cardinal principle

Estimation & Rounding	Knows they can check estimates by counting within 0-10	Can apply subitising skills to estimate the number of items in a set	Uses the language of estimation, including more than, less than, fewer than and the same

E1.2-3 E3.2-3

Estimating Distance

Estimation is finding a number that is close enough to the answer. It requires understanding of awareness of number and measure. Developing skills in estimation helps children check the closeness of their estimate and can lead to better understanding of place value and mathematical processes (addition, subtraction, multiplication and division). Opportunities to explore estimation should be sought regularly and embedded throughout all other strands.

Aim: - *To estimate and check, by counting, how many movements there are between two landmarks.*

Suggested Experience and Interactions:

- Within a small group discuss different ways of moving from one landmark to another for example baby steps, giant steps, frog jumps etc.
- Model an example of how to estimate and check a distance between two points.
  "I wonder how many baby steps I will need to take to get from the bin to the tree… I estimate it will take me seven baby steps. That is how many steps I think it will take. Shall we count to check my estimate?"
- Model moving between the two points counting with the children as you move.
  "It took nine baby steps, is that more than or less than my estimate?"
  You may wish to record the estimate and actual answer on paper or on a white board.
- Invite children to select two other landmarks and estimate the distance it will take them to travel between the two points using non-standard units of measurements of their choice e.g. baby steps, frog jumps etc.
- Check the count of steps/ jumps throughout and compare the estimated number of steps/ jumps with the actual number of movements.
  "How many steps did you take?" "Was that more than or less than you thought?"
  "Was your estimate close enough to the answer?"

Language: estimate, same as, more than, fewer than, big enough, small enough, too many, too few, just right, just the right amount, few/fewest, more/most

Resources:

- Space with a variety of landmarks that can be reached by children e.g. tree, shed, bus stop, postbox etc.
- Resources for recording estimates and actual answers e.g. clipboard and paper or white board (optional)

Other concepts explored

- Stable order principle, 1-1 correspondence, cardinal principle
- Number word sequences
- Numeral recognition

Estimation & Rounding	Knows they can check estimates by counting within 0-10	Can apply subitising skills to estimate the number of items in a set	Uses the language of estimation, including more than, less than, fewer than and the same

E1.3-3 E2.1-1 E3.3-3

Grab a handful

Estimation is finding a number that is close enough to the answer. It requires understanding of awareness of number and measure. Developing skills in estimation helps children check the closeness of their estimate and can lead to better understanding of place value and mathematical processes (addition, subtraction, multiplication and division). Opportunities to explore estimation should be sought regularly and embedded throughout all other strands.

Aim: *To use subitising skills to estimate how many items are in a set.*

Suggested Experience and Interactions:

- Explain to children that they are going to use their subitising skills to make estimates. Remind children that subitising means to say how many they think there are without counting and that an estimate is a guess.
- Fill a medium size bag or container with loose parts of a similar size e.g. shells or stones.
- Invite children to grab a handful of the objects and place them down in front of them.

  "***Let's use our super subitising skills to estimate how many there are."***

  "Without counting, how many stones do you think you have?"

  You may wish to record their answers.
- Encourage children to compare their handfuls with each other and support their thinking by asking questions such as;

  "Do you think you have more than, fewer than or about the same as your friend?" "Why do you think that?"
- Count with the children to check how close their estimate was to the actual amount.
- Providing opportunities for children to apply their subitising skills throughout the course of the day will help develop this skill.
- In the outdoor space, ***"Without counting, how many flowers are in the blue pot?"***
- At the snack table, ***"Without counting, how many slices of apple do you think there are on your plate?"***

Language: estimate, subitise, same as, more than, fewer than, , few/fewest, more/most

Resources:

- A bag or container
- Shells or stones

Other concepts explored

- Subitising
- 5 Principles of counting

No. word sequences	Say short forward and backward number word sequences within 0-10	Uses ordinal numbers in real life contexts e.g. I am first/second/third in the line'	Recalls the number sequence forwards and backwards within 0-10

No1.1-1

Beat The Magic Number

Number sequences are sets of numbers that follow a pattern or a rule in a list e.g. 0,1,2,3,4. The ability to count forwards and backwards between 0-10 is a necessary skill for addition and subtraction.

There are lots of spontaneous opportunities to develop children's knowledge of number sequences throughout the day.

Aim: *To join in reciting forward and backward number sequences between 0-10.*

Suggested Experience and Interactions:

- In a large outdoor space, make a circle with a group of children. Explain they are going to practice their counting skills, counting forwards or backwards.
- Ask a child to choose a number up to 10. This can be called the 'magic number'. The children then pass the ball around the circle and all children join in reciting the number sequence 0 to the 'magic number'. When the children reach the 'magic number', the child who has the ball passes it to the next person and runs around the circle and back to their place. Meanwhile, the rest of the children repeat the number sequence all together and continue to pass the ball around the circle.
- In order to beat the 'magic number' the child must get back to their place before the ball reaches them again.
- Repeat a few times with each number sequence before selecting another 'magic number'.
- Children should be given opportunities to play this game using both forward and backward number sequences.

Language: number, forwards, up, on, to, backwards, down, back, zero, one, two, three… ten, order, alternate, every other, take turns, next, after, before, first, second, third

Resources:

- A ball

Other concepts explored:

- Stable order principle

No. word sequences	Say short forward and backward number word sequences within 0-10	Uses ordinal numbers in real life contexts e.g. I am first/second/third in the line'	Recalls the number sequence forwards and backwards within 0-10

No2.1-2

Ordinal Numbers

An ordinal number is a ***number that indicates position or order in relation to other numbers:*** *first, second, third, and so on. Due to ordinal numbers being relational, they are an abstract concept which can be difficult for young children to understand. There are lots of opportunities for including incidental teaching of ordinal numbers in everyday practice.*

Aim: *To use ordinal numbers to describe position in an ordered set.*

Suggested Experiences and Interactions:

- Routines - By simply talking about consistent, sequential daily activities, you are teaching ordinal numbers. When getting ready to go outdoors, use ordinal numbers.
  "What is the first thing we need to do when we are going outside?"
  "Putting our jackets on is the first thing, what is the second thing we do?"
  "We change our shoes."
  "What is the third thing we need to do before we can go outside?"
  "Line up at the door"
- When children are getting ready to go outdoors, draw attention to their position.
  "***Stacey, you are first in the line. Simon, you are second in the line. Brian you are third in the line"***
  Encourage the children to tell you what ordinal number they are by their position in the line.
- When making a "potion" with children in the outdoor space, as you add twigs, leaves etc. model the language of ordinal numbers.
  "The first thing we added was the shells, then the second thing we added was the stones. Can anyone remember the third thing we added?"

- Ten Little ducks by Eric Carle is a good story book to support teaching of ordinal numbers.

Language: First, second, third, fourth

'Literacy, numeracy and mathematical thinking are woven within the fabric of all conversations, interactions and experiences. They are everywhere in the environment. They are part of a child's everyday life and are fundamental to all other learning.'

Realising the Ambition :Being Me p.70

Other concepts explored:

No. word sequences	Say short forward and backward number word sequences within 0-10	Uses ordinal numbers in real life contexts e.g. I am first/second/third in the line'	Recalls the number sequence forwards and backwards within 0-10

No 2.2-2 No3.1-2 **Beat The Magic Number (Recalling the Number sequence)**

Number sequences are sets of numbers that follow a pattern or a rule in a list e.g. 0,1,2,3,4. The ability to count forwards and backwards between 0-10 is a necessary skill for addition and subtraction.

There are lots of spontaneous opportunities to develop children's knowledge of number sequences throughout the day.

Aim*: To recall forward and backward number sequences between 0-10.*
This experience is a variation of the " Beat the Magic Number" game but develops recall of the number sequence, when a child can state the number independently.
Suggested Experience and Interactions:

- In a large outdoor space, make a circle with a group of children . Explain they are going to practice their counting skills, counting forwards or backwards.
- Ask a child to choose a number up to 10. This can be called the 'magic number'. **The children pass the ball around the circle and only the child holding the ball says the next number in the sequence** (support children if required)**.** When the children reach the 'magic number', the child who has the ball passes it to the next person and runs around the circle and back to their place. The rest of the children continue to repeat the number sequence **(with only the child holding the ball saying the next number in the sequence)** and continue to pass the ball around the circle.
- In order to beat the 'magic number' the child must get back to their place before the ball reaches them again.
- Repeat a few times with each number sequence before selecting another 'magic number'.
- Children should be given opportunities to play this game with using forward and backward number sequences.

Language: number, forwards, up, on, to, backwards, down, back, zero, one, two, three… ten, order, alternate, every other, take turns, next, after, before, first, second, third

Resources:

- A ball

Other concepts explored:

- Stable order principle

No. word sequences	Say short forward and backward number word sequences within 0-10	Uses ordinal numbers in real life contexts e.g. I am first/second/third in the line'	Recalls the number sequence forwards and backwards within 0-10

No3.2-2

Sharks and Islands

Number sequences are sets of numbers that follow a pattern or a rule in a list e.g. 0,1,2,3,4. The ability to count forwards and backwards between 0-10 is a necessary skill for addition and subtraction.

There are lots of spontaneous opportunities to develop children's knowledge of number sequences throughout the day.

Aim*: To recall forward and backward number sequences between 0-10 (*when a child can state the number sequence independently)

Suggested Experience and Interactions:

- Draw 11 shapes on the ground with chalk and write one number between 0-10 in a random pattern. Be mindful of size and location of the numbers on the islands so that it is possible for children to follow number sequences, making sure they are not too far apart from each other.
- Explain to children that the shapes are safe islands and the surrounding water is full of sharks. Challenge children to recall the number sequence from 0-10.
- Children must jump between the islands calling out the number as they land on each island following the correct forward number sequence starting from 0. They must aim to avoid falling into the water with the sharks.
- Once they have safely reached 10, challenge them to get safely back to 0 using the same pathway, saying the backward number sequence as they jump on each island.
- Try starting from a number other than zero.

"Can you get from island number 4 to island number 7? "

Notes- Children will need to be confident in numeral recognition to play this game. If they are not, ask them to say the next number in the sequence and support them to find the numeral that represents that number.

Language: number, forwards, up, on, to, backwards, down, back, zero, one, two, three… ten, order, alternate, every other, take turns, next, after, before, first, second, third

Resources:

- Chalk

Other concepts explored

- Numeral recognition

Numerals	Recognise numerals e.g. points to the number from 0-10	Identify (name) numerals e.g. can respond to question 'what is that number?' from 0-10	Explains zero is represented as 0	Orders numerals forwards and backwards within 0-10	Identifies number before, after and missing numbers in a sequence within 0-10; beginning to use the language before, after and in-between

N1.1-2 N2.1-5

Bubble Numbers

A numeral is a symbol or name that stands for a number, e.g. 3, 49 and 352 are all numerals. A digit is a single symbol used to make numerals. 0, 1, 2, 3, 4, 5, 6, 7, 8 and 9 are the ten digits we use in everyday numerals.

Aim: *To select the correct numeral when prompted by the number name.*

Suggested Experiences and Interactions:

- With the children, mark out several large bubbles on the ground using chalk. Write numerals inside the bubbles from 0-10. Alternatively, you could write numerals inside coloured hoops or put numeral cards up around your outdoor space.
- Children dance around the bubbles to music if you have it.
- Stop the music and call out a number. Initially call out the number e.g. 5, the children should be able to recognise and move to the bubble with the numeral 5 .
- Begin to challenge the children to identify numerals, for example;
  - ***"I wonder if you can see the number that comes after 3."***
  - ***"Can you find the bubble with number 6?"***
  - ***"Can we count on from 3 to 7? And backwards from 7 to 3?"***
  - ***"How many fingers do you see here? Can you find the bubble with that number?"***
- The child will be able to identify the numeral called out and jump in the bubble with the corresponding numeral.
- To build in further challenge and to support cardinality, ask children to do an action the same number of times. E.g. if 8 is selected, do 8 star jumps.

Language: number, numeral, count (forwards/backwards, up/down, on/back, to/from), zero, one, two, three, …ten, order, increasing, decreasing.

Resources:
- Chalk
- Music (optional)
- Hula hoops (optional
- Numeral Cards (optional)

Other concepts explored :
- Stable order principle, 1-1 correspondence, cardinal principle
- Subitising
- No word sequence

Numerals	Recognise numerals e.g. points to the number from 0-10	Identify (name) numerals e.g. can respond to question 'what is that number?' from 0-10	Explains zero is represented as 0	Orders numerals forwards and backwards within 0-10	Identifies number before, after and missing numbers in a sequence within 0-10; beginning to use the language before, after and in-between

N1.2-2 N2.2-5

Number Hunt

A numeral is a symbol or name that stands for a number, e.g. 3, 49 and 352 are all numerals. A digit is a single symbol used to make numerals. 0, 1, 2, 3, 4, 5, 6, 7, 8 and 9 are the ten digits we use in everyday numerals.

Aim: *To identify, select and order numerals within 10.*

Suggested Experiences and Interactions:

- Place numeral cards on trees/ fences/walls at children's eye level and hide the wooden/plastic numerals around the outdoor space.
- Begin by explaining to the children that when you call out a number they should run to the corresponding numeral card. This will allow you to ascertain whether the child recognises the numeral. To challenge children, try clapping out the number they need to run to (abstraction principle).
  - ***"Can you point to the number 2?"***
  - ***"I wonder if we can find the number 8?"***
  - ***"Find the number 5."***
  - ***"What number is Gemma standing beside?"***
- Then explain that all the wooden numbers from the nursery are missing from the box and ask the children to help you find them. Each child could be given a basket or a bucket to collect numbers. When the children return with their bucket of numbers, ask them to explore the numerals that they have found. Can they name the numerals which they have found?
  - ***"I wonder if anyone has found a number 3?"***
  - ***"What number is this?"***
  - ***"Does anyone have a number 9?"***
- Finally, ask the children to order their numbers within 0-10 (have extra numbers to fill gaps). This could be done individually or with a friend. Challenge the children to order the numbers backwards, depending on your group.
  - ***"What number comes next?"***
  - ***"What number comes after 8?"***
  - ***"I wonder how you could make the number 10?"***

Language: number, numeral, count (forwards/backwards, up/down, on/back, to/from), zero, one, two, three, …ten, order, increasing, decreasing.

Resources:

- Cards with numerals 0- 10 printed on them
- A variety of wooden or plastic numerals within 0-10

Other concepts explored:

- Number word sequences
- Stable order principle, 1-1 correspondence, cardinal principle, abstraction principle

Numerals	Recognise numerals e.g. points to the number from 0-10	Identify (name) numerals e.g. can respond to question 'what is that number?' from 0-10	Explains zero is represented as 0	Orders numerals forwards and backwards within 0-10	Identifies number before, after and missing numbers in a sequence within 0-10; beginning to use the language before, after and in-between

N2.3-5

Ten-ness of Ten

A numeral is a symbol or name that stands for a number, e.g. 3, 49 and 352 are all numerals. A digit is a single symbol used to make numerals. 0, 1, 2, 3, 4, 5, 6, 7, 8 and 9 are the ten digits we use in everyday numerals.

Aim: *To respond correctly when asked to identify (name) a numeral.*

Suggested Experiences and Interactions:

- Number buckets or tubs with 0 – 10.
- Children select a bucket. Encourage them to recognise and identify the numeral on it. The children should then find items to fill up the bucket with the identified numeral e.g. 3 leaves in the tub numbered 3, 8 stones in the tub numbered 8.
  "Can you read me the number on this bucket?"
  "I wonder if you can point to the bucket that has 5 leaves in it?"
- Children should then 'check' that the number of objects matches with the numeral on their bucket using 1-1 correspondence.
  "I wonder how many you have…"
  "Do you have 8 stones in your bucket?"
  "Can you point to the bucket with number 3 and count on to 8?
- Challenge children by asking,
  "What number comes after…."
  "What number comes before…"
  "I wonder what number is one more than 5?"
- Finally children could order the buckets 0-10.
- A digital camera / iPad can be used to capture photos that depict the X-ness of a number e.g. a house with 3 chimneys, 4 wheelie bins. Children then match the numeral cards to the pictures. (Adult should take the photos to prevent multiple people touching the equipment).

Language: - number, numeral, count (forwards/backwards, up/down, on/back, to/from), zero, one, two, three, …ten, order, increasing, decreasing.

Resources:

- Numbered buckets (or tubs)
- A variety of stones, sticks, shells etc. to fill the buckets
- iPad/ camera
- Numeral cards 0-10

Other concepts explored:

- Stable order principle, 1-1 correspondence, cardinal principle
- Number word sequences

Numerals	Recognise numerals e.g. points to the number from 0-10	Identify (name) numerals e.g. can respond to question 'what is that number?' from 0-10	Explains zero is represented as 0	Orders numerals forwards and backwards within 0-10	Identifies number before, after and missing numbers in a sequence within 0-10; beginning to use the language before, after and in-between

N2.4-5

Snap!

A numeral is a symbol or name that stands for a number, e.g. 3, 49 and 352 are all numerals. A digit is a single symbol used to make numerals. 0, 1, 2, 3, 4, 5, 6, 7, 8 and 9 are the ten digits we use in everyday numerals.

Aim: *To respond with the correct answer when asked to name a numeral*

Suggested Experiences and Interactions:

- Hide numerals and corresponding ten-frame numbers (or dice pattern) around the outdoor space.
- Invite children to find the numeral and matching quantity (ten-frame numbers/dice pattern)
- Children say "snap" when they have a matching pair i.e. they can match the numeral to the correct ten frame or dice pattern.
- Children can also find natural objects e.g. sticks to match the quantities on the cards.
- Ask the children to order the numerals forwards and/or backwards

  "Can you tell me what number you have found?"
  " What number does your friend have?"
  "Which number is missing?" (remove a number beforehand)
  "I wonder what comes before_" "I wonder what comes after_"
  "What number comes in between _ and _?"

Language: number, numeral, count (forwards/backwards, up/down, on/back, to/from), zero, one, two, three, …ten, order, increasing, decreasing.

Resources:
- Cards depicting numerals, dice patterns, arrays
- Pegs to display cards
- Resources such as loose parts to match quantities (optional)

Other concepts explored
- Stable order principle, 1-1 correspondence, cardinal principle
- Subitising
- Number word sequences

Numerals	Recognise numerals e.g. points to the number from 0-10	Identify (name) numerals e.g. can respond to question 'what is that number?' from 0-10	Explains zero is represented as 0	Orders numerals forwards and backwards within 0-10	Identifies number before, after and missing numbers in a sequence within 0-10; beginning to use the language before, after and in-between

N2.5-5 N3.1-2

Zero Jump

A numeral is a symbol or name that stands for a number, e.g. 3, 49 and 352 are all numerals. A digit is a single symbol used to make numerals. 0, 1, 2, 3, 4, 5, 6, 7, 8 and 9 are the ten digits we use in everyday numerals.

Aim: *To state that zero is expressed as 0 and identify numerals to 10.*

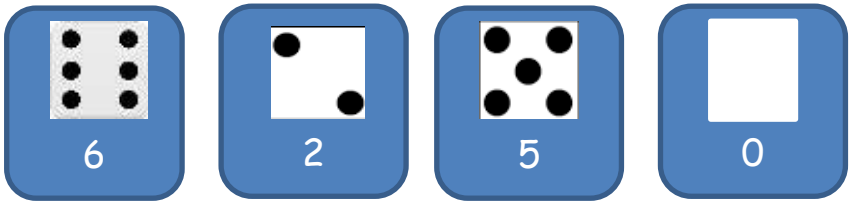
Suggested Experience and Interactions:

- Each child should stand within their own hula hoop.
- Explain that you are going to hold up a card and the children should shout the number and jump that amount of times in their hoop, counting aloud.
- Review the numeral cards in sequence with the children. First hold up the zero card. Ask*:*

  "What number is this?"

  "How many times do we jump for this number?"

  "I wonder how many jumps for this number?"
- Expect answers such as "None," "No times," or "Zero."
- Shuffle the cards 0-10. Hold up one card. Invite children as a group to jump the number of times shown by the circles and count aloud as they go. One of the children could take a turn of holding up the cards for their friends.
- Instead of jumping, children could hop, clap, puddle jump or star jump.



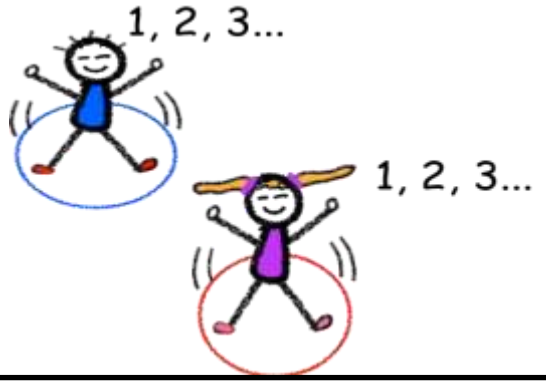
Language: number, numeral, count (forwards/backwards, up/down, on/back, to/from), zero, one, two, three, …ten, order, increasing, decreasing.

Resources:

- Numeral cards 0-10
- Hula Hoops

Other concepts explored:

- Subitising
- Number word sequences
- Stable order principle, 1-1 correspondence, cardinal principle



Numerals	Recognise numerals e.g. points to the number from 0-10	Identify (name) numerals e.g. can respond to question 'what is that number?' from 0-10	Explains zero is represented as 0	Orders numerals forwards and backwards within 0-10	Identifies number before, after and missing numbers in a sequence within 0-10; beginning to use the language before, after and in-between

N3.2-2

Zero Shape Hunt

A numeral is a symbol or name that stands for a number, e.g. 3, 49 and 352 are all numerals. A digit is a single symbol used to make numerals. 0, 1, 2, 3, 4, 5, 6, 7, 8 and 9 are the ten digits we use in everyday numerals.

Aim: *Children can state that zero is expressed as 0.*

Suggested Experiences and Interactions:

- In a small group show the 0 numeral card and use the word zero. Point out the symbol e.g. on the iPad, bike wheel, hula hoop, letter o.
- Then invite the children to go on a zero shape hunt around your outdoor space for things that are shaped like a 0 e.g. hoops, frisbee , wheels, etc.
- Allow children to search for as many items shaped like a 0 as possible.
- You could also allow the children to draw 0 using different mediums e.g. sticks in the mud, fingers in the sand, chalk on the chalkboard.
- Children can then count the number of items they have collected, using 1:1 correspondence.
  " I wonder what shape a zero looks like – can you draw it in the air?"
  "Can you show me 0 fingers on your hand?"
  "Can you point to the number 0?"
- A variation of this activity could also be completed on a local walk to find the numeral 0. E.g. car registrations, house numbers, bus numbers. These could be recorded using an iPad/camera or children could record their findings on paper. You could sing, ***'We're going on a Zero Hunt, we're going to catch a big one'***.
  " Can you see the number 0 anywhere in this street?
  "I wonder if there is a zero on any of these road signs?"
  "Let's see how many cars have a zero in their registration plate"

Language: number, numeral, count (forwards/backwards, up/down, on/back, to/from), zero, one, two, three, …ten, order, increasing, decreasing.

Resources:

- Add items such as: hoops, wheels, clocks, 0 numerals into your outdoor space
- 0 Numeral card
- iPad/Camera to record zeros(optional)
- Clipboard to record (optional)

Other concepts explored:

- Number word sequences
- Stable order principle, 1-1 correspondence

Numerals	Recognise numerals e.g. points to the number from 0-10	Identify (name) numerals e.g. can respond to question 'what is that number?' from 0-10	Explains zero is represented as 0	Orders numerals forwards and backwards within 0-10	Identifies number before, after and missing numbers in a sequence within 0-10; beginning to use the language before, after and in-between

N4.1-2 N5.1-2

Washing Line

A numeral is a symbol or name that stands for a number, e.g. 3, 49 and 352 are all numerals. A digit is a single symbol used to make numerals. 0, 1, 2, 3, 4, 5, 6, 7, 8 and 9 are the ten digits we use in everyday numerals.

Aim: *To order numerals between 0-10 forwards and backwards.*

Suggested Experiences and Interactions:

- Hang a washing line at child's height and attach a number 0-10 to each sock.
- Explain to the children that they must place the socks on the washing line in the correct order. The children can order the socks forwards or backwards.
- Challenge children to start from different numbers.

  "I wonder which number will come next?"

  "Can you hang these in order starting from zero?"

  "Let's see if we can count on from 3 to 8. Can you find the number 8?"
- You can then begin to build children's knowledge of numbers before, after, and between.

  "Can you tell me what number comes before/after _?"

  "I wonder what number comes between 5 and 7. Can you point to it? "
- You could also remove a sock from the washing line and ask the children;

  "What number is missing?"

  "I wonder what number is on the missing sock?"

Language: number, numeral, count (forwards/backwards, up/down, on/back, to/from), zero, one, two, three, …ten, order, increasing, decreasing.

Resources:
- 11 Socks (with numerals attached). Alternatively you could use laminated pictures of socks showing numerals.
- Numeral cards 0-10
- String
- Clothes pegs

Other concepts explored:
- Number word sequences
- Addition

Numerals	Recognise numerals e.g. points to the number from 0-10	Identify (name) numerals e.g. can respond to question 'what is that number?' from 0-10	Explains zero is represented as 0	Orders numerals forwards and backwards within 0-10	Identifies number before, after and missing numbers in a sequence within 0-10; beginning to use the language before, after and in-between

N4.2-2 N5.2-2

Missing Number Ladder

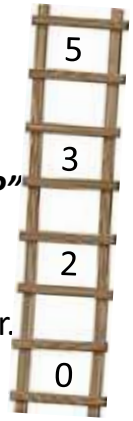
A numeral is a symbol or name that stands for a number, e.g. 3, 49 and 352 are all numerals. A digit is a single symbol used to make numerals. 0, 1, 2, 3, 4, 5, 6, 7, 8 and 9 are the ten digits we use in everyday numerals.

Aim: *To identify the missing numeral in a sequence between 0-10.*

Suggested Experience and Interactions:

- Use chalk (or duct tape) to draw a ladder on the ground.
- Put numbers in the ladder leaving some spaces blank.
- Invite children to select numeral cards/stones etc. to fill in the spaces.
- The numbers can either be placed nearby or hidden around the outdoor space. These can be ordered as they are found before adding them to the ladder.

  "What number is missing?"
  "What number comes between 5 and 7. Can you point to it? "
  "I wonder what number comes before/after _?"
  "I think that we have found all of our numbers. Shall we check?"



- To further develop this experience, children could also add the corresponding number of objects to each numeral on the ladder.

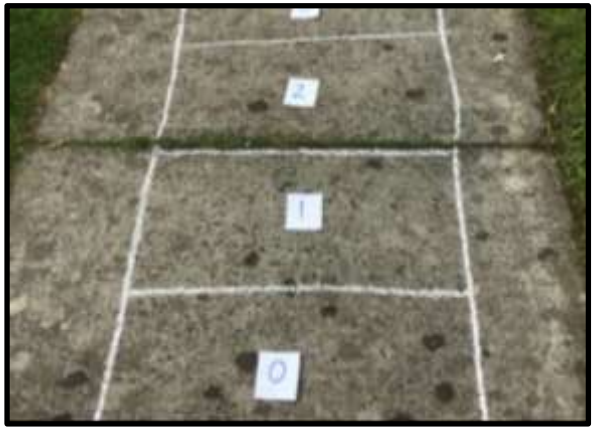
Language: number, numeral, count (forwards/backwards, up/down, on/back, to/from), zero, one, two, three, …ten, order, increasing, decreasing.

Resources:

- Chalk or duct tape
- Numerals 0-10 (on card/wooden / stones)
- Variety of objects for 1-1 correspondence

Other concepts explored:

- Number word sequences
- Stable order principle, 1-1 correspondence, cardinal principle



Subitising	Identifies 'how many?' in regular dot patterns e.g. dot arrangement/on fingers/five frames/10 frames/dice without counting up to 6	Identifies 'how many?' in irregular dot patterns e.g. dot arrangement/on fingers/five frames/10 frames/dice without counting up to 6	Represents amounts in different arrangements e.g.dot arrangement/on fingers/five frames/ 10 frames/dice without counting up to 6

S1.1-3

Subitising Fun

Subitising is an essential part of developing number sense. By looking at a group of items, children can start to develop an understanding of how a number is made up. There are two types of subitising, perceptual subitising, where you can instantly recognise the number of objects or items in front of you without counting, and conceptual subitising, which allows you to use recognisable patterns to help you get that same instant recognition without having to count.

Aim: *To identify how many dots there are by looking at regular dot patterns on dice using perceptual subitising.*

Suggested Experiences and Interactions:

- Subitise Race - The aim of the game is to be the first to reach the target. Create a start and finish line using chalk, sticks, stones etc. Alternatively, invite the children to draw one. Using a large dice, encourage each child to take a turn to roll the die. The group of children use their subitising skills to identify the amount shown.

  "***How many dots can you see?"*** ***"Let's count together and check."***

  Each child then jumps the quantity they rolled towards the finish line. The first to the finish line is the winner.
- What's the time Mr Wolf? - This game is based on the traditional version of 'What's the time Mr Wolf?' with the difference being the 'wolf' shows a dice instead of shouting out a number. The group of children identify the steps to be taken by using their subitising skills, reading the amount from the dot arrangement on the dice.

  "Tell me what you see" ***"Could you show me that number using your fingers?"***

  The children proceed to take the amount of steps until the wolf announces, 'dinner time'**.**
- Subitising Scavenger Hunt Race - Using a selection of outdoor materials e.g. stones, sticks, leaves etc. demonstrate rolling the die and gathering objects as an example. Children take turns to pick an object e.g. a leaf, and rolls the dice:

  "What did you roll?" ***"How many have we to find?"***

  Once the child identifies the number all the children race to find the required amount of the item. On return children can lay out their items or even place them on the dots of the dice to check they have the correct amount. The winner is the first to return with the correct total.

Language: How many, dots, patterns, objects, dice, domino, five frame, ten frame, array, tell me what you see

Resources:

- A large dice
- A range of natural materials e.g. stones, sticks, leaves etc.
- Chalk

Other concepts explored:

- Stable order principle, 1-1 correspondence, cardinal principle, abstraction principle

Subitising	Identifies 'how many?' in regular dot patterns e.g. dot arrangement/on fingers/five frames/10 frames/dice without counting up to 6	Identifies 'how many?' in irregular dot patterns e.g. dot arrangement/on fingers/five frames/10 frames/dice without counting up to 6	Represents amounts in different arrangements e.g.dot arrangement/on fingers/five frames/ 10 frames/dice without counting up to 6

S1.2-3

Jumping Track with Subitising Spinners

Subitising is an essential part of developing number sense. By looking at a group of items, children can start to develop an understanding of how a number is made up. There are two types of subitising, perceptual subitising, where you can instantly recognise the number of objects or items in front of you without counting, and conceptual subitising, which allows you to use recognisable patterns to help you get that same instant recognition without having to count.

Aim: *To create regular dot patterns and identify quantities using perceptual subitising skills*

Suggested Experience and Interactions:

- This game requires children to make, with support, their own subitising spinners which can be attached to a lanyard (or stick). Seek opportunities to discuss the sequence of numbers as the children stick numerals on the spinner:
  "***Which number comes first, next?"*** etc.
- Once the numerals are attached invite the children to draw dots or use dot stickers to match the corresponding numbers.
  "How will you arrange the dots to show number 2?
  "Look at how they are set out on the dice, do you want to copy the dice pattern?"
  "Where else do we see this same dot pattern?" "Let's find 2 on the dominoes...is it the same?
  "We call this a regular dot pattern because we see it a lot and that is why it's easier for us to recognise?"
  "Can you show me 2 with your fingers?"
- Continue this exploration of dot/finger patterns. Once the spinners are complete, they can be used to play the game.
- Use chalk to draw a track on the ground. Invite a child to spin their spinner and jump the corresponding jumps along the track. This game gives children repeated opportunities to interpret the dot images. Encourage the children to 'see the dots' and not count them individually with their counting finger (hide your counting finger behind your back).
- To extend the experience, spin the spinner and the number it shows is the number of leaves the children must run and collect and place on the spinner etc.

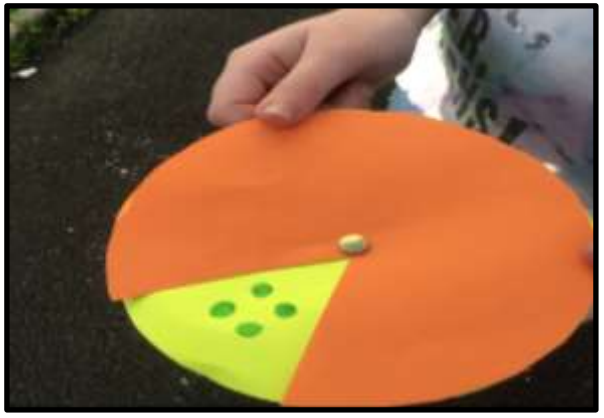
Language: How many, dots, patterns, objects, dice, domino, five frame, ten frame, array, tell me what you see

Resources:

- Card circles
- Sticky dots or felt tip pens
- Sticky numbers,
- Cardboard spinner and fastener
- Lanyard
- Large dot dice,
- Dominoes
- Chalk

Other concepts explored:

- Stable order principle, 1-1 correspondence, cardinal principle, abstraction principle



Subitising	Identifies 'how many?' in regular dot patterns e.g. dot arrangement/on fingers/five frames/10 frames/dice without counting up to 6	Identifies 'how many?' in irregular dot patterns e.g. dot arrangement/on fingers/five frames/10 frames/dice without counting up to 6	Represents amounts in different arrangements e.g.dot arrangement/on fingers/five frames/ 10 frames/dice without counting up to 6

S1.3-3

Locks and Keys

Subitising is an essential part of developing number sense. By looking at a group of items, children can start to develop an understanding of how a number is made up. There are two types of subitising, perceptual subitising, where you can instantly recognise the number of objects or items in front of you without counting, and conceptual subitising, which allows you to use recognisable patterns to help you get that same instant recognition without having to count.

Aim: To identify how many dots there are using perceptual subitising by looking at regular *dot patterns and know its value by matching it to a numeral.*

Suggested Experience and Interactions:

- Secure padlocks to something suitable in the outdoor space e.g. fence, gate, wood block.
- Encourage children to subitise the arrays on the keyrings, the children must match to the padlock with the corresponding numeral in order to open it. Encourage children to:

  "Count with your eyes."

  "How many dots can you see?"
- Draw attention to the array on the dice, ask children to show amounts using their fingers. Perhaps having a number line with dot patterns and numerals within your outdoor space could offer support to individuals if required. Encourage the children to check their subitising by counting.
- This type of experience helps children develop visual number memory.

Language: How many, dots, patterns, objects, dice, domino, five frame, ten frame, array, tell me what you see

Resources:

- Wooden block/ fence/ gate to attach padlocks
- Keyrings with arrays,
- Padlocks of varying sizes,
- Dice
- Number line with numeral and dot patterns

Other concepts explored:

- Stable order principle, 1-1 correspondence, cardinal principle
- Identifying numerals

Subitising	Identifies 'how many?' in regular dot patterns e.g. dot arrangement/on fingers/five frames/10 frames/dice without counting up to 6	Identifies 'how many?' in irregular dot patterns e.g. dot arrangement/on fingers/five frames/10 frames/dice without counting up to 6	Represents amounts in different arrangements e.g.dot arrangement/on fingers/five frames/ 10 frames/dice without counting up to 6

S2.1-2

Subitising Fun

Subitising is an essential part of developing number sense. By looking at a group of items, children can start to develop an understanding of how a number is made up. There are two types of subitising, perceptual subitising, where you can instantly recognise the number of objects or items in front of you without counting, and conceptual subitising, which allows you to use recognisable patterns to help you get that same instant recognition without having to count.

Aim: *To use conceptual subitising skills to identify irregular dot patterns.*

Suggested Experience and Interactions:

- Once children can subitise in regular dot patterns, progress on to irregular dot patterns. Invite children to match the quantities shown by the dots on one half of the domino to the same quantity on another domino, which is arranged in an irregular dot pattern. This will encourage subitising of quantities rather than memorising dot patterns.

  "How many different arrays can you see for 2?" "How are they different?"

  "Is one of them easier to count?" "Why do you think that is?"

  "Which one is your favourite?" "Why is that?"

  "Can you see any hidden numbers inside 2?"

  "I wonder how many different ways you can make 2 with your fingers?"

- Playing this game outdoors will give the children increased floor space they may not be able to achieve inside.

Language: How many, dots, patterns, objects, dice, domino, five frame, ten frame, array, tell me what you see

Resources:

- Irregular array domino cards

Other concepts explored:

- Stable order principle, 1-1 correspondence, cardinal principle

Subitising	Identifies 'how many?' in regular dot patterns e.g. dot arrangement/on fingers/five frames/10 frames/dice without counting up to 6	Identifies 'how many?' in irregular dot patterns e.g. dot arrangement/on fingers/five frames/10 frames/dice without counting up to 6	Represents amounts in different arrangements e.g.dot arrangement/on fingers/five frames/ 10 frames/dice without counting up to 6

S2.2-2

Hide and Reveal

Subitising is an essential part of developing number sense. By looking at a group of items, children can start to develop an understanding of how a number is made up. There are two types of subitising, perceptual subitising, where you can instantly recognise the number of objects or items in front of you without counting, and conceptual subitising, which allows you to use recognisable patterns to help you get that same instant recognition without having to count.

Aim: *To provide opportunities to use and develop their subitising skills.*

Suggested Experience and Interactions:

- Ask children to cover their eyes while the game is set up.
- Place 1 object on the ground and cover it with a bowl then place 2 objects on the ground and cover them with another bowl and finally place 3 objects on the ground and cover with a bowl in an irregular dot pattern.
- Ask the children to open their eyes and explain you have hidden jewels under each bowl and you are going to show /reveal to them what is under each bowl.
- Quickly lift and replace one bowl;

  "Can you tell me how many jewels were under the bowl?"

  "How did you know there were 3?"

  "I am going to mix the bowls up, let's see if you can still find 3"
- Encourage the children to create the dice dot patterns themselves with the jewels, using the dice as a visual to support.
- Extend this game by using 4, 5 and 6 jewels.
- Use two colours of jewels and see if children can say how many there are of each colour.

Language: How many, dots, patterns, objects, dice, domino, five frame, ten frame, array, tell me what you see

Resources:

- A range of natural materials e.g. stones, sticks, leaves etc.
- Several matching bowls
- A dice

Other concepts explored:

- Stable order principle, 1-1 correspondence, cardinal principle, abstraction principle

Subitising	Identifies 'how many?' in regular dot patterns e.g. dot arrangement/on fingers/five frames/10 frames/dice without counting up to 6	Identifies 'how many?' in irregular dot patterns e.g. dot arrangement/on fingers/five frames/10 frames/dice without counting up to 6	Represents amounts in different arrangements e.g.dot arrangement/on fingers/five frames/ 10 frames/dice without counting up to 6

S3.1-4

Show Me

Subitising is an essential part of developing number sense. By looking at a group of items, children can start to develop an understanding of how a number is made up. There are two types of subitising, perceptual subitising, where you can instantly recognise the number of objects or items in front of you without counting, and conceptual subitising, which allows you to use recognisable patterns to help you get that same instant recognition without having to count.

Aim: T*o create regular dot patterns and identify the quantities using subitising skills.*

Suggested Experience and Interactions:

- Offer children a selection of resources and challenge them to represent an amount using as many different resources as they can. Invite a child to roll a dice and establish the amount to be represented (having several dice will avoid waiting time). Hold up a dotted dice (showing 5) and 5 fingers and discuss how your fingers and the dice both show 5 but look different.
  " I wonder if we could make another 5 with the pinecones…."
  "Does that look the same as my fingers or the dice?"
  "It looks different, but it is the same amount...5"
- Children roll the dice and use a selection of resources to make several representations of an amount. Discuss the different arrangements made with the children.;
  "How does this 4 look different to that 4?" "Tell me what you see"
  "Do you think putting the 4 stones in a line makes it look more or less than the dice 4"?"
  "I wonder why…"
  "How do you know they are both 4?"
- Composition of numbers : ***"***
  "Can you show me 4 fingers in a different way/using two hands, can you make a different pattern with the 4 stones?"
  "Can you see any numbers hidden inside this pattern of 4?"
  Children can use chalk/paint to record their favourite pattern(s) and to show the numbers hidden inside eg. 4.- 3 and 1, 2 and 2, 1 and 3
  "The same number (quantity) can be shown in lots of different ways"
  "The same amount can look different – more/less but is the same quantity"
  "Numbers are made up of other numbers (hiding inside them)"
- Extend this experience by exploring larger numbers when the children are secure within 6. Larger numbers require to be broken down for us to subitise beyond 6.

Language: How many, dots, patterns, objects, dice, domino, five frame, ten frame, array, tell me what you see

Resources:

- Large dice
- Large number cards
- Irregular subitising cards
- Stones, pinecones, leaves, sticks,
- Chalk,
- Dominoes,
- Number line, 5/10 frames, outdoor abacus, subitising stones

Other concepts explored:

- Stable order principle, 1-1 correspondence, cardinal principle, abstraction principle, conservation
- Addition

Subitising	Identifies 'how many?' in regular dot patterns e.g. dot arrangement/on fingers/five frames/10 frames/dice without counting up to 6	Identifies 'how many?' in irregular dot patterns e.g. dot arrangement/on fingers/five frames/10 frames/dice without counting up to 6	Represents amounts in different arrangements e.g.dot arrangement/on fingers/five frames/ 10 frames/dice without counting up to 6

S3.2-4

Dominoes

Subitising is an essential part of developing number sense. By looking at a group of items, children can start to develop an understanding of how a number is made up. There are two types of subitising, perceptual subitising, where you can instantly recognise the number of objects or items in front of you without counting, and conceptual subitising, which allows you to use recognisable patterns to help you get that same instant recognition without having to count.

Aim: *To create regular dot patterns and identify the quantities using subitising skills.*

Suggested Experience and Interactions:

- Discuss the game of dominoes, looking closely at the dominoes;
  "Look each domino has two halves. Each half has its own number shown by dots (arrays)"
  "I can see 4 on this side, what can you see on that side?"
  Reinforce that we '*count with our eyes*' to subitise. Using dominoes invite children to match the dot patterns.
- Encourage and support children to chalk their own dominoes in an outdoor space. Then invite children to match real dominoes to the chalked dominoes. Encourage children to subitise the number of dots in one half of the domino and hold that number in their head, then 'count on' using the dots on the other half of the domino to find the total. Use fingers to support subitising and explore other ways to show a number.
- This experience could be extended by using two dice. Roll the dice and find the total e.g. 5. Encourage children to look for the corresponding domino pattern and establish that this equals the same total. The children can then search for dominoes with different arrays that add up to 5. This may offer an opportunity to explore and talk about the number stories for 5, addition and subtraction and the link between them.

Language: How many, dots, patterns, objects, dice, domino, five frame, ten frame, array, tell me what you see

Resources:

- Dominoes
- Chalk
- Dice

Other concepts explored:

- Stable order principle, 1-1 correspondence, cardinal principle, abstraction principle
- Fractions
- Addition

Subitising	Identifies 'how many?' in regular dot patterns e.g. dot arrangement/on fingers/five frames/10 frames/dice without counting up to 6	Identifies 'how many?' in irregular dot patterns e.g. dot arrangement/on fingers/five frames/10 frames/dice without counting up to 6	Represents amounts in different arrangements e.g.dot arrangement/on fingers/five frames/ 10 frames/dice without counting up to 6

S3.3-4

Hopscotch

Subitising is an essential part of developing number sense. By looking at a group of items, children can start to develop an understanding of how a number is made up. There are two types of subitising, perceptual subitising, where you can instantly recognise the number of objects or items in front of you without counting, and conceptual subitising, which allows you to use recognisable patterns to help you get that same instant recognition without having to count.

Aim: *To identify different arrangements and match them by amounts to numerals.*

Suggested Experience and Interactions:

- Chalk out a hopscotch grid using numbers. Encourage children to say the numbers out loud as they hop on each square, counting forward and back. Using wooden discs with arrays, invite a child to choose a disc and encourage them to 'count with your eyes';

  "How many dots can you see on your disk?"

  "What can you see? I can see one dot there and 2 dots there so I can see 3 all together"

  Invite the child to place the disk on the corresponding number. Use fingers to show the array and explore other ways to make the total.
- Alternatively, children could find natural objects e.g. stones, leaves etc. and place the correct quantities in each square of the hopscotch grid.

  "Can you show me on your fingers how many leaves we need for this box?"
- Arrays could be chalked on the hopscotch grid instead of the numbers.
- To extend this experience use irregular arrays for children who are confident with regular array patterns.
- Further learning opportunities include:
  - inviting children to find the number before/after/between or a missing number which has been covered up.
  - encouraging children to jump on the number which is one more than/one less than.
  - inviting children to design their own hopscotch grid.

Language: How many, dots, patterns, objects, dice, domino, five frame, ten frame, array, tell me what you see

Resources:

- Chalk,
- Wooden discs with arrays
- A range of natural items for children to access e.g. leaves, stones, sticks

Other concepts explored:

- Stable order principle, 1-1 correspondence, cardinal principle, abstraction principle
- Numeral recognition and identification
- Addition and subtraction

Subitising	Identifies 'how many?' in regular dot patterns e.g. dot arrangement/on fingers/five frames/10 frames/dice without counting up to 6	Identifies 'how many?' in irregular dot patterns e.g. dot arrangement/on fingers/five frames/10 frames/dice without counting up to 6	Represents amounts in different arrangements e.g.dot arrangement/on fingers/five frames/ 10 frames/dice without counting up to 6

S3.4-4

10 Frames

Subitising is an essential part of developing number sense. By looking at a group of items, children can start to develop an understanding of how a number is made up. There are two types of subitising, perceptual subitising, where you can instantly recognise the number of objects or items in front of you without counting, and conceptual subitising, which allows you to use recognisable patterns to help you get that same instant recognition without having to count.

Aim: *To identify different arrangements and match them by amounts to numerals.*

Suggested Experience and Interactions:

- Discuss what a ten frame is and how it gets its name;
  "Can you see it has two rows?"
  "How many boxes are in the top row?/bottom row?"
  "5 and 5 make 10 ." *etc.*
  Show numbers with your fingers at every opportunity. If children are not familiar with ten frames, use a five frame.
- Using sticks (or masking tape) make a large ten frame in your outdoor space. Invite children go on a treasure hunt to find a selection of natural objects. With the children explore different number patterns e.g. ***"Let's put 3 objects on the top row, one per box…let's count together."***
  "Now put 3 objects on the bottom row."
  "Using your subitising skills, how many do we have all together?"
  "If we space out the objects what happens?"
  "**Do we still have 3 in each row, still have the same total?"**
- Exploring ways to make 3 - 2+1, 1+2, 1+1+1. With the children model and explore different ways to arrange these 6 objects on the 10 frame – 5+1, 4+2, 3+3, 2+4, 1+5. Observe if they can spot a pattern in the numbers? As one row decreases the other row increases.
- Invite children to make their own ten frame with sticks and natural objects. Encourage them to place and subitise objects. With practice children will become familiar with the patterns e.g. 4 can be; almost all of the top row filled, two top and two bottom, three top and one bottom etc.
  "If 4 almost fills the top row, how many more to make 5?"
  " So 4 add 1 more makes 5 and 5 take away 1 makes 4" etc.

Language: How many, dots, patterns, objects, dice, domino, five frame, ten frame, array, tell me what you see

Resources:

- Chalk,
- wooden discs with arrays
- A range of natural items for children to access e.g. leaves, stones , sticks

Other concepts explored:

- Stable order principle, 1-1 correspondence, cardinal principle, abstraction principle, conservation
- Addition and subtraction

Glasgow's Improvement Challenge - Leaders of Early Learning

Glasgow Outdoors: Glasgow Counts - Numeracy Early Tracker 1

Counting	When counting objects understands the order in which we say the numbers is always the same (stable order)	Touch counts one item when each number word is said (1-to-1 correspondence)	When counting objects understands that the number name of the last object counted is the name given to the total number of objects in a set (cardinal principle)	When counting objects understands that the number of objects is not affected by position (order irrelevance)	Counts objects in a set recognising that the appearance of the objects has no effect on the overall total within 0-10 (conservation)	Counts anything e.g. objects at a distance/in a book/sounds/claps within 0-10 (abstract principle)

C1.1-3

Out to play!

Our number language is complex as it has no recognisable pattern before 15, therefore young children are required to rote learn these words. To begin with, children may simply chant number words they have remembered from songs, rhymes and stories. Children's awareness that the order of words has meaning and always remains the same will begin to develop. Experiences that support stable order are most useful when explored with 1-1 correspondence simultaneously.

Aim: *To use a familiar nursery rhyme to reinforce stable order of numbers from 0-10.*

Suggested Experience and Interactions:

- Frequent exposure to number songs and rhymes can support children in recalling the sequence of numbers as they count.
- With a small group of children sing the song 'One elephant went out to play' using props to engage children and encourage participation.

  '1 elephant went out to play, upon a spider's web one day
  It had such enormous fun, that it called for another elephant to come.
  Hey (name of child)***!*** (One more child joins the group that is moving to song)
  (repeat) ***2 elephants …, 3 elephants …, 4 elephants …, 5 elephants …***
  But alas, the web gave way, and that was the end of a perfect day!'
- After each verse seek opportunities for children to count how many elephants are out to play altogether.

  "How many elephants are there altogether?"
  "How many elephants are in the group now?"

  In addition to using props you should encourage all children to use their fingers to show the number of elephants counted each time.
- Seek opportunities to challenge children:

  "What number comes after one?"
  "I'm trying to think what number is next?"
  "I wonder what comes after 4?"
  "If 2 more elephants join this time, I wonder how many there will be altogether?"

Language: Count, set, items, collection, row, group, add, more, make, altogether

Resources:

- Props to identify elephant i.e. cut hose pipe, pool noodles as trunks
- Large laminated elephants

Other concepts explored:

- Number word sequences

SCAN ME

Counting	When counting objects understands the order in which we say the numbers is always the same (stable order)	Touch counts one item when each number word is said (1-to-1 correspondence)	When counting objects understands that the number name of the last object counted is the name given to the total number of objects in a set (cardinal principle)	When counting objects understands that the number of objects is not affected by position (order irrelevance)	Counts objects in a set recognising that the appearance of the objects has no effect on the overall total within 0-10 (conservation)	Counts anything e.g. objects at a distance/in a book/sounds/claps within 0-10 (abstract principle)

C1.2-3

Track Race

Our number language is complex as it has no recognisable pattern before 15 therefore young children are required to rote learn these words. To begin with, children may simply chant number words they have remembered from songs, rhymes and stories. Children's awareness that the order of words has meaning and always remains the same will begin to develop. Experiences that support stable order are most useful when explored with 1-1 correspondence simultaneously.

Aim*: To move along a track from start to finish counting jumps, steps etc. using stable order.*

Suggested Experience and Interactions:

- Following children's interest, invite children to select characters i.e. animal, superhero, dinosaur. Encourage children to think of where these characters might live i.e. in a nest, web and how they might move i.e. frog jumps, hops, leaps. Draw the home/den of the chosen characters, children may wish to work collaboratively to do this, their contributions should be encouraged. Mark out a track leading to the home/den with at least 10 spaces.
- Encourage children to take turns rolling a die, selecting a card etc. and support them, if needed, to count, subitise or identify a numeral.
  "What did you roll?" Let's count the dots to find out" or "How many dots can you see?"
- Children move along the track the corresponding number of spaces, like their chosen character.
  "How many spaces have you to move?"
  Children repeat this process until they reach the home/den (creating more than 1 track would allow multiple children to participate). Further challenge could be given if appropriate:
  "How many more jumps do you need until you reach the den?"
- The focus of this experience is saying the number words in order, don't worry too much about children moving one space with one number word but try to encourage this. Furthermore, children may count beyond the target number. This would not be a cause for concern as the concept of cardinality may not yet be secure.
- Children love when you make a mistake. Take a turn of rolling and moving along the track saying the order of number words incorrectly and see if the children spot it. ***"Can you help me to say the numbers in the correct order?"***

Language: Count, set, items, collection, row, group, add, more, make, altogether

Resources:

- Chalk
- Track with ten spaces (for challenge increase the number of spaces)
- Large dice, numeral/dot cards or numeral/dot spinner

Other concepts explored:

- Number recognition
- Subitising

Counting	When counting objects understands the order in which we say the numbers is always the same (stable order)	Touch counts one item when each number word is said (1-to-1 correspondence)	When counting objects understands that the number name of the last object counted is the name given to the total number of objects in a set (cardinal principle)	When counting objects understands that the number of objects is not affected by position (order irrelevance)	Counts objects in a set recognising that the appearance of the objects has no effect on the overall total within 0-10 (conservation)	Counts anything e.g. objects at a distance/in a book/sounds/claps within 0-10 (abstract principle)

C1.3-3

All aboard!

Our number language is complex as it has no recognisable pattern before 15 therefore young children are required to rote learn these words. To begin with, children may simply chant number words they have remembered from songs, rhymes and stories. Children's awareness that the order of words has meaning and always remains the same will begin to develop. Experiences that support stable order are most useful when explored with 1-1 correspondence simultaneously.

Aim: *To count aloud in order.*

Suggested Experience and Interactions:

- Seek incidental opportunities to count aloud with children throughout your day-to-day practice e.g. count the number of children in your group, on the climbing frame, as you climb the stairs. Children having frequent exposure to hearing stable order being used is essential.
- Invite children to board your 'train' by giving children a 'ticket'. Once aboard use your conductors voice to announce when the next stop will be coming up e.g.

  "Our next stop is pirate island; we will reach our destination once we count to …"

  Invite a child on the train to shout out a number and then proceed to move the 'train' counting aloud with the children. Children love when you make a mistake. Occasionally, say the order incorrectly and observe if the children notice and correct you.
- Invite children to offer different ways of moving e.g.

  "Our next stop is…., we will reach our destination in 8 jumps/4 hops."
- To provide challenge encourage children to count on from a stop till they reach stop number 10 (or beyond for children secure with stable order to 10).

  "We are at stop number 3, let's count on until we reach stop number 10"

  "I wonder what number comes after 3?"

  "4, 5, 6, 7, 8, 9, 10. Stop!"
- Give children the opportunity of being the conductor and leading the other children on the train. Be mindful of individual children's understanding of stable order and work within or just beyond this number range i.e. 0-3, 0-5, 0-10, 0-20

Language: Count, set, items, collection, row, group, add, more, make, altogether

Resources:

- Train tickets- either real or made by children
- Object/item of clothing to identify the conductor i.e. high-vis jacket

Other concepts explored:

- Addition

Counting						
	When counting objects understands the order in which we say the numbers is always the same (stable order)	Touch counts one item when each number word is said (1-to-1 correspondence)	When counting objects understands that the number name of the last object counted is the name given to the total number of objects in a set (cardinal principle)	When counting objects understands that the number of objects is not affected by position (order irrelevance)	Counts objects in a set recognising that the appearance of the objects has no effect on the overall total within 0-10 (conservation)	Counts anything e.g. objects at a distance/in a book/sounds/claps within 0-10 (abstract principle)

C2.1-3; C5.1-2

1-1 Explorers

1-1 correspondence is an important skill for children to learn, as we as adults use it regularly in our everyday lives e.g. to prepare food, count money, go shopping. It is the understanding that numbers correspond to specific quantities of objects. Children need to touch or 'tag' each individual object, in time, with the correct number word as they count.

Aim: *To explore a variety of ten frames and containers suitable for 1-1 correspondence, placing one object within each space*

Suggested Experience and Interactions:

- Set up an invitation area with a variety of loose parts, containers and 'ten frames', examples of these can be seen in the picture.
- Begin by modelling how to use the resources, placing one object within each space of the ten frames, or one object in each flowerpot. Model counting aloud as you place objects in each space and then counting how many altogether as a row or frame is filled.
- Observe children engaging with resources, do they place one object in at a time? Can you hear them counting aloud? Do they tag a number word with each object as they move it into place?

"I wonder, if we put one stone in each space, how many will we have altogether?"
"How many stones are in a row?"
"You have four stones in your frame, I wonder if you can show four stones in a different way?"
"I see you have 3 carrots in the pots, how many more carrots will you need to fill the rest of the pots?"

Language: Count, set, items, collection, row, group, add, more, make, altogether

Resources:

- Collection of ten frames i.e. ice cube trays, chocolate box trays, egg boxes, seed sowing trays
- Selection of containers to encourage 1-1 correspondence i.e. flowerpots, cups,
- Variety of small loose parts

Other concepts explored:

- Addition and subtraction
- Pattern

Counting	When counting objects understands the order in which we say the numbers is always the same (stable order)	Touch counts one item when each number word is said (1-to-1 correspondence)	When counting objects understands that the number name of the last object counted is the name given to the total number of objects in a set (cardinal principle)	When counting objects understands that the number of objects is not affected by position (order irrelevance)	Counts objects in a set recognising that the appearance of the objects has no effect on the overall total within 0-10 (conservation)	Counts anything e.g. objects at a distance/in a book/sounds/claps within 0-10 (abstract principle)

C2.2-3

Skittles

1-1 correspondence is an important skill for children to learn, as we as adults use it regularly in our everyday lives e.g. to prepare food, count money, go shopping. It is the understanding that numbers correspond to specific quantities of objects. Children need to touch or 'tag' each individual object, in time, with the correct number word as they count.

Aim: *To count how many bottles have been knocked down using 1-1 correspondence*

Suggested Experience and Interactions:

- Provide each child within the group with an empty bottle and ask them to grab a handful of small stones or sand (something to give weight to the bottles). Invite children to estimate how many stones they have or how full the bottle will be once they place their objects in the bottles. Provide time to discuss and check their estimations.
- Place the bottles or skittles in a pyramid formation/in a line, in an appropriate, safe place for children to either roll a ball or throw a beanbag.
- Children take turns trying to knock down the bottles and then count how many have been knocked down or are still standing. Encourage children to touch each bottle as they count. Whilst children are waiting their turn they could be encouraged to estimate or subitise how many were knocked over and show this using their fingers.

  "How many tall bottles are there?" "How many short bottles?"
  "How many bottles are there altogether?"
  "How many did you knock down?" "How many are still standing?"
  "If you knock down 1 more, I wonder how many will be knocked down altogether?"
  "Can you show me using your fingers, how many are still standing?"
  "I wonder how we can make these bottles easier to count?
- It can be easier for children to count objects in a row rather than a random collection, you may need to support children to manipulate bottles into a formation that they can easily count. This experience can be differentiated by the number of bottles used e.g. 3, 5, 10

Language: Count, set, items, collection, row, group, add, more, make, altogether

Resources:

- 10 bottles (they do not need to be the same) or skittles
- Items for children to weigh bottle down
- Soft ball to roll
- Bean bag or rolled up socks to throw

Other concepts explored:

- Estimation
- Addition and subtraction

Counting	When counting objects understands the order in which we say the numbers is always the same (stable order)	Touch counts one item when each number word is said (1-to-1 correspondence)	When counting objects understands that the number name of the last object counted is the name given to the total number of objects in a set (cardinal principle)	When counting objects understands that the number of objects is not affected by position (order irrelevance)	Counts objects in a set recognising that the appearance of the objects has no effect on the overall total within 0-10 (conservation)	Counts anything e.g. objects at a distance/in a book/sounds/claps within 0-10 (abstract principle)

C2.3-3

Welly Toss

1-1 correspondence is an important skill for children to learn, as we as adults use it regularly in our everyday lives e.g. to prepare food, count money, go shopping. It is the understanding that numbers correspond to specific quantities of objects. Children need to touch or 'tag' each individual object, in time, with the correct number word as they count.

Aim: *To throw wellies at a target and count how many wellies are within the target hoop*

Suggested Experience and Interactions:

- With a small group of children locate an area in your outdoor space that is appropriate and safe for throwing.
- Set up a target area using a large hoop or mark one out using chalk and identify a home spot where children will stand to throw the wellies.
- Model throwing the collection of wellies towards the target and then going over to count how many are inside and outside the target . Use finger to show the quantities as a further reinforcement of numbers as quantities.
- Invite children to take turns throwing the wellies towards the target and encourage them to count how many they successfully get inside the target. Children could record the amount on a score board, created on the ground using chalk or on a clipboard, using tally marks.

  "How many wellies are in the target?"
  "How many wellies are outside the target?"
  "How many tally marks do you need to make?"
  "I wonder how many tally marks you have altogether. Shall we count them?"

Language: Count, set, items, collection, row, group, add, more, make, altogether

Resources:

- A selection of wellies or objects to throw i.e. bean bags
- A large hoop or marked out target area
- Chalk
- Score board

Other concepts explored:

- Position

Counting	When counting objects understands the order in which we say the numbers is always the same (stable order)	Touch counts one item when each number word is said (1-to-1 correspondence)	When counting objects understands that the number name of the last object counted is the name given to the total number of objects in a set (cardinal principle)	When counting objects understands that the number of objects is not affected by position (order irrelevance)	Counts objects in a set recognising that the appearance of the objects has no effect on the overall total within 0-10 (conservation)	Counts anything e.g. objects at a distance/in a book/sounds/claps within 0-10 (abstract principle)

C3.1-3

Going Fishing

An understanding of cardinality is an important milestone for children's early mathematical development; the last number used to count a group/set of objects represents how many there are altogether. If a child recounts the number of objects when asked how many altogether then they may not yet be secure with this skill or with working within the range of numbers set for them. A good assessment of children's understanding is if they can bring you a specific quantity of objects asked for e.g. 9 crayons.

Aim: *To collect a specified quantity of objects by rolling a dice.*

Suggested Experience and Interactions:

- This experience could be carried out simply using a range of loose parts and dice or filling a tray with water and adding rubber ducks/floating objects that children could fish out using a net. Alternatively, you could involve the children in creating their own fishing game using the instructions here.
- Children take turns rolling a die and collecting/fishing out the corresponding number of objects, encourage children to count aloud as they collect objects. There will be opportunities for children to subitise and use 1-1 correspondence when counting dice patterns. ***"How many dots can you see?"***
  "How do you know?"
  "Shall we count together to check."
- Encourage children to recall how many objects they must collect after they have rolled the die and to recall how many they have collected after they have fished the objects out, this will help you assess if they are comfortable working with cardinality to this value.
- Children often need supported in remembering how many objects they must collect. It can be helpful to remind them to lock the number in their heads and count to the target number as they collect objects. Observe children's 1-1 correspondence closely.
  "What did you roll?" "Lock that target number in your head."
  "Count out loud as you collect the fish and stop on …"

Language: Count, set, items, collection, row, group, add, more, make, altogether

Resources:

- Objects for children to collect
- Rod or net for children to collect with
- Dice
- Containers/basket

Other concepts explored:

- Subitising

Counting						
	When counting objects understands the order in which we say the numbers is always the same (stable order)	Touch counts one item when each number word is said (1-to-1 correspondence)	When counting objects understands that the number name of the last object counted is the name given to the total number of objects in a set (cardinal principle)	When counting objects understands that the number of objects is not affected by position (order irrelevance)	Counts objects in a set recognising that the appearance of the objects has no effect on the overall total within 0-10 (conservation)	Counts anything e.g. objects at a distance/in a book/sounds/claps within 0-10 (abstract principle)

C3.2-3

Growing Numbers

An understanding of cardinality is an important milestone for children's early mathematical development; the last number used to count a group/set of objects represents how many there are altogether. If a child recounts the number of objects when asked how many altogether, then they may not yet be secure with this skill or working within the range of numbers set for them. A good assessment of children's understanding is if they can bring you a specific quantity of objects asked for e.g. 9 crayons.

Aim: *To work together to collect a set quantity of objects to create a growing step sequence.*

Suggested Experience and Interactions:

- Gather a small group of children and inform them that they are going to work together on a numeracy challenge to find quantities within your outdoor environment.
- Involve children in helping you to mark out numerals 0-10 on the ground (in a line) with chalk (or numeral cards). Seek opportunities to talk about the order of numbers.
  "I need your help, what number comes next/after … ?"
- Give each child/pair a container/basket for collecting objects and a numeral card, this is the quantity of objects they must look for and bring back. Once the children return with their found objects, they must place them out in a row above their identified numeral. ***"How many objects did you find?"***
  "Do you notice anything about the number of objects you can see?"
- Some children may bring back more or less than the specified quantity of objects. Model counting the objects using 1-to-1 correspondence tagging an object with a number word as you move it from the basket to the number line. Emphasis the final count with an intonation in voice and a gesture i.e. circling your hand around the total set and stating the final count number again.
- You could extend this activity by specifying what the children must find e.g. 3 stones, 4 leaves, 5 blue objects, 6 yellow objects or keep it more open ended to enable the children to come up with their own criteria.

Language: Count, set, items, collection, row, group, add, more, make, altogether

Resources:

- Outdoor space with a variety of objects which can be transported, small or large
- Large numeral cards 0-10
- Chalked numerals 0-10 in a line

Other concepts explored:

- Pattern and relationships

Glasgow's Improvement Challenge - Leaders of Early Learning

Glasgow Outdoors: Glasgow Counts - Numeracy Early Tracker 1

Counting						
	When counting objects understands the order in which we say the numbers is always the same (stable order)	Touch counts one item when each number word is said (1-to-1 correspondence)	When counting objects understands that the number name of the last object counted is the name given to the total number of objects in a set (cardinal principle)	When counting objects understands that the number of objects is not affected by position (order irrelevance)	Counts objects in a set recognising that the appearance of the objects has no effect on the overall total within 0-10 (conservation)	Counts anything e.g. objects at a distance/in a book/sounds/claps within 0-10 (abstract principle)

C3.3-3

Transient Maths Art

An understanding of cardinality is an important milestone for children's early mathematical development; the last number used to count a group/set of objects represents how many there are altogether. If a child recounts the number of objects when asked 'how many altogether' then they may not yet be secure with this skill or with working within the range of numbers set for them. A good assessment of children's understanding is if they can bring you a specific quantity of objects asked for e.g. 9 crayons.

Aim: *To create a picture using specified numbers of loose parts.*

Suggested Experience and Interactions:

- Ensure children have had the opportunity to explore materials and create their own transient art pictures before inviting them to play the 'game'.
- To play the 'game' children should take turns to roll the dice or select a numeral card and collect the corresponding quantity of objects e.g. 5 leaves or 4 stones.

  "How many dots can you see?" "How do you know"

  "How many leaves have you to collect?"

  As you take part, model using 1-to-1 correspondence as you count aloud and use intonation in voice to signal the final count number. Listen and observe for similar as children count out their set amounts.
- Children should have 3 or 4 turns of rolling the dice and collecting objects. Children should then be given time to create their own 'picture' and talk about it.
- Children could be encouraged to make comparisons about their pictures.

  "I used 3 stones in my picture. How many did you use?"

  "You look like you have more sticks in your picture, I wonder how many you have."
- It is important that children have experience of counting sets with a range of different objects i.e. ***"How many stones and leaves do you have altogether?"***

Language: Count, set, items, collection, row, group, add, more, make, altogether

Resources:

- Variety of small loose parts
- Variety of natural materials i.e. leaves, pinecones etc.
- Dice
- Numeral card 0-10

Other concepts explored:

- Subitising

Glasgow's Improvement Challenge - Leaders of Early Learning

Glasgow Outdoors: Glasgow Counts - Numeracy Early Tracker 1

Counting	When counting objects understands the order in which we say the numbers is always the same (stable order)	Touch counts one item when each number word is said (1-to-1 correspondence)	When counting objects understands that the number name of the last object counted is the name given to the total number of objects in a set (cardinal principle)	When counting objects understands that the number of objects is not affected by position (order irrelevance)	Counts objects in a set recognising that the appearance of the objects has no effect on the overall total within 0-10 (conservation)	Counts anything e.g. objects at a distance/in a book/sounds/claps within 0-10 (abstract principle)

C4.1-2

Hoop Jump

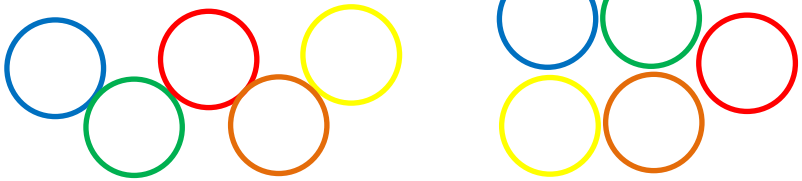
Order irrelevance is an important skill for children as they begin to understand that they can begin their count anywhere and, in any order, and the quantity of objects will remain the same. Encouraging children to count objects/people daily in meaningful contexts helps develop this skill. Making a game out of it by "mixing up" objects in a set to see if the quantity changes can be fun.

Aim: *To count how many hoops there are starting from different hoops and moving in a different order*

Suggested Experience and Interactions:

- Place coloured hoops down in a random order. Encourage children to jump in the hoops, counting aloud as they jump.
- Challenge children to start from a different hoop and find different ways of jumping through each hoop only once. Continue to encourage children to count aloud the number of jumps they make each time.

"How many hoops are there altogether?"
"Can you start from a different hoop?"
"I wonder how many hoops there will be if you start from the blue hoop."
"How many hoops are there now?"
"Has the amount of hoops changed?
"I wonder if we could place the hoops a different way, how many hoops are there now?"



Language: Count, set, items, collection, row, group, add, more, make, altogether

Resources:

- Collection of hoops (ideally different coloured)
- Alternatively – chalk different coloured circles on the ground

Other concepts explored:

- Number word sequences

Counting	When counting objects understands the order in which we say the numbers is always the same (stable order)	Touch counts one item when each number word is said (1-to-1 correspondence)	When counting objects understands that the number name of the last object counted is the name given to the total number of objects in a set (cardinal principle)	When counting objects understands that the number of objects is not affected by position (order irrelevance)	Counts objects in a set recognising that the appearance of the objects has no effect on the overall total within 0-10 (conservation)	Counts anything e.g. objects at a distance/in a book/sounds/claps within 0-10 (abstract principle)

C4.2-2

Ten Frames

Order irrelevance is an important skill for children as they begin to understand that they can begin their count anywhere and, in any order, and the quantity of objects will remain the same. Encouraging children to count objects/people daily in meaningful contexts helps develop this skill. Making a game out of it by "mixing up" objects in a set to see if the quantity changes can be fun.

Aim: *To count a specific quantity of objects using a ten frame and recount in a different order to check the total is the same.*

Suggested Experience and Interactions:

- Create a ten frame on the ground using chalk or paint one onto an old dust sheet which can be transported and reused.
- Model rolling the dice then placing the corresponding number of objects on the ten frame as you count aloud. Use intonation in voice to signal the final count number.
- Invite children to have a go at rolling the dice and placing objects on the ten frame. Seek opportunities to promote subitising skills.
  "How many dots do you see?" "How do you know?"
- Encourage children to place the objects into different squares and check how many they have. "***Can you place the stones in another way? I wonder how many you have now? Shall we count and check?"***
- Children may enjoy standing in the ten frame and counting themselves then moving to another square and counting to check if there is the same amount or not.
  "How many children is there?"
  "Let's move to a different square, how many children are there now?"
  "I wonder if you all stand in a different square again if there will be more, fewer or the same amount of children?"

Language: Count, set, items, collection, row, group, add, more, make, altogether

Resources:

- Large ten frames – chalked, painted on fabric
- Variety of loose parts e.g. pinecones, sticks etc.

Other concepts explored:

- Number word sequences

Glasgow's Improvement Challenge - Leaders of Early Learning

Glasgow Outdoors: Glasgow Counts - Numeracy Early Tracker 1

Counting	When counting objects understands the order in which we say the numbers is always the same (stable order)	Touch counts one item when each number word is said (1-to-1 correspondence)	When counting objects understands that the number name of the last object counted is the name given to the total number of objects in a set (cardinal principle)	When counting objects understands that the number of objects is not affected by position (order irrelevance)	Counts objects in a set recognising that the appearance of the objects has no effect on the overall total within 0-10 (conservation)	Counts anything e.g. objects at a distance/in a book/sounds/claps within 0-10 (abstract principle)

C5.2-2

Shark

Conservation of number is a significant milestone for children; recognising that the quantity of objects in a set does not change when the arrangement of objects changes. This skill is important and further reinforces children's understanding of cardinality.

Aim: *To notice that the number of objects in a set remains the same despite their position changing.*

Suggested Experiences and Interactions :

- When counting small sets of objects seek opportunities to reposition and count objects again highlighting that even though the positioning has changed the quantity is the same. See image below.

  "How many leaves are there?"
  "I wonder if we move them like this. How many are there now?"
  "I wonder if I place 4 more leaves like this. Which group has the most?"

  Children will often consider the objects that appear furthest apart to have more in the set.
- Play a game of 'Shark' invite children to swim around the space. Shout "Shark!" and hold up a set number of fingers or a numeral card e.g. 3. Children need to get together with that number of their friends and jump onto an 'island' (hoop) to stop them being eaten by the shark. Give instructions to the groups and invite them to recount the number on their islands.

  "Stand in a line, how many children are on the island altogether?"
  "Stand in a circle, how many children are there now?"
  "Stand up tall/curl up small…"
  "Stand close together/stand far apart…"

Language: Count, set, items, collection, row, group, add, more, make, altogether

Resources:

- Hoops or chalked 'islands'
- Numeral cards 0-10

Other concepts explored:

- Subitising
- Numeral recognition

Counting	When counting objects understands the order in which we say the numbers is always the same (stable order)	Touch counts one item when each number word is said (1-to-1 correspondence)	When counting objects understands that the number name of the last object counted is the name given to the total number of objects in a set (cardinal principle)	When counting objects understands that the number of objects is not affected by position (order irrelevance)	Counts objects in a set recognising that the appearance of the objects has no effect on the overall total within 0-10 (conservation)	Counts anything e.g. objects at a distance/in a book/sounds/claps within 0-10 (abstract principle)

C6.1-3

Seek and Find

The abstract principle means it does not matter what is being counted, the way we count stays the same i.e. any set of objects can be counted as a set, regardless of colour, size, shape or category. This also includes counting actions e.g. jumps, hops and things we cannot touch e.g. objects at a distance, sounds.

Aim: *To find and photograph the correct number of objects/things.*

Suggested Experience and Interactions:

- This experience could be conducted whilst out in the community e.g. a local walk or within your outdoor space.
- Encourage children to work with a partner or within small groups. Each pair or group should ideally have a way of capturing images digitally either using an iPad or camera.
- Invite children to seek, find and capture images of a specific quantity of 'things' e.g. 2 gates, 3 cars, 4 lamp posts. If you are within the nursery grounds you could use dice to determine the quantity of 'things' that children look for or numeral cards 0-10 could be used for children to select from.

  "How many doors have you to find?" "How do you know?" (after dice roll)

  "What number is after 3? Can we try and find that many cars?"

  "I wonder how many gates you have found so far? How many do you need to find altogether? Let's think how many more you need to find."

Language: Count, set, items, collection, row, group, add, more, make, altogether

Resources:

- iPad/camera
- Dice or numeral card 0-10

Other concepts explored:

- Subitising
- Numeral Recognition

Counting	When counting objects understands the order in which we say the numbers is always the same (stable order)	Touch counts one item when each number word is said (1-to-1 correspondence)	When counting objects understands that the number name of the last object counted is the name given to the total number of objects in a set (cardinal principle)	When counting objects understands that the number of objects is not affected by position (order irrelevance)	Counts objects in a set recognising that the appearance of the objects has no effect on the overall total within 0-10 (conservation)	Counts anything e.g. objects at a distance/in a book/sounds/claps within 0-10 (abstract principle)

C6.2-3

Teddy Bear's Picnic

The abstract principle means it does not matter what is being counted, the way we count stays the same i.e. any set of objects can be counted as a set, regardless of colour, size, shape or category. This also includes counting actions e.g. jumps, hops and things we cannot touch e.g. objects at a distance, sounds.

Aim: *To count a varying sets of objects e.g. plates and cups.*

Suggested Experience and Interactions:

- Invite children to help you set up a teddy bears picnic. Talk to the children about how many teddies they want to invite (have a basket of crockery etc. available for children to estimate).
  "I wonder if we will have enough plates for 5 teddies to come."
  "How many plates do you think there are?"
  "Do you think there is more or fewer cups than plates?"
- Encourage children to begin to set a place for each teddy.
  "Each teddy will need a plate, a cup, a knife and a fork, I wonder how many objects that is altogether?"
- Allow children to explore and play with the invitation, model using loose parts as 'food'. This will provide further opportunities for children to count sets of varied objects and explore sharing items equally (fractions).
  "Mmm your teddy has a big lunch, how many pieces of fruit has he got?"
  "I wonder if we can give each teddy a sandwich. Can we share the rest out equally until there is no more left?"

Language: Count, set, items, collection, row, group, add, more, make, altogether

Resources:

- A selection of teddy bears
- Crockery and plates for table setting
- Small loose parts to represent food

Other concepts explored:

- Estimation
- Comparison
- Fractions

Counting	When counting objects understands the order in which we say the numbers is always the same (stable order)	Touch counts one item when each number word is said (1-to-1 correspondence)	When counting objects understands that the number name of the last object counted is the name given to the total number of objects in a set (cardinal principle)	When counting objects understands that the number of objects is not affected by position (order irrelevance)	Counts objects in a set recognising that the appearance of the objects has no effect on the overall total within 0-10 (conservation)	Counts anything e.g. objects at a distance/in a book/sounds/claps within 0-10 (abstract principle)

C6.3-3

Music Maker

The abstract principle means it does not matter what is being counted, the way we count stays the same i.e. any set of objects can be counted as a set, regardless of colour, size, shape or category. This also includes counting actions e.g. jumps, hops and things we cannot touch e.g. objects at a distance, sounds.

Aim: *To play on instrument a set number of times e.g. strike a triangle 4 times.*

Suggested Experience and Interactions:

- In your outdoor space, give children the opportunity to explore a range of musical instruments. Talk about the noise they make and sort and categorise them – shake, tap, boom, ting.

  "How many instruments 'ting'?"

  "Which set of instruments has the most? 'Boom' or 'tap'?"
- Invite children to play a game, model first then select one child, encourage the other children to close their eyes. The selected child rolls a die or selects a numeral card. Try to ensure the child does not shout out the number rolled/selected. The child picks an instrument and plays it the corresponding number of times.
- The children with their eyes closed must count how many sounds they can hear and then hold up their fingers to show their 'answer'.

  "How many 'booms' did you hear?"

  "Can you show me with your fingers?"

  "I wonder if anyone can show 3 a different way?"
- Support children to check their answer against the die rolled or numeral card selected. If the number of sounds played was incorrect support this child to count and stop on the correct number of sounds.

Language: Count, set, items, collection, row, group, add, more, make, altogether

Resources:

- A variety of musical instruments – shake, tap, boom, ting
- Dice or numeral cards 0-10

Other concepts explored:

- Subitising
- Numeral recognition
- Sorting and categorising

Place Value	Explains that zero means there is none of a particular quantity	Partitions quantities to 10 into 2 or more parts and recognises that this does not affect the total e.g. 6 as 3 and 3/2 and 2 and 2

PV1.1-3

Place Value

Place Value is the value of each digit in a number. Developing Early Number sense through exploring the concept of zero and partitioning quantities into smaller parts provides the foundations of later understanding of place value.

The concept of zero is usually harder than counting and other early number concepts. It should only be introduced after a child has understood the value of numbers to some extent. The difference between 0 and other numbers is that all the other numbers have a tangible visual form, whereas 0 does not. At Early Level focus should be on the abstract uses of zero as 'none' of a quantity.

Aim: *To explain that zero means none of a quantity.*

Suggested Experiences and Interactions:

Zero can represent nothing to count. When objects are removed from a set, you will eventually be left with no objects or zero objects. One of the most effective ways to teach children about the value of zero is by incorporating real life examples into daily routine. You can highlight this to children by sharing items out until there are no more left or removing items from a set until there are zero.

- When sharing out resources:
  "I have two hula hoops in my hand. One hoop for you." (Give one away to child)
  "How many do I have left ? One hoop for you." (Give other hoop away)
  "How many do I have left? I have no hula hoops left . I have zero hula hoops"
- Drawing children's attention to the concept frequently/daily can help reinforce:
  "How many boys are at the mud kitchen?" (Count aloud to check),
  "How many girls?"
  "How many elephants are at the mud kitchen? That's right there are no elephants. There are zero elephants."
  "You had 6 grapes on your plate" (Use your hands to represent six)
  "You ate 6 grapes." (Slowly conceal fingers until you are showing none)
  "You have no grapes left. You have zero grapes".
- Try to find a chance to use the word '**zero**' every day!

Language: zero, none, nothing

Resources:

- No specific resources

Other concepts explored:

- Stable order principle, 1-1 correspondence, cardinal principle
- Number word sequences

Place Value	Explains that zero means there is none of a particular quantity	Partitions quantities to 10 into 2 or more parts and recognises that this does not affect the total e.g. 6 as 3 and 3/2 and 2 and 2

PV1.2-3

Oh No! Zero!

Place Value is the value of each digit in a number. Developing Early Number sense through exploring the concept of zero and partitioning quantities into smaller parts provides the foundations of later understanding of place value.
The concept of zero is usually harder than counting and other early number concepts. It should only be introduced after a child has understood the value of numbers to some extent. The difference between 0 and other numbers is that all the other numbers have a tangible visual form, whereas 0 does not. At Early Level focus should be on the abstract uses of zero as 'none' of a quantity.

Aim: *Children will respond to the numeral zero has having the quantity of none*

Suggested Experience and Interactions:

- Prepare a set of cards with the numbers 0-5 or 0-10 written on them and arrange the children in a circle. Show children some of the cards and discuss what number it shows and ask children to show you that number on fingers or clap out the number.
- Show children the zero card, remind children that zero means nothing.
  "Can you do zero star jumps for me?"
  "Can you show me zero with your fingers?" (Model clenched fist position)
  "Zero means none or nothing"
- Discuss with children different actions e.g. pat knees, jumping, hopping, clapping.
- Each child takes a turn to choose an action and select a numeral card. Invite the child to tell you what is says providing support if required. The child performs the action for the number of times on the card, for example, jumps five times.
- The rest of the children are encouraged to join in after the child has done it individually.
- If the zero card is selected all of the children have to shout "Oh No! Zero!" and stay completely still like a statue.
  "Why did you not do any star jumps? That is correct because zero means nothing so you do zero star jumps."

Language: zero, none, nothing, one, two, three, four, five....ten

Resources:

- Numeral cards 0-5 or 0-10 depending on children's ability

Other concepts explored:

- Stable order principle, 1-1 correspondence, cardinal principle
- Recognising and identifying numerals
- Number word sequences

Place Value	Explains that zero means there is none of a particular quantity	Partitions quantities to 10 into 2 or more parts and recognises that this does not affect the total e.g. 6 as 3 and 3/2 and 2 and 2

PV1.3-3

Zero Songs and Rhymes

Place Value is the value of each digit in a number. Developing Early Number sense through exploring the concept of zero and partitioning quantities into smaller parts provides the foundations of later understanding of place value.

The concept of zero is usually harder than counting and other early number concepts. It should only be introduced after a child has understood the value of numbers to some extent. The difference between 0 and other numbers is that all the other numbers have a tangible visual form, whereas 0 does not. At Early Level focus should be on the abstract uses of zero as 'none' of a quantity.

Aim: *Children will use the word zero to describe none of a quantity.*

Suggested Experiences and Interactions:

Incorporating the word zero into traditional counting songs and rhymes is another easy way to reinforce the concept of zero as 'nothing' daily within everyday practice.

Using concrete materials or encouraging children to represent quantities on their fingers whilst singing a song is even more effective for learners as it helps to develop association between the number word and quantity.

Some examples:

- Collect ten green plastic bottles, number them 1-10 and place them on a wall outside. To support children whilst singing the song "Ten Green Bottles", remove a bottle each time until there are none.
  "***There are no green bottles left. There are zero green bottles***"
  Sing the last verse... ***"There are zero green bottles sitting on the wall"***
- In a circle sing "5 Little Monkeys Jumping on the Bed" invite 5 children to be the monkeys in the centre, one child leaves the group to re-join the circle when they "fall off the bed". When there are no monkeys left:
  "How many are left?" "There are no monkeys, there are zero monkeys."
  Sing the last verse ***"There are zero little monkeys jumping on the bed."***

Language: zero, none, nothing, one, two, three, four, five....ten

Resources:

- Ten empty green plastic bottles
- Numeral cards 1-10

- **Other concepts explored**:
- Stable order principle, 1-1 correspondence, cardinal principle
- Recognising and identifying numerals
- Number word sequences

Place Value	Explains that zero means there is none of a particular quantity	Partitions quantities to 10 into 2 or more parts and recognises that this does not affect the total e.g. 6 as 3 and 3/2 and 2 and 2

PV2.1-3

Everyday Partitioning

Place Value is the value of each digit in a number. It is important for children to develop a strong sense of ten by providing regular opportunities for children to partition numbers. This provides the foundations of later understanding of place value as well as addition and subtraction.

- The day to day routine of the nursery offers multiple incidental opportunities for partitioning numbers by groups being split into subgroups. Practitioners should embed partitioning into everyday conversations such as, how many are in each subgroup and altogether. When doing this it is important to overemphasise counting aloud, modelling counting using fingers and encouraging the children to join in. If using concrete material, encourage the children to move objects into subgroups and count the groups and the total. Model recording numerals to reinforce numeral recognition at the same time.
- Note- Children should have a solid foundation of the 'five-ness of five' before moving onto partitioning within ten.

Aim: *To become familiar with partitioning through practitioners embedding partitioning observations, conversations or problems to solve into daily practise.*

Suggested Interactions-

- Going outside;
  "There are 10 children playing in the outdoor space today. 6 children are at the playhouse and 4 children are at the mud kitchen. There are 10 children altogether."
- When planting (large) seeds or bulbs;
  "We have 5 sunflower seeds and 2 pots. How many seeds should we put in each pot?"
  "If we put 3 seeds in the green pot, how many will we put in the blue pot?"
  "So 3 here and 2 here, can we check that we still have 5?"
- When eating lunch:
  "There should be 10 children eating lunch today, 4 are having chicken and 6 are having fish. Can we check that there are 10 altogether?"
- Try to include at least 1 partitioning observation, conversation or problem to solve every day.

Language: zero, none, nothing, one, two, three, four, five....ten, altogether, partition, total, combine, part, whole

Resources:

No specific resources required. Examples of interactions provide ways to incorporate partitioning into everyday conversations and play.

Other concepts explored:

- Stable order principle, 1-1 correspondence, cardinal principle
- Recognising and identifying numerals
- Number word sequences

Place Value	Explains that zero means there is none of a particular quantity	Partitions quantities to 10 into 2 or more parts and recognises that this does not affect the total e.g. 6 as 3 and 3/2 and 2 and 2

PV2.2-3

Part-Part-Whole Mud Pies

Place Value is the value of each digit in a number. It is important for children to develop a strong sense of ten by allowing lots of opportunities for children to partition numbers in many ways. This provides the foundations of later understanding of place value as well as addition and subtraction.

Aim: *Children will partition a quantity to 10 into 2 groups recognising the total is not affected*

Suggested Experience and Interactions:

- Within the mud kitchen invite an individual or small group of children to join you in becoming special 'chefs' who make 'Part-Part-Whole' Mud pies.
- Model for the children making 3 mud pies positioning one at the top (the whole) and the other two below (the parts) drawing chalk lines connecting the top to the other 2
- Depending on child's understanding of number select a number between 2 and 10 and invite them to help you "decorate" the top of the mud pie with that number of stones.
- Model counting aloud using 1-1 correspondence and record the numeral 8 beside it.

  "Our 'whole' mud pie has 8 stones on it, now we must decorate the other two 'part' mud pies by breaking up 8 into 2 groups. So how many more stones do we need to decorate the 'part' pies? That's right, 8"
- Collect a further 8 stones and place beside the pies

  "I have 8 stones. I am going to decorate this 'Part' pie with 3 stones. I have 5 stones left so I am going to decorate this pie with 5 stones. The whole pie has 8 stones and the part pies have 5 stones and 3 stones." (model counting, finger patterns and record numerals)

  "Let's check that the part pies have the same number of stones altogether as the whole pie."
- Invite the children to choose their own number for the 'whole' pie and support them in decorating the 'part' pies with numbers adding up to the same number.

  "So if you took 6 stones and you put 3 stones here and 3 stones here, how many stones do you have altogether? That's right, you still have six even though you have 3 on each pie"
- Once children are confident at partitioning numbers into 2 groups (pies) you can support them to partition them into 3 pies highlighting the quantity in each pie and the total.

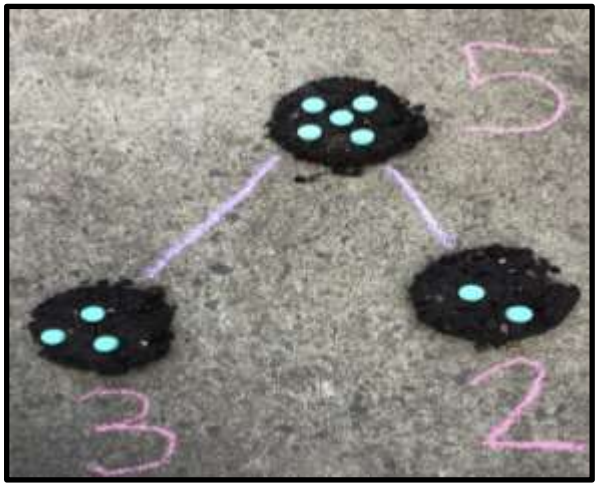
Language: zero, none, nothing, one, two, three, four, five....ten altogether, partition, total, combine, part, whole

Resources:

- Mud
- Chalk
- Stones or jewels to decorate the pies

Other concepts explored:

- Stable order principle, 1-1 correspondence, cardinal principle



Place Value	Explains that zero means there is none of a particular quantity	Partitions quantities to 10 into 2 or more parts and recognises that this does not affect the total e.g. 6 as 3 and 3/2 and 2 and 2

PV2.3-3

Five and Ten Frames

Using five/ten frames are excellent resources for developing number sense within the context of ten.

- Create five/ten frames within your outdoor space using chalk or twigs and use them within everyday play opportunities.

"I see that you have been collecting stones. Let's see how many you have by using our ten frame. You have six stones. I see one stone on the top and five stones below."

"Let's move the stones around. I see three stones at the top and three stones below. Do you still have six stones? Let's count to check ."
"I wonder how many different ways we can show the six stones?"

- Experiences like this not only help develop children's understanding of the relationship between numbers but also helps to develop conservation of number as the quantity of stones is not affected by layout.
- Another way to use five and ten frames outdoors is to create your own cloth 5/10 frame from old pillowcases, rags or pieces of heavy cotton. It can be kept in your pocket and produced when an opportunity presents itself or you could provide children with their own mini version to carry about.
- Why not ask the children to create their own activities and games around a five or ten frame?

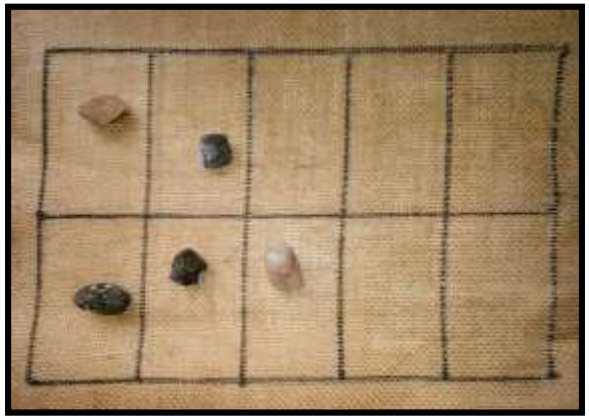
Language: zero, none, nothing, one, two, three, four, five....ten sets, ten frame, part, altogether, partition, total, combine, whole

Resources:

- Materials to create 5/10 frames- chalk/twigs, hessian, cotton
- Loose parts to insert into frame- stones, shells etc

Other concepts explored:

- 5 Principles of counting



Addition and Subtraction	Sorts & classifies objects using quantity as an attribute e.g. sets of 1, 2 within 0-10	Compares 2 sets to decide which has the fewest/most within 0-10	Finds the total when 1,2 or 3 is added to an existing amount e.g. a number line or height chart (augmentation)	Finds the total when 2 sets are added together within 0-10 (aggregation)	Finds out how many are left when 1 or 2 are taken away within 0-10	Compares to find the difference between sets as a quantity within 0-10	Beginning to count on and back in ones to add and subtract with objects or number line within 0-10

AS1.1-3

Dot Sort

Classifying and sorting involves grouping objects with the same/specific trait or attribute together. Children should have ample opportunities to sort objects within their environment e.g. toys, animals, colours. They need to learn how to sort objects into classified groups before they can move on to experiences that involves numbers.

Aim: *To sort objects according to the numbers of dots on them.*

Suggested Experience and Interactions:

- You may have subitising stones already made. If not, this can be a nice experience to involve the children in. Invite children to collect stones (about palm sized) within your outdoor environment, if these are not available you may need to source these prior. Use paint or markers and support children to create dot patterns on the stones e.g. 3 dots. Take opportunities to encourage children to show the same quantity of dots but in a different way.

  "***I see you have drawn 4 dots in a line, can you draw them in a square?"***
  "Can you draw 3 dots in a different way?"
- Give children the opportunity to explore and play with the stones they have created. Provide children with access to numerals and a range of containers and observe how children interact with the stones. Do they begin to sort stones? Big/small, different colours or possibly by the number of dots they see. Model collecting stones with the same number of dots on them e.g. 1 dot. You could make a balancing tower, place them out in different ways and count them using one to one correspondence. Invite children to find a set of stones with 2 dots etc. and do similar.
- Lay out or draw hoops with numerals chalked inside 0-5 or 0-10 depending on the level of challenge required and encourage children to work together to sort the stones into each corresponding hoop i.e. 3 dots goes into the hoop with numeral 3.

  "Tell me what you see on your stone."
  "How many dots are there?" "How do you know?"
  "Tell me why you placed this stone in this hoop?"
  "Let's sort the rest of the stones in the hoops."
  "How many stones have got 2 dots on them?"
  "Which hoop has the most/fewest stones?"

Language: add, plus, more, make, altogether, total, how many more?, how many left?, find the difference, take away, subtract, count on/back, left over, is the same as, equals

Resources:

- Hoops
- Numeral cards or chalked numbers
- Subitising stones (any other resource with dot patterns e.g. dominoes)

Other concepts explored:

- Stable order principle, 1-1 correspondence, cardinal principle
- Subitising
- Partitioning

Glasgow's Improvement Challenge - Leaders of Early Learning
Glasgow Outdoors: Glasgow Counts - Numeracy Early Tracker 1

Addition and Subtraction	Sorts & classifies objects using quantity as an attribute e.g. sets of 1, 2 within 0-10	Compares 2 sets to decide which has the fewest/most within 0-10	Finds the total when 1,2 or 3 is added to an existing amount e.g. a number line or height chart (augmentation)	Finds the total when 2 sets are added together within 0-10 (aggregation)	Finds out how many are left when 1 or 2 are taken away within 0-10	Compares to find the difference between sets as a quantity within 0-10	Beginning to count on and back in ones to add and subtract with objects or number line within 0-10

AS1.2-3

One-ness of 1, two-ness of 2…

Classifying and sorting involves grouping objects with the same/specific trait or attribute together. Children should have ample opportunities to sort objects within their environment e.g. toys, animals, colours. They need to learn how to sort objects into classified groups before they can move on to experiences that involves numbers.

Aim: *To create a number book by sorting images and objects by its cardinal value*

Suggested Experience and Interactions:

- Invite the children to explore a range of images previously gathered or that you have sourced. Talk about the images and encourage children to think of different ways these images could be sorted. Follow the child's lead as they explore ways of sorting objects according to their own classifications.
- Encourage children to look at the images again but this time consider quantities e.g. car has 4 wheels, chair has 4 legs, house has 2 door.
- Children may wish to explore their outdoor space further and find other objects that show specific quantities e.g. branch with 4 leaves, a collection of 4 stones, collection of 2 sticks. If these objects are too big an iPad or camera could be used to capture them.
- Invite children to sort out objects/images according to quantity. Using baskets or containers for sorting can help along with numeral cards illustrating the quantity i.e.
  "I see you have a branch with 3 leaves. What basket will you sort it into?"
  "I wonder where the picture of the car will go? Can you tell me why have you put it in that basket?"
- Once all the images and objects are sorted invite the children to work together to stick them into their own numbers book, alternatively you could hang the images on specific number trees. Take opportunities to talk about the images, which page has the most/fewest examples.

Language: add, plus, more, make, altogether, total, how many more?, how many left? find the difference, take away, subtract, count on/back, left over, is the same as, equals

Resources:

- Images from experience 'Seek and Find'
- Variety of found objects
- iPad/Camera

Other concepts explored:

- Stable order principle, 1-1 correspondence, cardinal principle

Addition and Subtraction	Sorts & classifies objects using quantity as an attribute e.g. sets of 1, 2 within 0-10	Compares 2 sets to decide which has the fewest/most within 0-10	Finds the total when 1,2 or 3 is added to an existing amount e.g. a number line or height chart (augmentation)	Finds the total when 2 sets are added together within 0-10 (aggregation)	Finds out how many are left when 1 or 2 are taken away within 0-10	Compares to find the difference between sets as a quantity within 0-10	Beginning to count on and back in ones to add and subtract with objects or number line within 0-10

AS1.3-3

Rainbow colours

Classifying and sorting involves grouping objects with the same/specific trait or attribute together. Children should have ample opportunities to sort objects within their environment e.g. toys, animals, colours. They need to learn how to sort objects into classified groups before they can move on to experiences that involves numbers.

Aim: *To sort items according to how many colours they have.*

Suggested Experience and Interactions:

- Provide children with a bucket or container and invite them to go and collect 4 or 5 objects within their outdoor space that interest them or that they like to play with.

- When children return with their objects spend time talking about them and why they chose them. Encourage the children to think of different ways they could sort the objects e.g. big/small, long/short, toy/natural.

  "How could we sort these objects?"

  Follow the children's lead and begin to sort objects into different groups. Large hoops can be helpful for sorting experiences.

- Encourage the children to focus on the colours they can see in each object.

  "What colours can you see on the ball? How many different colours does it have?"

  "I wonder if there is another object that has 2 colours on it? Can we find more?"

  "Let's sort the rest of the objects by the number of colours."

- Place hoops with numerals inside and support children to place their objects into the correct hoop e.g. 1 colour, 2 colours, 3 colours, 4 colours, more than 5 colours

  "How many objects have 2 colours?"

  "Which hoop has the most/fewest objects?"

Language: add, plus, more, make, altogether, total, how many more?, how many left? find the difference, take away, subtract, count on/back, left over, is the same as, equals

Resources:

- Buckets/containers
- Hoops
- Numeral cards or chalked numbers

Other concepts explored:

- 5 Principles of counting

Glasgow's Improvement Challenge - Leaders of Early Learning

Glasgow Outdoors: Glasgow Counts - Numeracy Early Tracker 1

Addition and Subtraction	Sorts & classifies objects using quantity as an attribute e.g. sets of 1, 2 within 0-10	Compares 2 sets to decide which has the fewest/most within 0-10	Finds the total when 1,2 or 3 is added to an existing amount e.g. a number line or height chart (augmentation)	Finds the total when 2 sets are added together within 0-10 (aggregation)	Finds out how many are left when 1 or 2 are taken away within 0-10	Compares to find the difference between sets as a quantity within 0-10	Beginning to count on and back in ones to add and subtract with objects or number line within 0-10

AS2.1-2

Voting Station

Once children have mastered the cardinal principal and know the last item counted gives the amount in any set they can begin to engage in ordering and comparing sets, showing an understanding that 1, 2, 3 means an increase in quantity and that the amount of objects is more than the last number.

Aim: *To compare two sets and discuss which has fewest/most.*

Suggested Experience and Interactions:

- Voting systems not only facilitate children's voice but provide opportunities to compare quantities of sets. Voting opportunities are plentiful in early learning and childcare settings e.g. voting for: resources, books, outings, use of space, snack choices.
- Within your outdoor reading space set up a voting station for children to vote for which book they would like to hear read aloud.
- To place their vote children select a brick and place it on top of the previous brick (there is a range of different ways this could be completed e.g. counters in jars). To ensure each child votes only once they could be given a brick with their name stuck on to it. Ideally children should be able to see the 'votes' increase over time therefore having a posting box may not be appropriate unless this is clear.
- After voting is complete compare the 2 towers of bricks or jars with 'voting' counters and talk about the results.
  - ***"I wonder which book we will read today? Why do you think this one?"***
  - ***"Which tower has more bricks/fewer bricks?"***
  - ***"How many bricks do you estimate there are?***
  - ***"Let's count the number of votes for each book. We will place the correct number card beside the tower of bricks."***
  - ***"How many more brick would this tower need to be the same as the taller tower?"***
  - ***"There are two more people to vote, will their vote change the results?"***
- '*Would You Rather?*' By John Burningham offers fun opportunities to vote.

Language: add, plus, more, make, altogether, total, how many more?, how many left? find the difference, take away, subtract, count on/back, left over, is the same as, equals

Resources:

- 2 books that children have expressed interest in
- Bricks (or clear container and voting object e.g. counters, stones)
- Numeral cards

Other concepts explored:

- Estimation
- Stable order principle, 1-1 correspondence, cardinal principle,

Addition and Subtraction	Sorts & classifies objects using quantity as an attribute e.g. sets of 1, 2 within 0-10	Compares 2 sets to decide which has the fewest/most within 0-10	Finds the total when 1,2 or 3 is added to an existing amount e.g. a number line or height chart (augmentation)	Finds the total when 2 sets are added together within 0-10 (aggregation)	Finds out how many are left when 1 or 2 are taken away within 0-10	Compares to find the difference between sets as a quantity within 0-10	Beginning to count on and back in ones to add and subtract with objects or number line within 0-10

AS2.2-2

Grab and Compare

Once children have mastered the cardinal principal and know the last item counted gives the amount in any set they can begin to engage in ordering and comparing sets, showing an understanding that 1, 2, 3 means an increase in quantity.

Aim: *To compare two sets of objects and discuss which has fewest/most.*

Suggested Experience and Interactions:

- Invite children to explore a range of bags you have made up by feeling inside or shaking them. Talk about the contents and encourage children to guess what objects might be inside.

  "Does it feel like something big or small?" "Rough or smooth?"

  "How many do you estimate might be inside?"

  Give children time to explore the contents of the bags and be comfortable handling the objects.
- When comparing quantities children often want to have more than or the same as their friends. Splitting quantities of objects between puppets can be more successful or allow children to compare their own sets.
- Invite children to take one handful from a bag:

  "How many do you estimate there are?"

  The same child should grab another handful with their other hand;

  "Which hand has the most?" "Which hand has the fewest?"

  "How do you know?" *or* ***"Why do you think that?"***

  Support and encourage children to check by counting the 2 sets separately.
- Support children to make further comparisons between sets by encouraging them to line up their objects to help them visually see the difference between the 2 sets.

  "This row has 2 more."

  "If we add 2 more acorns to this row, will have the same amount?"

Language: add, plus, more, make, altogether, total, how many more?, how many left? find the difference, take away, subtract, count on/back, left over, is the same as, equals

Resources:

- Bags with natural objects, loose parts up to 10 items in each (more for challenge)

Other concepts explored:

- Estimation
- Stable order principle, 1-1 correspondence, cardinal principle

Addition and Subtraction	Sorts & classifies objects using quantity as an attribute e.g. sets of 1, 2 within 0-10	Compares 2 sets to decide which has the fewest/most within 0-10	Finds the total when 1,2 or 3 is added to an existing amount e.g. a number line or height chart (augmentation)	Finds the total when 2 sets are added together within 0-10 (aggregation)	Finds out how many are left when 1 or 2 are taken away within 0-10	Compares to find the difference between sets as a quantity within 0-10	Beginning to count on and back in ones to add and subtract with objects or number line within 0-10

AS3.1-3; AS5.1-3

Race to 10 – Space Explorer

Addition and subtraction should, where possible, be explored simultaneously to support children in understanding the relationship between both processes. It Is important that children are confident in counting sets (groups of objects) and understand that the last number they count is the total in a set (cardinal principle). Children will then be able to count sets of objects together.

Aim: *To add or take away 1, 2 or 3 objects from a set. The 'winner' is the first to reach 10 (addition) or 0 (subtraction)*

Suggested Experience and Interactions:

- Set the scene of the 'game' with a small number of children to increase engagement and motivation following children's lines of interest e.g. space explorers landing on the moon. Inform children of their mission; to collect 10 'moon rocks' and place them on their ten frame, once their ten frame is full, they have to return to the spaceship as quickly and safely as possible.
- Children take a turn to roll the die and collect the corresponding number of 'moon rocks' from the centre of the group and place them on their ten frames.

  "Use your eyes to subitise, how many rocks have you to collect?"
- Continue to repeat this process encouraging turn taking and supporting children to fill the unoccupied spaces on their ten frames.

  "You had 3 rocks, and now you've added 2 more. How many rocks do you have altogether?"

  "How many more rocks do you need until you have 10?"
- You can follow a similar experience for subtraction, each child begins with 10 rocks on their 10 frame and race to take away rocks using the corresponding number on the die.

  "You had 10 rocks and you have to take one away. How many do you have left?"
- Number songs are a great way of exploring and reinforcing this concept of adding or taking away 1 or 2 e.g. '10 fat sausages, '5 little peas' etc.

Language: add, plus, more, make, altogether, total, how many more?, how many left? find the difference, take away, subtract, count on/back, left over, is the same as, equals

Resources

- A selection of objects of interest e.g. dinosaurs, treasure, gems, moon rocks (stones painted black and silver)
- A 1-3 die (dot patterns or numerals if children confident with numeral recognition)
- Ten frame

Other concepts explored:

- Stable order principle,1-1 correspondence, cardinal principle
- Subitising

Addition and Subtraction	Sorts & classifies objects using quantity as an attribute e.g. sets of 1, 2 within 0-10	Compares 2 sets to decide which has the fewest/most within 0-10	Finds the total when 1,2 or 3 is added to an existing amount e.g. a number line or height chart (augmentation)	Finds the total when 2 sets are added together within 0-10 (aggregation)	Finds out how many are left when 1 or 2 are taken away within 0-10	Compares to find the difference between sets as a quantity within 0-10	Beginning to count on and back in ones to add and subtract with objects or number line within 0-10

AS3.2-3; AS5.2-3

Tower Build

Addition and subtraction should, where possible, be explored simultaneously to support children in understanding the relationship between both processes. It Is important that children are confident in counting sets (groups of objects) and understand that the last number they count is the total in a set (cardinal principle). Children will then be able to count sets of objects together.

Aim: *To work as a 'team' to build a tower to 10*

Suggested Experience and Interactions:

- Use an 'editable' die to create one specific to this 'game'. Use 2 different colours e.g. red and blue, draw red dots on three sides to show 1, 2, and 3 and draw blue dots on 2 sides to show 1 and 2, leave one side blank to represent 0.
- Invite a small group of children to work together to build a tower of bricks, or children could work individually.
- Inform children when they roll red dots, they will add bricks on to their tower, when they roll blue dots, they will take away bricks from their tower. If they roll zero dots, they do nothing.
- Support children to take turns and keep track of the number of bricks after each turn. Seek opportunities to talk about more and fewer where appropriate.

  "Oh how many bricks do we have to start with?" (zero)
  "How many dots can you see?" "Can you show me with your fingers?"
  "You rolled 3 red dots. Have you to add more bricks or take some away?"
  "How many bricks do we have now?"
  "What's happening to our tower when we add more bricks?"
  "What's happening to our tower when we take away bricks?"
  "Do we have more bricks or fewer brick than the last shot? How do you know?"

Language: add, plus, more, make, altogether, total, how many more?, how many left? find the difference, take away, subtract, count on/back, left over, is the same as, equals

Resources:

- Editable dice
- Large outdoors bricks/construction

Other concepts explored:

- Stable order principle, 1-1 correspondence, cardinal principle
- Subitising

Addition and Subtraction	Sorts & classifies objects using quantity as an attribute e.g. sets of 1, 2 within 0-10	Compares 2 sets to decide which has the fewest/most within 0-10	Finds the total when 1,2 or 3 is added to an existing amount e.g. a number line or height chart (augmentation)	Finds the total when 2 sets are added together within 0-10 (aggregation)	Finds out how many are left when 1 or 2 are taken away within 0-10	Compares to find the difference between sets as a quantity within 0-10	Beginning to count on and back in ones to add and subtract with objects or number line within 0-10

AS3.3-3; AS5.3-3

Teddy Bear Den

Addition and subtraction should, where possible, be explored simultaneously to support children in understanding the relationship between both processes. It Is important that children are confident in counting sets (groups of objects) and understand that the last number they count is the total in a set (cardinal principle). Children will then be able to count sets of objects together.

Aim: *To find the total number of teddies in the den when 1, 2, or 3 are added or taken away.*

Suggested Experience and Interactions:

- Invite children to create a den for the nursery teddies or figurines of choice e.g. superheroes, dinosaurs etc. Ensure children have had the opportunity to play and explore inside the den prior to engaging in the experience.
- Place 3 teddies inside the den; ***"How many teddies are in the den?"***
- Add one more teddy in the den; ***"I wonder how many teddies are in the den now?"*** Reinforce with the children that by adding one more to a set the quantity has increased; ***"4 is one more than 3."*** Involve the children in manipulating the bears in different ways e.g. 4 in the den add 1 more, 1 in the den add 2 more.
- Repeat and reinforce this concept in other contexts i.e. snack ***"You have 2 crackers on your plate, add one more. Now you have 3 crackers altogether."*** Sand area ***"There are 4 children in the sandpit, one more child has joined. Now there are 5 children altogether."***
- Encourage children to think about what happens when we take away one;

  "There are 5 teddies in the den, and we take away one/one goes home. How many teddies are there now?"

  Reinforce with the children that by taking one away from a set the quantity has reduced; ***"4 is one less then 5."***
- Repeat and reinforce this concept in other contexts i.e. snack ***"You have 4 grapes on your plate. If you eat one you will have 3 left."*** Sand area ***"There were 4 children in the sandpit and one child left. Now there are 3 children altogether."***

Language: add, plus, more, make, altogether, total, how many more?, how many left? find the difference, take away, subtract, count on/back, left over, is the same as, equals

Resources:

- Materials for making an outdoor den e.g. fabric, cardboard boxes etc.
- Selection of teddies or small world figurines of interest

Other concepts explored:

- Stable order principle, 1-1 correspondence, cardinal principle
- Subitising
- Position

Addition and Subtraction	Sorts & classifies objects using quantity as an attribute e.g. sets of 1, 2 within 0-10	Compares 2 sets to decide which has the fewest/most within 0-10	Finds the total when 1,2 or 3 is added to an existing amount e.g. a number line or height chart (augmentation)	Finds the total when 2 sets are added together within 0-10 (aggregation)	Finds out how many are left when 1 or 2 are taken away within 0-10	Compares to find the difference between sets as a quantity within 0-10	Beginning to count on and back in ones to add and subtract with objects or number line within 0-10

AS4.1-2

On Target

Addition and subtraction should, where possible, be explored simultaneously to support children in understanding the relationship between both processes. It Is important that children are confident in counting sets (groups of objects) and understand that the last number they count is the total in a set (cardinal principle). Children will then be able to count sets of objects together.

Aim: *To throw bean bags at targets and count how many are on target altogether*

Suggested Experience and Interactions:

- Mark out or place 2 'targets' within a throwing zone and a starting point for throwers to stand on.
- Provide each child with 10 bean bags, ideally of the same colour, and encourage them to throw their bean bags towards and into the targets.
- Once all bean bags have been thrown invite the child to estimate or subitise how many bean bags are in each tub.

  "How many bean bags do you think you have got in here?"
  "How many bean bags can you see in this target?"
- Encourage each child to count how many they got in the targets altogether.

  "I wonder if we could count how many bean bags there are altogether…"
  "Where should we start counting?"

  (You may need to support children to manipulate and move the bean bags so they can keep track of what has been and has not been counted.)
- Some children may be able to record their 'score' by writing the numeral on the ground with chalk or clipboard.

  "Last time you got 4 beanbags in the target. Is your total more or fewer this time?"

Language: add, plus, more, make, altogether, total, how many more?, how many left? find the difference, take away, subtract, count on/back, left over, is the same as, equals

Resources:

- Hoops or containers (targets)
- 10 bean bags (ideally same colour)

Other concepts explored:

- Stable order principle, 1-1 correspondence, cardinal principle
- Subitising

Addition and Subtraction	Sorts & classifies objects using quantity as an attribute e.g. sets of 1, 2 within 0-10	Compares 2 sets to decide which has the fewest/most within 0-10	Finds the total when 1,2 or 3 is added to an existing amount e.g. a number line or height chart (augmentation)	Finds the total when 2 sets are added together within 0-10 (aggregation)	Finds out how many are left when 1 or 2 are taken away within 0-10	Compares to find the difference between sets as a quantity within 0-10	Beginning to count on and back in ones to add and subtract with objects or number line within 0-10

AS4.2-2

Domino Sort

Addition and subtraction should, where possible, be explored simultaneously to support children in understanding the relationship between both processes. It Is important that children are confident in counting sets (groups of objects) and understand that the last number they count is the total in a set (cardinal principle). Children will then be able to count sets of objects together.

Aim: *To add 2 sides of a domino together and sort into the corresponding hoop/circle*

Suggested Experience and Interactions:

- Ensure children have had the opportunity to explore and play with large dominoes prior to introducing the 'game'.
- Place or draw hoops in a line or in a circle like a clock face. Invite children to work together to order the numeral cards from 0-10 into the hoops.
  "I see you have number 4. What number comes before/after?"
  "I wonder if number 8 will go near the beginning or end of the line…"
- Place dominoes in the centre face down. Children take turns to flip over a domino and count how many dots there are altogether.
  "How many dots can you see on this side?"
  "Let's count how many there are altogether?"
- Once a child has calculated how many dots there are altogether encourage them to hold the number in their head and find the hoop with the corresponding numeral and place it in.
  "You have 8 dots altogether, stick that number in your head."
  "What hoop have you to put your domino in?" (8)

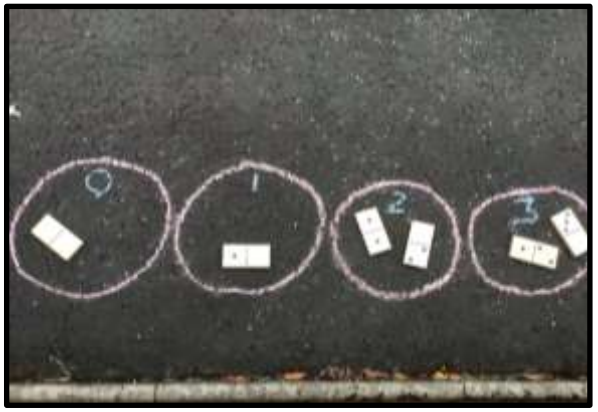
Language: add, plus, more, make, altogether, total, how many more?, how many left? find the difference, take away, subtract, count on/back, left over, is the same as, equals

Resources:

- Large domino set (remove dominoes that total more than 10)
- Hoops or chalked circles
- Numerals 0-10

Other concepts explored:

- Numeral recognition and ordering
- Stable order principle, 1-1 correspondence, cardinal principle
- Subitising



Addition and Subtraction	Sorts & classifies objects using quantity as an attribute e.g. sets of 1, 2 within 0-10	Compares 2 sets to decide which has the fewest/most within 0-10	Finds the total when 1,2 or 3 is added to an existing amount e.g. a number line or height chart (augmentation)	Finds the total when 2 sets are added together within 0-10 (aggregation)	Finds out how many are left when 1 or 2 are taken away within 0-10	Compares to find the difference between sets as a quantity within 0-10	Beginning to count on and back in ones to add and subtract with objects or number line within 0-10

AS6.1-1

Find the difference

Children need a lot of practical, hands on experience of this concept. Children will often recognise if there is more or less of a specific item, particularly if it is of interest to them e.g. food, toys such as bricks etc. Supporting children to line sets of objects in rows can help them to visualise and 'find the difference' between 2 sets.

Aim: *To find the difference between 2 sets.*

Suggested Experience and Interactions:

- When sharing resources between children encourage them to place their resources in a row e.g. Lego bricks, stones etc. (You could also use the grab and compare approach suggested in a previous experience)

  "I wonder if you have the same amount?" "How do you know?"
  "Who has the most/fewest?"
  "I wonder what the difference is between your stones and your friends?"
  "Shall we count to find the difference?"
  "You have 2 more than your friend. Your friend has 2 less than you."
  "I wonder how many more stones you need so that they are the same."

- When finding the difference using this approach, draw children's attention to the objects that don't line up with another.

  "The difference between 3 and 5 is 2. 5 is 2 more than 3. 3 is 2 less than 5."

Language: add, plus, more, make, altogether, total, how many more?, how many left? find the difference, take away, subtract, count on/back, left over, is the same as, equals

Resources:

- Lego bricks or similar objects for sharing

Other concepts explored:

- Stable order principle, 1-1 correspondence, cardinal principle

Addition and Subtraction	Sorts & classifies objects using quantity as an attribute e.g. sets of 1, 2 within 0-10	Compares 2 sets to decide which has the fewest/most within 0-10	Finds the total when 1,2 or 3 is added to an existing amount e.g. a number line or height chart (augmentation)	Finds the total when 2 sets are added together within 0-10 (aggregation)	Finds out how many are left when 1 or 2 are taken away within 0-10	Compares to find the difference between sets as a quantity within 0-10	Beginning to count on and back in ones to add and subtract with objects or number line within 0-10

AS7.1-3

Counting on

Within early mathematical development children typically use the 'counting all' strategy, count out 2 sets of objects then combine and count altogether, before progressing on to the 'counting on' strategy. This requires understanding of cardinal value, the final object counted in a set is the total, whereby children can hold a total in their heads and count on in ones.

Aim: *To provide daily opportunities to model and experience counting on and back in 1's.*

Suggested Experiences and Interactions:

- Seek opportunities to model and explore counting on:
  - during daily routines such as snack time i.e.
    "We need 6 cups, I have 3 *(collect more cups and count on till 6)* ***4, 5, 6."***
    "You can have 4 crackers each, you have 2 (count out more crackers) ***3, 4."***
  - playing dice games i.e.
    "How many sticks do you have? (3) ***You rolled a 2, lets count on 2 more. 3*** *(circle hand over the 3 sticks to signal you have 'counted' them)* ***4, 5. You have 5 sticks now."***
  - keeping scores i.e. create a 'natural' abacus (or use airflow balls) to keep track of total scores. String 10 wood slices/logs or balls on to rope and attach to a fence, adding numerals can support children to recall the total of their last score. Children can manipulate to add on their scores after each shot.
    "You scored 3 wellies in the bucket. How many will you move?"
    "You scored 2 more wellies in the bucket. Let's count on 2. 3! (circle hand over the 3 logs) ***4, 5."***
    "Your last total was 5. Start at 5 and count on 3. 5…6, 7, 8." (support child to move 3 logs by holding up 3 fingers and putting one down each time a log is moved as a reminder to stop after three logs have been moved.)

Language: add, plus, more, make, altogether, total, how many more?, how many left? find the difference, take away, subtract, count on/back, left over, is the same as, equals

Resources:

- Any objects that can be counted
- Dice
- Abacus

Other concepts explored:

- Stable order principle, 1-1 correspondence, cardinal principle
- Subitising

Addition and Subtraction	Sorts & classifies objects using quantity as an attribute e.g. sets of 1, 2 within 0-10	Compares 2 sets to decide which has the fewest/most within 0-10	Finds the total when 1,2 or 3 is added to an existing amount e.g. a number line or height chart (augmentation)	Finds the total when 2 sets are added together within 0-10 (aggregation)	Finds out how many are left when 1 or 2 are taken away within 0-10	Compares to find the difference between sets as a quantity within 0-10	Beginning to count on and back in ones to add and subtract with objects or number line within 0-10

AS7.2-3

Walk the plank!

Within early mathematical development children typically use the 'counting all' strategy, count out 2 sets of objects then combine and count altogether, before progressing on to the 'counting on' strategy. This requires understanding of cardinal value, the final object counted in a set is the total, whereby children can hold a total in their heads and count on in ones.

Aim: *To jump along the 'plank' (number line) without landing on 10*

Suggested Experience and Interactions:

- Use chalk to draw a large number line, 'plank' 0-10 on the ground.
- Set the scene and build excitement with stories of pirate ships or a ship made from boxes with props available for children e.g. telescope, hats, eye patches. Ensure children have had time to explore materials before engaging in the 'game'.
- Encourage children to work together to 'walk the plank'. Invite one child to stand on 0, another child to roll the die (dot patterns 1-3) and support another child to shout out the instructions. After each roll the child should jump along the number line. If the child lands on 10 they have fallen into the sea. If the child jumps over 10 they have safely landed in a 'rescue boat'.

  "You are standing on number 6 and the dice shows you have to count on 2 jumps. Hold 6 in your head and count on 2." (Encourage and support child to use and manipulate fingers to count on 2.) ***"Count on from 6. 6!…7, 8."***

  "You are standing on number 8; what number do you hope the dice will land on?" "Why"

  "What will happen if you roll a 2?"
- Repeat this ensuring all children have a turn of counting on, rolling the die and instructing.
- Encourage children to hold the previous total in their heads and count on. Using fingers to track how many moves the child must take can support them in knowing when to stop.

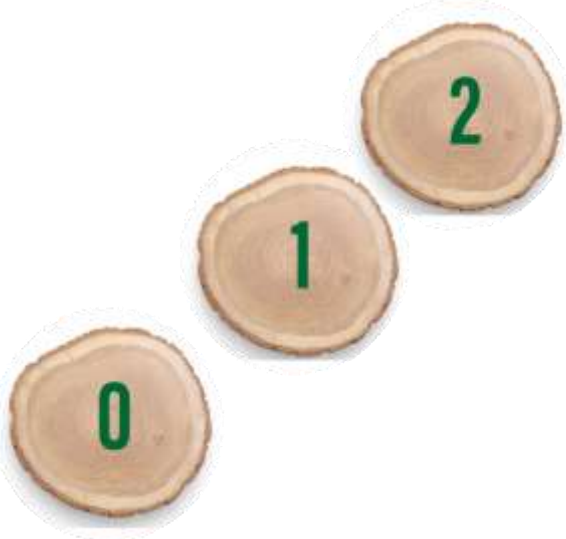
Language: add, plus, more, make, altogether, total, how many more?, how many left? find the difference, take away, subtract, count on/back, left over, is the same as, equals

Resources:

- Chalked 'plank' 0-10
- 1-3 Dice

Other concepts explored:

- Stable order principle, 1-1 correspondence, cardinal principle
- Subitising



Addition and Subtraction	Sorts & classifies objects using quantity as an attribute e.g. sets of 1, 2 within 0-10	Compares 2 sets to decide which has the fewest/most within 0-10	Finds the total when 1,2 or 3 is added to an existing amount e.g. a number line or height chart (augmentation)	Finds the total when 2 sets are added together within 0-10 (aggregation)	Finds out how many are left when 1 or 2 are taken away within 0-10	Compares to find the difference between sets as a quantity within 0-10	Beginning to count on and back in ones to add and subtract with objects or number line within 0-10

AS7.3-3

Which number now?

Once children understand cardinality they can use their knowledge of forward and backward number sequences to count on or back to solve number problems. For example 3 can be taken away from 5 by counting back from the largest number: "5…4, 3, 2". Children should have opportunities to start from different numbers as this will support them in understanding the size of numbers in relation to others.

Aim: *To identify which number they will land on by counting on or back.*

Suggested Experience and Interactions:

- Use chalk to draw a number track 0-10, alternatively to stimulate motivation and interest, string hoops through rope and tie them between 2 points at a height that children can climb/jump through. Using numeral cards invite children to help number the hoops in order from 0-10.
- Children should work in pairs to play and move through the hoops. Child A selects a numeral card and stands beside the corresponding hoop. Child B rolls a die with 1 and 2 dot patterns on them (increase dot patterns as children require challenge). Child A must climb backwards through 1 or 2 hoops 'counting back' aloud as they move.

  "You are on 8. You have to move back 2 hoops. Which hoop will you move to?"
  (Support the child to use their fingers to manipulate and work out which hoop they will stop at.)
  "Stand on number 6. Move back 1. "Which hoop will you be on now?" "5 is one less than 6. 6 take away 1 is 5."
- This experience can be carried out using 'counting on' as well.

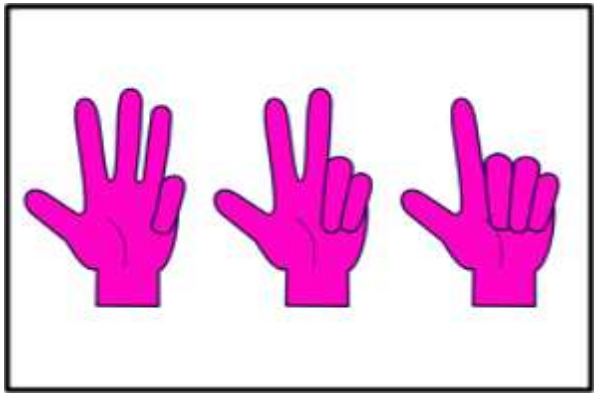
Language: add, plus, more, make, altogether, total, how many more?, how many left? find the difference, take away, subtract, count on/back, left over, is the same as, equals

Resources:

- Hoops
- Rope
- Numeral card 0-10
- Editable dice (1 and 2 dot patterns)

Other concepts explored:

- Number word sequences
- Stable order principle, 1-1 correspondence, cardinal principle
- Subitising



Multiplication and Division	Shares out a group of items into 2 equal sets within 0-10. Groups objects into matching or natural sets of 2 e.g. shoes within 0-10	Begin to identify halves and doubles using concrete materials within 0-10

M&D 1.1-3

Matching Wellies

Once children have mastered the cardinal principle and know the last item counted gives the amount in any set, they can begin to engage in early division as a concrete activity by exploring sharing and grouping. Children can observe halves and doubles naturally as part of the sharing and grouping process. Early multiplication may also be explored as skip counting e.g. I say number 1 quietly, number 2 loudly, number 3 quietly, number 4 loudly etc.

Aim: *To group objects into natural sets of 2.*

Suggested Experience and Interactions:

- Separate the pairs of wellies and hide up to 10 pairs in your outdoor space.
- Explain to the children that all the wellies are missing and have lost their pair.
- Ask the children to help you find the wellies and match them together to make a pair (groups of two).
- Ask the children to count how many pairs of wellies they have found.
- Challenge children by asking them to share their pairs of wellies with a friend so that they both have the same amount.

  "I wonder how you know that they are a pair?"
  "How many pairs of wellies did you find?"
  "I wonder how many are in a pair?" "How many wellies are in two pairs?"
  "Can you share the wellies between you and your friend?"
  "How many pairs of wellies do you have?"
  "How many does your friend have? Are they equal (the same)?"

Variation: This activity could also be carried out using, socks (real or printed and laminated), shoes, gloves, laminated pairs of photographs etc

Language: Share(s), group(s), pairs, twos, threes, fours, etc. odd, even, array.

Resources:
- Up to 10 pairs of wellies

Other concepts explored:
- Stable order principle, 1-1 correspondence, cardinal principle

Multiplication and Division	Shares out a group of items into 2 equal sets within 0-10. Groups objects into matching or natural sets of 2 e.g. shoes within 0-10	Begin to identify halves and doubles using concrete materials within 0-10

M&D 1.2-3

Pair Race

Once children have mastered the cardinal principle and know the last item counted gives the amount in any set, they can begin to engage in early division as a concrete activity by exploring sharing and grouping. Children can observe halves and doubles naturally as part of the sharing and grouping process. Early multiplication may also be explored as skip counting e.g. I say number 1 quietly, number 2 loudly, number 3 quietly, number 4 loudly etc.

Aim: *To group objects into natural sets of 2.*

Suggested Experience and Interactions:

- Separate 10 pairs into each basket, mix them up and split the children into two groups.
- Explain to the children that all socks are mixed up in the washing basket and they must find all the pairs before the other group of children.
- Explain that the first child will run to the basket, grab a sock, bring it back to their group and peg it on the washing line. Then the second child will run to the basket, grab a sock and bring it back to the group, if they match, they need to peg the pair together on the washing line. If they don't, leave the sock on the ground until its pair is found.
- Repeat until there are no socks left in the basket.
- Then ask each group of children to count how many pairs of socks they have found.

"How many pairs of socks did you find?"
"How many are in a pair?"
"I wonder how you knew that those socks were a pair?"
"Can you share the socks equally between you and your friend?"
"Do you and your friend have an equal amount?"

Language: Share(s), group(s), pairs, twos, threes, fours, etc. odd, even, array.

Resources:

- Up to 20 pairs of socks/shoes/wellies, gloves
- Two baskets with 10 pairs in each
- Two washing lines and pegs

Other concepts explored:

- Stable order principle, 1-1 correspondence, cardinal principle
- Pattern

Multiplication and Division	Shares out a group of items into 2 equal sets within 0-10. Groups objects into matching or natural sets of 2 e.g. shoes within 0-10	Begin to identify halves and doubles using concrete materials within 0-10

M&D 1.3-3, M&D2.1-3

Outdoor Picnic

Once children have mastered the cardinal principle and know the last item counted gives the amount in any set, they can begin to engage in early division as a concrete activity by exploring sharing and grouping. Children can observe halves and doubles naturally as part of the sharing and grouping process. Early multiplication may also be explored as skip counting e.g. I say number 1 quietly, number 2 loudly, number 3 quietly, number 4 loudly etc.

***Aim**: To share out (half) a group of items into two equal sets within 0-10*

Suggested Experience and Interactions:

- Collect all the 'food' for your picnic e.g. sticks, stones and pinecones (or other items you have) from outdoor area and place them in bowls. Lay the picnic blanket on the ground with the 'food' in the middle and ask a child to give the rest of the children a plate each.
- Split the children into twos and explain that you are going to give them a bowl of food that they need to share equally between their plates.
- Children can take it in turns to share between 2, counting to check that they both have an equal amount. Explain that when you share objects equally between two, you halve the amount.
- Repeat swapping the different 'food' bowls between the pairs.

  "***Can you share these leaf sandwiches between the plates?***
  "How many sandwiches are on each plate?"
  "Do you both have an equal (the same) amount?"
  "I wonder how many pinecones will be on each plate"
  "I'm thinking that we may have more leaf sandwiches than spaghetti sticks? What do you think? Shall we share them out and see?"

This experience could be carried out as a *Teddy Bears Picnic,* with children sharing the 'food' between the teddy bears.

Language: Share(s), group(s), pairs, twos, threes, fours, etc. odd, even, array.

Resources:

- sticks, stones, pinecones, leaves (loose parts), (up to 10 of each item)
- 1 plate per child
- picnic blanket

Other concepts explored:

- Stable order principle, 1-1 correspondence, cardinal principle

Multiplication and Division	Shares out a group of items into 2 equal sets within 0-10. Groups objects into matching or natural sets of 2 e.g. shoes within 0-10	Begin to identify halves and doubles using concrete materials within 0-10

M&D 2.2-3

Doubling Mirror

Once children have mastered the cardinal principle, and know that the last item counted gives the number in any set, then they can begin to engage in division as a concrete activity by exploring sharing and grouping. Children can observe halves and doubles naturally as part of the sharing and grouping process.

Aim: *To investigate what happens to the number of objects when placed in front of a mirror.*

Suggested Experience and Interactions:

- Place items in baskets/bowls and mirrors in front of the children.
- Explain to the children that you are going investigate what happens to the number of objects when you put them in front of the mirror.
- Allow the children to explore and discover what happens to the number of items if they put it in front of a mirror.
- Explain that the number is doubling (there are twice as many).
- Ask children,
  - ***"How many objects do you have?"***
  - ***"How many object can you see?***
  - ***"Double _ is _?"***
  - ***"I wonder how many double _ is?"***
- Encourage children to investigate and predict what will happen when more than one item is placed in front of the mirror.
  - ***"I wonder how many items we will see if we use a mirror"***
  - ***"How many things do you have altogether?"***
  - ***"I wonder what will happen if we put 3 pegs in front of the mirror"***

Language: share(s), group(s), pairs, twos, threes, fours etc. odd, even, array

Resources:

- One mirror per child
- Loose parts e.g. leaves, pinecones, shells, stones, pegs etc

Other concepts explored:

- Stable order principle, 1-1 correspondence, cardinal principle, abstraction principle

Multiplication and Division	Shares out a group of items into 2 equal sets within 0-10. Groups objects into matching or natural sets of 2 e.g. shoes within 0-10	Begin to identify halves and doubles using concrete materials within 0-10

M&D 2.3-3

Pizza Race

Once children have mastered the cardinal principle and know that the last item counted gives the number in any set, then they can begin to engage in division as a concrete activity by exploring sharing and grouping. Children can observe halves and doubles naturally as part of the sharing and grouping process.

Aim: *To work in pairs to half sets of objects equally.*

Suggested Experience and Interactions:

- Set out the hoops as shown below, with baskets of 'ingredients' around the top hoop.
- Ask children to group themselves so that there are 2 groups of children.
- Explain to the children that you need to make two pizzas with an equal (same) amount of each topping.
- Tell the children that they will need to work with a partner from the other group to count the number of objects (0-10) in the top hoop then share them equally between the two pizzas (hoops below).
- Children race to select a basket of 'toppings' and empty it into the top hoop.
- Once items have been shared equally, count how many items in each hoop to ensure that they have halved (shared) the 'toppings' equally .

  "I wonder if you can share these items equally between the two hoops?"
  "How many are in your hoop? And in yours? Are they the same?"
  "We had 6 cones and shared them between the 2 hoops, there are now 3 cones in each hoop, so half of 6 is?"
  "There were 4 leaves in the top hoop, 4 shared between 2 is _?"
  "I wonder how many is half of 10?"

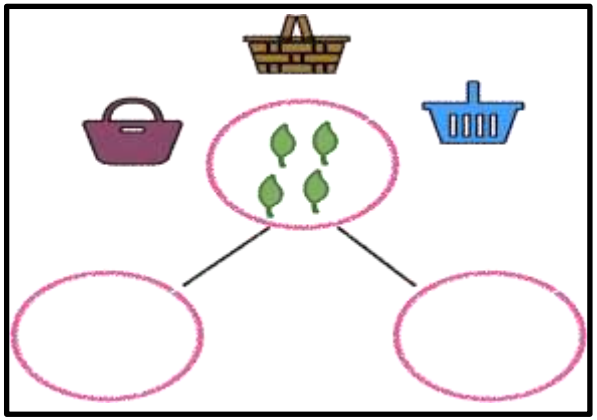
Language: share(s), group(s), pairs, twos, threes, fours etc. odd, even, array

Resources:

- 3 hoops
- 2 sticks or pieces of ribbon.
- Loose parts in baskets representing toppings e.g. leaves, stones, pegs **(an even number of objects up to 10 in each basket, so that they can be spilt equally).

Other concepts explored:

- Stable order principle, 1-1 correspondence, cardinal principle



Fractions, Decimals and %	Identifies wholes and halves in a social context and uses appropriate language e.g. 'I have eaten half of my banana'	Splits a whole into smaller parts and explains that equal parts are the same size	Understands that a whole can be shared equally and unequally

FD% 1.1-3

Social Contexts

It is only appropriate to work with fractions in social and naturally occurring contexts in early years. It is important for children to know that an object is halved by cutting it into two equal sized pieces and that when an object is split, if the resulting parts are unequal then each part cannot be half. Children should also be encouraged to put two halves back together to reinforce that they make a whole.

Lots of practical and real-life experiences need to be offered for learners to begin to understand that fractions are created when a whole object is divided into equal parts, allowing them to 'see' the whole and the associated parts.

Aim: *To discuss wholes and halves in social contexts.*

Suggested Experiences and Interactions:

Some of these practical and real-life experiences outdoors include, snack time, sand, water and mud play as well as playdough.

- Children could be provided with whole strawberries or tomatoes at snack time which they then need to cut in half.
- You could provide cutters and slicers for rolling out and cutting up sand, play dough, snow or mud.
- Provide opportunities for taking things apart and putting them back together e.g. tinker table and construction kits.
- Discuss objects in the wider environment, discussing the parts that make up a whole e.g. a house is made up of bricks, doors, windows and a roof.
- You could also introduce the concept 'halfway' e.g. the bike is halfway between the door and the fence (it's in the middle)

"Are they equal?" "Are they the same size?" "How can we check?"
"I wonder what will happen if we push the two halves together?"
"When we half a _ how many people can we share it with?"

Language: Half, share, equally, part, whole, amount, shape, object, number, one half, equal, unequal

*"The language used around fractions requires careful thought to avoid giving children confusing messages, e.g. when cutting an apple in half it is more helpful to emphasise that the resulting halves are two parts of **one** apple rather than part of a **whole** apple."*
(Messy Maths, 2017, p.80)

Other concepts explored

Fractions, Decimals and %	Identifies wholes and halves in a social context and uses appropriate language e.g. 'I have eaten half of my banana'	Splits a whole into smaller parts and explains that equal parts are the same size	Understands that a whole can be shared equally and unequally

FD% 1.2-3

Water Play

It is only appropriate to work with fractions in social and naturally occurring contexts in early years. It is important for children to know that an object is halved by cutting it into two equal sized pieces and that when an object is split, if the resulting parts are unequal then each part cannot be half. Children should also be encouraged to put two halves back together to reinforce that they make a whole.

Aim: *To explain and demonstrate the concepts of full, half-full and empty.*

Suggested Experience and Interactions:

Set up the water tray (food colouring optional) and mark halfway on each container.

- Children use the containers and water to model 'empty' - no water, and 'full' - when the container cannot hold any more water.
  - ***"Can you pour water into this container until it is full?"***
  - ***"I wonder how you know the bottle is full?"***
  - ***"If the bottle is empty, how much water is in it?"***
- Introduce the halfway point around containers and discuss a container being 'half full'.
- Children explore the concepts of full, half-full and empty.
  - ***"Is the bottle full or half-full"***
  - ***"I wonder if you can fill this container so that it is half-full"***
  - ***"How much water is in this bottle?"***
- It is easy to incorporate these opportunities into daily routines such as snack time e.g. children fill milk/water jugs halfway, children pour themselves half a glass of milk/water.

Language: Half, quarter, share, equally, part, whole, amount, shape, object, number, one half, one quarter, equal, unequal, full, half-full, empty

Resources:

- A variety of bottles/containers with halfway marked on them
- Water tray
- Food colouring (optional)

Other concepts explored

- Capacity

Fractions, Decimals and %	Identifies wholes and halves in a social context and uses appropriate language e.g. 'I have eaten half of my banana'	Splits a whole into smaller parts and explains that equal parts are the same size	Understands that a whole can be shared equally and unequally

FD% 1.3-3

Find my Face

It is only appropriate to work with fractions in social and naturally occurring contexts in early years. It is important for children to know that an object is halved by cutting it into two equal sized pieces and that when an object is split, if the resulting parts are unequal then each part cannot be half. Children should also be encouraged to put two halves back together to reinforce that they make a whole.

Aim: *To join two halves to make a whole.*

Suggested Experience and Interactions:

- Mix up all of the half faces and display them around your outdoor space.
- Explain to the children that you had printed pictures of them but something strange happened to the printer so the pictures are mixed up and halved in two (show the children an example of two mismatched halves). Ask them to help you find the correct halves of each photo and put them together.

  "I wonder how many pieces of each face we will need to find?"
  "How many halves will make up each whole face?"
- Children should work together to match the two halves of each face together, the practitioner should encourage social discussion between the children, helping them to solve the problem e.g.

  "Whose face do you have half of?"
  "Does anyone else have half of _'s face?"
  "Do the two halves you have make the same face?"
  "I wonder if your two halves make a whole?"

*Variation – This could also be done with pictures of children's favourite characters or books.

Language: Half, quarter, share, equally, part, part, whole, amount, shape, object, number, one half, one quarter

Resources:

- A4 pictures of children's faces, halved in two.

Other concepts explored:

Fractions, Decimals and %	Identifies wholes and halves in a social context and uses appropriate language e.g. 'I have eaten half of my banana'	Splits a whole into smaller parts and explains that equal parts are the same size	Understands that a whole can be shared equally and unequally

FD% 2.1-2

Stick Challenge

It is only appropriate to work with fractions in social and naturally occurring contexts in early years. It is important for children to know that an object is halved by cutting it into two equal sized pieces and that when an object is split, if the resulting parts are unequal then each part cannot be half. Children should also be encouraged to put two halves back together to reinforce that they make a whole.

Aim: *To half a stick in two, and explain that the halves should be the same size.*

Suggested Experience and Interactions:

- Explain to the children that you are going to set them a challenge. The challenge is to break a stick in half so that both halves are exactly the same size.
- Demonstrate by breaking two sticks in half, break one into equal halves and one into unequal halves. Discuss the difference between equal and unequal halves. Reinforce that for a stick to be halved, the two pieces must be the same size.

  "Are those two pieces of stick the same size?"

  "Is this stick halved?"

  " I wonder how can we check that the two halves are equal?"

  "Are your two pieces equal or unequal?"
- The left over pieces of stick could then be turned into a stick family.

equal **unequal**

Language: Half, quarter, share, equally, part, part, whole, amount, shape, object, number, one half, one quarter, unequal, equal

Resources:

- a bundle of sticks

Other concepts explored:

Fractions, Decimals and %	Identifies wholes and halves in a social context and uses appropriate language e.g. 'I have eaten half of my banana'	Splits a whole into smaller parts and explains that equal parts are the same size	Understands that a whole can be shared equally and unequally

FD% 2.2-2

Find the Fractions

It is only appropriate to work with fractions in social and naturally occurring contexts in early years. It is important for children to know that an object is halved by cutting it into two equal sized pieces and that when an object is split, if the resulting parts are unequal then each part cannot be half. Children should also be encouraged to put two halves back together to reinforce that they make a whole.

Aim: *To join two halves to make a whole and explain that equal halves must be the same size.*

Suggested Experience and Interactions:

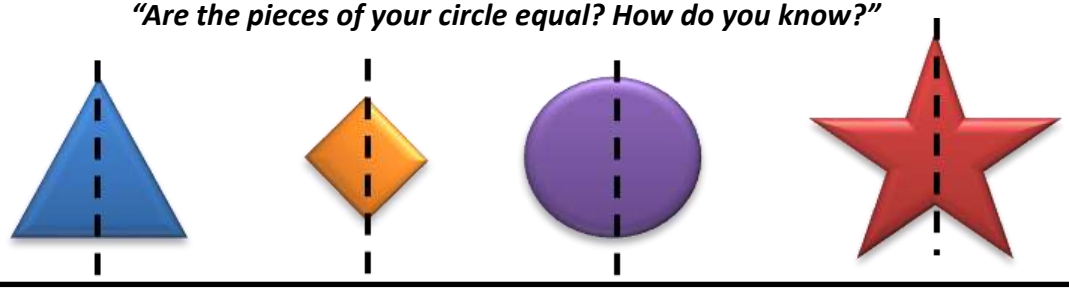
- Hide a selection of shapes which you have halved and laminated around your outdoor space.
- Explain to the children that there are some missing shapes in the garden that you need their help to find, but the problem is that the shapes have all split in half,

  "I wonder how many pieces of each shape we will need to find?"

  "How many halves will make up the whole shape?"
- Spilt the children into pairs, with one child the *finder* and the other the *maker.* Send the finders to find the shape pieces and return these to the maker, who then puts the halves together. If the shapes are different sizes, discuss how two different sized pieces don't match as the two halves need to be an equal size.

  "How many halves did you find to make the whole triangle?"

  "Are the pieces of your circle equal? How do you know?"



Language: Half, quarter, share, equally, part, part, whole, amount, shape, object, number, one half, one quarter

Resources:

- A selection of multiple shapes in different sizes (circle, square, triangle, rectangle, star, arrow) cut in half and laminated. It is beneficial to partition the shapes equally when they are laid out in different ways.

Other concepts explored:

- Symmetry

Fractions, Decimals and %	Identifies wholes and halves in a social context and uses appropriate language e.g. 'I have eaten half of my banana'	Splits a whole into smaller parts and explains that equal parts are the same size	Understands that a whole can be shared equally and unequally

FD%3.1-2

Simple Sharing

It is only appropriate to work with fractions in social and naturally occurring contexts in early years. It is important for children to know that an object is halved by cutting it into two equal sized pieces and that when an object is split, if the resulting parts are unequal then each part cannot be half. Children should also be encouraged to put two halves back together to reinforce that they make a whole.

Aim: *To recognise equal and unequal shares of concrete materials and explain why shares are equal or unequal.*

Suggested Experience and Interactions:

- Draw chalk circles on the ground with a line halving it in two (alternatively this could be done using hoops, rope or drawn in the sand).
- Explain to the children that you need their help to share baskets of natural resources into two sets. One half for them and the other for their friend.

  "I wonder what the best way to share these shells between you and your friend is?"

  "There are two of you and 6 pinecones, how can you make sure you both have the same amount of pinecones?"

  "We have 8 sticks, I wonder if we can make two groups with them?"
- Once the children have shared the objects between them and a friend, ask them to check that they both have an equal (same) amount.
- Begin to introduce sharing an uneven number of objects so that the children will have unequal amounts.

  "There are two of you and 9 leaves. I wonder if you can share them?"

  "You shared 5 sticks between the two of you, do you both have an equal amount?"

  "Eva has 4 shells, and Sam has 4, is that equal or unequal?" "How do you know?"

Language: Half, quarter, share, equally, part, part, whole, amount, shape, object, number, one half, one quarter, equal, unequal

Resources:

- Natural resources such as; shells, stones, pinecones and sticks (up to 10 of each)
- Chalk

Other concepts explored

- Stable order principle, 1-1 correspondence, cardinal principle
- Subitising

Fractions, Decimals and %	Identifies wholes and halves in a social context and uses appropriate language e.g. 'I have eaten half of my banana'	Splits a whole into smaller parts and explains that equal parts are the same size	Understands that a whole can be shared equally and unequally

FD%3.2-2

Ice Cream Cones

It is only appropriate to work with fractions in social and naturally occurring contexts in early years. It is important for children to know that an object is halved by cutting it into two equal sized pieces and that when an object is split, if the resulting parts are unequal then each part cannot be half. Children should also be encouraged to put two halves back together to reinforce that they make a whole.

Aim: *To recognise equal and unequal shares of concrete materials and explain why shares are equal or unequal.*

Suggested Experience and Interactions:

- Place the baskets of pom poms or cotton wool balls inside the hoops or chalk circles and give each child a cone.
- Explain to the children that the game is to share the ice cream between the cones. The idea is that you will call out a number, children will run to the hoop in groups of that number then share out the pom poms in the basket between their cones.
- Start with numbers that can be shared out equally first e.g. 2 or 5. E.g. if you call out 2, two children will run to a hoop and share the 10 pom poms between the two cones. Children should be able to explain that they have an equal share of 5 each.
  "Is your share equal or unequal?" "Equal means the same."
- Then begin to call numbers that will leave an unequal share. For example, if you call out 4, four children will run to a hoop and share the 10 pom poms between their four cones (there will be two cones with 2 pom poms and 2 cones with 3 pom poms).
- Ask the children if they all got an equal or unequal amount of ice cream. Children should empty their cones and count how many pom poms they each have. They should be able to explain if the shares are equal or unequal. E.g. *the shares are unequal because Evie and Sam got 3 pom poms each and Alex and Jack only got two pom poms each.*
  "I wonder if 10 can be shared equally between 4 children?"
  "Was 10 shared equally between 3 children?" "How do you know?"

Language: Half, quarter, share, equally, part, part, whole, amount, shape, object, number, one half, one quarter, equal, unequal

Resources:

- Paper Cones
- Baskets of 10 large Pom Poms or cotton wool balls
- Hoops or chalk circles

Other concepts explored

- Stable order principle, 1-1 correspondence, cardinal principle