






Glasgow Counts in our Playrooms Measures: Making Comparisons



Twilight
March 2023



Aims

-  To consider what measure is
-  To explore the GCIP framework and highlight digital enhancements
-  To consider developmental stages and progression in measure
-  To identify key concepts of measure with considerations for the learning environment
-  To identify key elements of assessment





Reflection

- What does measure mean to you?
- What was your experience?
- Why do you think is the key message that children need to get about measure?
- What opportunities do you provide for measure in your establishment?



Definition of Measure

“Ascertain the size, amount, or degree of (something) by comparison with a standard unit or with an object of known size.”

Concise Oxford English Dictionary; 2002



Everyday experiences of measure

Comparison of
size – longest,
tallest, largest

Clothing/shoes
– sizing, best
fit

Estimating –
size, travel
time

Furniture



Glasgow Counts Framework



Measurement

Early Level E's and O's

I have experimented with everyday items as units of measure to investigate and compare sizes and amounts in my environment, sharing my findings with others.

MNU 0-11a





Money	Handles money and recognises a few coins up to the value of £2 through play and in real life and relevant contexts (using real and plastic money)		Apply addition and subtraction skills to money contexts.	Use 1p, 2p, 5p and 10p coins to pay the exact value for items to 10p.
	Identifies (names) 1p, 2p, 5p and 10p coins and pays the exact value for items to 10p e.g. if the price is 5p; can use a 5p coin to pay for it			
Time	Links daily routines and personal events to time sequences and begins to use appropriate language including before, after, later, earlier		Recognise, talk about and , where appropriate, engage with everyday devices used to measure or display time- including sand timers, clocks, calendars and visual timetables.	Use appropriate language when discussing time, including before, after, o'clock, hour hand and minute hand.
	Recognises and where appropriate engages with everyday devices used to measure or display time e.g. clocks, calendars, sand timers and visual timetables			
	Identifies (names) the days of the week in sequence			
Measurement	Recognises the months of the year and describes features of the four seasons in relevant contexts		Read analogue and digital o'clock times (12 hour only) and represent this to a digital display or clock face.	
	Length	Shares relevant experiences in which measurements of lengths, heights, mass and capacities are used, for example, in baking and other meaningful contexts		
		Mass		Describes and compares common objects' lengths, heights, mass and capacities using everyday language, including long/longer, short/shorter, tall/taller, heavy/heavier, light/lighter, more/less/same
Capacity	Estimates, then measures, the length, height, mass and capacity of common objects using a range of appropriate non-standard units			
Patterns and Relationships		Copies, continues and creates simple patterns Involving objects shapes and numbers.	Copies, continues and creates simple patterns involving objects, shapes and numbers. Find missing numbers on a number line within the range 0-20.	





Money	Handles money and recognises a few coins up to the value of £2 through play and in real life and relevant contexts (using real and plastic money)			Identifies (names) 1p, 2p, 5p and 10p coins and pays the exact value for items to 10p e.g. if the price is 5p; can use a 5p coin to pay for it		
	Time	Links daily routines and personal events to time sequences and begins to use appropriate language including before, after, later, earlier	Recognises and where appropriate engages with everyday devices used to measure or display time e.g. clocks, calendars, sand timers and visual timetables	Identifies (names) the days of the week in sequence	Recognises the months of the year and describes features of the four seasons in relevant contexts	
Measurement	Length	Shares relevant experiences in which measurements of lengths, heights, mass and capacities are used, for example, in baking and other meaningful contexts	Describes and compares common objects' lengths, heights, mass and capacities using everyday language, including long/longer, short/shorter, tall/taller, heavy/heavier, light/lighter, more/less/same	Estimates, then measures, the length, height, mass and capacity of common objects using a range of appropriate non-standard units		
	Mass					
	Capacity					
Patterns & Relationships	Copies simple patterns involving objects, shapes and numbers		Continues simple patterns involving objects, shapes and numbers		Creates simple patterns involving objects, shapes and numbers	
Shape	Recognise and describe common 2D shapes and 3D objects by attribute e.g. straight, round, flat and curved			Sort common 2D shapes and 3D objects according to attribute e.g. shape, colour, size		
Angles, Symmetry and Transformation	Correctly uses some of the language of position e.g. in front, behind, above, below		Begins to correctly use some of the language of direction e.g. left right, forwards and backwards to solve simple problems in relevant contexts	Identifies and describes basic symmetrical pictures with one line of symmetry		Creates basic symmetrical pictures with one line of symmetry
Data Handling and Analysis	Uses knowledge of colour, shape, size and other properties to match and sort items in a variety of different ways	Collects and organises objects for a specific purpose	Asks simple questions to collect data for a specific purpose	Contributes to a concrete or pictorial display where one object or drawing represents on data value, using digital technologies as appropriate	With support interprets simple graphs, charts and signs and demonstrates how they support planning, choices and decision making	With support applies counting skills to ask and answer questions. Makes relevant choices and decisions based on the data

Measurement : Length, Mass & Capacity : Early Level

Mathematical Language : Long, short, longer, shorter, longest, shortest, tall,/taller/tallest ,double, half, heavy, light, heavier, lighter, heaviest, lightest, full, empty, more than, less than, half full, half empty, nearly full, nearly empty, almost

CfE [MNU 0-11a](#)

Strategies and Approaches

Children should have opportunities to explore length, weight, capacity, area, volume, time and temperature in their day to day learning across the playroom and outdoors.

Children should be thinking about three key aspects:

- **Perception** - the appearance of an object and how it seems e.g. big or small
- **Comparison** - how it compares to other 'normal' examples of that object e.g. bigger or smaller
- **Function** - its use e.g. is it too big or small to eat, to wear, to use?

Sand/Water:

Children can use non-standard units of measure. They should estimate how many cubes long objects are then check using paperclips, cubes, lolly pop sticks. Using [Cuisenaire](#) rods can help children 'see' different lengths and make comparisons.

In order to become familiar with standard measures, pupils should have chances to play with measuring tools such as a ruler, weighing scales, tape measures, metre sticks, trundle wheels and containers.

- Share relevant experiences in which measurements of lengths, heights , mass and capacities are used, for example, in baking and other meaningful contexts.
- Describe common objects using measurement language, including tall, heavy and empty.
- Begin to use non-standard units to measure

Digital Learning:

[Resources](#)

Questions to Enable Higher Order Thinking Skills

- Show me an item longer than this ruler. And another, and another ...
- Show me an item heavier than this book. And another, and another ...
- What size of puddle do you think this liquid would make?
- Would this amount make a bigger or smaller puddle?
- What makes you think that?
- Can you order these from ... to ...?
- Can you find things which are longer than...?
- Can you find things which are shorter than...?
- Can we peg up the ties from shortest to longest?
- Do you agree/disagree with the way your partner has ordered them? Why/why not?
- How many cubes long is your foot? Compare to your partners' foot. Whose foot is longer?

Barriers to Learning

- Some of the language may be problematic for some children e.g. tall for length;
- Poor fine/gross motor skill development may result in 'hands on' practical tasks being difficult for some pupils

On Track at Transition Statement

- Shares relevant experiences in which measurements of lengths, heights, mass and capacities are used, for example, in baking.
- Describes common objects using appropriate measurement language, including tall, heavy and empty.
- Compares and describes lengths, heights, mass and capacities using everyday language, including longer, shorter, taller, heavier, lighter, more and less.
- Estimates, then measures, the length, height, mass and capacity of familiar objects using a range of appropriate non-standard units.

Resources – Measurement

Common Learning Resources



Objects to sort, compare and measure



Height Chart



Non-standard units of measure e.g. lego, hands, cubes



Scales



Online Resources



Making Caterpillars

Our making caterpillars activity uses clay and dough to introduce measurement.



Long Creatures

Creating long creatures from card, cubes etc.



Presents

Discussing weights of wrapped presents.



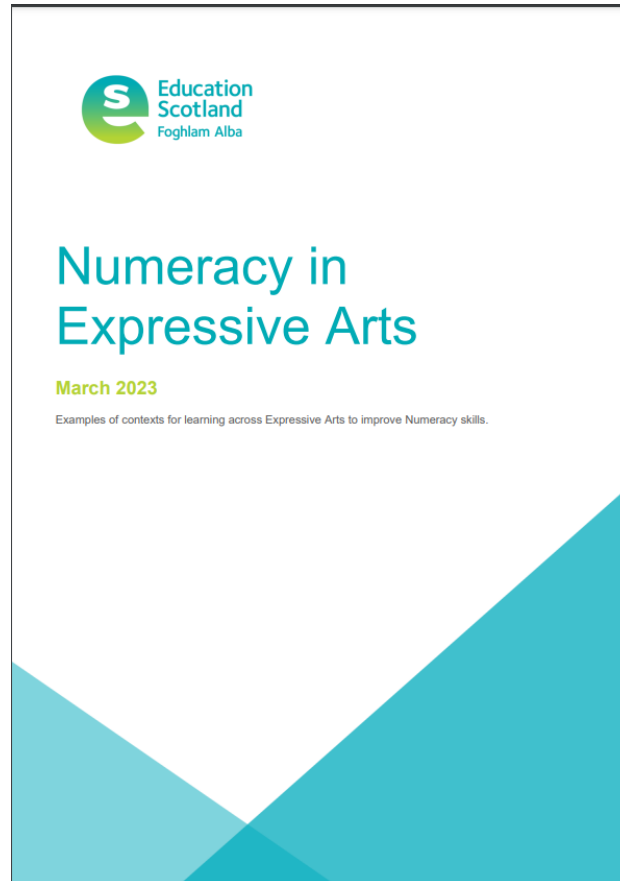
I Have a Box

This activity encourages children to guess what is inside your box.

Stories


- *Actual Size* by Steve Jenkins
- *How much does a ladybird Weigh* by Alison Limentani
- *How Tall was a T Rex?* by Alison Limentani
- *How Long is a Whale?* by Alison Limentani
- *The Blue Whale* by Jenni Desmond

Numeracy in Expressive Arts



Contexts

Contexts for Learning – Early Level

Early Level	Benchmarks	Possible Contexts for Learning
<p>Maths and Numeracy</p> <p>Estimation MNU 0-01a</p> <p>Measurement MNU 0-11a</p>	<ul style="list-style-type: none"> • Demonstrates skills of estimation in the contexts of number and measure using relevant vocabulary, including less than, longer than, more than and the same. • Compares and describes lengths, heights, mass and capacities using everyday language, including longer, shorter, taller, heavier, lighter, more and less. 	<p>When creating models and drawings mathematical language is modelled and used to describe and compare the designs and features.</p> <p>Vocabulary linked to estimation is modelled and used to create, compare and adapt designs.</p>
<p>Expressive Arts</p> <p>Art and Design EXA 0-02a EXA 0-06a</p>	<ul style="list-style-type: none"> • Records from experiences across the curriculum, for example, through observing and remembering, makes a model or drawing based on an aspect of the natural environment such as natural items from the sea shore, the countryside, a forest. • Solves simple design problems, working on their own and with others, using a degree of trial and error, for example, designs a simple container for an agreed purpose. 	 <p>Education Scotland: Being me Through Block Play Wakelet</p>

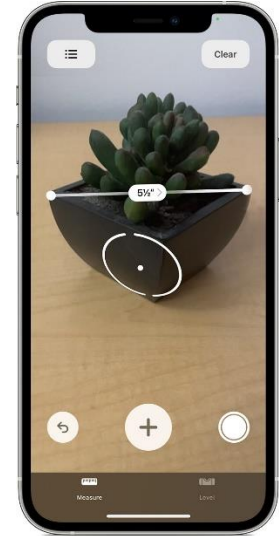
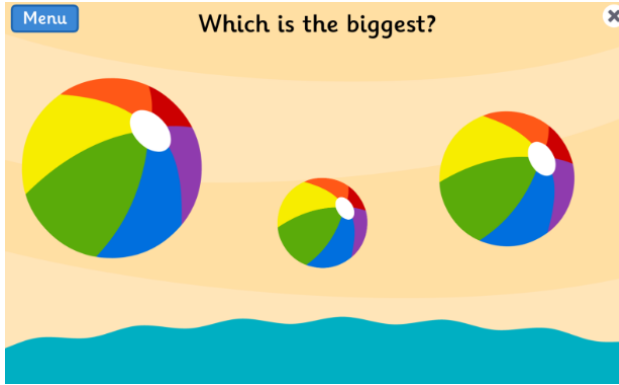
Digital Enhancements





Digital Literacy	Using digital products and services in a variety of contexts to achieve a purposeful outcome	Recognises different types of digital technology	Uses digital technologies in a responsible way with appropriate care	Identifies different applications and programs by icon	Logs on to devices with a password/passcode	Opens and closes a pre-saved file	Identifies and consistently uses the close icon
	Searching, processing and managing information responsibly	Identifies and uses images and key words when searching for specific information		Demonstrates an understanding of how information can be found on a website (text, audio, images, video)		Understands they should not use materials that belong to others without permission	
	Cyber resilience and internet safety	Demonstrates understanding of appropriate behaviour and language in the digital environment	Some awareness of what to do and who to ask for help if something inappropriate happens while using a device		Identifies where passwords and passcodes are used in school and at home		Understands the importance of having passwords and passcodes
Computing Science	Understanding the world through computational thinking	Classifies objects, and groups using simple categories	Identifies similarities and differences between objects	Begins to identify patterns (objects and information)		Identifies beginning and end of an everyday process and recognises there are steps in between	Can give a set of instructions or directions in correct sequence
	Understanding and analysing computing technology	Understands that computers follow a process and need precise instructions	Follows a simple set of instructions using visual representation (e.g. arrows)	Understands that devices can be controlled and respond to commands	Predicts what a device (or person) will do when given a simple set of instructions	Follows and designs simple algorithms for a programmable device (or person) to carry out a task (e.g. directions to a goal)	Identifies computing devices and everyday technology in the world around them and the impact it has on their daily life
	Designing, building and testing computing solutions	Uses directional language (e.g. forwards, backwards, turn)		Identifies and corrects errors in a simple set of instructions or algorithm			Uses key language of computational thinking

Digital Enhancements



www.topmarks.co.uk



Developmental Stages



Realising the Ambition

When I am a baby...

- Provide a range of richly illustrated books for me. Discuss the illustrations with me using language such as bigger, smaller, up, down, under, over.
- Involve me in simple counting songs with repetition of rhyme and rhythm.
- Encourage me to notice how numbers are evident in my environment.
- Give me time and space to explore toys and materials from different angles and move around freely to investigate my surroundings in terms of position and how my body works.
- Water and sand play are important for me, model pouring and measuring for me to experiment with.
- Provide materials such as paint and clay for me to explore, discussing with me categorising concepts such as hard, soft, wet, dry.
- Encourage me to sort and recognise and make patterns, supporting me to notice differences.
- Encourage my awareness of shape within natural contexts and environments.
- Enable me to play outdoors every day which includes discussing, for example, how the wind blows, the features of natural materials, exploring the textures, weight and size of items such as stones, twigs and plants.

When I am a toddler...

- Provide richly illustrated books with representations of number, shape and pattern to support conversations with me around these concepts.
- Sing and recite counting songs and rhymes with me, linking to visual representations using rhyme and rhythm.
- Encourage me to notice and use numbers as I explore my environment.
- Encourage me to have fun and play with numbers; investigating and experimenting with quantity, through comparing and contrasting a variety of objects using mathematical language such as less than, more than, same as.
- Continue to give time and space for me to explore toys and materials from different angles.
- Encourage me to move around freely to investigate my surroundings in terms of position and how my body works.
- Ensure my water and sand play is developing more specific language around pouring, measuring, volume, and capacity.
- Provide a variety of materials for me to explore, discussing with me categorising and sorting concepts such as hard, soft, wet and dry.
- Encourage me to sorting and play with patterns, supporting me to identify the characteristics of different objects.
- Encourage me to identify and explore shape within natural contexts and environments.
- Enable daily outdoor play which encourages me to explore natural materials through movement and to gain an understanding of textures, weights and sizes of items.



When I am a young child...

- Continue to provide me with richly illustrated story books with representations of number, shape and pattern to support conversations around these concepts.
- Continue to sing and recite counting songs and rhymes linking to visual representations of numbers that involve counting, ordering and recognising number.
- Encourage me to notice how numbers are evident in my environment and to enjoy using and writing numbers for a purpose.
- Continue to encourage me to play with numbers, having fun investigating and experimenting with quantity, through comparing and contrasting a variety of objects using mathematical language such as less than, more than, same as.
- Support my understanding and use of positional language within everyday experiences and through activities such as role-play, board games, digital technologies and programmable toys.
- Continue to include water and sand play to encourage me to explore, experiment, test and extend ideas developing more specific language and understanding around pouring, measuring, volume, and capacity.
- Provide a variety of materials which encourage my reasoning through experimentation, trial and error and prediction based on my developing understanding of mathematical concepts.
- Encourage me to create my own patterns and sets of objects, identifying and talking about the characteristics we notice together.
- Encourage me to identify and explore shape and symmetry, developing an understanding of characteristics within natural contexts and environments.
- Enable daily outdoor play which encourages me to explore size and perspective through my movements and by seeing familiar objects from a different angle, height or distance.



Development Matters



Birth to three – babies, toddlers and young children will be learning to:

Climb and squeeze themselves into different types of spaces.

Build with a range of resources.

Complete inset puzzles.

Compare sizes, weights etc. using gesture and language - 'bigger/little/smaller', 'high/low', 'tall', 'heavy'.

Notice patterns and arrange things in patterns.

Examples of how to support this:

Describe children's climbing, tunnelling and hiding using spatial words like 'on top of', 'up', 'down' and 'through'.

Provide blocks and boxes to play freely with and build with, indoors and outside.

Provide inset puzzles and jigsaws at different levels of difficulty.

Use the language of size and weight in everyday contexts.

Provide objects with marked differences in size to play freely with. Suggestions: dolls' and adult chairs, tiny and big bears, shoes, cups and bowls, blocks and containers.

Provide patterned material – gingham, polka dots, stripes etc. – and small objects to arrange in patterns. Use words like 'repeated' and 'the same' over and over.



Development Matters



3 and 4-year-olds will be learning to:

Examples of how to support this:

Understand position through words alone – for example, “The bag is under the table,” – with no pointing.

Describe a familiar route.

Discuss routes and locations, using words like ‘in front of’ and ‘behind’.

Discuss position in real contexts. Suggestions: how to shift the leaves **off** a path or sweep water away **down** the drain.

Use spatial words in play, including ‘in’, ‘on’, ‘under’, ‘up’, ‘down’, ‘besides’ and ‘between’. Suggestion: “Let’s put the troll under the bridge and the billy goat beside the stream.”

Take children out to shops or the park: recall the route and the order of things seen on the way.

Set up obstacle courses, interesting pathways and hiding places for children to play with freely. When appropriate, ask children to describe their route and give directions to each other.

Provide complex train tracks, with loops and bridges, or water-flowing challenges with guttering that direct the flow to a water tray, for children to play freely with.

Read stories about journeys, such as ‘Rosie’s Walk’.

Make comparisons between objects relating to size, length, weight and capacity.

Provide experiences of size changes. Suggestions: “Can you make a puddle larger?”, “When you squeeze a sponge, does it stay small?”, “What happens when you stretch dough, or elastic?”

Talk with children about their everyday ways of comparing size, length, weight and capacity. Model more specific techniques, such as lining up ends of lengths and straightening ribbons, discussing accuracy: “Is it **exactly**...?”



Development Matters



3 and 4-year-olds will be learning to:

Examples of how to support this:

Understand position through words alone – for example, “The bag is under the table,” – with no pointing.

Describe a familiar route.

Discuss routes and locations, using words like ‘in front of’ and ‘behind’.

Discuss position in real contexts. Suggestions: how to shift the leaves **off** a path or sweep water away **down** the drain.

Use spatial words in play, including ‘in’, ‘on’, ‘under’, ‘up’, ‘down’, ‘besides’ and ‘between’. Suggestion: “Let’s put the troll under the bridge and the billy goat beside the stream.”

Take children out to shops or the park: recall the route and the order of things seen on the way.

Set up obstacle courses, interesting pathways and hiding places for children to play with freely. When appropriate, ask children to describe their route and give directions to each other.

Provide complex train tracks, with loops and bridges, or water-flowing challenges with guttering that direct the flow to a water tray, for children to play freely with.

Read stories about journeys, such as ‘Rosie’s Walk’.

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Talk with children about their everyday ways of comparing size, length, weight and capacity. Model more specific techniques, such as lining up ends of lengths and straightening ribbons, discussing accuracy: “Is it **exactly**...?”



Development Matters



Children in reception will be learning to:



Select, rotate and manipulate shapes to develop spatial reasoning skills.

Compose and decompose shapes so that children recognise a shape can have other shapes *within* it, just as numbers can.

Continue, copy and create repeating patterns.

Compare length, weight and capacity.

Examples of how to support this:

Provide high-quality pattern and building sets, including pattern blocks, tangrams, building blocks and magnetic construction tiles, as well as found materials.

Challenge children to copy increasingly complex 2D pictures and patterns with these 3D resources, guided by knowledge of learning trajectories: "I bet you can't add an arch to that," or "Maybe tomorrow someone will build a staircase."

Teach children to solve a range of jigsaws of increasing challenge.

Investigate how shapes can be combined to make new shapes: for example, two triangles can be put together to make a square. Encourage children to predict what shapes they will make when paper is folded. Wonder aloud how many ways there are to make a hexagon with pattern blocks.

Find 2D shapes within 3D shapes, including through printing or shadow play.

Make patterns with varying rules (including AB, ABB and ABBC) and objects and invite children to continue the pattern.

Make a deliberate mistake and discuss how to fix it.

Model comparative language using 'than' and encourage children to use this vocabulary. For example: "This is heavier than that."

Ask children to make and test predictions. "What if we pour the jugful into the teapot? Which holds more?"



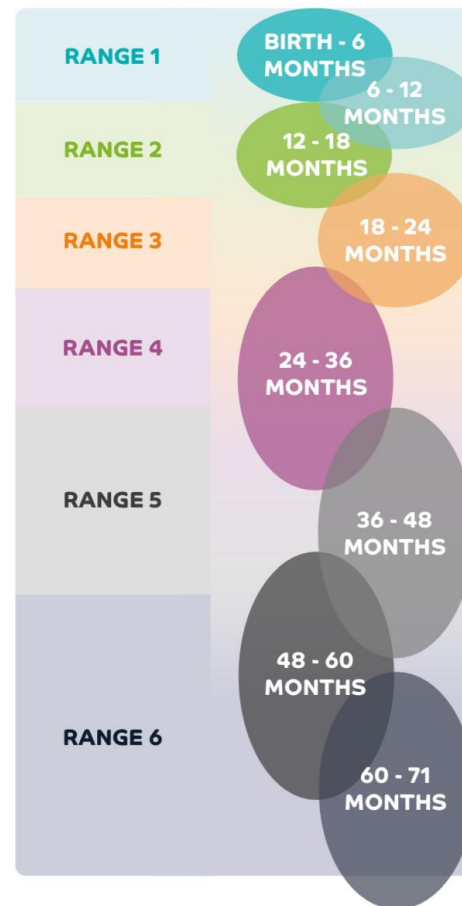
Birth to 5 Matters

BIRTH TO 5 MATTERS Guidance by the sector, for the sector

Birth to 5 Matters:
Non-statutory guidance for the Early Years Foundation Stage

From the Early Years Coalition
www.birthto5matters.org.uk

Key to understanding the age ranges:



Birth to 5 Matters

Mathematics

A Unique Child: what a child might be doing



Number

- Reacts to changes of amount when those amounts are significant (more than double)

Spatial awareness

- Explores space when they are free to move, roll and stretch
- Developing an awareness of their own bodies, that their body has different parts and where these are in relation to each other

Shape

- Explores differently sized and shaped objects
- Beginning to put objects of similar shapes inside others and take them out again

Pattern

- Shows interest in patterned songs and rhymes, perhaps with repeated actions
- Experiences patterned objects and images
- Begins to predict what happens next in predictable situations

Measures

- Responds to size, reacting to very big or very small items that they see or try to pick up

Positive Relationships: what adults might do

- Notice and mirror children's reactions to changes in amount.
- Add to objects & draw attention to the change in amount, using words like *more*.
- When feeding babies comment on whether they would like more after being winded, e.g. *Oh, you want more*.
- Use feeding, changing and bathing times for finger-play with young babies

- Support babies' developing awareness of their own bodies e.g. through baby massage and singing songs
- During floor play sometimes place objects that are just in or just out of reach, including small objects on cloths that babies can pull towards themselves.

- Encourage babies' explorations of the characteristics of objects, e.g. by rolling a ball or sliding a block.
- Demonstrate putting items inside others of similar shape

- Sing patterned songs and rhymes with predictable movements or actions (including from children's families).
- Move with babies to the rhythm patterns in familiar songs. Encourage older babies to join in tapping and clapping along to simple rhythms.
- Use repeated noises, movements and activities.
- Play simple "to and fro" games, passing and rolling between the adult and child so they begin to predict which comes next.

- Comment on the size and weight of objects when babies grasp objects that are *big* or *heavy*.
- During water play and bathing routines, show filling and emptying containers.
- At the end of mealtimes show and comment on the empty bowl, cup or bottle: *All gone!*

Enabling Environments: what adults might provide

- Provide small groups of the same objects in treasure baskets, as well as single items.

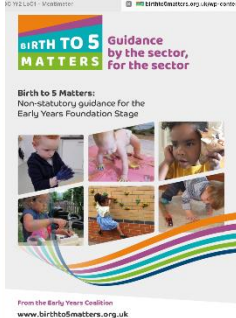
- Provide opportunities for babies to move freely on carpets, grass etc. Observe and sensitively support babies' play and give them long stretches of uninterrupted time to explore.
- Provide low mirrors to support babies to develop a body awareness.

- Provide interestingly shaped objects to explore.
- Make towers for children to knock down using objects that stack.

- Plan for adults to have time to enjoy repetitive activities with babies.
- Provide resources with high-contrast patterns.

- Provide a range of objects of various lengths and weights in treasure baskets to excite and encourage babies' interests including larger and smaller items.

RANGE
1



Birth to 5 Matters



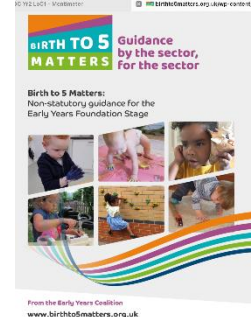
Mathematics

	A Unique Child: what a child might be doing	Positive Relationships: what adults might do	Enabling Environments: what adults might provide
RANGE 2	Number <ul style="list-style-type: none"> • May be aware of number names through their enjoyment of action rhymes and songs that relate to numbers • Looks for things which have moved out of sight 	<ul style="list-style-type: none"> • Take opportunities during play to sing number rhymes. • During personal care routines make a point of using numbers. • Play peek-a-boo hiding games with toys and people. 	<ul style="list-style-type: none"> • Plan to sing number rhymes with actions. Involve families in sharing number rhymes from home cultures.
	Spatial awareness <ul style="list-style-type: none"> • Explores space around them and engages with position and direction, such as pointing to where they would like to go 	<ul style="list-style-type: none"> • Use spatial words during everyday play and routines, or one-word comments e.g. as you get children <i>in</i> and <i>out</i> of a highchair. • Take opportunities to play hide and reveal games with objects in boxes and under cups. • Support babies' physical experience of positions and direction, e.g. describing <i>up</i> and <i>down</i>. 	<ul style="list-style-type: none"> • Play games that involve curling and stretching, popping <i>up</i> and bobbing <i>down</i>. • Provide boxes, cloths and bags for children to store, hide and transport items. • Provide nested boxes, cups and toys of different sizes that fit inside each other. • Share books that provide opportunities to use spatial language and describe movement
	Shape <ul style="list-style-type: none"> • Stacks objects using flat surfaces • Responds to changes of shape • Attempts, sometimes successfully, to match shapes with spaces on inset puzzles 	<ul style="list-style-type: none"> • When playing with malleable materials draw attention to shapes as they are created and changed. 	<ul style="list-style-type: none"> • Provide blocks and boxes to stack, build and solve problems with. • Provide a range of inset puzzles and support children as they explore matching shapes with spaces.
	Pattern <ul style="list-style-type: none"> • Joins in with repeated actions in songs and stories • Initiates and continues repeated actions 	<ul style="list-style-type: none"> • Talk about patterns in the environment e.g. spots and stripes on clothing or bumps in the pavement. • Spot opportunities to play "back and forth" and repetitive "again" games. 	<ul style="list-style-type: none"> • Sing familiar songs with repeated actions, jig to and tap out simple beats, encouraging children to join in. • Provide items for children to make repetitive sounds.
	Measures <ul style="list-style-type: none"> • Shows an interest in objects of contrasting sizes in meaningful contexts • Gets to know and enjoys daily routine • Shows an interest in emptying containers 	<ul style="list-style-type: none"> • During play and everyday contexts, comment on the sizes and weights of objects using a range of language such as <i>big</i>, <i>huge</i>, <i>enormous</i>, <i>long</i>, <i>tall</i>, <i>heavy</i>. • Talk about what is going to happen and what has happened during the day using <i>first</i>, <i>next</i> and <i>then</i>. 	<ul style="list-style-type: none"> • Provide big and little versions of objects for children to play with and compare. • Share picture books showing objects of contrasting sizes.





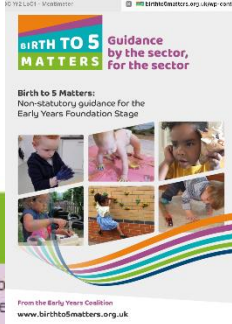
Birth to 5 Matters



	A Unique Child: what a child might be doing	Positive Relationships: what adults might do	Enabling Environments: what adults might provide
RANGE 3 (cont.)	<p>Measures</p> <ul style="list-style-type: none"> Shows an interest in size and weight Explores capacity by selecting, filling and emptying containers, e.g. fitting toys in a pram Beginning to understand that things might happen now or at another time, in routines 	<ul style="list-style-type: none"> Use the language of size and weight as children are involved in everyday play and routines. Use the language of capacity as children explore water or sand to encourage them to think about when something is <i>full</i>, <i>empty</i> or <i>holds more</i>. Emphasise the sequence within familiar activities or routines. 	<ul style="list-style-type: none"> Provide a range of objects, including big, heavy and awkward ones that can be transported, both indoors and outdoors. Provide different sizes and shapes of bags, boxes and containers so that children can experiment with filling, experiencing weight and size. Plan to share images and books which show the order of daily routines.



Birth to 5 Matters



A Unique Child: what a child might be doing



Shape

- Chooses puzzle pieces and tries to fit them in
- Recognises that two objects have the same shape
- Makes simple constructions

Pattern

- Joins in and anticipates repeated sound and action patterns
- Is interested in what happens next using the pattern of everyday routines

Measures

- Explores differences in size, length, weight and capacity
- Beginning to understand some talk about immediate past and future
- Beginning to anticipate times of the day such as mealtimes or home time

Positive Relationships: what adults might do

- Chat about the shape of the pieces and the holes when fitting pieces into inset puzzles.
- Model comparing two objects to see if they have the same shape in purposeful contexts.
- Suggest choosing a particular shaped item for a purpose.
- Model your thinking when building.

- Talk with children about the patterns you notice around you.
- Comment on and help children to recognise the patterns they make in their mark making, loose parts and construction.
- Draw children's attention to the patterns in their routines by asking what comes next.

- Use everyday opportunities to describe everyday items and contexts using informal language of size (*giant, teeny, big, little, huge, small*), length (*long, tall, short*), weight (*heavy, light*) and capacity (*full, empty*).
- Observe children's problem-solving when ordering things by size, e.g. stacking cups, sensitively supporting by offering one if they are really struggling.
- Look out for opportunities to compare things purposefully such as finding out whether a teddy will fit in a bed.
- When children talk about their experiences at home and in the setting, use some language of time (*before, later, soon, next, after, morning, afternoon, evening, night-time*).
- In everyday activities, make a commentary about the sequence of events.
- When sharing stories and books, draw attention to routines and time sequences within them.

Enabling Environments: what adults might provide

- Provide a range of inset and jigsaw puzzles of increasing complexity for children to choose
- Provide a variety of construction materials including some with identical pieces so that children freely explore *same* and *different*.

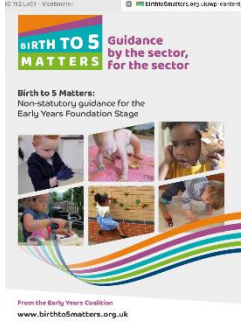
- Provide a range of natural and everyday materials, as well as blocks and shapes, with which to make patterns.
- Plan opportunities for children to experience pattern such as percussion, music and action games that involve repeated sounds or actions.

- Provide similar items of contrasting sizes so that children have many opportunities to encounter the language of size.
- Provide resources with clearly different weights to support direct comparison, and something to carry them in.
- Provide equipment with varied capacities and shapes in the sand, water, mud kitchen and role play areas.

RANGE 4
(cont.)



Birth to 5 Matters



A Unique Child: what a child might be doing

Positive Relationships: what adults might do

Enabling Environments: what adults might provide

RANGE 5
(cont.)

Pattern

- Creates their own spatial patterns showing some organisation or regularity
- Explores and adds to simple linear patterns of two or three repeating items, e.g. stick, leaf (AB) or stick, leaf, stone (ABC)
- Joins in with simple patterns in sounds, objects, games and stories dance and movement, predicting what comes next

- Whilst playing alongside children, model simple repeating patterns of two or three items and encourage children to create and continue patterns.
- Demonstrate arranging objects in spatial patterns when building, collaging or playing with loose parts.
- Draw children's attention to patterns around them including from a range of cultures.
- When making patterns, help children to solve problems.

- Provide a range of items for free exploration of patterning indoors and outdoors including natural materials, pattern blocks, loose parts, mats, trays and strips.
- Encourage children to join in with body patterns or repeating sections of songs.
- Pause to encourage prediction when enjoying stories and rhymes with repeating elements, sometimes using props.
- Emphasise the repeating pattern when turn taking.
- Provide patterned resources including those representing a range of cultures, such as clothing, fabrics or wrapping paper.

Measures

- In meaningful contexts, finds the longer or shorter, heavier or lighter and more/less full of two items
- Recalls a sequence of events in everyday life and stories

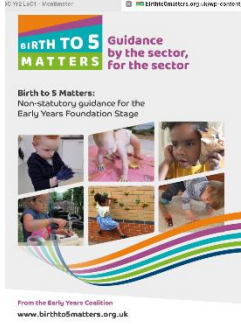
- During play, model comparing lengths and distances.
- Look out for meaningful opportunities for children to compare by length, weight, capacity and time using comparative language (*longer/shorter, heavier/lighter, holds more/holds less, longer time/shorter time*).
- Encourage children to participate in seesaw and balance scale play.
- Encourage children to respond to and use words such as *before, after, soon or later* when talking about routines, recent events and events in a story or rhyme.

- Provide problem-solving opportunities indoors and outdoors for comparing length, weight and capacity, e.g. *Which is the best bottle so we'll have enough drink for everyone at the picnic?*
- Ask children to predict *What happens next?* using visual timetables, books and stories.
- Provide items that can be ordered by size, such as plates and clothes in role play.





Birth to 5 Matters



A Unique Child: what a child might be doing

Positive Relationships: what adults might do

Enabling Environments: what adults might provide



**RANGE 6
(cont.)**

Measures

- Enjoys tackling problems involving prediction and discussion of comparisons of length, weight or capacity, paying attention to fairness and accuracy
- Becomes familiar with measuring tools in everyday experiences and play
- Is increasingly able to order and sequence events using everyday language related to time
- Beginning to experience measuring time with timers and calendars

- When comparing the length, weight and capacity of things in play and everyday activities, encourage children to predict and give reasons.
- Discuss accuracy, for instance matching ends or starting points, balancing exactly or "fullness".
- Support timed challenges by timing runs, trails, obstacle courses, etc. and teach children how to use the stopwatch.
- Discuss the order and sequence of events in routines and role play using the language of time (*first, then, after, before, next, sooner, later*).
- Draw children's attention to visual timetables and clock times, focusing on the hour hand.

- Have areas where children can explore the properties of objects, compare lengths, weigh and measure.
- Provide objects in a range of contexts varying in length, capacity or weight, including tall thin, short fat, large light and small heavy things.
- Provide pictorial sequences for instructions.
- Model using measuring tools including height charts, rulers, tape-measures, scales and timers.
- Sing songs about the days of the week and months of the year, referring to a calendar. Countdown to events.



Understanding Measure



Two fundamental ideas for everyday use of measure

Estimation

Use it more in the
real world than we
use measuring
instruments

Approximation

Measure can never be
exact and is always an
approximation with
varying degree of accuracy.

Key language: 'about', 'nearly', 'just over', 'almost'

Complexities of Measure

Length

(including height, width, and depth)

Weight

(we use the term 'weight' rather than 'mass' as it is the one that the children are more likely to hear used in everyday life)

Capacity

(how much something holds)

Area

Volume

(the space taken up by an object)

Time

Temperature

Angle

(a measure of turn)

Money

compound measures, such as density (weight per volume), and fuel consumption (litres per kilometre) and speed (kilometres per hour)

Mathematics in Early Years Education, Montague-Smith and Price, 2012, p. 146

Conservation and Transitivity

Piaget (1960) identified two key components to children's understanding of measure:

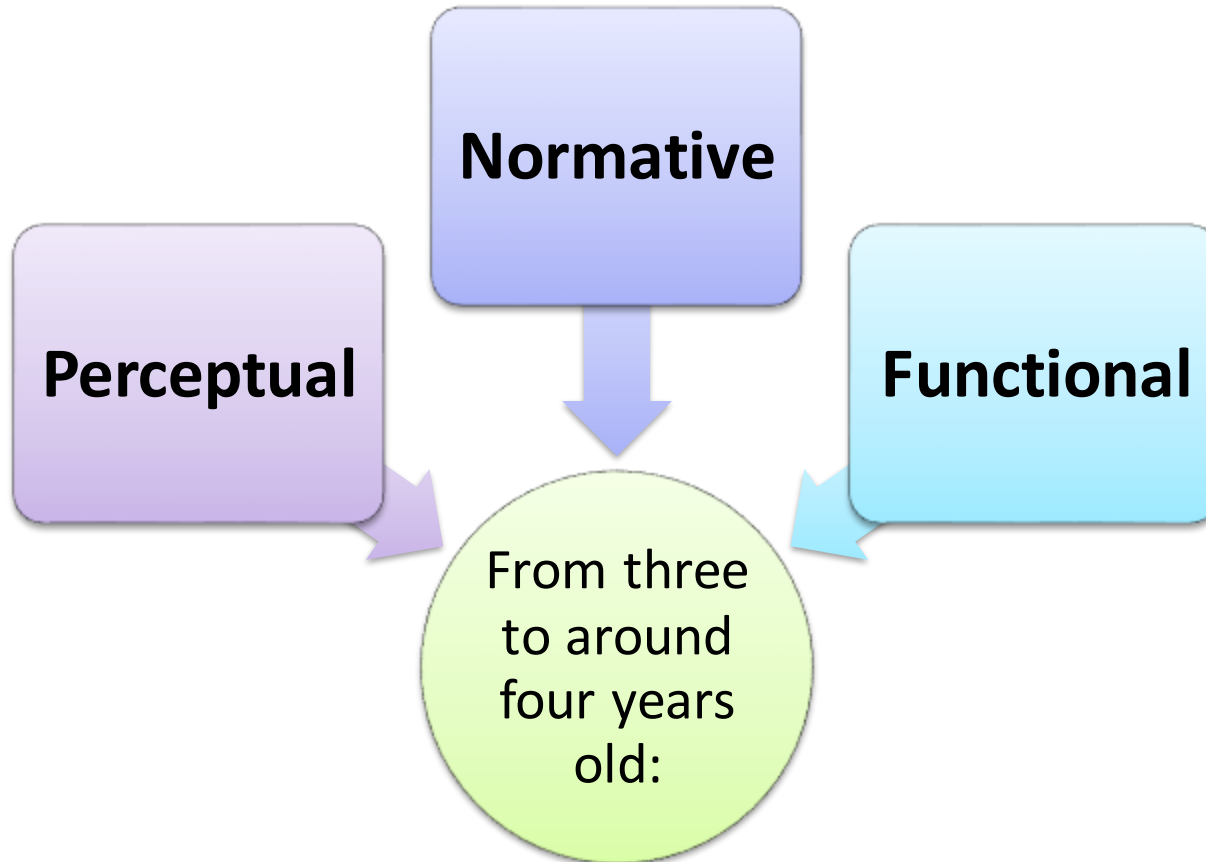
Conservation

One attribute of an object may be changed but another may stay the same.

Transitivity

The use of a transitional object e.g. ruler to compare 2 things that cannot be compared directly.

Three Standards to Judge Size



Perceptual



Perception:
What an object looks
or feels like e.g. big or
small, heavy or light.

Normative



Comparison:
Comparing an object
with a mental image of
what is 'normal'.

Montague-Smith et al:

Functional

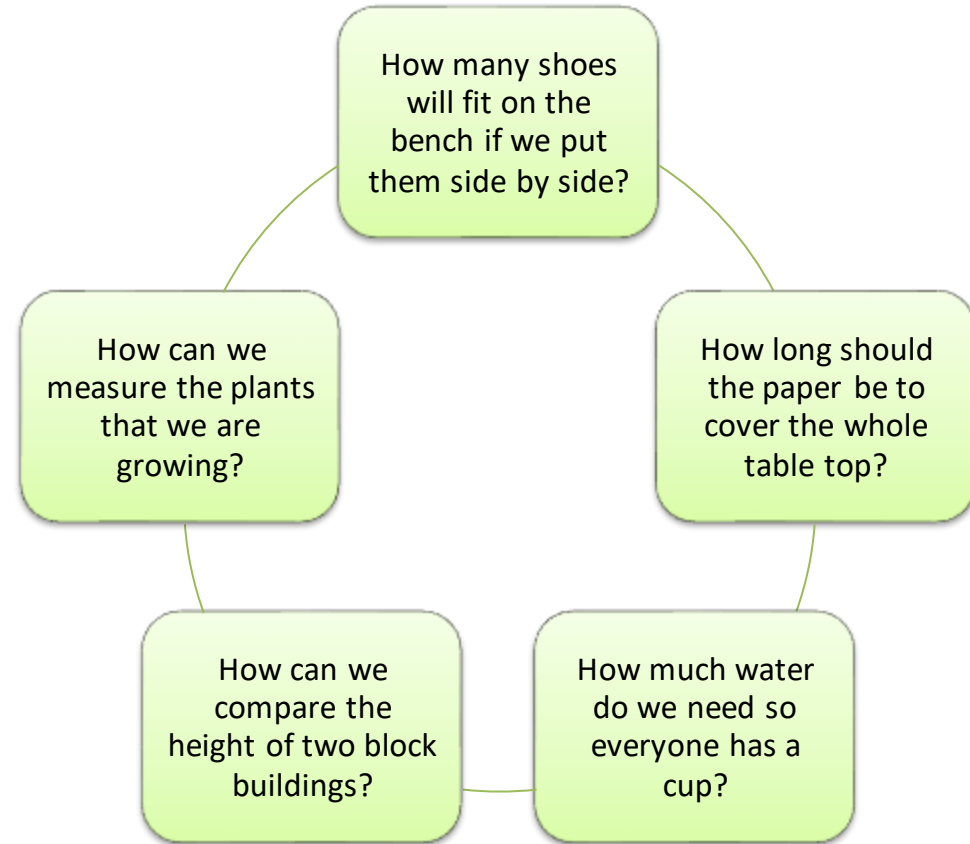


**Sound judgements
about function:**
Comparing something
with what it is used for
e.g. 'this hat is too big'
(for the baby)



Measure decision making with an adult

In every day talk, educators can enable children to participate in measurement in the playroom, and help them to make decisions about measure:



Key Concepts of Measure



Measure concept & vocabulary - progression



Descriptive

Big/little,
thin/wide etc.



Comparative

which is
taller/smaller?



Superlative

order and say
biggest, smallest
longest, etc.

Key Concepts of Length





Length





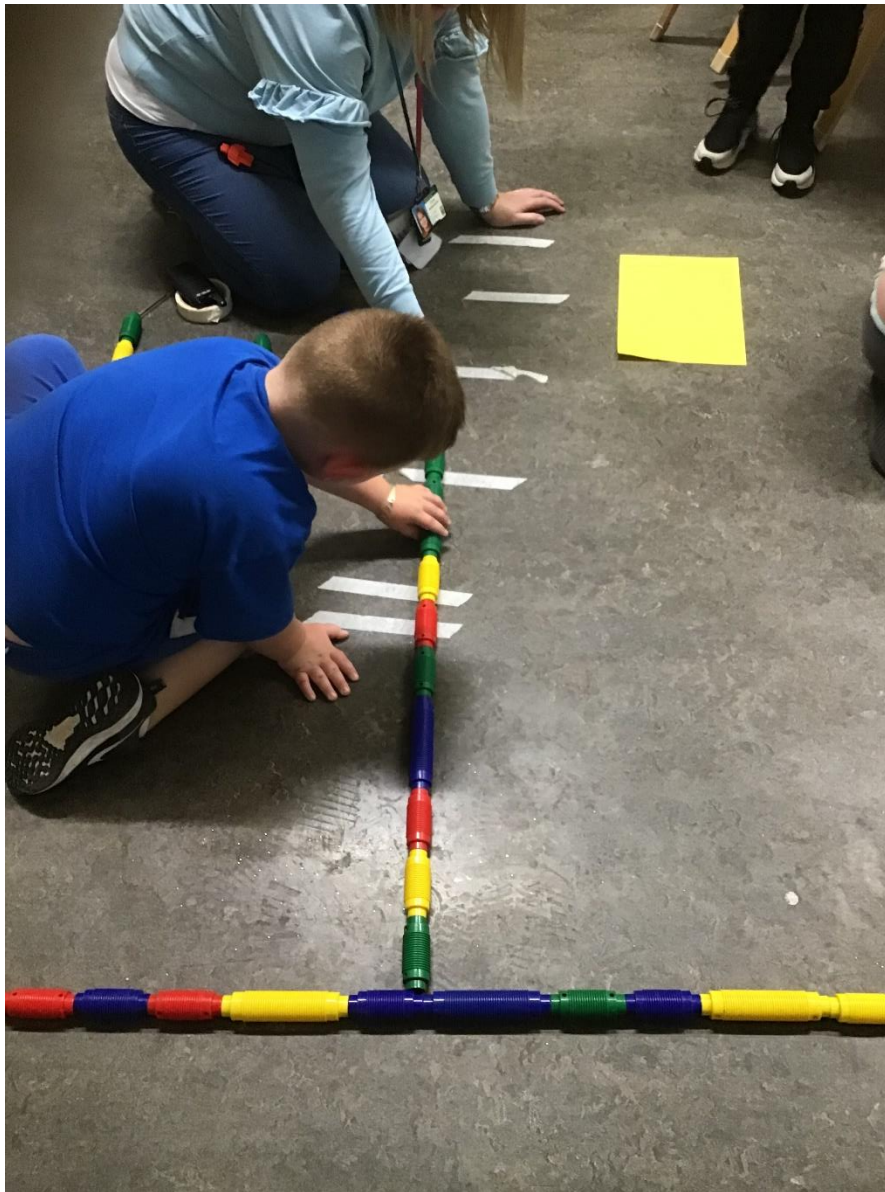
Length





What could we use to measure our jumps?

How many tubes did you jump?



I wonder who jumped the furthest?

How do you know?

Key Concepts of Weight





Weight





Baking



Baking without scales



Key Concepts of Capacity





Capacity





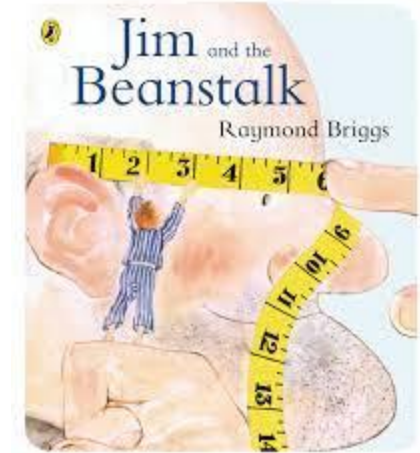
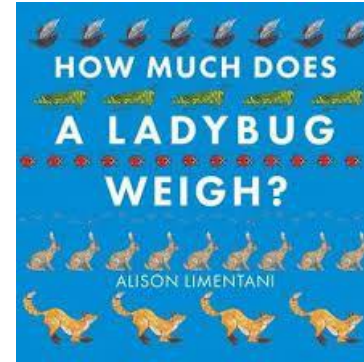
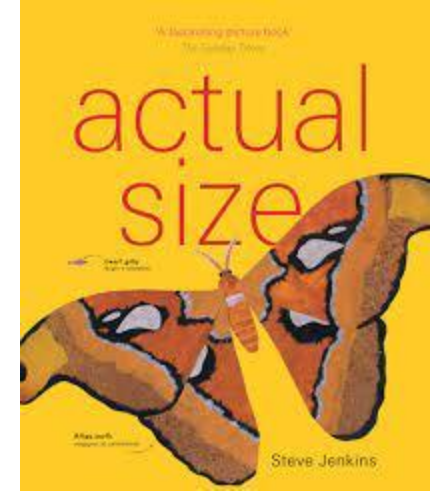
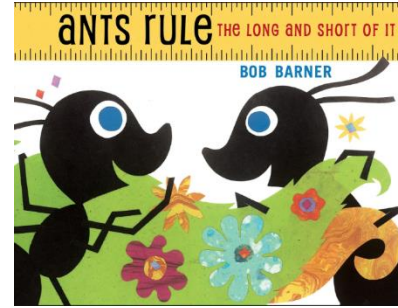
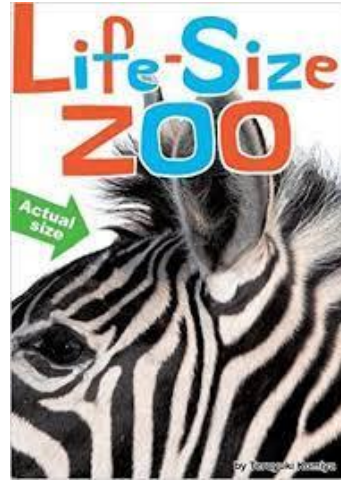
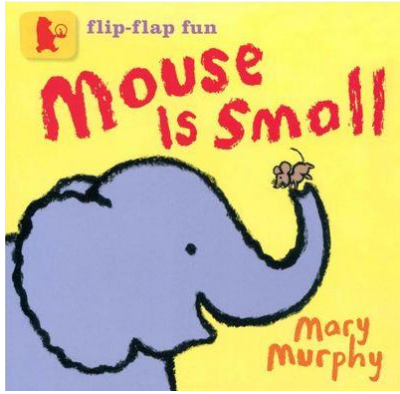
Milk Waste at Snack



Water Play



Using Picture Books to explore Measure



Problem Solving





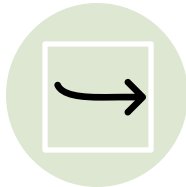
Assessment



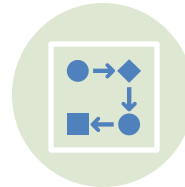
Use descriptive language for length, weight, capacity, volume



Use comparative language for length, weight and capacity when comparing two or more objects



Make ordered arrangements of length, capacity and weight and using superlative language



Sequence events: recognise that were events that happened in the past and events that will be happening in the future



Talk about significant times, day and dates that are special to them

Glasgow Counts in our Playrooms Measures: Making Comparisons



Year 2 Twilight

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