

Glasgow Counts in our Playrooms



Overview and Framework Session 1
2022-2023
LEL Team



Aims



To explore mathematical mind-sets



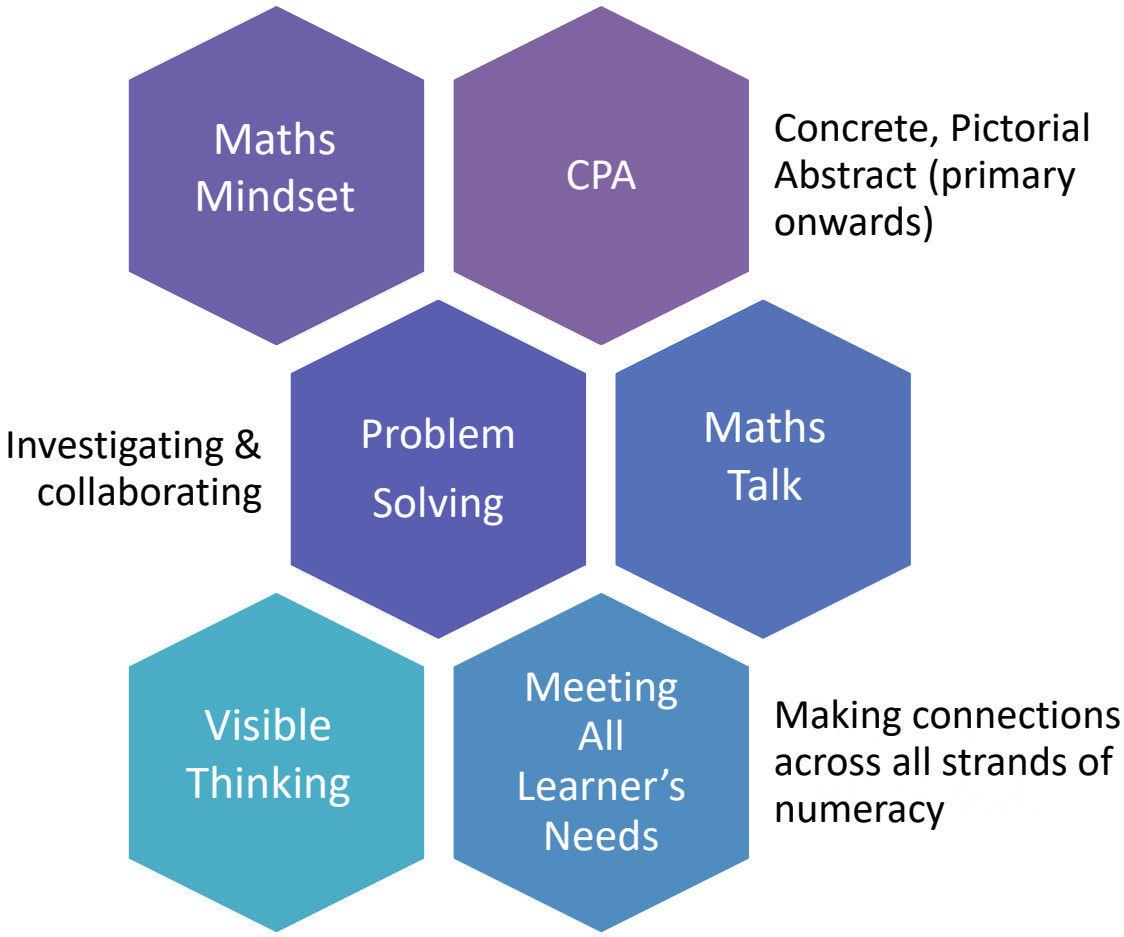
To explore what high quality provisions look like in early years establishments



To familiarise ourselves with the Glasgow Counts Framework



Our key messages:



[Video 1](#) [Video 2](#)



To explore mathematical mind-sets





Discussion time



PAUSE
HEALTHY

Take a minute to read the statements and then circle the one you most identify with.

In your groups discuss:

- why that resonates with you?
- why did you discard the others?



Mathematical Mindsets



To solve math problems, you need to know the basic mathematics before you can start applying it.

Catherine Asaro



Mathematics is not about numbers, equations, computations, or algorithms. It is about **understanding**.

- William Paul Thurston

©iStockphoto.com/123456789

The only way to learn mathematics is to do mathematics.

PAUL MALMOS

JOHANN VON NEUMANN

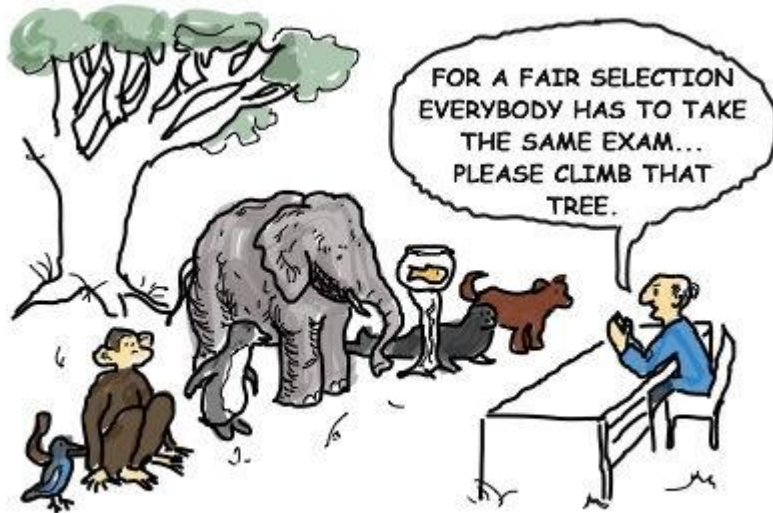
IN MATHEMATICS YOU DON'T UNDERSTAND THINGS. YOU JUST GET USED TO THEM.

QUOTE BANNER.COM





Meeting All Learners' Needs



Everyone is a
genius. But if you
judge a fish on its
ability to climb a
tree, it will live its
whole life believing
that it is stupid.

-A Einstein



PAUSE

How does this make you feel?

$$\begin{array}{r} 47 \\ + 28 \\ \hline \\ \hline \end{array}$$



PAUSE
HEALCOT

Activity

There are 47 children in the hall.
28 more children arrive.

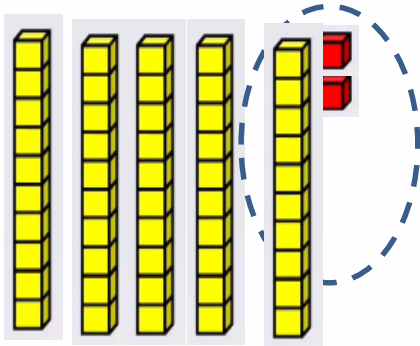
How many are in the school hall now?

- How did you work it out?
- Can you think of any other ways to solve the problem?
- What is your most efficient strategy?

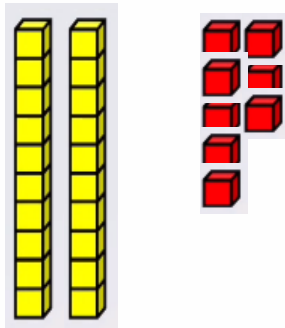


PAUSE





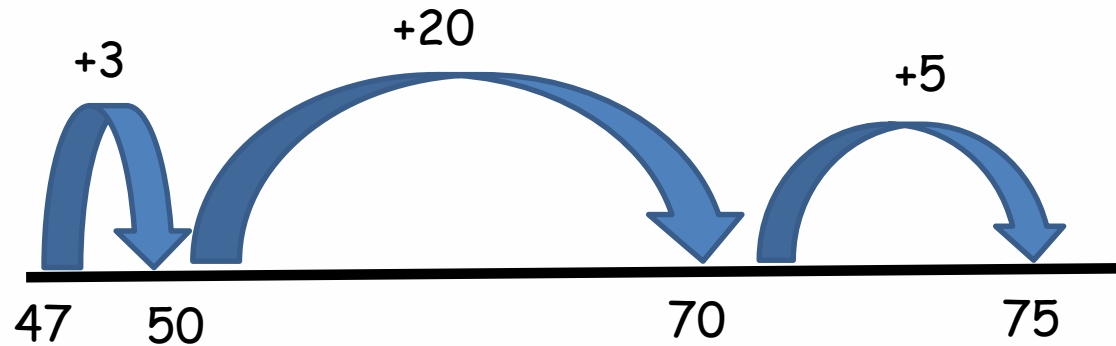
$$47 + 28 = 75$$



Partitioning: open number line

$$47 + 28 = 75$$

Open Number Line:



Rounding/compensating

$$47 + 28 = 75$$

+3

or

$$50 + 28 = 78 - 3$$

I rounded 47 to 50 and 28 to 30.

$$30 + 50 = 80$$

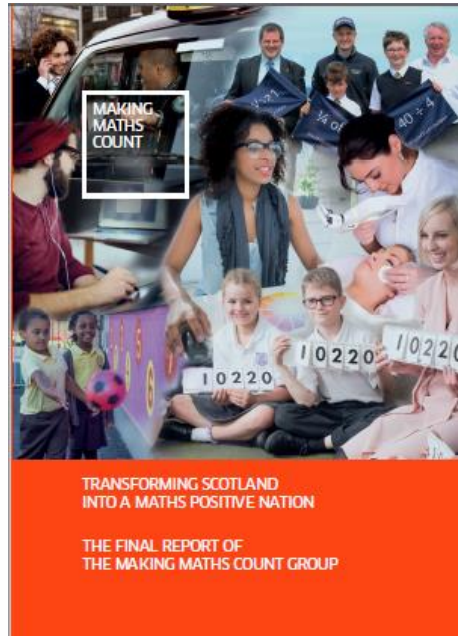
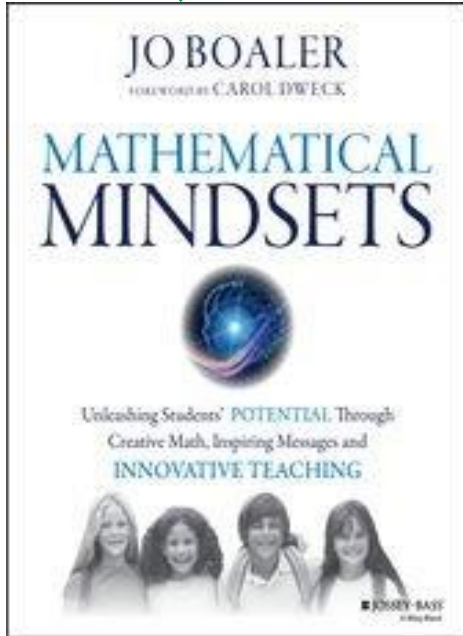
I rounded up by 5 so

$$80 - 5 = 75$$





Theory into Practice



Improving confidence and fluency in maths for children, young people, parents and all those who deliver maths education to raise attainment and achievement across learning.

All schools and nurseries should use a wide range of effective learning and teaching approaches to promote positive attitudes and develop high expectations, confidence and resilience in maths.

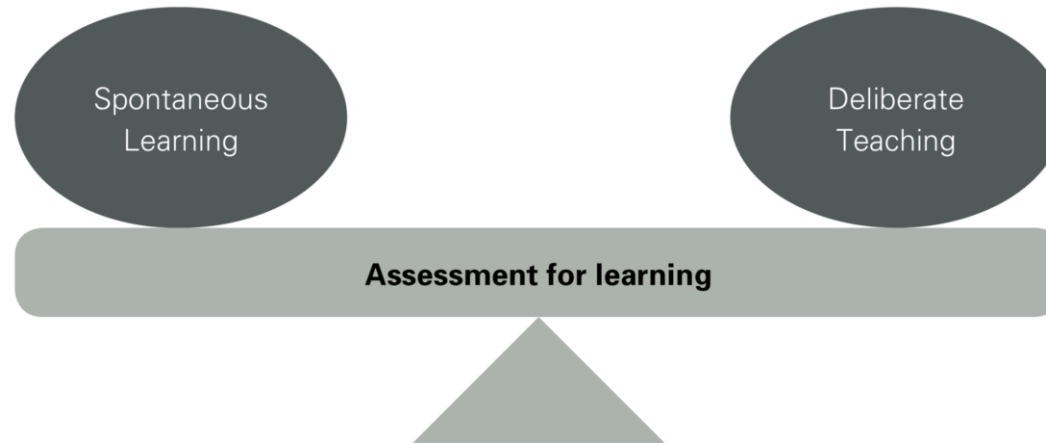




What does high quality provision look like in early years establishments?



Balancing spontaneous learning with intentional teaching



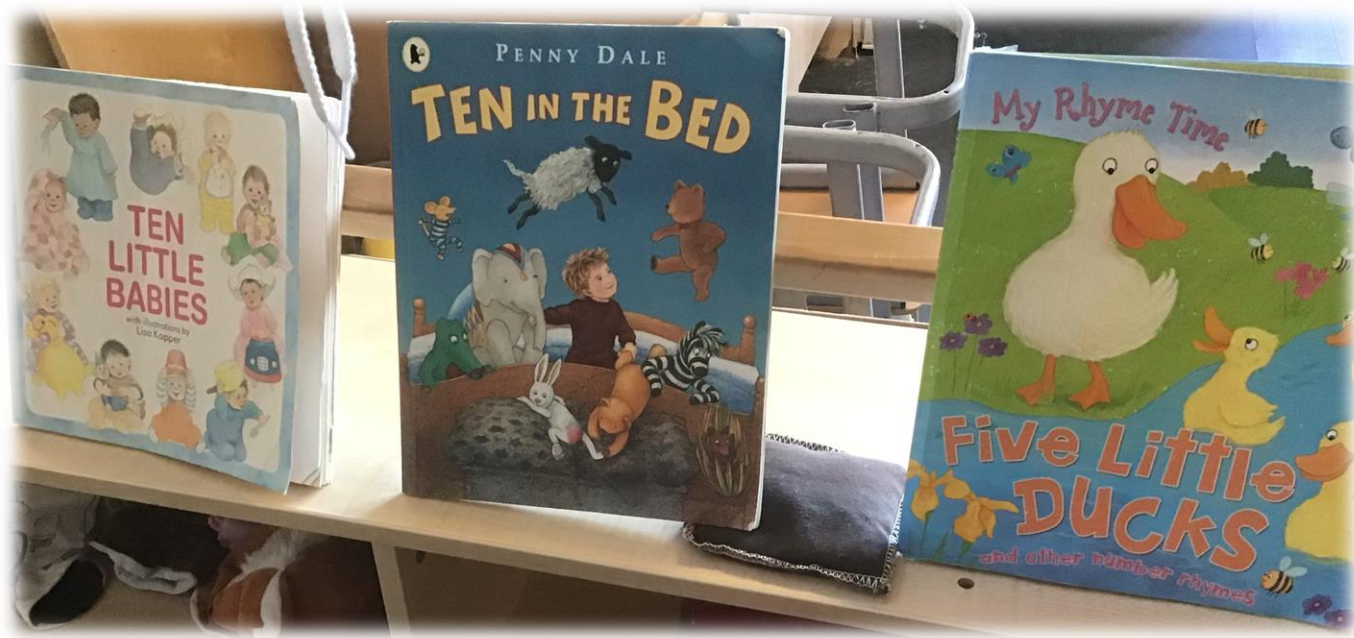
New Zealand Government, Early Mathematics:
A guide for improving teaching and learning,
2016

"A balance of responsive and intentional planning is essential in providing suitable experiences that connect with and extend children's interests and motivations."

p 63 Realising the Ambition



What does quality provision look like?



"Numeracy should be embedded throughout the curriculum and the environment and should not simply be seen as an area on it's own."

Realising the Ambition p75





High Quality Provision





LEL Literacy Group 2015

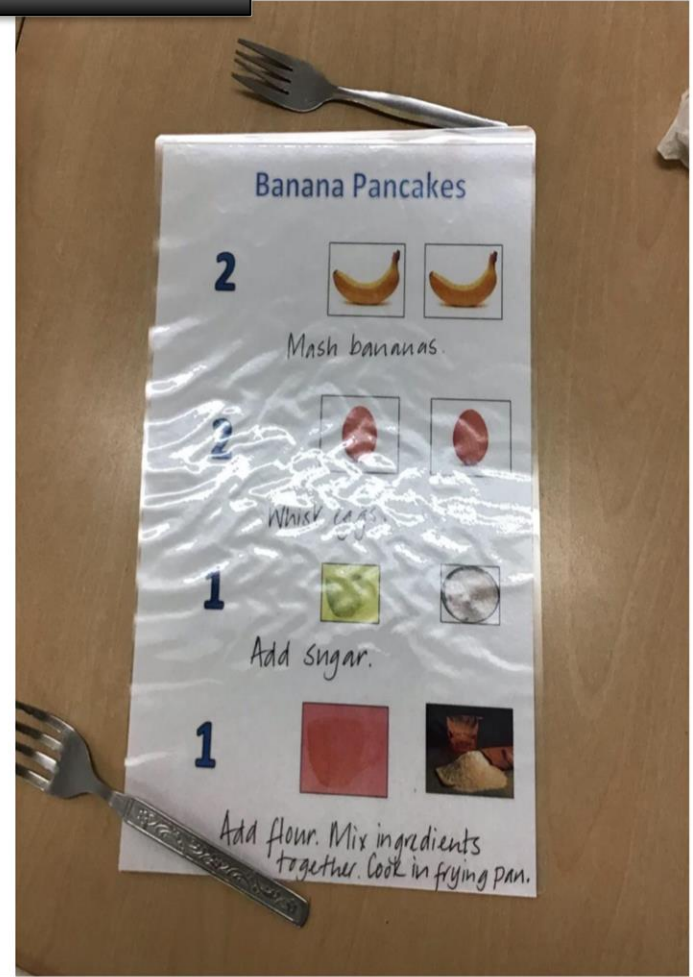


High Quality Provision



High Quality Provision





High Quality Provision





High Quality Provision







Would a dedicated numeracy area work well in your establishment??









High Quality Provision





Self evaluation

Challenge questions

1. To what extent do you have a clear picture of every child in your group as a mathematician with knowledge of what went before, is happening now and next steps?
2. Are most of the learning experiences children have in mathematics in your centre planned or spontaneous?
3. What play situations have you found are the most effective at stimulating mathematical conversations and learning?
4. How do you cater for children's interests when engaging children in challenging mathematics?
5. To what extent do you feel confident in your knowledge of the maths curriculum and spotting opportunities for learning?



PAUSE



Numeracy Evaluation Tool/Audit



Early Years Numeracy Rich Learning Environment Toolkit

Numeracy Rich Environments

Children's numeracy and mathematical learning can thrive when surrounded by attuned adults and enabling environments that are rich and diverse in opportunities for developing understanding of number, numeral recognition, counting, sorting, patterning, measuring and problem solving. A numeracy rich environment emphasises the importance of using **interactions**, **experiences** and **spaces** effectively to facilitate high quality numeracy and mathematical opportunities.

Practitioners in high quality provision:

- highly value and promote child-initiated experiences and provide spaces to capitalise on children's interests and motivation.
- tune in to child-initiated activity and sensitively intervene to extend children's inquiry, problem solving and thinking skills.
- extend learning based on an understanding of developmental stage and interests, rather than providing adult directed activities that have little meaning for children.
- enable children to lead their own learning, including planning projects and solving their own problems.

Realising the Ambition (2020), p.83



Using the Toolkit

- This Numeracy Rich Environment Toolkit can be used to help you and/or your team evaluate the experiences, interactions and spaces within your establishment.
- Use your evaluation to plan for identified areas of development.
- This toolkit is not intended to be used in its entirety at the one time, rather to focus on one or more concepts of numeracy and mathematics. This may be linked to an improvement plan outcome or development need you have identified. For example, if you are focusing on developing counting skills, you may first use the *awareness of number* paper to identify where you are and how you know, then plan next steps or actions in order to improve the





The Framework



On track statements

"No significant gaps"

Benchmarks are the end of Early Level
(Typically end of Primary 1)



Learning, Teaching and Assessment

	Curriculum organisers	Experiences and Outcomes for planning learning, teaching and assessment	Benchmarks to support practitioners' professional judgement of achievement of a level
Number, money and measure	Estimation and rounding	<p><i>I am developing a sense of size and amount by observing, exploring, using and communicating with others about things in the world around me.</i></p> <p>MNU 0-01a</p>	<ul style="list-style-type: none"> Recognises the number of objects in a group, without counting (subitising) and uses this information to estimate the number of objects in other groups. Checks estimates by counting. Demonstrates skills of estimation in the contexts of number and measure using relevant vocabulary, including less than, longer than, more than and the same.
	Number and number processes	<p><i>I have explored numbers, understanding that they represent quantities, and I can use them to count, create sequences and describe order.</i></p> <p>MNU 0-02a</p> <p><i>I use practical materials and can 'count on and back' to help me understand addition and subtraction, recording my ideas and solutions in different ways.</i></p> <p>MNU 0-03a</p>	<ul style="list-style-type: none"> Explains that zero means there is none of a particular quantity and is represented by the numeral 0. Recalls the number sequence forwards within the range 0 - 30, from any given number. Recalls the number sequence backwards from 20. Identifies and recognises numbers from 0 to 20. Orders all numbers forwards and backwards within the range 0 - 20. Identifies the number before, the number after and missing numbers in a sequence within 20. Uses one-to-one correspondence to count a given number of objects to 20. Identifies 'how many?' in regular dot patterns, for example, arrays, five frames, ten frames, dice and irregular dot patterns, without having to count (subitising). Groups items recognising that the appearance of the group has no effect on the overall total (conservation of number). Uses ordinal numbers in real life contexts, for example, 'I am third in the line'. Uses the language of before, after and in-between. Counts on and back in ones to add and subtract. Doubles numbers to a total of 10 mentally. When counting objects, understands that the number name of the last object counted is the name given to the total number of objects in the group.
	Fractions, decimal fractions and percentages	<p><i>I can share out a group of items by making smaller groups and can split a whole object into smaller parts.</i></p> <p>MNU 0-07a</p>	<ul style="list-style-type: none"> Splits a whole into smaller parts and explains that equal parts are the same size. Uses appropriate vocabulary to describe halves. Shares out a group of items equally into smaller groups.





Writing Effective LIs



- I have explored numbers, understanding that they represent quantities, and I can use them to count, create sequences and describe order (MNU 0-02a)
- We are learning to count
- We are learning to sequence
- We are learning to describe the order





LI: We are learning to count

Benchmarks:

- *Recalls* the number sequence forward in the range 0-30, from any given number.
- *Uses one to one correspondence* to count a given number of objects to 10

SC: I can count forwards from 0 - 10

I can count the number of objects in a group

I can point to each object as I count



GCIP Framework



Experiences and Outcomes

LfA/GC Frameworks

Benchmarks

LI and SC

High-quality Learning Experiences



Focus for Assessment





Glasgow Counts

A Framework for Mathematics

Important Information
& User Guide for
Playrooms

Important Information
& User Guide for
Primarys

Early Level

Effective Learning and Teaching in Mathematics



Mission Statement:

Our fundamental aim is to fill our young minds with a sense of agency and endow them with the motivation, courage and belief in their power to influence their own futures. We are driven by a commitment to create pathways to enable all stakeholders to possess skills for life, learning and work.

We want our young people to engage with mathematics and build their comprehension of the subject across the curriculum. Society requires young people who are sophisticated mathematical thinkers, pattern spotters and problem solvers therefore we aim to empower our young people as mathematicians.

With this pathway, we aim to provide opportunities for learning that promote deep engagement with all areas of mathematics.

Our purpose is to offer a better way to build mathematical understanding in and beyond our playrooms.

Glasgow Counts

Next slide

Early Years – Key Messages

Young children are born ready and eager for **mathematical thinking**. Research shows that young babies are able to subitise and can compare quantity. Noticing same and different, shapes children's early mathematical thinking, particularly in relation to the child's immediate world and experiences. The child might notice he only has one jelly baby whilst you have two and therefore understanding quantity becomes very important to the child! By observing similarities and differences and making comparisons the young child starts to become mathematically aware. With the help of an interested and **attuned adult** this can happen quite naturally through play and playful approaches, as the adult and child draw each others' attention to what is important, and talk about what they can see and think. Through talk the adult provides the child with the **language and mathematical terms** they need to describe what they are observing and experiencing. Children should be engaged in mathematical **experiences** everyday, in an **environment** which has a rich affordance for all elements of the curriculum. **Interactions** and the role of the adult is key as the child is building an association with mathematics as playful, creative and joyous. Children need adults who are curious, joyful and confident who can foster and scaffold positive experiences **with other learners**. The adult in early years is also fostering the child's **learning dispositions**. Therefore the Glasgow Counts framework should be considered alongside [Development Matters](#) (see p.6 and p.7). It is important also to consider how families are able to support their child's learning in mathematics, ensuring the key messages and playful ideas are shared with **families**, will give young children the best chance of success and of acquiring a **life-long love** of mathematical learning.

Next slide



Glasgow Counts – Framework



These lines of progression for mathematics has been developed to support practitioners in their delivery of the mathematics curriculum.

The framework captures all elements of mathematics and breaks down each concept into a series of progressive Learning Intentions, informed by Education Scotland's Benchmarks.

The trackers allow practitioners to monitor learner's progress across levels, supporting transition between stages. The strategies and approaches pages, will support practitioners through Glasgow Counts core training.

The Glasgow Counts key messages are:

- to use the CPA approach to develop conceptual understanding
- to develop problem solving, reasoning and fluency
- to create mathematical mindsets
- to engage in Maths Talk
- to meet the needs of all learners' needs
- to develop mastery learning

We would like to acknowledge the original draft Glasgow Counts Numeracy Framework (2017) and also Mathematics: Lines of Progression written by Glasgow City Council, North Lanarkshire Council and Inverclyde Council completed in 2014.

Inspiration and guidance has also been taken from NCETM, [NRich](#) and Kangaroo Maths.

Next slide



Glasgow Counts - Framework



Please note that guidance on the strategies & approaches pages and the resources pages are not exclusive. We urge practitioners to seek out and develop learning experiences which will best support the learners in their own playrooms.

Each topic has a resources page. We would like schools to take ownership of these pages and insert their own lesson plans, printables, links to maths resources, etc.

It is essential that practitioners make themselves familiar with the framework, and there will be the opportunity to attend twilight information sessions.

This document does not show a linear progression and **practitioners must ensure they make explicit links across areas of learning. The following pages will give a step by step overview.**

These pathways are a working document and will be updated regularly. Please be flexible in your approach and keep up-to-date with developments to ensure you can best plan for excellent learning and teaching.

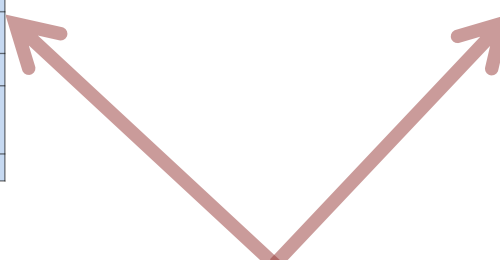
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The framework for Mathematics has been organised into the Curriculum Organisers in line with the CfE Experiences and Outcomes. Progression in Numeracy relies on learners developing an understanding of the intrinsic links across each of these organisers. As such, it is essential that progression within each organiser is not achieved in isolation of the others. Planning should therefore focus on developing progressive learning experiences that draw from each of the organisers.

Early Level Tracker 1				
Estimation & Rounding	Recognises the number of objects in a group without counting (subitise) and use info to estimate in other groups	Understands and uses the language of estimation, including more than, less than and the same		
Numbered Numerals	Say short forward number word sequences (to at least 20)	Say short backward number word sequences (to at least 20)	Say alternate numbers (to at least 20)	Say next number word forward (to at least 20)
Subitising	Recognise numerals (to at least 20)	Identify (frame) numerals (to at least 20)	Explains zero is represented as 0	Begin to sequence numerals forwards and backwards (to at least 20)
Counting	Count objects in a group - regular & irregular arrangements (to at least 6 - dice patterns)	Identify numbers in a group without counting - Subitise (to at least 6)		
Place Value	Sort & classify objects in a set	Understand that the number of objects in a set is not affected by position	Begin to understand that a group gets bigger when we add items to it	Use 1-to-1 correspondence (to at least 10)
Addition and Subtraction	Partition quantities to at least 5 through exploration (2 sets)	Explain that zero means there is none of a quantity		
Multiplication and Division	Begin to find the cardinal number of items in 2 groups by counting all of them (within 20) (count from 1)	Begin to find how many are left when some are taken away	Understand that when counting a group the last number represents the total amount (cardinality)	
Reasoning, Problem Solving & %	Share a quantity of objects equally between 2	Begin to identify half of a group of objects using concrete materials	Cut an object in half	Combine halves to make a whole

Early Level Number Tracker 2										
Estimation & Rounding	Checks estimates by counting					Demonstrates skills of estimation in the context of number including more than, less than and the same				
Numbered Numerals	Say short forward number word sequences (to at least 20)	Say short backward number word sequences (to at least 20)	Say alternate numbers (to at least 20)	Say next number word forward (to at least 20)	Say next number word backward (from 20)	Say number word after (within 20)	Say number word before (to at least 20)			
Subitising	Recognise numerals (from 0 to at least 20)	Identify (frame) numerals (to at least 20)	Sequence numerals forwards and backwards (to at least 20)	Identify number before and after (to at least 20)	Identify missing numbers in a sequence (to at least 20)					
Counting	Use 1 to 1 correspondence (to at least 20)	Count objects in a group (to at least 20)	Count objects in a group - regular & irregular arrangements (to at least 20)	Count objects using an array (to at least 20)	Count objects in a row (without touching) (to at least 20)	Understand that the last number identifies how many in a set (cardinality)	Use and understand ordinal numbers	Understand that the number of objects is affected by position (conservation)	Skip counts in 2s (to at least 20)	Skip counts in 5s (to at least 20)
Place Value	Partition numbers usually to at least 10 (2 or more parts)	Identify number bonds to 10	Recognise zero as a place holder							
Addition and Subtraction	Find one more and one less than a given number (to at least 20)	Combine 2 or more numbers to find the total	Count on or back in 1's (to at least 20)	Recognise and use + and - symbols	Read an addition / subtraction number sentence	Use an addition / subtraction number sentence	Translate a word problem into a number sentence	Combine two quantities to find the total	Partition numbers into part-part-whole to find (and record) number sentences	Solve missing number problems
Multiplication and Division	Solve division problems by sharing (to at least 20)	Solve division problems by grouping (to at least 20)	Identify odd and even (to at least 20)	Find the total of equal groups	Find the total of equal groups using repeated addition	Place objects into arrays	Find missing numbers (to at least 20)	Double quantities (to at least 20)	Count patterns of 2	Double numbers (to at least 20)
Reasoning, Problem Solving & %	Recognise half of an object (of 2 equal parts)	Recognise quarter of an object (as 1 of 4 equal parts)	Identify half of a shape (object)	Identify quarter of a shape (object)	Identify half of a quantity	Identify quarter of a quantity	Find a quarter by halving half			



The trackers developed for each level provide a detailed breakdown of the progressive learning intentions embedded within the framework. They aim to support practitioners to track coverage through the framework and can be used in conjunction with individual establishments' planning procedures.

Number Progression Pathways: Early Level			
Tracker 1	Tracker 2	Tracker 3	
Estimation and Rounding	Recognises the number of objects in a group without counting (subitise) and use info to estimate in other groups	Understands and uses the language of estimation, including more than, less than and the same	Checks estimates by counting
Numbered Numerals	Recalls the number sequence forwards and backwards, from zero to at least 10, from any given number. Orders numbers forwards & backwards to at least 10. Identifies the number before, after and missing numbers in a sequence.	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.	Demonstrates skills of estimation in the context of number
Subitising	Recognises number names and numerals to at least 10. Explains that zero is represented by the numeral '0'.	Recognises number names and numerals to at least 20. Orders numbers forwards & backwards to at least 20. Identifies the number before, after and missing numbers in a sequence.	
Counting	Identifies 'how many?' in regular & irregular dot patterns, five frames and dice without having to count - subitising.	Identifies 'how many?' in regular & irregular dot patterns, arrays, five frames, ten frames and dice without having to count - subitising.	
Place Value	Understands cardinal numbers - sorting, classifying, ordering number & conservation of number.	Compares quantities using appropriate language.	Uses 1-to-1 correspondence to count objects to at least 10. When counting, understands that the last number counted is the total.
Addition and Subtraction	Using concrete resources, solves problems that involve addition and subtraction.	Counts on and back in ones to demonstrate understanding of addition and subtraction.	Partitions single digit numbers into two or more parts and recognises that this does not affect the total.
Multiplication and Division	Shares out a group of items equally into smaller groups.	Doubles numbers to a total of at least 10, mentally.	Shares out a group of items equally into smaller groups.
Reasoning, Problem Solving & %	Splits a whole into at least halves and uses appropriate language.	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.	Demonstrates understanding of at least possible partitions of numbers to at least 10.

The trackers can be navigated to via the overview page at each level and are broken down into 2 at Early Level, 3 at First Level and 3 at Second Level.





Glasgow Counts

A Framework for Mathematics

Important Information
& User Guide for
Playrooms

Important Information
& User Guide for
Primarys

Early Level

Glasgow Counts Numeracy and Maths Planner

	Organiser	Early Level Experiences and Outcomes
Number, Money and Measure	Estimation & Rounding	<p><i>I am developing a sense of size and amount by observing, exploring, using and communicating with others about things in the world around me.</i></p> <p style="text-align: right;">MNU 0-01a</p>
	Number & Number Processes	<p><i>I have explored numbers, understanding that they represent quantities, and I can use them to count, create sequences and describe order.</i></p> <p style="text-align: right;">MNU 0-02a</p> <p><i>I use practical materials and can 'count on and back' to help me understand addition and subtraction, recording my ideas and solutions in different ways.</i></p> <p style="text-align: right;">MNU 0-03a</p>
	Fractions, Decimals & %	<p><i>I can share out a group of items by making smaller groups and can split a whole object into smaller parts.</i></p> <p style="text-align: right;">MNU 0-07a</p>
	Money	<p><i>I am developing my awareness of how money is used and can recognise and use a range of coins.</i></p> <p style="text-align: right;">MNU 0-09a</p>
	Time	<p><i>I am aware of how routines and events in my world link with times and seasons, and have explored ways to record and display these using clocks, calendars and other methods.</i></p> <p style="text-align: right;">MNU 0-10a</p>
	Measure	<p><i>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.</i></p> <p style="text-align: right;">MNU 0-11a</p>
	Patterns and Relationships	<p><i>I have spotted and explored patterns in my own and the wider environment and can copy and continue these and create my own patterns.</i></p> <p style="text-align: right;">MTH 0-13a</p>

Glasgow Counts Numeracy and Maths Planner

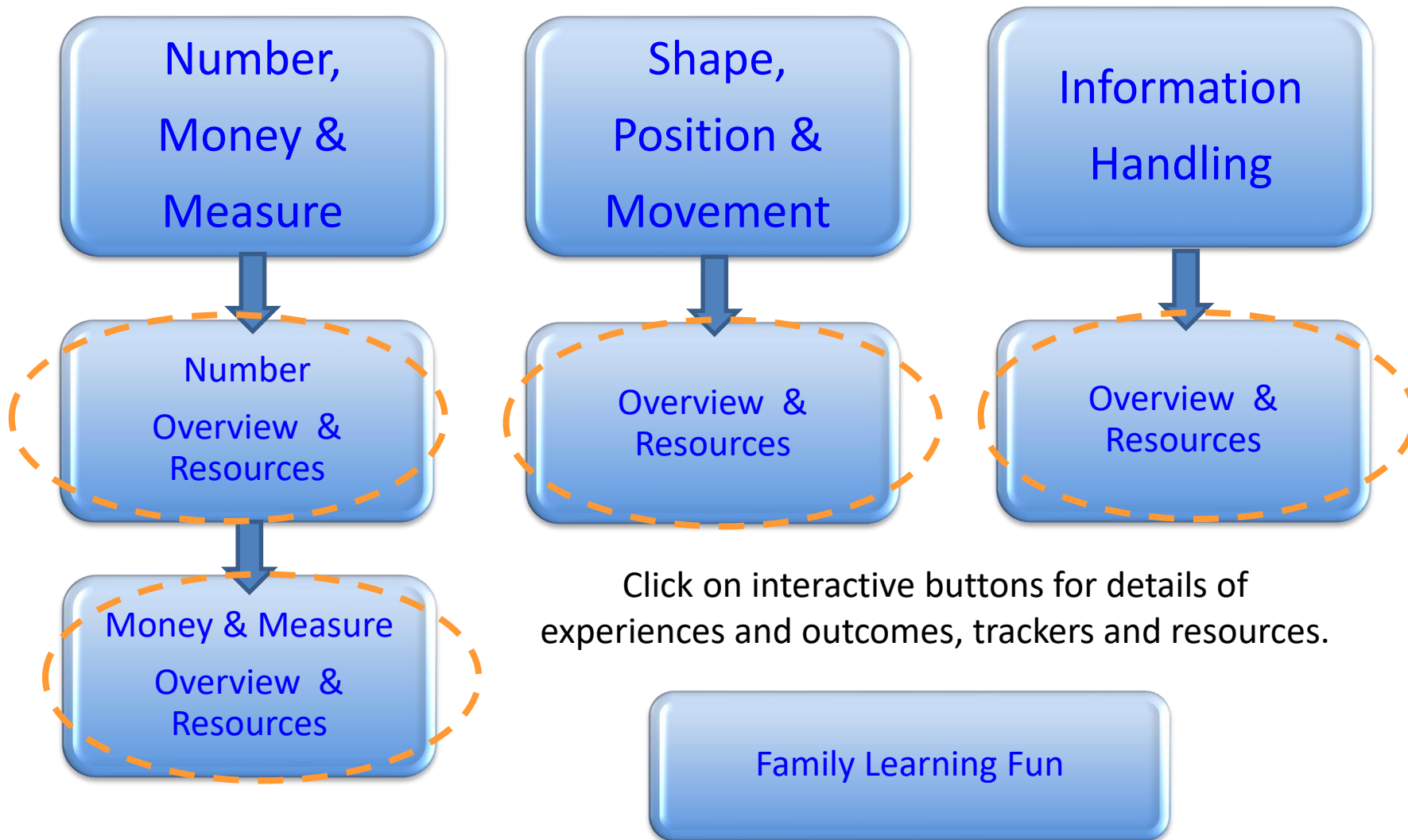
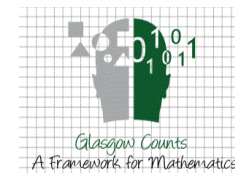
	Organiser	Early Level Experiences and Outcomes
Shape, Position & Movement	Properties of 2D shapes & 3D objects	<i>I enjoy investigating objects and shapes and can sort, describe and be creative with them.</i> MTH 0-16a
	Angle, Symmetry & Transformation	<i>In movement, games, and using technology I can use simple directions and describe positions.</i> MTH 0-17a <i>I have had fun creating a range of symmetrical pictures and patterns using a range of media.</i> MTH 0-19a

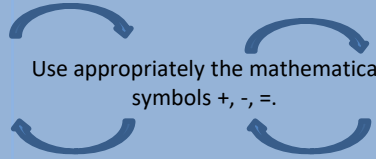
Glasgow Counts Numeracy and Maths Planner

	Organiser	Early Level Experiences and Outcomes
Information Handling	Data & Analysis	<p><i>I can collect objects and ask questions to gather information, organising and displaying my findings in different ways. MNU 0-20a</i></p> <p><i>I can match objects, and sort using my own and others' criteria, sharing my ideas with others. MNU 0-20b</i></p> <p><i>I can use the signs and charts around me for information, helping me plan and make choices and decisions in my daily life. MNU 0-20c</i></p>
	Ideas of chance and uncertainty	<p><i>There are no Experiences and Outcomes at early level.</i></p>



Glasgow Counts Numeracy & Mathematics Framework Early Level



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.	 Links number families when explaining mental strategies for addition & subtraction. Solves simple missing number equations, for example, $3 + \bullet = 10$. 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.	



Money & Measure Progression Pathways: Early Level



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



**2D shapes
and
3D Objects**

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

Recognise, describe and sort common
2D and 3D objects
according to various criteria, for example,
straight, round, flat and curved.

**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

Understand and correctly use
the language of
position and direction,
Including
in front, behind, above, below, left, right,
forwards and backwards
to solve simple problems
in movement games.

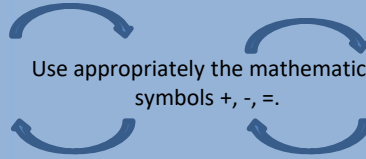
Identify, describe and create
symmetrical pictures
with one line of symmetry.



Information Handling Progression Pathways: Early Level



Ideas of Chance & Uncertainty	No experiences at this level	No experiences at this level		
Data Handling and Analysis	<p>Uses knowledge of colour, shape, size and other properties to match and sort items in a variety of different ways</p> <p>Collects and organises objects for a specific purpose</p> <p>Asks simple questions to collect data for a specific purpose</p> <p>Contributes to a concrete or pictorial display where one object or drawing represents on data value, using digital technologies as appropriate</p> <p>With support interprets simple graphs, charts and signs and demonstrates how they support planning, choices and decision making</p> <p>With support applies counting skills to ask an answer questions and makes relevant choices and decisions based on the data</p>	Apply counting skills to ask and answer different questions and make relevant choices and decisions based on the data.	Contribute to concrete or pictorial displays where one object or drawing represents one data value, using digital technologies as appropriate.	Interpret simple graphs, charts and signs and demonstrate how they support planning, choices and decision making.
Impact on the World	There are no experiences and outcomes at early level.	There are no experiences and outcomes at early level.		

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.		 <p>Use appropriately the mathematical symbols +, -, =.</p>		Links number families when explaining mental strategies for addition & subtraction. Solves simple missing number equations, for example, $3 + \bullet = 10$. 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

<u>Estimation & Rounding</u>	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		
<u>No. word sequences</u>	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		
<u>Numerals</u>	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		
<u>Subitising</u>	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		
<u>Counting</u>	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)	
<u>Place Value</u>	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>Addition and Subtraction</u>	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
<u>Multiplication and Division</u>	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			
<u>Fractions, Decimals and %</u>	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		

Money & Measure: Early Level Tracker 1



<u>Money</u>		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		
		<u>Time</u>		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
<u>Measurement</u>	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					
<u>Patterns & Relationships</u>		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, Position and Movement: EL1



<p><u>Shape</u></p>	<p>Recognise and describe common 2D shapes and 3D objects by attribute e.g. straight, round, flat and curved</p>		<p>Sort common 2D shapes and 3D objects according to attribute e.g. shape, colour, size</p>	
<p><u>Angles, Symmetry and Transformation</u></p>	<p>Correctly uses some of the language of position e.g. in front, behind, above, below</p>	<p>Begins to correctly use some of the language of direction e.g. left right, forwards and backwards to solve simple problems in relevant contexts</p>	<p>Identifies and describes basic symmetrical pictures with one line of symmetry</p>	<p>Creates basic symmetrical pictures with one line of symmetry</p>

Information Handling: EL1



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 and makes relevant choices and decisions based on the data

Early Level Tracker 1

<u>Estimation & Rounding</u>		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		
Awareness of Number – Counting, Quantities & Number Structure	<u>No. word sequences</u>	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		
	<u>Numerals</u>	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		
	<u>Subitising</u>	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		
	<u>Counting</u>	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)	
	<u>Place Value</u>	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>Addition and Subtraction</u>	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	
<u>Multiplication and division</u>	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				
<u>Fractions, Decimals and %</u>	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			

Addition and Subtraction: Early Level

Mathematical Language : add, more, make, altogether, total, how many more? How many left?, find the difference, take away, subtract, leave, count on, count back, number sentence, plus, sum, left over, is the same as, equal to.

CfE [MNU 0-02a](#)
[MNU0-03a](#)

Strategies and Approaches

Once children have mastered the cardinal principle and know the last item counted gives the amount in any set, they can begin engage in ordering sets showing an understanding that 1,2,3 or 3,2,1 means an increase or decrease in quantity. They can begin to engage in early addition and subtraction as a concrete activity by exploring:

Early Addition

- ways a set can be broken into smaller sets e.g. 6 can be 4 and 2 - **partitioning**
- adding to an existing amount to find a new total – **augmentation**
- combining two sets together to find a new total – **aggregation**

Early Subtraction

- two sets to think about which has most/fewest – **comparison**
- two sets to think about which has more items
- taking away items from a set and find a new total

Small World: children may be working with farm animals in the field or leave the field so this gives the possibility of working out a new total. Children might work out how many animals are on the farm altogether by aggregating 2 or more sets together

Board games: games that involve building up a set of items lend themselves to discussion about how many is their set, how many they have now, who has most/fewest.

Outdoors: children might add to existing sets of conkers, twigs, leaves. They may compare their sets with a friend to work out who has fewest and by how many. They might be building and decide they need more or fewer bricks. They can compare against their own prediction. They might be monitoring the bird feeder for different types of bird and compare the amounts of each type within the day and over time. They might start to think about this in terms of why certain birds come is it certain food that they like? **Children have to see early number processes as purposeful and meaningful for them.**

Digital Learning:

more lesson
resources here...

[Resources](#)

Questions to Enable Higher Order Thinking Skills

- What would happen if 2 more cows came into the field? How many would there be?
- How many grapes do you have on your plate? How many will you have when you eat one?
- Who has the fewest grapes left on their plate?
- Can you show me different ways to make 6 with your fingers? What if you added one more finger – how many would you have then?
- The birds have all left the bird feeder – how many are there now? How many starlings do you think will come tomorrow?
- Which is the most popular fruit for snack? How many more like apples than grapes?
- If I take away 2 cartons of milk how many will we have? Will we have enough for everyone?
- If 2 people in these 2 cars got on the bus, how many people will be on the bus?
- How many different ways can you show me 6 using these items in the circles?

Click on links for examples of different teaching strategies

Barriers to Learning and Misconceptions

- Not fully confident in number recognition and counting.
- Children will require modelling to build their organizational skills e.g. working in rows, combining sets carefully
- Unclear language e.g. a few more, a lot less
- Children may be asked to state 'the most' very frequently; they need to also be asked about 'the fewest' to build understanding.
- Children need to have meaningful ways to work with sets or they will not have a motivation to work things out.

On Track at Transition Statement

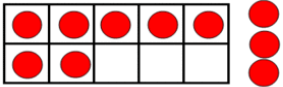
- Beginning to compare and find the difference between two quantity within 0-10
- Beginning to count on and back in ones objects or number line within 0-10

Next slide

Resources – Addition and Subtraction

Common Learning Resources

Five and Ten Frames



Board games

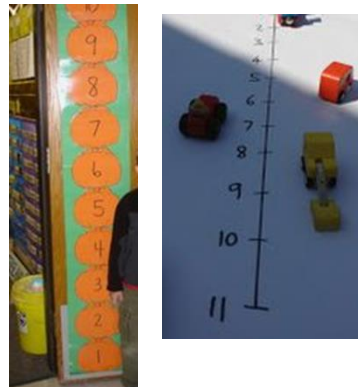


Part, Part, Whole Modelling

Three friends won five marbles. How many different ways could they share them out?



Height charts and number lines



Sets to bring together



Sets of manmade and natural objects to add to and take away from



Online Resources

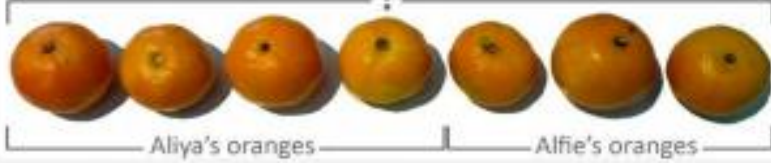


Stories

- *The Country Bunny and the Little Gold Shoes* by Rick Walton
- *The Crayon Counting Book* by Pam Munoz Ryan and Jerry Pallotta
- *Fat Frogs On a Skinny Log* by Sara Riches
- *The Icky Bug Counting Book* by Jerry Pallotta
- *Ten Terrible Dinosaurs* by Paul Stickland
- *Ten Sly Piranhas* by William Wise
- *Five Little Ducks* by Pam Paparone
- *Construction Countdown* by K.C. Olsen
- *The Very Hungry Caterpillar* by Eric Carle
- *Five little monkeys go shopping* by Eileen Christelow
- *Ten Little Beasties* by Rebecca Emberley
- *Wibbly Pig has 10 balloons* by Mick Inkpen
- *One less fish* by Kim Michelle Toft
- *Magic Numbers* by Patrick George

Early Addition

Aggregation - Bringing 2 sets together



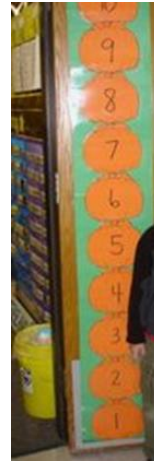
Aliya's oranges



Alfie's oranges



Augmentation – Adding more to an existing amount



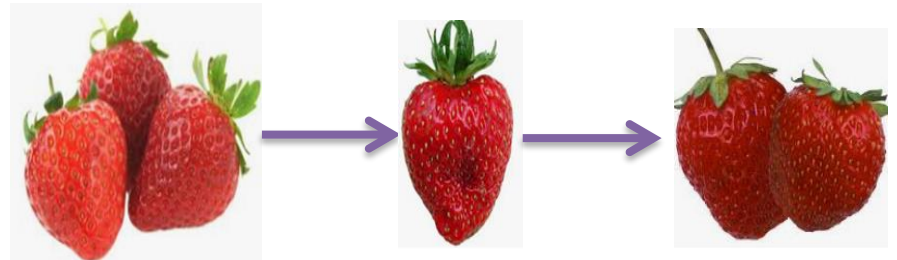
You have increased from number 5 to number 7 on the height chart.

Early Subtraction

Finding the difference



Reduction - Take away



Subitising: Early Level

Language

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

CfE

[MNU 0-01a](#)

[MNU 0-02a](#)

Strategies and Approaches

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 (https://valeriefaulknermathclub.files.wordpress.com/2017/05/faulkner_ainslie_proof.pdf)

Perceptual Subitising is the amount you can instantly recognise without counting. We do this 'naturally' from a young age. It becomes difficult to process the 'full amount' beyond 5 or 6. Beyond 6 you will apply conceptual subitising skills to chunk what you see into smaller values.

Conceptual Subitising chunks a larger amount into smaller values. Beyond 6 your mind will process a larger amount e.g. 7 as 5 and 2 or 3 and 4 depending on the representation. This is made possible if the amounts are arranged in an organised way. Therefore effective conceptual subitisers need to be taught to organise their amounts into regular patterns, and 5/10 frames, to make subitising possible. Irregular arrangements are far harder to see and should only be used within 5. Beyond 5 or 6 children will need to adopt regular arrangements to see the amount.



irregular arrangements



regular arrangement



10 frame

- **Fingers:** Use fingers everyday to represent quantities. What do you see? How do you know? Can you grow the number adding a finger at a time? Challenge children e.g. make 5 using 2 hands in different ways.
- **Dot arrangements:** Look for everyday opportunities for learners to see and organise regular structured representations of numbers e.g. objects or dots organised on a five frame or a ten frame, [Numicon](#), dominos, playing cards, an abacus and dice: [dice/dominoes/five/ten frames/counters](#). Children should be familiar with all of these ways of seeing patterns of numbers for example by:
 - Playing board games, dominos, cards games and snap games
 - Registering attendance on a five or ten frame/ voting for preferences on the five or ten frame
 - Recording who has had snack on a ten frame, ordering at the 'bakery' on a five or ten frames

- Ordering regular and irregular patterns, on a subitising washing line for example, will give learners the opportunity to show they understand the dot patterns represent increasing amounts.

Digital Learning

[Resources](#)

Questions to Enable Higher Order Thinking

- Can you show me your age using your fingers?
- Can you show me 4 using finger patterns? Can you make it in a different way?
- How many on each hand?
- How many circles did you see in the picture?
- Can you tell me without counting?
- What other groups of circles did you see?
- Tell me what you see

Barriers to Learning and Misconceptions

- The spatial arrangement of sets influences how difficult they are to subitise. Children usually find rectangular arrangements easiest, followed by linear, circular, and scrambled arrangements
- If children have poor skill development with number word sequences – ability to say numbers in the correct order, they will find subitising difficult
- Inability to identify and match objects seen with associated number name
- Inability to count on – when subitising more than one group

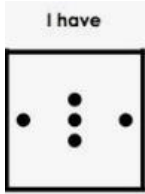
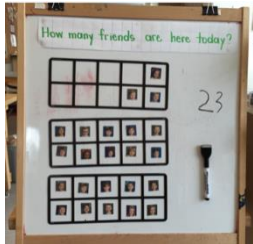
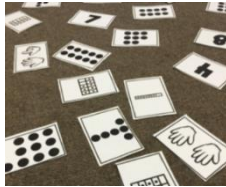
On Track at Transition Statement

- Represents amounts in different arrangements e.g. dot arrangement/on fingers/five frames/10 frames/dice without counting up to 6

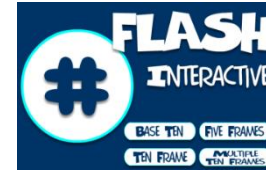
Resources – Subitising

Common Learning Resources

- Sets of counters and objects placed in different arrangements
- Dice
- Dominos
- Subitising cards
- Subitising stones
- Rekenrek
- Children’s fingers
- Playing cards



Online Resources



Hidden Jewels
Age 3 to 5

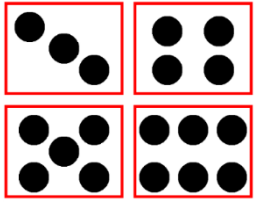
Saying how many there are without counting

Stories

- *Ten Black Dots* by Donald Crews
- *The Very Hungry Caterpillar* by Eric Carle
- *Night Light* by Nicholas Blechman
- *Dog’s Colourful Day* by Emma Dodd
- *My Very First Book of Numbers* by Eric Carle
- *Ten Little Rubber Ducks* by Eric Carle
- *How Many Snails?: A Counting Book*



Dominos, dice and playing cards



I see four

What else do you see?



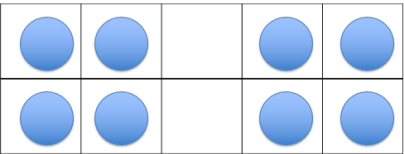
Irregular pattern cards and games



An open frame where children can create their own patterns



Using a five/ten frame create structured patterns



How many altogether?

How many children are here today?

How many different ways to make 8?

Noticing patterns in nature/real world



Glasgow Counts – Guidance for use of Tracker in Early Years

Numeracy Tracker: First Level Part 1

Estimation & Rounding	Estimate the number of objects (same objects in a row)	Estimate the number of objects (different objects in a row)	Estimate the number of objects (same objects in a pile)	Estimate the number of objects (different objects in a pile)	Estimate the total and check by counting all	Estimate the difference and check by counting all	Estimate the total and check by counting on	Estimate the difference and check by counting from
	Identify most, more and more from objects and pictures	Identify least and fewer from objects and pictures	Give more or less than a given number	Count to 100 forwards in 1s, 2s, 5s, 10s (rote counting)	Count back from 100 as above			
Counting	Read and write numerals from 0-20 and then beyond		Use knowledge of place value to place numerals on a number line					
Number Sequences	Identify most and more from objects and pictures		Identify least and fewer from objects and pictures		Compare quantities using language such as most and least		Use language of equal to when comparing quantities	
Place Value	Understand and provide examples of the number before and after a given number			Use objects to represent different numbers			Match numerals to pictorial representation or objects	
Addition & Subtraction	Partition single digit numbers in different ways	Recognise and describe part whole relationships	Use number bonds to create problem	Read and arrange a number sentence using objects and pictures	Solve a mathematical number sentence/problem using symbols	Add/subtract using number bonds	Add/subtract by counting on/back	Solve missing number problems
Multiplication & Division	To make equal groups	To add equal groups	To make equal rows	To find doubles	To solve problems with the above	To group equally	To share equally	
Fractions, Decimals and %	To make halves	To identify halves	To make quarters	To identify quarters		To share and group equally		

Term 1: Term 2: Term 3: Term 4:

Figure 1

Early Level Tracker 1

Estimation & Rounding	Understands and uses the language of estimation, including more than, less than and the same			Can apply subdividing skills to estimate the number of items in a set		
No. word sequences	Say short forward number word sequences (to at least 10)	Say next number word forward (to at least 10)	Say short backward number word sequences (to at least 10)	Say next number word backward (to at least 10)	Begin to say alternate numbers forwards and backwards e.g. with a partner. (to at least 10)	
Numerals	Recognise numerals e.g. point to the number 5. (to at least 10)	Identify (name) numerals e.g. what number is this? (to at least 10)	Explains zero is represented as 0	Sequences numerals forwards and backwards (to at least 10)	Identifies number before and after (to at least 10)	Identifies missing numbers in a sequence (to at least 10)
Subitising	Identify numbers in a group without counting – subitise (within 6)			Represent numbers in different arrangements using objects e.g. fingers, dots (within 6)		
Counting	Understand 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)	Understand that last number identifies 'how many' in a set (cardinality)	Understand that the number of objects is not affected by position (order/relevance)	Can count objects in a row (to at least 10)	Begin to count objects in an irregular arrangement (to at least 10)
Place Value	Explain that zero means there is none of a quantity.			Partition quantities to at least 10 through exploration (2 sets)		
Addition and Subtraction	Can sort & classify objects into a set e.g. sets of one, two (to at least 10)	Can compare 2 sets to decide which has the fewest/most (within 10)	Begins to find the total when 1 or 2 items are added to an existing set (augmentation)	Begins to find the total when 2 sets are added together (within 10) (aggregation)	Begins to find out how many are left when 1 or 2 are taken away (within 10)	Begins to compare and find the difference between sets as a quantity (within 10)
Multiplication and division	Begin to share a set equally between 2 (within 10)		Can group objects into matching or natural sets of 2 e.g. shoes (within 10)		Begin to solve problems involving grouping and sharing with an adult (within 10)	
Fractions, Decimals and %	Cut an object in half.		Combine halves to make a whole.		Begin to identify half a set using concrete materials. (within 10)	
					Begin to share a set equally between 2 (within 10)	

Figure 2

Children should experience a curriculum in which mathematics is learned through play and meaningful contexts where an attuned adult recognises their strengths and interests and builds on these.



Digital Literacy and Computing Science

The screenshot shows a web browser window with the URL 'glasgow Leaders of Early Learning'. The page has a dark navigation menu on the left with the following items: 'GLASGOW COUNTS IN OUR PLAYROOMS', 'LITERACY FOR ALL IN OUR PLAYROOMS', 'GLASGOW OUTDOORS', 'LEARNING AT HOME', 'PROMOTING ALTERNATIVE THINKING STRATEGIES', 'REALISING THE AMBITION', 'LEARNING FOR SUSTAINABILITY', 'DIGITAL LITERACY AND COMPUTING SCIENCE (DLCS)', and 'CREATE EARLY LEVEL FRAMEWORK'. The main content area features a 'WELCOME' heading, a 'Leaders of Early Learning Blog' title, and a paragraph: 'The Leaders of Early Learning Team (LELs) are part of Glasgow's Improvement Challenge within Glasgow City Council. We are a peripatetic team of teachers who support curriculum development and effective learning and teaching in all early years establishments, including funded partners.' Below this is a 'Vision' section with the text: 'The pursuit of equity and excellence for Glasgow's young people'. A 'Values' section lists 'Partnership and Collaboration'. On the right, there is a 'FIND US' section with contact information: 'We are located within Royston Primary School, please use the side entrance on Gadshill Street. c/o Royston Primary School, 102 Royston Road, Glasgow, G21 2NU, 0141 287 9751'. Below that is a 'FOLLOW US ON TWITTER' section with 'My Tweets' and a language selection dropdown.



Framework



Early Level Tracker							
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
			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
				Identifies and corrects errors in a simple set of instructions or algorithm			Uses key language of computational thinking

Early Level
CS1: Understanding the world through computational thinking

Key language: directions, directions, commands, sequence, group, sort, organise, share, size, colour, tinker

Cross-curricular links:
(MNU 0-13a) spotting and exploring patterns; copying, continuing and creating own patterns
(MNU 0-20a) collecting and organising objects
(MNU 0-20b) matching objects, sorting using own and others' criteria

Resources & Approaches:

Unplugged

- Learners can identify the beginning and end of a process, when given all of the steps. Spend time thinking of familiar routines and identifying the first and last steps – can use visual cards with routines and sequence these
- Begin grouping together found objects or maths concrete resources, with categories that are chosen for the learners, such as grouping by colour, by size, by type, by purpose, by qualities and move on to simple categories chosen by the learner (they may come up with some you hadn't considered)
- When grouping and sharing in maths, you may also group by number of 'things' e.g. sharing eight things into four groups of two.
- Identify repeating visual patterns, using the same categories and groups for sorting, e.g. red-yellow-red-yellow and try to vary the method of pattern. Ask children to create repeating patterns of their own and ask a partner to try to identify the pattern.
- Look at overlapping qualities, e.g. in a Venn diagram (you can make these with two hula hoops) to discuss similarities and differences, for example 'this teddy is red AND soft but this truck is red and not soft'
- Complete the [Pattern activity](#) (online, but download activity for unplugged use)

Plugged

- Tinker with programmable devices to find out what they do, especially robots that follow patterns of instructions
- Code short routes for programmable devices to follow (e.g. Bee-Bot, Code-a-pillar, Dash & Dot) and start to recognise that the instructions given are the same as the route the device follows

CE/EO: I can explore computational thinking processes involved in a variety of everyday tasks and can identify patterns in objects or information **TCH 0-13a**

Pupil Resources

Topmarks
Bee-Bot
Sphero
Code-a-pillar
Dash & Dot

CLPL

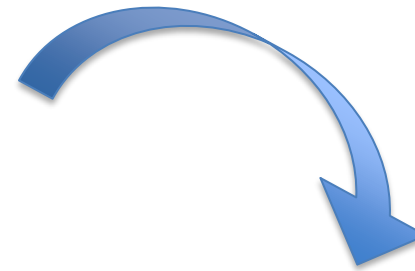
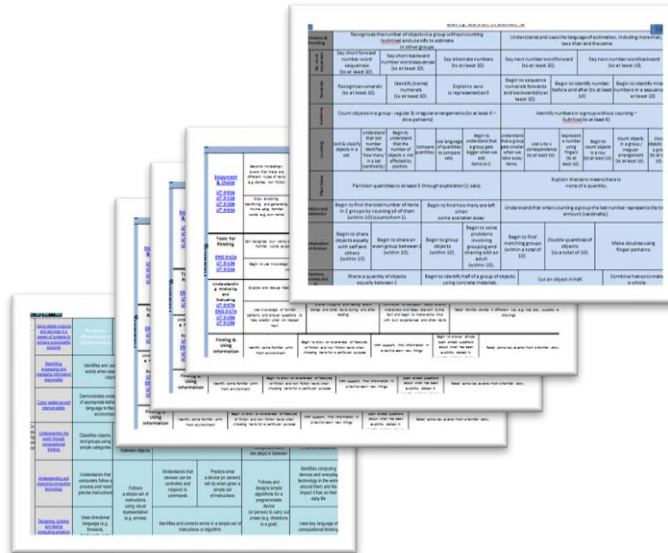
End of Level Benchmarks:

- Identifies and sequences the main steps in an everyday task to create instructions/an algorithm for example, washing hands
- Classifies objects and groups them into simple categories for example, groups toy bricks according to colour
- Identifies patterns, similarities and differences in objects or information such as colour, size and temperature and simple relationships between them





Digital Versions of the 4 Trackers



Digital Version of GCIP Framework



WELCOME

**EARLY LEVEL FRAMEWORKS -
DIGITAL VERSION**

GLASGOW COUNTS IN OUR
PLAYROOMS

LITERACY FOR ALL IN OUR
PLAYROOMS

GLASGOW OUTDOORS

LEARNING AT HOME

PROMOTING ALTERNATIVE
THINKING STRATEGIES

REALISING THE AMBITION

LEARNING FOR
SUSTAINABILITY

EARLY LEVEL FRAMEWORKS – DIGITAL VERSION

Digital Version of the Literacy for ALL, Glasgow Counts and Digital Literacy/Computing Science Frameworks

This works best using an Ipad or when opened in Excel online via One Drive. We are aware of a glitch in Numeracy (1) and (2) when downloaded onto a desktop or a laptop – If some of the boxes only half colour, this can be resolved by double clicking the cell or re-selecting from the drop down menu.

[LEL Framework – Digital Version](#)



FIND US

We are located within Royston Primary School, please use the side entrance on Gadshill Street.

c/o Royston Primary School
102 Royston Road
Glasgow
G21 2NU
0141 287 9751

FOLLOW US ON TWITTER

[My Tweets](#)



	A	B	C	D	E	F	G	H	I	J
	Early Level Tracker 1									
1	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, the same		
2	No. word seq.		Says 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		
3	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	
4	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 arrangement/on fingers/five frames/ 10 frames/dice without counting up to 6	
5	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)	
6	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 and 3/2 and 2 and 2				
7	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)	
8	Multiplication and Division		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				
9	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'			Understands that a whole can be shared equally	
10										
11										
12										

Emerging - Recognise numerals e.g. points to the number from 0-10

Developing - Recognise numerals e.g. points to the number from 0-10

Embedded - Recognise numerals e.g. points to the number from 0-10



Adding and Removing Comments or Notes

The image illustrates the process of adding and removing comments or notes on an embedded text in a SeeSaw workspace. It is divided into three main sections:

- Top Section:** Shows a workspace with a blue embedded text box containing the text: "Embedded - Will take opportunities to select appropriate texts within collaborative play contexts". A red arrow points from the "New Comment" option in the "Paste Options" menu to the top of the embedded text box. Another red arrow points from the "New Note" option to the bottom of the embedded text box.
- Middle Section:** Shows a comment by Elaine Quinn with a date of September 1, 2022. A red arrow points from the comment to the "Link to comment" option in the comment's context menu.
- Bottom Section:** Shows a note by Elaine Quinn with a date of 1/9/22. A red arrow points from the note to the "Edit Note" option in the note's context menu.

The "Paste Options" menu includes the following items:

- Insert
- Delete
- Clear Contents
- Sort
- New Comment
- New Note
- Number Format...
- Hyperlink...
- Copy link to this range
- Show Changes

The comment context menu includes:

- Link to comment
- Edit comment
- Resolve thread
- Delete thread

The note context menu includes:

- Edit Note
- Delete Note
- Show/Hide Note
- Convert Note

Saving Digital Version of Framework

GE Grp-Example Establishment ☆
Private group • 2 members
Send email

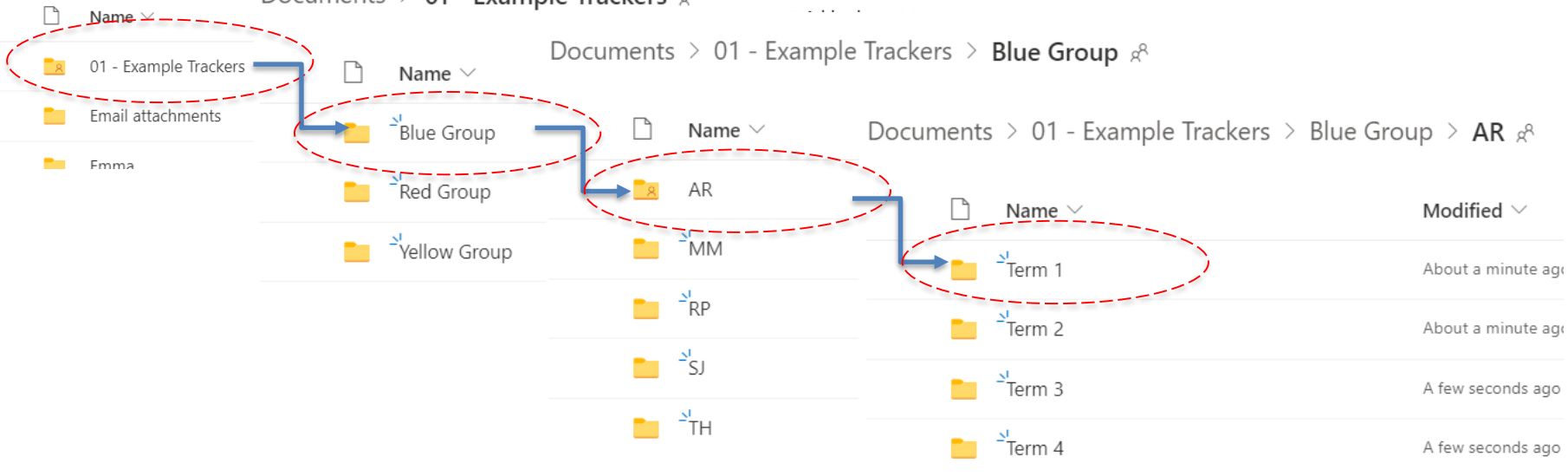
+ New Upload Edit in grid view Sync Add shortcut to OneDrive Pin to Quick access

Documents

Documents > 01 - Example Trackers

Documents > 01 - Example Trackers > Blue Group

Documents > 01 - Example Trackers > Blue Group > AR



Glasgow Counts in our Playrooms



Overview and Framework Session 1
2022-2023
LEL Team

