Caldercuilt

Primary & Nursery

Numeracy & Maths Policy

Numeracy & Maths at Caldercuilt

*We want our learners 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 want to **empower** our young people as mathematicians. We aim to provide opportunities for learning that promote deep engagement, within all areas of numeracy and mathematics.*

Rationale: Caldercuilt Primary School is committed to educating learners to the highest possible standard. Our staff are dedicated to completing Career-Long Professional Learning to enhance learning and teaching experiences in Numeracy and Mathematics. We have embedded the Glasgow Counts approach to Numeracy and Mathematics at all stages in our school and nursery. Both the outdoors and indoor classroom environments are valued, as well a range of contextual learning opportunities so that the importance of transferable numeracy skills is considered.

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

(S. Morrow, G. McNeil & G. Meharg - 'Glasgow Counts Framework' 2016)

Goal: To motivate and raise the attainment of all pupils, through high quality learning and teaching experiences.

Our Key Aims:

- to use the CPA approach to develop conceptual understanding
- to develop problem solving, reasoning and fluency
- to engage in Number Talks
- to meet the needs of all learners
- to encourage family learning in Numeracy and Mathematics

Caldercuilt checklist for classroom, planning & area:

Number Talks (whole number computation) by Sherry Parrish (area)	Number Talks (mental maths computation) by Sherry Parrish (area)	Number Talks (fractions, decimals, percentages) By Sherry Parrish (area)	√
Number Talks hand signals display sign (classroom)			√
Number talks visual timetable sign (classroom)			√
Maths & Numeracy medium-term plan (PAT folder)			√
Glasgow counts trackers (highlighted in PAT folder)			√
Number Talks progression (highlighted in PAT folder)			√
Mental Agility progression (highlighted in PAT folder)			√
Maths & Numeracy Resource box with concrete materials (classroom)			√
Key vocab for maths and numeracy topics on display (classroom)			√

Planning

Medium Term Plans:

To plan for numeracy and mathematics, select Es & Os and the relevant benchmarks, then match these up with the desired statements from the Glasgow Counts Trackers and finally, add in the Make Say Write Do activities. One medium term plan can be used for all numeracy groups within a class – this is because the differentiation can/will be shown through the E & O levels, GC tracker statements and Make Say Write Do activities.

Session: 2023-24 Term: 1

Main Curricular Area (Theme): Shape & Position		**IDL curricular areas:** Art / Drama / Music / Dance / Social Studies / Science / **Technologies** / RME / French / Literacy / **Maths** / HWB	
Context for Learning: Curricular Areas / IDL	**Links:** Outdoor learning / Home learning / Technology / Problem Solving / Literacy (reading)	**Skills, Creativity & Employability:** ICT and digital literacy / STEM / Problem Solving	**Cross Cutting Themes Link:** Creativity
Key Vocabulary (Word Aware): round, flat, curved, forwards, backwards			
Experiences and Outcomes:		**Benchmarks:**	
I enjoy investigating objects and shapes and can sort, describe and be creative with them. MTH 0-16a In movement, games, and using technology I can use simple directions and describe positions. MTH 0-17a		• Recognises, describes and sorts common 2D shapes and 3D objects according to various criteria, for example, straight, round, flat and curved • Understands and correctly uses the language of position and direction, including in front, behind, above, below, left, right, forwards and backwards, to solve simple problems in movement games.	
What will learners know, understand or be able to do by the end of this block of learning?		**Assessment of Learning & Context (inc. DYW)** Make, Write, Say, Do linked to Benchmarks	
We are learning to: • Identify 2D & 3D shapes • Describe and sort 2D and 3D shapes (straight, round, flat etc) • Use language of position (front, behind, above, below) • Use language of direction (forwards/backwards)		SAY: • Name common 2D and 3D shapes • Sort shapes by certain criteria (straight, round etc). • Describe the position of an object (in the castle) MAKE: • Various 3D shapes through STEM building projects • 3D castles ("position of the dragon", linked to story) WRITE: • Draw print common 2D shapes • Map of their castle (different mediums chalk, paint, jotter) DO: • Play games using language of position • Sort 2D and 3D shapes by given criteria • Programme beebots to go forwards/backwards	

Number Talks Progressions:

This document is to be used as a tracker to highlight the Number Talks strategies that will be covered during the term and ensure progression.

Mental Agility Progressions:

This document is to be used as a tracker to highlight the Mental Agility strategies that will be covered during the term and ensure progression.

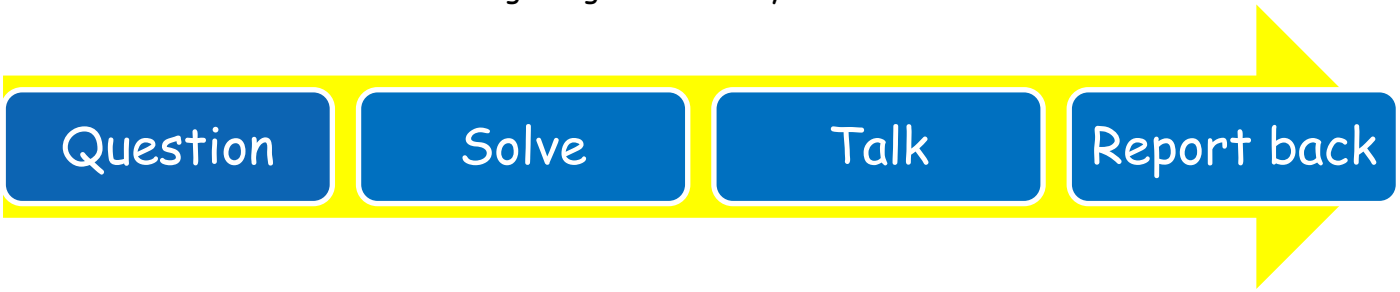
Teaching & Learning

Number Talks:

Number Talks is a strategy to build flexibility, accuracy and efficiency in mathematical thinking through the discussion and sharing of mental math strategies. It is a short daily routine that allows learners to contribute to meaningful dialogue concentrating on how to answer Numeracy problems. Number Talks is a powerful tool for helping learners develop fluency to help when adding, subtracting, multiplying and dividing.

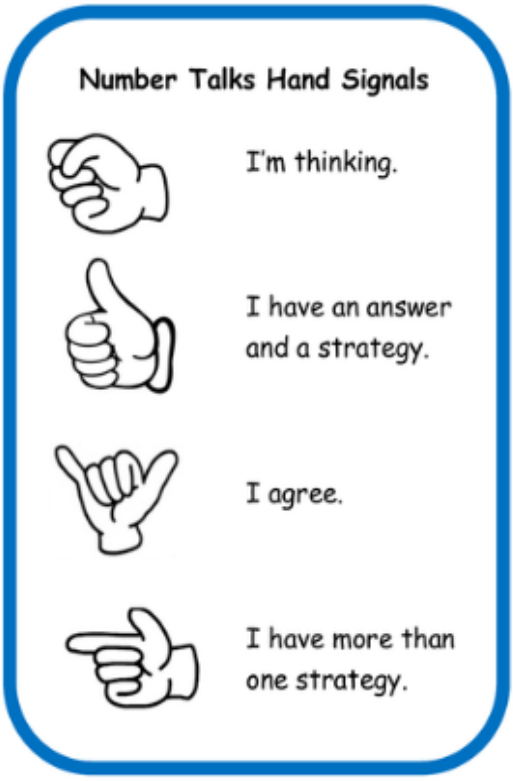
Key Features of Number Talks:

- It is a conversation that takes place around a Numeracy problem that the children should solve mentally
- The problems allow children to build on previous knowledge and use specific strategies
- Pupils are given a problem that they are expected to mentally solve accurately and efficiently
- Pupils share how they have solved the problems and what strategies they have used
- 5-15 minutes at the beginning of Numeracy lesson



For a further explanation use this link: https://www.youtube.com/watch?v=R7tEpq6VN0M

Number Talks provides valuable Making Thinking Visible experience, through dialogue and justification. By explaining their own thinking and considering the strategies of their peers, pupils will learn about a range of efficient strategies and make decisions about the most suitable strategy for specific problems. During the thinking time, learners should not speak aloud or raise their hands, as this may deter other learners from trying and completing their task (as they think someone else has already finished). Instead, learners should be taught the following hand signals to show you, the teacher, what they are thinking.



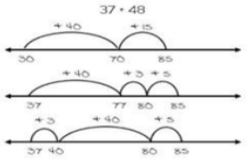
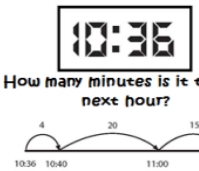
From **Primary 1 to Primary 3,** learners will develop the following skills:

- Number sense - awareness of numbers and what they are, one-to one correspondence, estimation of numbers
- Fluency with small numbers - knowing how numbers can be composed and decomposed e.g. 8=4+4, or 7+1 or 10-2
- Subitizing - the ability to quickly identify the number of items in a small set without counting
- Ability - to make tens

From **Primary 4 to Primary 7**, learners will be given a Numeracy word problem to solve using efficient strategies that they have been taught. They are encouraged to use as many different ways as they can to solve the Numeracy problem and then explain these to the rest of the class. Children will be given time to think of the best way to solve the problem and will use hand signals to show how many strategies they have used.

The strategies which will be covered during the learners' time at Caldercuilt are shown below:

Addition Strategies

Adding Up in Chunks/Counting On	Reordering	Place Value - Partitioning	Making Tens/Bridging through 10
37 + 48 	25 + 26 + 75 100 + 26 = 126	116 + 127 100 + 100= 200 10 + 20 = 30 6 + 7 = 13 200+30+13=243	49 + 38 1 7 50 + 37= 87
Compensation	**Doubles/Near Doubles**	**Friendly Numbers**	**Bridging through 60**
67 + 28 +2 67 + 30 = 97 97-2 = 95	16 + 17 16 1 16 + 16= 32 32 + 1 = 33	28+47 +2 -2 30 + 45= 75	 How many minutes is it to the next hour?

Subtraction Strategies

Removal or Counting Back	Reordering	Place Value - Partitioning	Adding Up/Bridging through 10
123 - 69 123 - (20+40+3+6) 123 – 20 = 103 103 – 40 = 63 63 – 3 = 60 60 – 6 = 54	25 - 6 - 5 20 - 6 = 14	367 - 154 367 – 100 = 267 267 - 50 = 217 217 - 4 = 213 367 – 100 – 50 – 4 = 213	23 - 16 16 + 4 = 20 20 + 3 = 23 7 +4 +3 16 20 23
Place Value + Negative Numbers	**Adjusting for Easier Numbers**	**Keep a Constant Difference**	
399 - 254 (300+90+9) – (200+50+9) 300 + 90 + 9 - 200 + 50 + 4 100 + 40 + 5 = 145	123 - 59 +1 123 – 60 = 63 63 + 1 = 64	151 – 98 (151 + 2) – (98+2) 153 – 100 = 53 151 – 98 = 53	

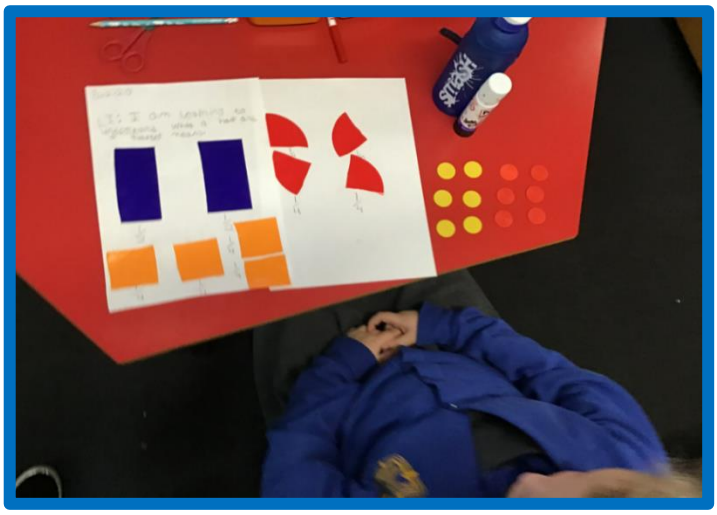
Multiplication and Division Strategies

Friendly Numbers	Repeated Addition	Partial Products	Doubling and Halving
9 X 15 10 X 15 = 150 150 – 15 = 135 Don't forget to 'undo' your change!	6 X 15 15+15+15+15+15+15 15 + 15 = 30 30 + 15 = 45 45 + 15 = 60 60 + 15 = 75 75 + 15 = 90	6 X 125 6 X (100 + 20 + 5) (6X100) + (6X20) + (6X5) 600 + 120 + 30 = 750	24 X 8 x2 ÷2 48 X 4 x2 ÷2 96 X 2 x2 ÷2 192
Breaking Factors into Smaller Factors	**Grid Method**	**Partial Quotients**	**Multiplying Up**
12 X 25 2 × 6 2 X 25 = 50 50 X 6 = 300	35 X 7 × 30 5 7 210 35 210 + 35 = 245	36 R 10 15 | 550 - 150 (10 x 15) 400 - 300 (20 x 15) 100 - 30 (2 x 15) 70 - 60 (4 x 15) 10	72 ÷ 8 8 X 5 = 40 8 X 4 = 32 (5 + 4) = (40 + 32) 8 X 9 = 72
Repeated Subtraction			
24 ÷ 6	24 – 6 – 6 – 6 – 6	6 X 4 = 24 so 24 ÷ 6 = 4	

Glasgow Counts:

Glasgow Counts is the council wide initiative to raise attainment in numeracy and maths across the city. It is based on teaching Concrete, Pictorial and Abstract approaches to numeracy. Use the following link to access the Glasgow Counts Homepage for the framework, presentations, digital enhancements, toolkits, outdoor resources, learning at home, CLPL modules and webinars:

Glasgow Counts - Home (sharepoint.com)



At Caldercuilt we use **CPA approaches** to:

- help develop, deepen and secure understanding of number
- builds confidence in learners
- meet learners 'where they are at'
- support all learners
- ensure secure knowledge of concrete before moving to visual ques
- develop problem solving, reasoning and fluency
- create mathematical mindsets
- ensure abstract problems are accessible

At Caldercuilt the **outdoors** is used to:

- give context to learning (IDL)
- create a hook for learning
- make learning active and memorable
- engage all learners
- meet the needs of all learners (behavioural & ASN)
- provide a numeracy rich environment
- teach using PE Counts techniques

Use link to access the Glow tile: Glasgow Outdoors

"Going outside to do Maths is brilliant. I'm more likely to remember the lesson because the environment changed."

"I find that by taking my lessons outside, they are both beneficial and engaging. The enjoyment is clear to see on the learners' faces, and the experience is positive for all."

Glasgow Counts in Nursery:

Glasgow Counts in Our Playrooms | Leaders of Early Learning (glowscotland.org.uk)

Heinemann Active Maths:

At Caldercuilt, HAM is used as a teaching & learning and assessment resource. Staff access the resource their own login here: HAM login page .

The resource provides teaching cards with: learning intentions, success criteria, clear teaching vocabulary (word aware links), structure and progression to lessons. There are further challenges and resources attached using hyperlinks to the teaching cards, worksheets and games. All resources explain prior learning and give next steps. There are also suggested warm-ups/starters and plenaries.

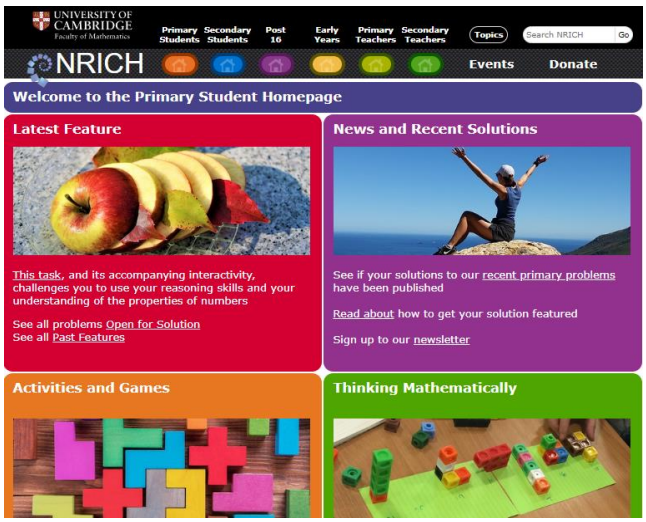
"HAM is clear and easy to use. It gives teachers steps to follow for lessons, with a range of active ideas to introduce and develop concepts. It also gives examples of challenges and resources to support and assess learners."

PE Counts:

At Caldercuilt, we use PE Counts to reinforce Maths & Numeracy through Physical Education, Physical Activity & School Sport (PEPASS). The PE Counts Glow Tile takes us directly to the site to access videos and lesson ideas linking to specific skills. The resources are split into:

- Maths & Numeracy topics
- Aesthetics
- Individual activities
- Invasion games
- Net games
- Target games
- Ideas

For more information use the link:https://blogs.glowscotland.org.uk/gc/pepassglasgowcounts2018/



Challenging the more able:

Nrich Maths is a website with resources for children, parents and teachers to enrich learning. The resources develop mathematical reasoning and problem-solving skills. It takes numeracy out of Caldercuilt and into the wider world.

Features include 'problem of the week' which aligns with our thinking culture here at Caldercuilt.

Use link to access: https://nrich.maths.org/

West OS (West Partnership Online School) provides quality assured recorded learning experiences for children and young people. It is an online library of recorded learning episodes created by teachers. The videos designed to support learners to develop skills, knowledge and understanding of key learning concepts. They are best used as part of a wider learning experience alongside the teacher input.

Using ICT:

We must equip our learners with digital skills for lifelong learning and employability. At Caldercuilt, we use iPads regularly to support numeracy and maths skills.

Apps such as Sumdog are used to engage learners, as well reinforce skills and enhance learning experiences. At Caldercuilt is also used an assessment tool to inform next steps and track progress.

Other apps and websites can be used to engage learners in solving numeracy questions such as:

"Sumdog is fun. There are a good range of games and I find it really helpful to practise my numeracy skills. It teaches you Maths but in a fun way."

- Seesaw
- Topmarks
- ICT Maths
- Maths Playground
- Microsoft excel
- Cool Maths Games
- Mathisfun.com

Partnerships

Parental Engagement:

At Caldercuilt, we recognise that learning at home is a really valuable way of supporting children's learning progress. Various ways we maintain links with home are: using Read, Write, Count bags, Maths/Numeracy stay & plays, STEM Working party parent workshops (CPA, PE Counts and Active Learning), Seesaw, Sumdog national/local competitions and themed weeks (Maths week/Finance week). Some examples and suggestions from Glasgow Counts for Home Learning links are below:

Early Level : PowerPoint Presentation (glowscotland.org.uk)

Opportunties at home: Glasgow Counts - Learning at Home - All Documents (sharepoint.com)

Transitions:

At Caldercuilt, our Nursery, Primary 1 staff, CDO and infant PT work together to plan collegiately, thus ensuring a seemless transition that benefits our learners. In term 4, staff work together, using maths & numeracy contexts during transition activities so that learners become comfortable with their new learning environement.

Cleveden Secondary School is our feeder secondary school. We work closely with them to ensure enhanced transition support and transition days run smoothly. Visiting teachers from the Maths department run support groups for our most able learners, and those that need support. As several of our Primary 7 learners move onto to alternative Secondary Schools, links have been made with these establishments.

Developing the Young Workforce:

DYW GLASGOW Developing the Young Workforce

NatWest MoneySense

At Caldercuilt, we think of ways to create meaningful contexts for our learners in numeracy and maths. Some examples of this are:

- Maths Week
- Finance Week
- Money Sense
- Christmas Fayre
- Enterprise topics
- Links to local businesses (Asda)
- Parent sharing their professions

Tracking, Assessment and Monitoring

Tracking:

Glasgow Counts Trackers are colour coded per term and saved in the PAT folder as staff complete termly evaluations. The CDO also records data, which is shared with SLT and class teachers.

Assessment:

Assessments are completed at the start and end of the school year, as well as at the end of topics. Sumdog and HAM assessments are used as assessment tools for the end of numeracy/maths topics, to evidence outcomes met. Primary 1 complete SNSAs in April, Primary 4 and 7 complete SNSAs by November. MALT summative assessments are completed at the end of the school year and used for transition data.

Monitoring

Photos of completed work and learning through play are shared regularly on Seesaw. Skills are selected by staff so that learning evidence is recorded and simple to refer to when reporting to parents.

Annual cluster moderation focuses ensure that there is consistency across the cluster primary schools when assessing ACfE levels.

Fact Story Action data is collected and shared with the HT three times a year to discuss progression and planned interventions.

Jotter expectations are set out at the start of the school year and shared with learners. Consistency is ensured by class teachers and SLT.

A Yearly Overview is completed by staff when planning and shows coverage of Numeracy & Maths topics. This is saved in the PAT folder on the shared system.