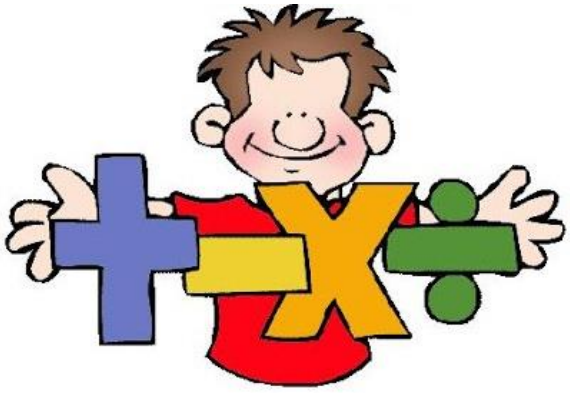
Bellsbank Primary School and Early Childhood Centre

Numeracy & Mathematics Policy



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1. Rationale

Numeracy and Mathematics is important in our everyday life, allowing us to make sense of the world around us and to manage our lives. Using mathematics enables us to model real-life situations and make connections and informed predictions. It equips us with the skills we need to interpret and analyse information, simplify and solve problems, assess risk and make informed decisions.

CfE Mathematics, Principles and Practices

Being numerate helps us to function responsibly and contribute effectively to society. It increases our opportunities within the world of work and establishes foundations which can be built upon through lifelong learning. Numeracy is a life skill which permeates and supports all areas of learning, allowing young people to access the wider curriculum.

To face the challenges of the 21st Century, each young person needs to have the confidence in using mathematical skills, and Scotland needs both specialist mathematicians and a highly numerate population.

Building the Curriculum 1

All teachers have responsibility for promoting the development of numeracy. With an increased emphasis upon numeracy for all young people, teachers will need to plan to revisit and consolidate numeracy skills throughout schooling.

Building the Curriculum 1

Bellsbank Primary School and Early Years Centre is committed to meeting the numeracy needs of our learners and ensuring that the numeracy skills are developed from early level and are revisited and refreshed throughout schooling and into lifelong learning.

2. Aim

It is our aim at Bellsbank Primary and Early Years Centre to provide high quality learning experiences to promote progression in our children's numeracy skills through cumulative growth in their understanding of key concepts and application of their skills in new contexts.

We will achieve this aim by :

- Delivering Numeracy and Maths within a learning environment that supports discovery, questioning, relevance, experimenting and most of all enjoyment.
- Providing rich numeracy experiences as part of our day-to-day learning and teaching programmes.
- Planning learning and teaching using the EAC Numeracy and Maths progression frameworks.

- Engaging in cross curricular links and real-life situations so giving children opportunities to develop high levels of numeracy skills across the curriculum and to make connections and informed predictions.
- Focusing our assessment on children's ability to work with numbers and data and how well they can use them in their learning and lives. This includes: mental maths strategies, fluency, reasoning & problem solving.
- Planning high quality assessment opportunities collaboratively to allow learners to apply their learning in new and unfamiliar contexts and to promote higher order thinking skills.
- Having a clear picture of the progress of each child across all aspects of numeracy and maths
- Working in partnership together and with ECC and Secondary School Staff to ensure smooth transitions.
- Involving other agencies where additional support is required.
- Ensuring staff, partners, parents/carers and pupils are aware of the policy and their role in making it successful.

3. Numeracy & Mathematics

Effective Learning and Teaching

- From the early stages onwards, children should experience success in maths and develop the confidence to take risks, ask questions and explore alternative solutions without fear of being wrong.

- They should enjoy exploring and applying mathematical concepts to understand and solve problems, explain their thinking and present their solutions to others in a variety of ways.

- At all stages, an emphasis on collaborative learning will encourage children to reason logically and creatively through discussion of mathematical ideas and concepts.

- Through their use of effective questioning and discussion, class teachers/early years practitioners will use misconceptions and wrong answers are opportunities to improve and deepen children's understanding of maths.

- Maths is most powerful when the knowledge and understanding that have been developed are used to solve problems. Problem solving should be at the heart of all learning and teaching.

- As children develop concepts, these will need continual reinforcement and revisiting in order to maintain progression. Class teachers/early years

practitioners should plan this development and progression through providing children with more challenging contexts in which to use their skills.

- A rich supportive learning environment will support a skilful mix of a variety of approaches including:

    - active learning and planned purposeful play
    - development of problem-solving capabilities
    - development of mental agility
    - frequently asking children to explain their thinking
    - use of relevant contexts and experiences, familiar to children
    - use of technology in appropriate and effective ways
    - building on the principles of Assessment is for Learning, including understanding the purpose and relevance of the activities
    - both collaborative and independent learning
    - making frequent links across the curriculum, so that concepts and skills are developed further by being applied in different, relevant contexts
    - promoting an interest and enthusiasm for numeracy

- **Key Messages:**
    - Visualisation is key; Don't rush to formal recording—keep it practical
    - Know starting points and destinations
    - Depth is needed at each level of progression
    - Links and connections are made
    - Mental maths strategies need taught and practised
    - Whole school/campus maths language is used
    - Ensure consistency across the ECC and school
    - Learning and teaching displays (including digital displays) are focused and relevant.

Developing number sense

The development of number sense is key to successful learning in numeracy and mathematics. Children need access to a range of strategies for calculating and problem solving, and should be encouraged to develop their own strategies. There needs to be a focus on the use of mathematical vocabulary and children should be given frequent opportunities to explain their thinking and share their learning with others.

Teachers should plan to establish and consolidate children's fundamental numeracy skills using imaginative, interactive approaches, so that young people develop a sound understanding of number. Through such approaches they will grow in confidence in recall and use of number bonds and multiplication facts, in their understanding of place-value, and in the application of mental strategies.

Teachers should reinforce these skills continually. From the early stages onwards, children should experience success in numeracy and mathematics and develop the confidence to take risks, ask questions and explore alternative solutions without fear of being wrong. They will enjoy exploring and applying mathematical concepts to understand and solve problems, explaining their thinking and presenting their solutions to others in a variety of ways.

Problem solving

Maths is at its most powerful when the knowledge and understanding that have been developed are used to solve problems. Problem solving should be at the heart of all our learning and teaching. Through real contexts, children will be supported in developing an awareness of the relevance of the concepts and relationships they encounter in their daily lives.

Interdisciplinary studies, where appropriate, will serve as a useful tool for reinforcing prior learning, as well as making meaningful links between subject areas.

Progression

Through the Experiences and Outcomes within Curriculum for Excellence and the EAC Numeracy and Mathematics Progression Frameworks, we aim to provide learners with the opportunity to develop their knowledge and skills through cumulative growth in terms of their understanding and application. On-going collaboration and moderation with colleagues in relation to the progression frameworks encourages a shared understanding of expectations of standards as well as effective learning and teaching within Numeracy and Mathematics.

Planning Numeracy and Maths

Teachers/Early Years Practitioners should plan to establish and consolidate young people's fundamental numeracy skills using imaginative, interactive approaches, so that young people develop a sound understanding of number. Through such approaches, learners will grow in confidence in the recall and use of number structures and multiplication facts, in their understanding of place-value, and in the application of mental strategies. Teachers will reinforce these skills continually throughout the education of each child and young person.

- Numeracy and Mathematics should be planned in a long term (backdrop) planner for the year which should show links to IDL and elements of maths being taught in a context. Teacher's weekly planners for their maths groups should include an overview of LIs, Activities & Resources to be used.
- School Maths Planners should be used within each class to guide the content & pathway of the maths curriculum throughout the year. This will ensure breadth, progression, depth and coherence across the school.

- When planning numeracy and maths, the same concepts should be taught to all children in the class but differentiated for each group/level. Teaching should be aimed at a 'middle' ability group and then the level of challenge differentiated up or down as appropriate. Teaching should use pictorial resources and differentiation should determine whether concrete materials are required (differentiating down) or abstract concepts/methods used (differentiating up).
- The EAC Numeracy progression frameworks should be used when planning to ensure planning is focused on the outcomes and benchmarks and appropriate progression throughout each level.
- When using Number Talks, progressions planners should be followed as recommended and activities should be carried out to revisit topics regularly.
- Numeracy and Maths will be regularly taught, with approximately 5 hours spent on it weekly (including lessons, morning challenges etc.)
- Problem Solving is integral to teaching and learning in numeracy and mathematics and children should regularly be provided with opportunities to think mathematically through extended problem solving activities and tasks.
- Moderation activities should be planned with CfE Level partners throughout the academic year. Education Group moderation activities will be planned in line with the schedules developed each year.

Structure of Lessons

Lessons in Numeracy and Mathematics should contain:

1. A mental maths activity or number challenge to revisit and consolidate one of the four functions (+, -, x, ÷)
2. Recap on previous knowledge
3. Explicit sharing of Learning Intention and Success Criteria
4. Direct teaching
5. Learning experience and activity.
6. Plenary with reflection on Learning Intention and Success Criteria

Numeracy lessons should contain a variety of skills from the East Ayrshire Numeracy and Mathematics Frameworks. For example, a lesson with an addition focus should still contain number word sequences, number structures and work on numerals.

Homework

- Homework activities to develop and consolidate numeracy & maths skills will be assigned regularly in line with the school's Homework Policy.

Resources

- Teejay, Heinemann Active Maths, Number Talks and Numicon are the main resources for teaching maths.

- The school has an extensive range of additional resources available to complement/supplement the teaching of numeracy. Each classroom holds the relevant textbooks and resources for that stage. Large resources (e.g. for measure) are stored in the main school storage cupboard.

- Each class/stage has been allocated a range of concrete materials and a wide range of innovative resources to inspire and motivate learners in numeracy lessons and ensure that lessons are active. Whilst text books and worksheets are necessary for consolidation of skills, these should be used with care and planned for within a wider variety of activities.

- ICT (e.g. Sumdog) should be used to reinforce learning and the opportunity to learn outdoors or through IDL should be planned regularly.

- Each class should have a Numeracy and Mathematics area where children are actively encouraged to explore a variety of resources and activities which interest them. These areas should contain a wide variety of concrete and manipulative resources such as cubes, glass beads etc.

What are Number Talks?

- Number Talks are short (approx. 10 minutes), daily exercises aimed at building number sense. Number sense is the ability to play with numbers meaning students can visualize problem solving, perform calculations quickly, and are flexible in their mathematical strategy. Students who have strong number sense solve problems in more than one way and check that their answers make sense. During a number talk, students are thinking, asking their peers questions, and explaining their own thinking all while the teacher records the thinking.

Assessment

Assessment in Numeracy and Mathematics will focus on the learner's abilities to work increasingly skilfully with numbers, data and mathematical concepts and processes and use them in a range of contexts.

- Teacher assessments at class level should be carried out on an on-going basis through observations, questioning and/or marked work including: mental

maths strategies, fluency (number bonds, times tables etc.), thinking it through jotters, reasoning & problems solving.

- Periodic summative assessments should be undertaken and formally recorded e.g. Teejay Assessments, WhiteRose Maths Assessments and SNSAs (P1, P4, P7).

- School assessments are continuing to be developed by the Numeracy Lead as part of our curriculum development.

- High Quality Assessment Opportunities should be planned and used within episodes of learning to allow learners to apply their learning in new and unfamiliar contexts and to promote higher order thinking skills. These types of assessments should be used for any moderation activities.

- AifL strategies should be used to include peer and self-marking where age and stage appropriate. Teacher comments should refer to the Learning Intention and Success Criteria, as well as the level of effort from the pupil. All written annotations should be in line with school's feedback policy.

- Assessment should also link with other areas of the curriculum, within and outside the classroom, offering children and young people opportunities to develop and demonstrate their understanding of mathematics through social studies, technologies and science, and cultural and enterprise activities. (Mathematics and Numeracy Principles and Practice)

- All forms of assessment will inform teacher judgements. This should be recorded in the tracking and monitoring system throughout the year in line with the T&M timetable.

Appendix 1 – Maths & Numeracy Resources Allocated to Classes

Room 1

- Early Years Roamer
- Roamer Clear Grid Mat
- Abacus Beads
- Bead Strings
- Teacher's Counting Stick
- Child's Counting Sticks (x12)
- Colour Coded 100 line
- Digit Playing Cards
- Wall Number Line 0-100
- Number Lines 0-20 (x3)
- Blank Dice (x20)
- Magnetic write on/ wipe off dice (1x large, 10x small)
- Soft Foam Dice (1x pack of 200)
  Ten frames Numicon sets
- Number track (carpet tiles)
- Rekenreks
- Number-Talk resources

Room 2

- Infant Roamer with Keypad
- Roamer Clear Grid Mat
- Number and Place Value Teaching Essentials Kit
- Abacus Beads
- Bead Strings
- Number Jumble Tumble (x5)
- A4 Grid Boards (x30)
- Teacher's Counting Stick
- Child's Counting Sticks (x12)
- Colour Coded 100 line
- Digit Playing Cards
- Base Ten Class Set
- Place Value Flip Stand
- Place Value Magic Class Ruler
- Wall Number Line 0-100
- Number Lines 0-20 (x3)
- Number Lines 0-1000 (x20)
- Blank Dice (x20)
- Polyhedra Dice Set
- Magnetic write on/ wipe off dice (1x large, 10x small)

- Soft Foam Dice (1x pack of 200)
- Ten frames Numicon sets
- Number track (carpet tiles)
- Rekenreks
- Number-Talk resources
- Double sided counters.
- Place value counters (units, 10s, 100s, 1000s)

Room 3

- Primary Roamer with Keypad
- Roamer Clear Grid Mat
- Number and Place Value Teaching Essentials Kit
- Abacus Beads
- Bead Strings
- Number Jumble Tumble (x5)
- A4 Grid Boards (x30)
- Place Value Dice
- Teacher's Counting Stick
- Child's Counting Sticks (x12)
- Colour Coded 100 line
- Digit Playing Cards
- Base Ten Class Set
- Place Value Flip Stand
- Place Value Magic Class Ruler
- Wall Number Line 0-100
- Number Lines 0-1000 (x20)
- Blank Dice (x20)
- Polyhedra Dice Set
- Magnetic write on/ wipe off dice (1x large, 10x small)
- Soft Foam Dice (1x pack of 200)
- Numicon sets
- Number-Talk resources
- Double sided counters.
- Place value counters (units, 10s, 100s, 1000s)
- Place value arrow cards (units, 10s, 100s, 1000s)
- Base 10 flats (hundreds)

Room 4

- Junior Roamer with Keypad (share with P6/7)
- Roamer Clear Grid Mat
- Number and Place Value Teaching Essentials Kit

- Number Jumble Tumble (x5)
- A4 Grid Boards (x30)
- Place Value Dice
- Teacher's Counting Stick
- Child's Counting Sticks (x12)
- Colour Coded 100 line
- Digit Playing Cards
- Base Ten Class Set
- Place Value Flip Stand
- Place Value Magic Class Ruler
- Fraction Tower Cubes (Percentages & Equivalence)
- Equivalence Bars
- Wall Number Line 0-100
- Number Lines 0-1000 (x20)
- Blank Dice (x20)
- Polyhedra Dice Set
- Equivalence Dice
- Magnetic write on/ wipe off dice (1x large, 10x small)
- Soft Foam Dice (1x pack of 200)
- Numicon sets
- Number-Talk resources
- Double sided counters.
- Place value counters (units, 10s, 100s, 1000s)
- Place value arrow cards (units, 10s, 100s, 1000s)
- Base 10 flats (hundreds)

Room 5

- Junior Roamer with Keypad (share with P5/6)
- Roamer Clear Grid Mat
- Number and Place Value Teaching Essentials Kit
- Number Jumble Tumble (x5)
- A4 Grid Boards (x30)
- Place Value Dice
- Teacher's Counting Stick
- Child's Counting Sticks (x12)
- Colour Coded 100 line
- Digit Playing Cards
- Base Ten Class Set
- Place Value Flip Stand
- Place Value Magic Class Ruler
- Fraction Tower Cubes (Percentages & Equivalence)

- Equivalence Bars
- Wall Number Line 0-100
- Number Lines 0-1000 (x20)
- Blank Dice (x20)
- Polyhedra Dice Set
- Equivalence Dice
- Magnetic write on/ wipe off dice (1x large, 10x small)
- Soft Foam Dice (1x pack of 200)
- Numicon sets
- Number-Talk resources
- Double sided counters.
- Place value counters (units, 10s, 100s, 1000s)
- Place value arrow cards (units, 10s, 100s, 1000s)
- Base 10 flats (hundreds)