**Ballater School**

**Numeracy and Mathematics Policy 2020**

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.

Mathematics plays an important role in areas such as science or technologies and is vital to research and development in fields such as engineering, computing science, medicine and finance.

To face the challenges of the 21st Century, each young person needs to have confidence in using mathematical skills and all teachers have responsibility for promoting the development of numeracy.

Numeracy is not only a subset of mathematics; it is also a life skill which permeates and supports all areas of learning, allowing young people to access the wider curriculum. Being numerate helps us to function responsibly in everyday life 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.

All teachers have a 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*

**Aims**

In Ballater School we aim to:

* Develop a positive attitude to numeracy and maths as an interesting and exciting subject in which all learners gain success and enjoyment.
* Provide a breadth and balance of mathematical activities for all learners.
* Provide experiences and activities that are relevant to everyday life.
* Build confidence and competence in applying mathematical concepts, knowledge, skills and understanding to solve problems, analyse information and make informed decisions.
* Provide differentiation to meet the needs of all learners.
* Ensure progression and continuity at all stages and across areas of transition.
* Raise and maintain levels of achievement and attainment across all learners.

**Learning and Teaching**

The teaching of Numeracy and Mathematics is planned in line with Education Scotland Curriculum outcomes as organised below and is supported with Aberdeenshire Progression Framework and National Benchmarks.

**Number, money and measure**

* Estimation and rounding
* Number and number processes
* Multiples, factors and primes
* Powers and roots
* Fractions, decimal fractions and percentages
* Money
* Time
* Measurement
* Mathematics – its impact on the world, past, present and future
* Patterns and relationships
* Expressions and equations.

**Shape, position and movement**

* Properties of 2D shapes and 3D objects
* Angle, symmetry and transformation.

**Information handling**

* Data and analysis
* Ideas of chance and uncertainty.

Active involvement in mathematical experiences, set in real and relevant contexts, is vital to the development of knowledge, understanding, skills and a positive attitude towards numeracy and mathematics.

Within a rich and supportive learning environment, best practice will draw upon a skilful mix of approaches include:

* Planned active learning with opportunities to observe, explore, enquire, investigate, experiment and play at all stages, developing skills for life in cooperation, confidence, curiosity, problem solving, flexibility, negotiation, empathy, sharing and the ability to communicate appropriately.
* Development of problem-solving capabilities
* Development of mathematical thinking skills and mental agility.
* Use of relevant contexts, familiar to young people’s experiences
* Appropriate, effective use of technology
* Building on the principles of Assessment is for Learning
* Collaborative and independent learning
* Making links across the curriculum where appropriate
* Increased opportunities for discussion, communication and explanation of thinking

Pupils will be engaged in regular numeracy and maths activities throughout the week which could be part of core lessons or interdisciplinary learning.

Lessons should be well structured from the early stages onwards, pupils should experience success in mathematics 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, explaining their thinking and presenting 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.

The format for a well planned and executed lesson should consist of: -

* A mental warm up at start of lesson.
* Learning intentions and success criteria displayed throughout lesson and made clear to all pupils. Pupils involved in the creation of learning intentions and success criteria.
* Interactive teaching with good use of ICT.
* Pupils actively engaged
* Paired/group work as part of daily lesson where appropriate, including co-operative learning
* Differentiation
* Plenary Session.
* Discussion of next steps.

**Problem Solving**

Problem Solving skills are a tool for thinking across learning and should be seen as a life skill which will be developed across curricular areas, including maths. Through problem solving, learners have the opportunity to apply their knowledge and understanding of concepts.

**Financial Education**

Financial Education should be delivered as part of a cross-curricular experience, helping learners prepares for the financial challenges they will face both now and as they move into adulthood. A Curriculum for Excellence provides opportunities for learners to engage in financial education in creative and innovative ways.

<https://www.mymoneysense.com/>

**Assessment**

Assessment, using the Progression Frameworks for Numeracy and Mathematics, is built in at the planning stage and should be ongoing throughout the teaching and learning process. Assessment is both formative and summative and will be undertaken in a variety of ways and different forms of evidence will be gathered. This evidence will inform future planning, provide information about individuals or groups and provide information for parents. Dialogue should take place between teachers and learners on progress and next steps. The Progression Frameworks and National Benchmarks will also be used to assess how far children are progressing through Early, First, Second and Third levels of Curriculum for Excellence at key points in the session and at transition points.

**What does mathematics and numeracy look like at early level?**

* Children have time to play, explore and revisit learning.
* Planning starts from what children know.
* Children explore at their own level and their ideas are responded to.
* Everyday experiences are used as relevant contexts.
* Teachers find out what is happening in a child’s head.
* The environment is numeracy rich and opportunities to model numeracy are planned.
* There is a lot of talking and questioning to develop thinking.
* Recording happens in a variety of different ways.

**What does mathematics and numeracy look like at first level?**

* Builds on early level.
* Children can explain their answers and their thinking and develop ways of representing this.
* Teachers model number and thought processes.
* Lessons provide progression in concepts, skills and understanding.
* Children make connections with prior learning.
* Active learning approaches engage children fully.
* There is a problem-solving and investigative ethos.
* Contexts are developed which support learning.

**What does mathematics and numeracy look like at second level and beyond?**

At second level children are thinking through problems of their own. They are being creative using their number skills and problem-solving strategies.

* Pupils are developing skills to identify the problems and the mathematical processes needed to solve them.
* Pupils develop confidence, resilience and a positive attitude towards solving problems.
* Pupils can justify and explain their thinking and can solve problems collaboratively.
* Pupils transfer skills and make links between different areas of learning and different areas of mathematics.
* Pupils use mathematical language and thinking is recorded in a variety of ways.
* Creative contexts are used to promote mathematics and numeracy across learning.
* Pupils have a clear idea of their learning and how to improve it.

**Resources**

Children become fluent in mathematics when they have lots of ‘hands on’ experiences. Therefore, children and staff draw on a wide range of practical resources in order to develop the conceptual understanding of maths, its structures and its relationships. This then helps children move smoothly to abstract representations and recorded methods. Good use of resources also helps make the learning more interesting.

A variety of mathematics resources are available in school.

* Scottish Heinemann Mathematics
* TeeJay
* Maths No Problem
* Teacher made resources and photocopiable resources
* Practical maths equipment
* Computer-based materials (Sumdog)
* White Rose Maths

<https://education.gov.scot/Documents/numeracy-maths-eo.pdf>

<https://education.gov.scot/improvement/learning-resources/curriculum-for-excellence-benchmarks>

<https://education.gov.scot/improvement/practice-exemplars/aberdeenshire-council-learning-pathways-from-early-to-second-level/>

<https://highlandnumeracyblog.wordpress.com/>