# Duns Primary School

# Numeracy & Mathematics Policy

# Numeracy and Mathematics

***'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***

## Numeracy and Mathematics in Duns Primary School

In Duns Primary School we believe that Maths and Numeracy should be delivered with a learning environment that supports discovery, questioning, relevance, experimenting and most of all enjoyment.

Our approach to Numeracy is based on the shared understanding of the **Number Counts/SEAL** approach. This approach utilises a clear progression in number, and strives to ensure that all children develop high levels of numeracy skills through their learning across the curriculum.

Through the Learning and Teaching experiences the children will realise that Mathematics is important in our everyday life, allows us to make sense of the world around us and enables us to manage our lives. By engaging in real-life situations children will be given opportunities to make connections and informed predictions.

## Numeracy

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. 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 access to the wider curriculum.

Numerate people rely on the accumulation of knowledge, concepts and skills they have developed, and continually revisit and add to these. We aim to provide our learners with experiences that will ensure numeracy skills are not only developed from early levels and beyond, but are revisited and refreshed throughout schooling and into lifelong learning.

## Mathematics

Curriculum for Excellence promotes the development of *Numeracy across Learning* as the responsibility of all teachers. Where appropriate, we provide opportunities to apply mathematical concepts and skills on other curricular areas and particularly in Science and Technology.

Mathematics permeates all aspects of modern life and we aim to develop all aspects of mathematical capability by providing opportunities where learners can;

- become familiar and fluent with numbers
- use and apply skills in the real world, including the use of ICT
- be open to new ideas and alternatives, and appreciate the importance of evidence and critical reasoning
- be curious, imaginative and diligent

## What are the features of effective learning and teaching in Numeracy and Mathematics?

**High quality learning depends upon achieving a suitable balance between developing key facts and integrating and applying them in relevant and imaginative contexts.**

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

The experiences and outcomes promote and support effective learning and teaching methodologies which will stimulate the interest of learners and promote creativity and ingenuity

A rich and 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
- developing mental agility
- frequently asking children to explain their thinking
- use of relevant contexts and experiences, familiar to children and young people
- using 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.

Teachers 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 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.

*Please see Appendix 1 for additional expectations within Duns*

All teachers have a responsibility for the development of mathematics and will be familiar with the role of numeracy within mathematics and with the means by which numeracy is developed across the range of learning experiences.

Curriculum for Excellence identifies a key feature of the mathematics framework is the development of algebraic thinking from an early stage. Research shows that the earlier algebraic thinking is introduced, the deeper the mathematical understanding will be and the greater the confidence in using mathematics. This is evidenced within our planning format and we are developing our Learning and Teaching approaches in-line with this.

*Please see Signposts in Number Counts*

## How do we ensure progression within and through levels?

Through the Experiences and Outcomes within Curriculum for Excellence and our Number Counts approach, we aim to provide learners with the opportunity to develop their knowledge and skills through cumulative growth in terms of their understanding and application. By understanding the Stages of Early Arithmetical Learning and identifying key 'pathways of progression' within this, next steps can be clearly identified.

On-going collaboration and moderation with colleagues in relation to pathways of progression encourages a shared understanding of expectations of standards as well as effective learning and teaching within Numeracy and Mathematics.

Within Numeracy, we follow the Highland Numeracy Signposts in Number alongside Number Counts coloured planners. By dating the activities as they are covered and using Traffic Light colours to show the learners understanding, we are able to track progression and identify next steps.

This approach was started for the whole school in August 2016 and therefore continues to be a focus point for our Numeracy and Mathematics staff CAT sessions.

## What are the features of assessment in Numeracy and Mathematics?

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. Teachers can gather evidence of progress as part of day-to-day learning about number, money and measurement, shape, position and movement and information handling.

*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*

As stated in Curriculum for Excellence; approaches to assessment should identify the extent to which children and young people can apply their skills in their learning, in their daily lives and in preparing for the world of work. Progress will be seen as children and young people demonstrate their competence and confidence in applying mathematical concepts and skills. For example, within Mathematics:

- Do they relish the challenge of number puzzles, patterns and relationships? Can they explain increasingly more abstract ideas of algebraic thinking?
- Can they successfully carry out mathematical processes and use their developing range of skills and attributes as set out in the experiences and outcomes? As they apply these to problems, can they draw on skills and concepts learned previously?
- As they tackle problems in unfamiliar contexts, can they confidently identify which skills and concepts are relevant to the problem? Can they then apply their skills accurately and then evaluate their solutions?
- Can they explain their thinking and demonstrate their understanding of 2D shapes and 3D objects?
- Can they evaluate data to make informed decisions?
- Are they developing the capacity to engage with and complete tasks and assignments?

Within Numeracy;

- Can they explain their thinking to show their understanding of number processes and concepts?
- Are they developing securely the full range of the skills and attributes set out within the experiences and outcomes? As they apply these to problems, can they draw on skills and concepts learned previously?

- As they tackle problems in unfamiliar contexts, can they confidently identify which skills and concepts are relevant to the problem? Can they then apply their skills accurately when working independently and with others, and can they then evaluate their solutions?
- Are they developing their understanding of personal finance?
- Can they evaluate data to make informed decisions?
- Are they developing the capacity to engage with and complete tasks and assignments?

## Making connections within and beyond mathematics

Within mathematics there are rich opportunities for links among different concepts: a ready example is provided by investigations into area and perimeter which can involve estimation, patterns and relationships and a variety of numbers. When children and young people investigate number processes, there will be regular opportunities to develop mental strategies and mental agility. Teachers will make use of opportunities to develop algebraic thinking and introduce symbols, such as those opportunities afforded at early stages when reinforcing number structures or later when investigating the sum of the angles in a triangle.

There are many opportunities to develop mathematical concepts in all other areas of the curriculum. Patterns and symmetry are fundamental to art and music; time, money and measure regularly occur in modern languages, home economics, design technology and various aspects of health and wellbeing; graphs and charts are regularly used in science and social studies; scale and proportion can be developed within social studies; formulae are used in areas including health and wellbeing, technologies and sciences; while shape, position and movement can be developed in all areas of the curriculum.

## Reporting

Progress is reported to parents/carers in November during Parent Consultations. Summative reports are issued in November and May.

## Responsibilities

The Senior Management Team will;
- provide support and guidance on policy and practice
- support the policy by allocating time and resources
- review the policy regularly
- monitor and evaluate the policy through established monitoring procedures.

Teachers will:
- plan for Numeracy and Mathematics in accordance with Curriculum for Excellence and the school policy
- record, assess and evaluate individual, group and whole class progress using school, authority and national guidelines
- share and discuss progress with pupils, parents, management and other partner agencies.

Parents' Role

Working in partnership we aim to:

- encourage parents to use their knowledge and skills for enhancement of learning and teaching.
- foster home/school links through homework, the school website, parent consultations, written reports and parental involvement in class.
- encourage children to make use of Mathletics at home.

## How should your lesson be organised?

Your class should be in differentiated groups of ability.

There should be a range of written, active and teacher input throughout your Numeracy and Maths lesson.

For Example:

**Mental Maths – Differentiated multiplication speed test challenge**

**Hexagons – I can calculate relationships between currencies and do simple calculations**

1. Teacher input - PowerPoint
2. TJ2B page 56
3. Mathletics – Money transfer game

**Triangles – I can confidently use money up to the value of £20**

1. TJ2A
2. Multiplication Splat/Mathletics
3. Teacher input

**Circles/Squares – I can confidently use money up to the value of £5**

1. TJ2A page 23
2. Teacher Input
3. Mathletics

## Appendix 1 – School Expectations within Number Counts

Using the Signposts within Number Counts for planning and tracking, children will have the knowledge, understanding and experiences to be secure at the following Phases at the end of each year stated.
As discussed, this is the expectation for the majority of children.

| | |
|---|---|
| **Phase 1** | **Early Primary 1** |
| **Phase 2** | **Primary 1** |
| **Phase 3** | **Primary 2** |
| **Phase 4** | **Primary 3 plus addition through 10** |
| **Phase 5** | **Primary 4** |
| **Phase 6** | **Primary 5** |
| **Phase 7** | **Primary 6** |
| **Phase 8** | **Primary 7** |