



Crowan Primary School - Maths Policy

Ratified by the Governing Body on:

Signed: _____ (Chair of Governors)

Date of next review - September 2021

**this policy will be reviewed annually*

COVID-19 Amendments September 2020

Due to restrictions brought about by the COVID-19 pandemic and the need for social-distancing certain classroom practises have had to be altered slightly.

These changes are listed below:

- 1) Group and paired work has been limited, although full-class discussion continues.
- 2) The use of resources has been limited to help limit the potential transmission of the virus. Any resources that are used are cleaned after the session before further use.
- 3) Children remain seated during lessons: the AET approach what involved children moving onto other tasks themselves has been revised. The children will be provided with Fluency, Reasoning and Problem Solving all within a single worksheet, with further extension work available and provided to them by the class-teacher.
- 4) There will be more worksheet and whiteboard work than previously, though when possible, maths can continue to be delivered outside.

1. Rationale - Mathematics teaches children how to make sense of the world around them through developing the ability to calculate, to reason and to solve problems. It enables children to understand and appreciate relationships and pattern in both number and space in their everyday lives. Through their growing knowledge and understanding, children learn to appreciate the contribution made by many cultures to the development and application of mathematics.

The rationale for this policy- to ensure all teachers and governors are aware of the vision and aims of mathematics in our school. There will be a consistent approach in the delivery of mathematics from the Early Years Foundation Stage to Year 6.

2. The policy was developed by: - Mrs Victoria Gillam (subject leader for mathematics) in consultation with all teaching staff at Crowan Primary School.

3. Objectives: -Through the model of a dedicated daily mathematics lesson of between 45-60 minutes we will endeavour to support children to:

1. **Become fluent** in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.

2. **Reason mathematically** by following a line of enquiry, making conjectures about mathematical relationships and forming generalisations, and by developing an argument, justification or proof using mathematical language.

3. **Solve problems** by applying their mathematical understanding to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering when seeking solutions.

In our teaching of maths we endeavour to:

- Develop a confident, positive attitude towards the learning and use of mathematics
- Promote confidence and competence with numbers and the number system.
- Develop the ability to solve problems through decision-making and reasoning in a range of contexts.
- Develop a practical understanding of the ways in which information is gathered and presented.
- Explore features of shape and space and develop measuring skills in a range of contexts.
- Understand the importance of mathematics in everyday use.

4. Teaching and Learning

- The school uses a variety of teaching methods and recognises a variety of learning styles in the delivery of mathematics lessons.

Our principal aim is to develop children's knowledge, skills and understanding in mathematics. We do this through a daily lesson which can involve teacher led directed teaching, a high percentage of independent and peer work as well as small group activities.

During these lessons we encourage children to ask, as well as to answer, mathematical questions.

Children have the opportunity to use a wide range of resources to support their learning. Where appropriate, ICT is used to further enhance teaching and learning including the use of the Interactive Whiteboard (IWB). Wherever possible, we encourage children to use and apply their learning in everyday situations.

The teaching of daily maths can take place in a variety of different ways including:

- Work on whiteboards, which may be teacher led
- Number of the Day activities, where children explore and manipulate different numbers
- Practical maths, where children will learn kinaesthetically
- Written work within a lesson maths book
- Times tables and number facts may be learnt and practised verbally

Due to this variation a date may not be present every-day in the children's Maths books.

5. Mathematics Curriculum Planning

5.1 Foundation Stage

In accordance with the Ofsted 'Bold Beginnings' document, published in November 2017, teachers in our Reception class '*...devote sufficient time each day to the direct teaching of... mathematics, including frequent opportunities for children to practise and consolidate their skills.*' (2017:page 7)

Maths is taught through an initial whole-class input and then skills are consolidated in small groups or on an individual basis at a similar time in the morning every day. Numeracy is taught through first-hand, practical activities. These are carried out in both the indoor and outdoor environments and are differentiated to take into account the child's individual and current learning needs.

We have a large maths area within the Reception classroom to encourage opportunities for independent, child-initiated learning and problem-solving and to reinforce skills introduced during whole-class sessions.

When children first start school, the practical nature of the numeracy teaching and learning in the Foundation Stage, means that initially very little paper-based recording is carried out, with photos to record children's learning often being used instead as a record of achievement and progress. As time progresses, children are encouraged to record their findings and learning with mark-making and correct number formation.

Planning in the Foundation Stage is based around the EYFS Early Learning Goals, following the 'Abacus' Active learn Maths planning resources to ensure coverage but with modifications, where necessary, to take into account children's individual needs.

5.2) Transition to Key Stage One (KS1)

Children in Key Stage 1 will need to develop their understanding of mathematics as a subject in its own right and there will need to be a time of transition from the Foundation Stage numeracy curriculum to the Key Stage 1 National Curriculum.

During this time of transition, learning objectives and planning is, therefore, sympathetic to the Foundation Stage curriculum in presentation and approach, and will incorporate the Early Learning Goals for those who have yet to achieve levels 8/9 prior to joining Key Stage 1.

5.3) Key Stage 1 and Key Stage 2

Mathematics is a core subject in the National Curriculum and we have adopted the AET scheme of work to support our planning, monitoring and assessment of the pupils.

Within our increasingly global and technologically driven world, the ability of our young people to become champions of flexibility and the unfamiliar is crucial.

Our Mastery Flow Teaching Model (initially championed in mathematics from 2013) is spreading through other subjects. The model maps out the learning journey of a learning objective.

The desired outcome of the learning journey is mastery. We define mastery as: fluency with the unfamiliar.

Show - Support, making sense, representing.

Do - Generalising fluency with different types of questions.

Think - Extension through probing questions.

Explain - Further extension, explaining and reasoning.

Solve - Rich or complex tasks or problems.

5.4) Calculations (methods and strategies)

Although pencil and paper procedures are developed, it is important to recognise that the ability to calculate mentally is of fundamental importance in developing mathematical competence. The mental methods in the revised National Curriculum for mathematics will be taught systematically from Reception onwards and pupils will be given regular opportunities to develop the necessary skills. Mental calculation should be seen as complementary to, and not separate from, the development of written calculations.

In every written method there is an element of mental processing. Sharing written methods with the teacher encourages children to think about the mental strategies that underpin these and to develop new ideas. Therefore, written recording both helps

children to clarify their thinking and supports and extends the development of more fluent and sophisticated mental strategies.

During their time at Crowan Primary School children will be encouraged to see mathematics as both a written and spoken language.

Teachers will support and guide children through the following important stages:

- developing the use of pictures and a mixture of words and symbols to represent numerical activities;
- using standard symbols and conventions;
- use of jottings to aid a mental strategy;
- use of pencil and paper procedures;
- use of a calculator and other forms of ICT

Bar Modelling

The use of bar modelling is used through all the year groups to encourage and support children's skills at making maths problems appear pictorially and to aid their skills with problem-solving. Although bar models will not always help children carry out required calculations, they are clearly designed to help children decide which operation to use. Instead of relying on superficial and unreliable clues like key words, the simple visual diagrams help children understand why the appropriate operations make sense.

The progression of bar modelling is:

Concrete/Object - Discrete - Continuous

These different stages are used in relation to the individual child's understanding.

- This policy concentrates on the introduction of standard symbols, the use of the empty number-line as a jotting to aid mental calculation, and on the introduction of pencil and paper procedures.

It is important that children do not abandon jottings and mental methods once pencil and paper procedures are introduced. Therefore children will always be encouraged to look at a calculation/problem and then decide the best method to use- pictures, mental calculation with or without jottings, structured recording or a calculator.

Our long-term aim is for children to be able to select an efficient method of their choice (whether this be mental, written or, in upper Key Stage 2, using a calculator) that is appropriate for a given task.

They will do this by always asking themselves:

'Can I do this in my head?'

'Can I do this in my head using drawings or jottings?'

'Do I need to use a pencil and paper procedure?'

'Do I need a calculator?'

Written methods of calculation are taught to each year group as set out in the Calculation Policies which has been developed by all primary schools in the Southerly Point Co-operative Multi-academy Trust.

(See Appendices 1 and 2 for an overview of the development of calculation strategies in both Key Stage 1 and 2 and Appendix 3 for more details of the expectations for the development of calculation within each year group).

5.5) AET Approach to Teaching Maths

Teaching and learning is set out into 5 learning points. This is how a typical maths lesson will look:

Show, Do, Think, Explain and Reason, Solve

All children have access to all stages of learning with each planned topic, providing them with the chance to access the mastery curriculum. Confidence comes from fluency with the learning and naturally progresses through to mastery level activities.

6. Resources

There are a range of resources to support the teaching of mathematics across the school. All classrooms are fully equipped with basic maths resources i.e. number lines, hundred squares etc. A central storage area also accommodates larger resources and those that are not used on a daily basis. We have a range of books to aid in the teacher's planning. A range of appropriate software is also available and this is usually stored in the individual classrooms.

7. Cross Curricular links

The teaching of mathematics will be linked with other subjects across the curriculum, and Information and Communications Technology will be used in different situations so that children may see its relevance and application to problems in the outside world. *For example, in Science children will use graphs, tables and charts during their investigations.* Where possible we will contribute to the cultural development of our children by introducing them to famous mathematicians around the world and through history.

The Use of Information and Communications Technology - The computer is a valuable resource in the classroom to support teaching and learning in mathematics and to motivate children's learning. Staff are aware of a number of excellent internet sites

e.g. www.nwnet.org.uk, www.primaryresources.co.uk, www.deepeningunderstanding.co.uk, www.nrich.maths.org and-regularly access these to support teaching and learning.

8. Mathematics At Home

It is the aim of this school to involve parents and carers in their children's learning and to inform them of the child's progress in this subject. Homework will be sent home weekly from Year 2 onwards (see *Crowan Primary School Homework Policy*).

9. Assessment and Recording

9.1) Foundation Stage -

Assessment is completed through observations of the children during numeracy/independent learning activities, teacher led activities, problem-solving opportunities and conversations. These assessments are recorded using note-taking and photographs. This information is used to track a child's progress throughout their time in the Foundation Stage and to contribute to parent meetings and report writing.

9.2) Key stage 1 and Key Stage 2

At the completion of each topic the children in Key Stage 2 undertake an independent written test to assess their depth of knowledge and understanding of particular concepts (e.g. place value). These tests will be in-line with end of year expectations for each year group. They will also provide children with the opportunity to work under test conditions similar to the end of key stage 2 SATs.

Assessment grids are also completed by the class teacher at the end of every term. These assessment are based on a range on work completed throughout the term from which the teachers make their judgements. These assessments are then transferred onto the whole school tracking system in order to monitor the progress and attainment of individuals, target groups, different cohorts and the whole school.

The subject leader for mathematics and/or the Headteacher will also complete Pupil Progress Meetings with the individual class teachers, in order to discuss the pupils' attainment, progress and understanding, and to identify potential strategies for tackling identified barriers to their learning; appropriate short-term steps will be noted to help ensure continued progress is made. This process will support the class teacher in identifying and addressing identified needs through the class teaching, intervention strategies, staff training or use of resources.

We use the national SATs tests for children in Year 2 and Year 6, plus other published texts (NFER) and Teacher Assessment for Years 3, 4 and 5.

We use the results from these, in conjunction with on-going teacher assessments, to inform the progress and attainment through the year. (Y2-5).

The children's individual annual school report to parents records the child's attainment and progress in the subject, with SATs outcomes reported at the end of each key stage (Year 2 and Year 6). The children's progress throughout the year is also reported to parents in the Autumn Term and Spring Term Summary Reports.

10. Equal Opportunities: - (including gender and ethnic grouping)

Our planning and organisation for mathematics will ensure equal opportunities for all children regardless of their race, culture, gender or ability.

11. SEN Provision

The school aims to provide, through the daily mathematics lesson, a broad, structured mathematics curriculum for all. Manageable differentiation within lessons will aid the learning of both the more and less able mathematicians.

Less confident children, or those performing just below age related, expectations may receive additional support through specific intervention programmes at other times to help address gaps in their knowledge and understanding or to help resolve any misconceptions.

Certain children with special educational needs may require targeted support within the daily mathematics lessons and if appropriate at other times. Clear objectives will be recorded on the child's Individual Education Plan. Teaching Assistants are trained to offer support to these children in addition to that provided by the class teacher.

12. Monitoring of Learning and Standards

Monitoring of this subject will be undertaken by: - The subject leader for mathematics, the Headteacher and members of the Local Governing Body.

Standards of teaching and learning in this subject are monitored by the Curriculum Leader using the following:

- Pupil Progress Meetings - between the teachers, the Curriculum Leader and/or the Headteacher - to explore the impact of the school's policies, scheme of work and outcomes for the children in the different year groups across the school
- Pupil conferencing - to illicit the views of the pupils; their attitude towards learning in this subject; and the depth of their understanding and related skills
- Work sampling - to explore the content and detail of the children's work in this subject
- Planning scrutiny - to investigate the coverage and suitability of the planned lessons
- Lesson observations - to gauge the effectiveness of the teaching and learning for all ability groups

- Teacher assessments - to compare pupil outcomes against expected norms

School governors may also meet with the Curriculum Leader from time to time to review progress against identified targets within the subject and school development plan: these will be reported to the Local Governing Body during their termly meetings.

13. Roles and Responsibilities:

The work of the subject leaders with overall responsibility for mathematics also involves supporting colleagues in the teaching of mathematics, being informed about current developments in the subject and providing a strategic lead for the subject in the school. (*see 'Agreed Role for Subject Leaders.'*)

Related policies:

[Calculations Policy](#)

[Curriculum Policy](#)

[Science Policy](#)

[Foundation Stage Policy](#)

[Homework Policy](#)

[Computing Policy](#)

[Special Educational Needs and Inclusion Policy](#)

[Marking & Feedback Policy](#)