Carlton Colville Primary School
Mathematics Policy

(Also see Calculation Policy, Homework Policy, Assessment Policy, Learning and Teaching Policy)

Date: December 2016

1 Maths Philosophy

Mathematics teaches children how to make sense of the world around them through developing their ability to calculate fluently, reason and solve problems. It enables children to understand relationships and patterns in both number and space in the world around them. Through their growing knowledge and understanding, children learn to appreciate the contribution made by many cultures to the development and application of mathematics. It is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment.

2 Maths Aims

Our policy aims of teaching mathematics are:

- To teach the children to see themselves as Mathematicians, think like Mathematicians and develop a growth mindset that ensures effective learning.
- To broaden and deepen children's knowledge, skills and understanding in maths on a journey towards mastery.
- to promote enjoyment and curiosity of learning through practical activity, exploration, investigation and discussion;
- to develop an appreciation of the beauty and power of mathematics.
- to understand the importance of mathematics in other curriculum areas (including STEM subjects) and in everyday life.
- to develop children's ability to move between concrete, iconic/pictorial and symbolic/abstract representations fluently and confidently.
- to promote confidence and competence with understanding and using numbers and the number system, developing good 'number sense.'
- to develop the ability to solve problems through decision-making and reasoning in a range of contexts, and other curriculum areas;
- to develop a practical understanding of the ways in which information is gathered and presented;
- to explore features of shape and space, and develop measuring skills in a range of contexts;
- to enable children to select and use a range of mathematical tools effectively.
- to equip children with the mathematical language needed to understand problems and explain their methods and reasoning.
- to promote and provide opportunities for children to develop the core learning skills of confidence, determination, curiosity, aspiration, teamwork, independence, communication and focus.

3 Organisation and Environment

3.1 Teaching and learning style

The school understands that children learn in different ways, and so uses a variety of teaching styles in mathematics, adapting to the needs of the children as necessary and appropriate. During our daily lessons we encourage children to ask as well as answer mathematical questions. We develop their ability to independently select and use appropriate concrete apparatus to support their conceptual understanding and build procedural fluency as part of the 'Concrete-Pictorial-Abstract (CPA) approach. They have the opportunity to independently access and use a wide range of resources, such as bead frames, bead strings, number lines, Dienes/ Base 10 apparatus, place value counters, Numicon, multilink, place value cards, Cuisenaire rods and other small apparatus to support their work. We develop the children's ability to represent problems using visualisation skills, jottings and pictorial representations such as Empty Number Lines, the 'Bar Model', 100 squares and their own ideas. Mathematical dictionaries are available and used whenever and wherever appropriate. ICT is used in mathematics lessons for modelling ideas and methods. Wherever possible, we provide meaningful contexts and encourage the children to apply their learning to everyday situations. At all times the policy aims are the drivers behind the planning and delivery of lessons.

3.2 We aim for children to achieve mastery of the key areas and domains in Maths, narrowing the gap between the most and least able learners. We believe that conceptual fluency and procedural fluency should be developed in tandem, with neither being at the expense of the other. The expectation is that the majority of pupils will move through the programmes of study at broadly the same pace. However, decisions about when to progress will always be based on the security of pupils' understanding and their readiness to progress to the next stage. Pupils who grasp concepts rapidly will be challenged through being offered rich and sophisticated problems before any acceleration through new content. Those who are not sufficiently fluent with earlier material will consolidate their understanding, including through additional practice, before moving on. We achieve this through a range of strategies, such as the use of differentiated challenges, booster programmes (such as 1st Class@Number and Success@Arithmetic) and SEN intervention programmes (such as Numicon-Closing the Gap). There is also the use of peer-support pairs and guided or targeted input from the teacher, teaching assistants and learning support assistants. Teaching assistants support all children, based on ongoing formative assessment.

3.3 Mathematics curriculum planning

Mathematics is a core subject in the National Curriculum, and we use the new Mathematics Programmes of Study: Key stages 1 and 2 (dated September 2013) as the basis for our school curriculum, ensuring we teach the relevant statutory content. This, along with the non-statutory guidance from the National Curriculum and other useful resources such as the Chris Quigley 'Essentials For Learning' resource inform our school curriculum.
The school's Calculation Policy details the approach and learning progression in the main operations of addition, subtraction, multiplication and division, and is a working document that all staff are expected to apply.

We carry out the curriculum planning in mathematics in three phases (long-term, medium-term and short-term). Our long-term plans provide an overview to ensure the appropriate content is covered in each year group.

Our medium-term mathematics plans, give details of the main teaching objectives for that theme or topic and provide the structure of the 'mastery' approach to our curriculum design and organisation. This means that areas of Maths will be taught in longer 'blocks'. For Number, Addition and Subtraction, Multiplication and Division and Fractions these blocks will be taught in a progressive manner across the year. Blocks relating to other areas of Maths may only be taught once and not re-visited until the following year. However, there is an expectation that at least three out of five lessons each week will still contain some content relating to the four operations, and key aspects of previously-covered learning will be revisited in lesson starters, home learning tasks or through continuous provision in order to keep them 'on the boil.'

3.4 The short-term plans contain the specific learning objectives and expected outcomes for each learning sequence/series of lessons, and give further detail about specific lesson design. There is no set format for this. The class teacher keeps these individual plans, and the class teacher and subject leader often discuss them on an informal basis as part of the subject leader's monitoring, as well as when more formal monitoring takes place.

3.5 Early Years Foundation Stage

We teach mathematics in our Foundation Stage where we relate the mathematical aspects of the children's work to the objectives set out in the Early Learning Goals, which underpin the curriculum planning for children during the Early Years Foundation Stage. We give all the children ample opportunity to develop their understanding of number, measurement, pattern, shape and space, through varied activities that allow them to enjoy, explore, practise and talk confidently about mathematics.

3.6 Links with other curriculum areas

Our school runs a flexible, creative theme-based curriculum, and although much of the Mathematics is taught during a daily maths lesson, we constantly seek to make meaningful cross-curricular links through our themes in order to embed maths into the bigger picture of each child's learning, and to provide real life relevance to the concepts and skills that they are acquiring. This is a two–way process, so sometimes the maths objectives may be taught as part of another topic, and other times the other curricular objectives may be taught as part of the maths. We especially seek to make connections through the STEM umbrella. Opportunities to do this may be identified at either the long-term, medium-term or short-term planning stage.

Mathematics and Computing:

Information and communication technology enhances the teaching of mathematics significantly. It also offers ways of impacting on learning which are not possible with conventional methods. Teachers can use software to present information visually, dynamically and interactively, so that children understand concepts more quickly. Children may use ICT in order to learn or apply mathematical concepts and skills either within maths lessons or in other curriculum areas.

3.7 Maths Learning Environment

We aim to create a rich and stimulating Maths environment that promotes learning and independence. See Appendix 1 for the Maths learning environment 'Non-Negotiables.'

3.8 Spiritual, moral, social and cultural development

The teaching of mathematics supports the social development of our children through the way we expect them to work with each other in lessons. We group children so that they work together, provide opportunities and structure for collaborative learning, and we give them the chance to discuss their ideas and results. One example of this is the use of 'Number Buddies' as peer support and to promote Mathematical speaking and listening.

3.9 Home/school links

We aim to raise the profile and understanding of our approach to Maths with parents, and they are encouraged to be actively involved in supporting children's learning in school in a number of ways, such as through the use of 'Learning Together' sessions, supporting home learning and supporting specific projects and initiatives. Guidance and information about Maths is provided on the school website, along with links to apps, games, Maths websites and other useful documents and resources. Home learning tasks will be sent home when appropriate in order to reinforce concepts and skills being learned in school. (See Homework Policy).

4. Assessment

4.1 Assessment for learning

Assessment for learning is embedded into each lesson and teachers use formative assessment techniques and strategies on a daily basis in order to identify pupils' strengths and difficulties, inform the next steps for each child's learning, modify the teaching and provision and improve the learning outcomes for each child. Short–term planning is constantly reviewed and modified on the basis of these assessments.

4.2 Summative assessment

We make termly summative judgements of each child's achievement.

Some of the evidence base for these assessments may come from day-to-day class work, but evidence will also come from specific tasks and tests used to assess the depth of understanding, independence and breadth of application shown. We use these judgements to assess progress and achievement against the 'Milestone Assessment Criteria' and they help to inform individual and national targets. We identify and target those children at risk of not meeting the nationally expected standard by the end of the key stage and/or not making good progress. These children are discussed in depth at termly pupil progress meetings with the class teacher, subject leader and Headteacher and we make any changes to provision and/or intervene accordingly. We pass all assessment information on to the next teacher at the end of the year, so that s/he can plan for the next school year.

Teachers in Year 2 and Year 6 will also use carry out the statutory End of Key Stage assessments as described in the Assessment and Reporting Arrangements documents published by the Standards and Testing Agency.

We give parents the opportunity to discuss their child's progress and attainment each term in a teacher/parent meeting. We also write a summary of each child's progress and achievement in the Annual Report for parents.

5. The role of the Subject Leader

Monitoring of the standards of children's work and of the quality of teaching in mathematics is the responsibility of the subject leader. The work of the subject leader also involves supporting colleagues in their teaching, being informed about current developments in the subject, ensuring relevant high-quality CPD is provided and providing a strategic lead and direction for mathematics in the school (informing the School Development Plan). The Senior Leadership Team (including the Maths Subject Leader) will meet to evaluate strengths and weaknesses in the subject, using all relevant assessment information and data and discuss areas for further improvement. Termly pupil progress meetings (half-termly for Year 6) are held with all classteachers, where the progress and attainment of all pupils is discussed, with a focus on improving outcomes for every pupil. Monitoring may include such activities as reviewing samples of children's work, undertaking lesson observations of mathematics teaching across the school, analysing planning and carrying out pupil-perception discussions. A named member of the school's governing body is briefed to oversee the teaching of Maths.

5.1 The Mathematics subject leader keeps a subject portfolio up to date. This provides a picture of mathematics across the school. Teachers meet at least once each term to discuss progress, carry out standardisation / moderation activities using national exemplification material, be updated with latest developments in Maths and carry out a range of other CPD activities as appropriate.

6 Special Educational Needs and Disability (SEND)

At our school we teach mathematics to all children, whatever their ability and individual needs. Mathematics forms part of the school curriculum policy to provide a broad and balanced education to all children. Through our mathematics teaching we provide learning opportunities that enable all pupils to make good progress. We strive hard to meet the needs of disadvantaged and vulnerable children, those with special educational needs, those with disabilities, and those learning English as an additional language. We take all reasonable steps to achieve this.

6.1 When progress or attainment falls significantly outside the expected range, the child may have special educational needs. Our assessment process looks at a range of factors such as classroom organisation, teaching materials, teaching style, and differentiation so that we can take some additional or different action to enable the child to learn more effectively. Ongoing assessment for learning,

and summative assessment allows us to consider each child's attainment and progress against expectations. This ensures that our teaching is matched to the child's needs. Intervention may include, as appropriate, specific targets, strategies and intervention programmes relating to mathematics, such as Numicon intervention, Success@Arithmetic, 1st Class@Number and the Maths coaching schemes, Plus 1' and 'Power of 2.' (for example). We may also run bespoke intervention groups devised by the school. We make use of other helpful documents, such as the Phase progression in 'Numbers and Patterns.'

7 Gifted and talented pupils

We also ensure that we meet the needs of those children with special gifts and talents. This may be achieved in a variety of ways, such as personalised/individual learning programmes and collaboration with other year groups and schools (including High Schools).

For further details see separate policies: Special Educational Needs; Disability Non-Discrimination; Gifted and Talented; English as an Additional Language (EAL).

This policy will be reviewed every two years, or sooner if necessary.

Signed:

J. Rose- Maths Subject Leader, Deputy Headteacher.

Date: December 2016

To be reviewed: By December 2018

Appendix 1

Maths Learning Environment: Non-Negotiables

Based on Learning Walks undertaken by the Subject Leader, Maths Advisor and the teaching staff, the following have been highlighted as best practice, and are to be regarded as the 'Non-Negotiable Continuous Provision' that is expected to be consistently present throughout the school:

- Use of Maths Learning Walls, signs, posters etc. to support learning- need to be ***relevant***, which can include the following:

  - Supporting current learning.
  - Supporting recent learning but still needed by the children.
  - Ongoing and continuously supportive.

  The content may be presented in a manner that is visible and accessible when children are at tables, but also in a more detailed form that children need to get up and get closer to access. It does, however need to be clear and uncluttered.

- The promotion of Maths language/vocabulary, including the availability of age-appropriate Maths dictionaries.

- Appropriate practical resources to support Mathematical learning that are relevant to the area of learning, clearly labelled and easily accessible to the children. There needs to be the provision of opportunities to self-select equipment to encourage greater independence and choice.

Other examples of good practice that are recommended include:

- The use of 'Maths Challenges'.
- The use of 'Showcase Displays' to celebrate good examples of work, especially where Maths is being applied in a cross-curricular way (do not always have to be present but do need a few over the course of the year).