

ST. DOMINIC'S CATHOLIC PRIMARY SCHOOL

Mathematics and Calculation Policy

Date:	September 2016	Review Date:	Annually
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Purpose of the Policy

This document is a statement of aims, principles and strategies for the teaching and learning of mathematics. It is closely linked to our Mission Statement and helps to fulfil its aims and objectives.

Our Mission Statement

In Jesus we love, learn, hope, trust and care.

Aims in teaching mathematics

- Establish a broad, balanced and culturally-relevant mathematical programme.
- Make mathematics creative, interesting and exciting.
- Children enjoy mathematics and are positive and confident.
- Children are appropriately supported and challenged to enable them to achieve their full potential in a range of mathematical skills.
- Maintain an inclusive ethos.
- Provide investigative opportunities for pupils to use and apply mathematics with confidence and understanding.
- Ensure pupils have a repertoire of mental and written strategies and are able to select the most appropriate for a given calculation.
- Engage pupils in dialogue to communicate their mathematical reasoning using appropriate vocabulary.
- Provide opportunities to explore mathematics outside of the classroom.
- Develop pupils own awareness of their achievements and the next steps in their learning.
- Create a stimulating maths environment which supports pupils learning.
- Ensure continuity and progression throughout the school.
- Encourage development of a range of visual, auditory and kinaesthetic learning styles.
- Use numeracy as a key life skill.

Structure for the Teaching of Mathematics

Mathematics is a core subject in the National Curriculum.

Daily Maths lessons take place throughout the school.

- Oral / Mental starter (rehearse and revisit objectives).
- Main Teaching Session (whole class interactive teaching, which includes modelling, planned questioning and talk partners).
- Independent / guided group work (appropriately differentiated activities to practise and apply knowledge, skills and understanding.)

- Plenary (to consolidate learning, address misconceptions, evaluate, extend and apply understanding).

This model is flexible to allow for mini plenaries etc. dependent on topic/ children.

EYFS teach 30 minute whole class sessions followed by teacher led/free choice independent mathematical activities.

Planning in mathematics

The foundation for curricular planning is the PA Maths Programme.

Numeracy is delivered through the Primary Advantage Maths Programme (PAMaths) which is in line with the New National Curriculum. The programme aims to develop children's conceptual understanding of maths. This is done by encouraging the use of concrete and pictorial representations of problems to enable children to solve them successfully before moving on to a more abstract approach.

Children in EYFS and KS1 are exposed to ideas at a concrete level with a range of apparatus, such as counters, straws and dienes. This helps the children to develop and secure their understanding of the value of numbers. Concrete apparatus continues to be used throughout KS2 in order to re-visit learning, or to illustrate new concepts.

Once children are secure in their concrete understanding of number, they will move on to using pictorial representations. This may include diagrams, sketches or using the bar model. These visual examples support the children in moving into the use of abstract methods. Abstract written methods are taught throughout the school, and Years 2 to 6 have a weekly skills test, as well as a weekly times table challenge.

This learning is underpinned by a strong focus on developing fluency in recalling number facts and the use of mental maths strategies. The aim being that when confronted with a maths problem, the children's first thought is "Can I do it in my head?"

Homework

Appropriate differentiated homework is given every week to support numeracy lessons. This could take the form of a practical activity or a game to involve parents/carers in their children's learning.

Teaching and Learning

For the oral mental starter the Learning Intention is made clear and referred to. During the main teaching session the Learning Intention and vocabulary are displayed and shared. In addition, success criteria are developed and displayed to support children in achieving the Learning Intention.

Practical resources and ICT are used throughout the whole lesson to engage learners and support teaching and learning.

Differentiated questioning (including open ended and probing questions) is used throughout maths teaching to inform Assessment for Learning and address pupils' misconceptions.

During whole class teaching talk partners are used to allow children to support one another and clarify their own understanding.

Guided group work is used to assess children's understanding and move their learning forward. This should be rotated to give relevant support and extend all children to make progress. This allows the teacher to develop an understanding of each child's ability and learning needs and therefore informs future planning.

The teaching assistant is directed by the teacher, as indicated on the planning, to support children during different phases of the lesson. This could include working with an ability group who are below or above the pitch of the main teaching.

Jottings in books to show methods are encouraged during all activities to allow the teacher to discover any misconceptions.

Each class is equipped with suitable resources to deliver the numeracy lesson effectively. There is also a central resource of mathematical equipment for whole school use (in KS2 building 2nd Floor). All resources are reviewed and updated regularly.

Calculation Strategies

Teaching of calculation strategies are in accordance with the Primary Advantage Maths Programme.

Inclusion

During planning and teaching, activities should be planned to cater for all children; ensuring differentiation for children with Special Educational Needs, Gifted and Talented children, children with English as an Additional Language, and that the needs of different learning styles are met.

We identify pupils who are underachieving and rigourously improve their attainment through carefully targeted interventions. Children who are working at greater depth are identified and learning challenges provided.

Assessment

Formative assessment is used to inform the teacher of the progress of individual pupils in mathematics. It involves identifying each child's progress in each aspect of the subject determining what each child has learnt and what therefore should be the next steps in his/her learning. Formative assessment is carried out informally by teachers and additional adults throughout each lesson and should be used to evaluate lessons and inform future teaching and learning.

Formal summative assessment is carried out at the end of the National Curriculum Key Stage (Year 2 and Year 6) through the use of SATs and teacher assessment.

The foundation stage profile, based on the Early Learning Goals, is a formative assessment conducted by EYFS practitioners which is submitted at the end of the Key Stage.

Assertive mentoring tests are also administered half termly (year 1 to 6) and individual targets are set. These are written in each child's numeracy book and communicated to each child during timetabled one to one meetings.

Assessment data from the KS1 and KS2 SATs and Assertive mentoring tests are used during an annual maths audit to review whole school attainment and progress. The audits, both whole school and individual classes, are fed back to each class teacher.

Marking and Feedback – See Marking Policy

Calculators are used to enable children to work on investigational activities throughout the school. They are not a substitute for pencil and paper or mental methods of calculation. Calculators can be used as an effective teaching tool rather than for calculation and as a way of teaching pupils about numbers and the number system.

Information and Communication Technology

There is a statutory requirement for the application of ICT in mathematics. ICT is a major resource which is used in mathematics for:-

- Problems solving and investigational activities.
- Data handling - presenting information in graphical or tabular form.
- Logo and control activities.
- Practice of basic skills in adventure games with specific problems to solve and for individual pupils who are in need of special support or motivation.
- Learning and enjoying counting, multiplication songs etc .
- Understanding concepts through mathematical programmes and videos.
- Recording information using cameras.

Environment

The maths environment in each classroom should be engaging and stimulating with a wide variety of visual and kinaesthetic resources available.

Each half term a working wall should be established to support children in meeting their class end of unit target. This will include success criteria, models and images, appropriate vocabulary and children's work.

In addition each class should have basic resources such as a 100 square, number line and multiplication grid (as appropriate for each age group) displayed clearly in each classroom.

Once it has been introduced, the vocabulary for each unit should be permanently displayed throughout the length of the unit.

Each teacher is responsible for storing, using and taking care of Maths resources in his/her classroom with storage trays clearly labelled for easy access and use by all pupils.

CPD

All staff involved with the teaching of Mathematics will be entitled to professional development opportunities. These will include:

- in-school Inset or staff meetings (for both teachers and support staff),
- in-school sharing of learning (for example, moderation, peer observations or development meetings)
- out of school training, (Primary Advantage training sessions, observations of modelled lessons in other schools, moderation cluster meetings or to develop an area of Maths teaching and learning).

These opportunities will be agreed by each staff member, with the person in charge of professional development and the Mathematics Lead, and will always be in line with the School Development Plan and Performance Management agreed targets.

Staff are expected to feedback after attending external training in order to support the whole school in improving their practice.

Role of Subject Leader

- To lead the teaching of mathematics, demonstrating excellent practice;
- To advise and support colleagues in all aspects of the implementation of mathematics throughout the school;
- To lead or to organise appropriate INSET where necessary, in line with the School Development Plan;
- To keep up to date with mathematical publications and research, as well as maintaining contact with agencies outside the school, and to feedback to staff as and where appropriate;
- To monitor and assess progress in mathematics, informing colleagues, and acting on areas where further progress is needed – Pupil Progress meetings
- To conduct planning and book scrutinies and feedback to colleagues and the senior management team and give support where needed.
- To review the use of mathematical resources, and to organise ordering within the budget designated for mathematics.

Monitoring of Subject

Books and planning are monitored on a frequent basis using the relevant pro-forma. Written and verbal feedback is given at the end of each scrutiny with support provided where necessary.

The quality of lessons is monitored through regular observations by Senior Leadership Team / Maths Lead. Written and verbal feedback is given at the end of each observation with strengths and targets discussed and recorded.