

Mathematics Policy



Reviewed December 2010
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General Aims

To share with the children, the joy and fun of learning and understanding mathematics and consequently increase their mathematical confidence and proficiency by using it as a powerful tool. In doing so the pupils will be:-

- able to recall basic facts and have the ability to use them in a variety of contexts.
- able to think clearly and logically and to develop reasoning and communication skills.
- fostering positive attitudes towards mathematics by developing pupil confidence, independence, perseverance and co-operational skills.
- confident and proficient with numbers and measures, and have an ability to solve problems in a variety of contexts

Teaching and Learning

Maths should be seen as a subject to be taught both in its own right and as an integrated part of the topic work and other subjects. The content of the lesson will often dictate the style of delivery ranging from direct teaching to individual investigation, discovery and problem solving. Children should experience working independently, in mixed ability and similar ability groups and as a class, depending on the type of learning that is to take place. Talking and discussion with partners and adults in the classroom should be encouraged. A range of resources should be available and the use of ICT actively encouraged, as it is a purposeful way for the children to learn and for the teacher to demonstrate using visual imagery.

Calculations

The approach to calculation adopted is set out by the Eastfield Primary School Calculation Policy.

Mental methods will be encouraged at the foundation stage. Children throughout the school will be taught directly and provided with regular opportunities to develop the different skills needed to solve problems.

- developing a range of mental strategies.
- being able to solve problems
- remembering number facts
- using well know facts to work out new facts

Written work will be used to:-

- informally support mental calculations
- develop the skill of explanation
- practice using the correct notation and symbols
- carry out the standard written notation for written methods of calculating.
- help when assessing work
- remember or practice the recall of number facts.

Calculators

There are three reasons for calculators to be used:-

1. as a teaching aid in all year groups
 2. as an aid for checking results
 3. as a calculating aid in years 5 and 6
- in these year groups opportunities should be given to develop technical skills, the use of the correct vocabulary, whether the display is accurate (rounding to 1dp when involving measures) and when it is best to use and not use a calculator.

Lesson organisation

In Year 1 and 2 all pupils will have daily dedicated maths lesson and will be taught within mixed ability class groups. From Year 3 onwards, all pupils will have a daily dedicated maths lesson. There is a top set and two parallel academic ability groups. There will be an even balance between whole-class work, group teaching and individual practice. The overall structure of lessons will generally be the same as suggested in the Numeracy Strategy:-

- oral/mental starters (approx 5 to 10 mins). Whole class work to reinforce, assess, refine and develop mental and oral skills across the subject.
- main teaching activity (approx 30 to 40 mins). This should include teacher input and modelling with differentiated pupil activities, either in groups, pairs or individually.
- plenary (approx 10 to 15 mins) Work with the whole class sorting out misconceptions, misunderstandings and assessing the progress made by groups and individuals - the pupils will also participate in peer and self assessment. This should also provide an opportunity to identify key facts and ideas, make links to other work and discuss targets for next steps. An opportunity to set homework is also ideal during these sessions.

Time Allocation

KS1 3 hours and 45 minutes weekly

KS2 5 hours weekly

Teachers will use their professional judgement to determine the activities, timing and organisation of each part of the lesson to suit the objectives. There will be therefore considerable variety and creativity on different days.

Mathematics teaching for the reception children will develop over the year. The aim is that by the end of the reception year all children are preparing to participate in the daily, dedicated mathematics lesson. At the start of the year elements of the lesson might take place at different times of the day and in different contexts not necessarily when others are doing the subject.

Cross Curricular Mathematics

Opportunities will be used to draw mathematical experiences out of a range of activities in other subjects via Topic Work is possible and to provide opportunities to apply and use maths in real life, problem solving situations. Maths will also contribute to other subjects in practical ways.

ICT

Children will apply and use maths in a variety of ways when they are problem solving using ICT when appropriate and possible. The use of computers in the daily maths lesson aims to be to support and enhance pupil activities and direct teaching strategies related to the learning objectives for the lesson.

SEN

The aim is to ensure that all pupils progress and gain positively from each numeracy lesson. All teachers aim to:-

- Plan lessons so that all pupils can be included
- Use a range of resources effectively to allow access to whole class or group work
- Organise the class and deploy support staff to work with groups or individuals as and when needed.
- Differentiate tasks or activities

For children with special needs in maths, their targets will be included the IEP. These will be taken from the framework for teaching or P levels.

Able children

The able child will be provided for in the general maths lesson through differentiation. For the able child, work consists of Ma1, challenges and logical and lateral thinking skills and extension activities. This is to provide enrichment and breadth for these children. These children will be on the Gifted and Talented register.

Equal Opportunities

It will be ensured that all pupils will have equal access to the full maths curriculum. See the school's Equal Opportunities Policy.

Resources

Resources will be stored in individual classrooms and /or Resource Room and be used to:-

- demonstrate or model an idea, an operation or method of calculation e.g. a number line, large arrow cards, counting sticks.
- enable children to use a calculation strategy or method that they could not do without help: e.g. individual number grids or lines, counters, bears.
- provide a context for the application and practise of mental calculation strategies and number skills e.g. dice, 0-10 number cards, number games, and coins.

The aim will continue to be to develop an approach in which mental methods are always considered first. A list of photocopiable books and resources is also displayed in the Resource room and is regularly updated. Any Resources not being used to be returned to the Resource Room please. If you require any additional materials please ask one of the co-ordinators.

Out of class work/homework/parental involvement

Opportunities will be provided for children to practise and consolidate their skills and knowledge; to develop and extend their techniques and strategies; to prepare for their future learning through out-of-class activities or homework. Homework will be set weekly for years..... It will be varied, interesting and fun so that the children are motivated; it stimulates their learning; fosters different study skills. Whatever the nature of the work, it is aimed that feedback will always be given.

See school's homework policy.

Planning and Assessment/Record keeping

At each level of planning it is aimed that assessment informs future planning.

Long term plans for mathematics will be the yearly teaching programmes set out in the Primary Framework for teaching and available on the network.

Medium term plans are taken from the Primary Framework units by using the objectives from all of the blocks within each unit.

Short term planning will be on a weekly basis, using the Primary Framework objectives from each term's blocks and adapting these to suit the needs of the pupils. A short term planning sheet will show the learning objective, what the teacher will do, differentiated pupil activities and levelled success criteria for each lesson. The blocks for each termly unit and other related documents for each year are accessible via the network and in the P.P.A. room.

See assessment policy for strategies and procedures for assessment / APP and the passing on of records.

The Headteacher and Co-ordinators will regularly monitor mathematics teaching and planning in the school, scrutinise children's work and speak with the pupils with regards to the work they have done.

Intervention/Catch up Programmes

After careful assessment each term by teaching staff, children can be identified for inclusion in intervention programmes such as Springboard programmes of work (KS2), Max's Marvellous Maths groups, or, also available is the Wave 3 programmes of lessons. Gaps in children's learning will be regularly identified and these can be 'plugged' with 'one off' lessons taken from this programme or with re-enforcement lessons with objectives set by the teacher. Wave 3 is available to all staff on the network and a hard copy is to be found in the Resource Room also

Intervention Folders to be available at all times to the TAs and teaching staff concerned. Specific groups will be identified and their needs addressed on a regular basis by dedicated L4 TAs.

Targets and Comments

Targets and levels should be reviewed regularly in accordance with Assessing Pupils Progression (APP) guidelines and kept in line with individual children's progress. Clear level sheets should be pasted into children's books to show what level the child is on each term. Master copies are available in the Maths drawers in the Resource Room. All levels that are pertinent to each class /set are displayed in the classroom so the children to know what to aim for next.

Comments in children's books should be of a positive nature, when possible, reflecting the objective of the lesson, ways forward and how to overcome any difficulties. Children should be encouraged to signal if they feel they have been successful also, by either drawing a small traffic light or smiley face or other simple character.

Marking, Use of Books and Presentation of Numeracy Work



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Presentation

- All numeracy work to be completed in pencil.
- The short date to be written on left hand side of page - each digit taking a square and each separating dot taking a square also.
- A line is missed before the Learning Objective is written and underlined and also in between the start of any work.
- All lines to be drawn with a ruler.
- Only one digit per square (unless writing fractions - see later)
- Decimal points/symbols etc. to have square of their own.
- Fractions to be written in one square unless mixed numbers.
- Answers to calculations to be clearly identified and underlined in KS2.
- Corrections by children to be titled and dated in KS2.
- Use of plain books by all pupils in KS2 when working on problem solving, investigations, challenges etc.
- All pupils to have a blue folder that will include loose worksheets, assessment tests and homework sheets. This work should be marked to the same high standard as in books.

Marking

- ***Progressive marking*** to be evident at least once a week for every child. This should include for example consolidation ideas, re-enforcement questions or challenge/extension examples to be completed.
- Positive comments that show the next step or way forward.
- Comments written in child friendly language and children's replies to be encouraged.
- If verbal feedback given, especially in KS1, then VF to be written at the end of work.
- Relates to the Success Criteria .
- Peer/self assessment against the Success Criteria to be included - e.g. traffic lights/thumbs up/smiley faces etc. to denote achievement. Children to be encouraged to respond to comments made.
- All work to be marked by the adult taking lesson (TA to be denoted for L4 Teaching Assistant taken or ST for supply teacher taken).
- Few minutes at the start of lessons to reflect on comments written.

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Calculation Policy



This policy contains the key pencil and paper procedures that will be taught within our school. It has been written to ensure consistency and progression throughout the school and reflects a whole school agreement.

Although the focus of the policy is on pencil and paper procedures it is important to recognise that the ability to calculate mentally lies at the heart of the Primary Strategy. The mental methods in the *Primary Framework for teaching mathematics* will be taught systematically from Reception onwards and pupils will be given regular opportunities to develop the necessary skills. However mental calculation is not at the exclusion of written recording and should be seen as complementary to and not as separate from it. 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 them 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 this 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.

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 which is the best method to choose - 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?'

Up to Year 3, the emphasis should be on children working mentally. Once written methods are introduced, mental skills will be kept sharp by continuing to develop and apply them daily.

It is expected that children will be introduced to the progression of written methods as and when they are ready. Children's readiness for different written calculations will be judged according to whether the child possesses the prerequisite skills needed to carry out each operation.

A short list of criteria for readiness for written methods of addition and subtraction would include:

- Do children know addition and subtraction facts to 20?
- Do they understand place value and can they partition numbers into hundreds, tens and units?
- Do they use and apply the commutative and associative laws of addition?
- Can they add at least three 1-digit numbers mentally?
- Can they add and subtract any pair of 2-digit numbers mentally?
- Can they explain their mental strategies orally and record them using informal jottings?

Corresponding criteria to indicate readiness to learn written methods for multiplication and division are:

- Do the children know the 2, 3, 4, 5 and 10 times tables and corresponding division facts?
- Do they know the result of multiplying by 0 or 1?
- Do they understand place value?

- Do they understand 0 as a place holder?
- Can they multiply 2 and 3 digits mentally by 10 and 100?
- Can they use their knowledge of all the multiplication tables to approximate?
- Can they find products using multiples of 10?
- Do they use the commutative and associative laws of multiplication?
- Can they halve and double 2-digit numbers mentally?
- Can they use multiplication facts to derive mentally, other multiplication facts they don't know?
- Can they explain their mental strategies orally and record them using informal jottings?