

South Cave C of E Primary School

Maths policy

Date: Autumn 2017

School aims

General

To ensure all staff, children, parents/carers and Governors are aware of the aims for learning and teaching Mathematics at South Cave CE (VC) Primary School and that these are consistently applied.

School Staff

- To promote a confident, positive attitude towards the learning and use of Mathematics making it an enjoyable experience;
- To promote confidence and competence with numbers and the number system;
- Encourage pupils by believing that every child, with hard work, can be good at Mathematics through promoting a Growth Mindset.
- To promote the ability to solve problems through connecting ideas, decision-making and applying their mathematical skills in a range of contexts, including other subjects such as Science;
- To promote mathematical reasoning by following a line of enquiry, developing an argument and making justifications using mathematical language;
- To promote a practical understanding of the ways in which information is gathered, presented and used;
- To promote the exploration of features of shape and space and develop measuring skills in a range of contexts;
- To understand the importance of Mathematics in everyday use, especially in relation to essential life skills, such as telling the time and understanding money.

Children

- To develop an enjoyment of learning through practical activity, investigation, exploration; mental exertion and discussion;
- To develop confidence and competence with numbers and the number system;
- To develop the ability to solve problems through connecting ideas, decision-making and applying their mathematical skills in a range of contexts, including other subjects such as Science and Geography;
- To develop the ability to reason mathematically by following a line of enquiry, developing an argument and making justifications using mathematical language;
- 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 understand the importance of Mathematics in everyday life, especially in relation to essential life skills such as telling the time and handling money; and
- To foster positive attitudes towards Mathematics by developing confidence, independence, persistence and co-operation skills and understand Growth Mindset in a Mathematical context.

Parents and Carers

- To be understanding and supportive of our aims in learning and teaching Mathematics.
- To attend and contribute to Parent Consultation Meetings.
- To support their children with Mathematics homework activities (please refer to Homework Policy) including the importance of learning their number bonds and times tables off by heart.
- To praise their children for the good things that they do in Mathematics.
- To communicate and work with School whenever further support is needed to develop their children's mathematical skills and understanding.
- To make mathematics part of children's everyday lives.
- To foster positive attitudes towards Mathematics.

Governors

To appoint a designated link governor who will:

- Meet with the Mathematics Subject Leader at least termly to find out about;
 - the school's systems for planning work, supporting staff and monitoring progress;

- the allocation, use and adequacy of resources;
- how the standards of achievement are changing over time.
- Visit school and talk to pupils about their experiences of Mathematics;
- Promote and support the positive involvement of parents in Mathematics;
- Where possible; attend training and other events relating to the Mathematics curriculum ;
- Report jointly with the Subject Leader, for the governing body with recommendations, if appropriate, termly.
- To be understanding and supportive of our aims in the learning and teaching of Mathematics and to review this policy.

Curriculum objectives & Key Skills

The national curriculum identifies three main aims in the primary phase:

- 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.
- **reason mathematically** by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language
- can **solve problems** by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

The national curriculum states '*Mathematics is an interconnected subject in which pupils need to be able to move fluently between representations of mathematical ideas.*' Therefore, it is organised into distinct domains. However, pupils should make rich connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems.

These domains for KS1 are:

- Number and place value
- Addition and subtraction
- Multiplication and division
- Fractions
- Measures
- Geometry: properties of shape
- Geometry: position and direction
- Statistics (Year 2)

These domains for KS2 are:

- Number and place value
- Addition and subtraction
- Multiplication and division
- Fractions (including decimals and percentages)
- Ratio and proportion (Year 6)
- Measures
- Geometry: properties of shape
- Geometry: position and direction
- Statistics
- Algebra (Year 6)

The distinct domains highlight the important areas of mathematics children need to learn to make effective progress.

Through combining the national curriculum aims and the Math hub principles our objectives are:

- A dedicated daily mathematics lesson is planned in each class, which will last for an hour KS1 and KS2. In the Foundation Stage there will be a daily lesson which will last for at least 30 minutes, alongside opportunities for mathematical activities daily through continuous provision.
- Lessons are well structured, positive and delivered at an appropriate pace.
- Lessons are structured to embed mathematical understanding through concrete, pictorial and abstract representation.
- Variation will be used to broaden the children's exposure to the learning objectives in a wide range of context to ensure deeper understanding of concepts.
- The foundations of mental calculation and recall of number facts are established thoroughly through daily fluency which consolidates mental recall and informal/written calculations.
- Teaching, questioning and level of support is differentiated so that the children are all working towards the same learning objective appropriate to their age group.
- All children will be exposed to challenge through tasks and questioning including further mastery standard problem solving activities for gifted and talent pupils.
- Time is given in other subjects for pupils to develop and apply their mathematical skills.
- Children will actively take part and are enthusiastic during their maths lessons and will develop an appropriate mathematical vocabulary as modelled by the teachers using guidance from the vocabulary specified in the national curriculum.

Organisation and planning (FS/KS1/KS2)

Lessons

- The children are taught in discreet year groups.
- Differentiation is provided with targeted, positive support to help those who have difficulties with mathematics, as well as those who are higher achievers. In line with the aims of the NC2014, differentiation has now moved to focus on all children achieving the same learning outcome and the differentiation is the way that different groups of children are supported to achieve this.
- Work is carried out using a balance of individual, paired and group work.
- A high proportion of lesson time is devoted to direct teaching of methods and vocabulary through modelled examples to ensure that the children are fully confident to tackle independent tasks.
- Teachers demonstrate, explain and illustrate mathematical ideas to fully involve pupils and maintain their interest through appropriately demanding work.
- Teachers use and expect pupils to use correct mathematical notation and vocabulary.
- Mathematical errors and misconceptions are dealt with as they are identified in a positive and supportive way, teaching what is right and what is not right.
- The emphasis on pupil's learning begins with practical examples leading onto informal jottings and mental strategies, and finally to formal representations as laid out for year groups in the calculation policy
- Children are given a variety of mathematical approaches to solving problems. They are encouraged to develop their own mathematical strategies as well as learning standard methods.
- We recognise and help to develop the children's abilities to select methods for problem solving mentally, recognising that these may differ from those used to solve pencil and paper problems.
- The use of calculators is introduced near the end of key stage 2 to support pupils' conceptual understanding and exploration of more complex number problems, once written and mental arithmetic are secure. Calculators are used in lower years as well as KS2 as a way to self-check answers.
- Teaching Assistants are trained in supporting children.
- The children are expected to gain a wide range of experiences with a variety of materials including IT.
- A high priority will be placed on children reasoning and explaining their strategies.
- Homework for all pupils is set in accordance with the Homework Policy.
- Children in KS1 and KS2 complete a weekly skills test to embed fluency. Children in KS2 complete an arithmetic test on a weekly basis.

Planning

The long term plan (LTP) is taken from the White Rose maths hub overviews and their lesson overviews are used to inform medium term planning (MTP). The LTP is used as a guidance tool in order to pace out coverage of the

curriculum throughout the year. Teachers are encouraged to use professional discretion when deciding on how long is needed on particular curriculum area whilst ensuring all objectives are covered by the end of the academic year. Short term planning (STP) is recorded each week on standard planning sheets. These plans outline the topic area /focus with specific learning objectives to be taught that week. Specific representation, fluency, reasoning and problem solving skills identify the focus area, activity and support children will be carrying out/receiving.

Calculation Policy

Please refer to our Calculation Policy.

Cross curricular links

Opportunities are used to draw mathematical experiences out of a range of activities in other subjects, such as in PE, Science and Geography, to enable children to apply and use Mathematics in both real life and academic contexts and make links.

Assessment, recording and reporting

Assessment is a vital tool in the teaching of Mathematics, designed to monitor children's progress and measure attainment. It is also used to inform future planning by staff at this school or the child's next school.

Teachers are responsible for assessing and recording children's progress in mathematics.

Assessment opportunities are built into the planning of lessons and a range of other methods are used as appropriate. Standards are checked both in-school and through external moderation opportunities. These include:

- children's work marked promptly and in accordance with the school marking policy and AfL policy
- completion of the Foundation Stage Profile on-entry and at the end of the school academic year
- summative standardised tests (SATs) from Y2 to Y6 with statutory tests at the end of Years 2 and 6
- summative tests termly from Y1-Y6 using PUMA, giving standardised score and used to determine progress over the year
- Weekly fluency tests and Arithmetic test are recorded by the teacher
- self assessments and peer assessments by the children which may be recorded as a smiley face are recorded in books
- listening to what children say and questioning them to ascertain their level of understanding
- projections are determined at the end of each school year based on prior attainment and FFT20 data
- class track is used to assess achievement of NC objectives for each child at the end of a unit of work
- termly Teacher Assessments recording on O'Track moderated by the maths coordinator to facilitate tracking and analysis informed by class track and summative tests
- observations of individuals or groups, looking for particular skills or concepts to be demonstrated
- homework set that is appropriate and relevant to the mathematics curriculum being taught
- half termly moderation of children's work to agree and check the standards of attainment termly

Teachers assess the standard of work against the key objectives for each year group and compare and moderate work to standards as displayed in the national curriculum. This data is recorded and assessed through O'Track. Termly teacher assessments are reviewed by the maths coordinator to facilitate tracking and target setting and support the monitoring of children's progress.

At the end of the academic year, children's assessments are moderated alongside the next teacher and to the maths coordinator to identifying areas for improvement.

As a statutory requirement, the end-of-year report will include whether a child has reached end of year age related expectations in mathematics as in the other core subjects.

SEND/equality

Differentiation is provided with targeted, positive support to help those who have difficulties with mathematics, as well as those who are higher achievers. In line with the aims of the NC2014, differentiation has now moved to focus

on all children achieving the same learning outcome and the differentiation is the way that different groups of children are supported to achieve this.

Children with special educational needs in mathematics are supported to enable them to achieve the learning objective. (See the Special Educational Needs Policy and the Equal Opportunities Policy for details)

Intervention plans are in place for those not on track to achieve expected progress or attainment, and same day intervention is used for those who have not understood during the lesson.

Health and safety

The teaching and learning of Maths is in line with the school's health and safety policy.

Staff development

The development of staff is identified through various means; performance management, lesson observations, book scrutiny, pupil progress meetings, learning walks, staff questionnaires, staff discussions, data.

Where development needs have been identified, there are different methods that the school will adopt to address these skills: peer coaching / mentoring, staff meeting, CPD, LA support or visits to schools where good practice has been identified.

Subject leader role

The role of the Subject Leader is to provide professional leadership and management in Mathematics in order to secure high quality teaching, effective use of resources and high standards of learning and achievement for all pupils. Maths is led by the main subject leader for maths, supported by the shadow leader, who works alongside the main leader to monitor, evaluate and support teaching and learning across the school, this is to ensure good succession planning and to verify judgements and ways forward.

- They will achieve this by affecting the following key areas: strategic direction and development; learning and teaching (including planning and marking and presentation); leading and managing staff; development and monitoring of the maths subject action plan; and efficient and effective deployment of staff and resources.
- The Subject Leader will train and coach staff on Mathematical pedagogy within the school and keep up-to-date with developments from a county and national level.
- The Subject Leader has regular discussions with the Head Teacher and other senior leaders about learning and teaching in Mathematics and provides data and a subject overview of the strengths and weaknesses of Mathematics within South Cave CE (VC) Primary School on a termly basis.
- During the academic year the Subject Leader has specific allocated time for subject self-evaluation activities.

Monitoring and review

Monitoring of the standards of children's work and of the quality of teaching in mathematics is the responsibility of the mathematics subject leader, the Headteacher and the class teacher.

Resources

The use of Mathematics resources is integral to the concrete – pictorial – abstract approach and thus planned into our learning and teaching.

- We have a variety of equipment and resources, both tangible and ICT based, to support our learning and teaching.
- These resources are used by our teachers, teaching assistants and children in a number of ways including:
- Demonstrating or modelling an idea, an operation or method of calculation, e.g.: a number line; place value cards; dienes; money or coins; measuring equipment for capacity, mass and length; bead strings; the interactive whiteboards and related software; 3D shapes and/or nets; Numicon and related resources and software; multilink cubes; clocks; protractors; calculators; dice; number and fractions' fans; individual whiteboards and pens; and 2D shapes and pattern blocks, amongst other things;
- Enabling children to use a calculation strategy or method that they couldn't do without help, by using any of the above or other resources as required; and
- Providing a context, where possible and linking it to the application and practise of calculation strategies and number skills.
- Standard resources, such as number lines, multi-link cubes, dienes, hundred squares, shapes, etc. are located within individual classrooms.

- Resources within individual classes are accessible to all pupils who should be encouraged to be responsible for their use.
- A range of Mathematics related software is also available and this is accessible via the shared server, which children can access when projected onto the Interactive Whiteboards in each classroom; by using individual I pads; or by using the Computing suite as a whole class.
- Teachers are encouraged to use the school playgrounds as an outdoor classroom when possible, for example, when teaching length, area or perimeter.
- The staff in school have access to Numicon resources. The Numicon resources are tangible resources, which are used for individual interventions; intervention groups; or in-class focus groups in all year groups, but focused particularly on KS1 and Foundation Stage.
- Each child in Years 1 to 6 has access to the subscription only EasiMaths website, which they can access at home or at school to support their learning in Mathematics. The website follows and supports the National Curriculum 2014 and learning can be child lead or teacher lead.
- The staff in school have access to the White Rose Maths schemes of learning and individual accounts for the NCETM website.

Review date

Written by Mr. W. Tatton and Miss C. Sheeley (Maths subject leads)

This policy will be reviewed Autumn 2020 or according to the School Development Plan.