**Twiss Green Community Primary School**

**Policy for Mathematics**

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1. Intent

At Twiss Green it is our intent to teach mathematics in a purposeful and engaging manner which will equip our children with a powerful set of tools to understand and change the world. These tools include logical reasoning, problem solving skills and the ability to think in abstract ways.

We intend for our pupils to be able to apply their mathematical knowledge to science and other subjects. We want children to realise that mathematics has been developed over centuries, providing the solution to some of history’s most intriguing problems. We want them to know that it is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment.

It is important to us that all of our children are challenged to do their best and our expectations are aspirational for all. Numeracy skills are needed in all aspects of life and with this in mind we endeavour to ensure that children develop a healthy, curious and enthusiastic attitude towards mathematics that will stay with them into adulthood.

1. Aims

At Twiss Green teachers use the 2016 national curriculum for mathematics. In early years the curriculum is guided by the Early Learning Goals.

The national curriculum for mathematics aims to ensure that all pupils:

* 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.

At Twiss Green it is our aim to develop:

* a positive attitude towards mathematics and an awareness of the fascination of mathematics
* competence and confidence in mathematical knowledge, concepts and skills
* an ability to solve problems, to reason, to think logically and to work systematically and accurately
* initiative and an ability to work both independently and in cooperation with others
* an ability to communicate mathematics
* an ability to use and apply mathematics across the curriculum and in real life
* an understanding of mathematics through a process of enquiry and experiment

1. Planning and organization

Each class teacher is responsible for the mathematics in their class in consultation with and with guidance from the mathematics coordinator. The approach to the teaching of mathematics within the school is based on three key principles:

* a mathematics lesson every day
* a clear focus on direct, instructional teaching and interactive oral work with the whole class and group
* an emphasis on mental calculation, developing fluency, reasoning and problem solving skills.

Each class organises a daily lesson of between 45 and 50 minutes for mathematics and a separate 10 minute mental maths session. 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 should always be based on the security of pupils’ understanding and their readiness to progress to the next stage. Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content. Those who are not sufficiently fluent with earlier material should consolidate their understanding, including through additional practice, before moving on. Intervention and consolidation is delivered to children either the same day or the following morning.

Lessons are planned throughout school using the **White Rose** scheme of learning. Y6 use parts of the White Rose scheme alongside revision materials to deliver lessons. Reception currently use the White Rose scheme of learning also. Taking the end of year Early Learning Goals into account, this scheme provides progression to support teachers in building up the key small steps in learning throughout the year.

Direct teaching focuses on demonstrating, modelling and discussion with children. Teachers use a variety of visual, aural and kinaesthetic resources and mathematical language during the main part of the daily maths lesson. Children participate actively in activities related to the learning objective.

1. Pupils records of their own work

The majority of work is recorded in the White Rose practice books. Shared work at the beginning of the lesson may be recorded in Maths jotters, on feedback paper or on whiteboards. There are occasions when it is both quick and convenient to carry out written calculations. It is also important to record aspects of mathematical investigations. Children are taught a variety of methods for recording their work and they are encouraged and helped to use the most appropriate and convenient method of recording. Children are encouraged to use mental strategies before resorting to a written algorithm.

It is school policy that the following exercise books are used:

* KS1: 2cm and then 1 cm squares when individual children are ready
* Year 3: 1 cm squares - move to 7 mm squares in the Autumn term when individual

children are ready

* Year 4 -6: 7 mm squares

All children are encouraged to work tidily and neatly when recording their work. When using squares one square should be used for each digit.

Each child will have a folder where work completed on worksheets is stored.

1. Marking and Homework

See separate policy documents.

1. Assessment and record keeping

Teachers are expected to make regular assessment of each child’s progress and to record these systematically. The following is the school policy for assessment in mathematics:

Weekly Evaluation

The annotation of weekly plans shows what has been taught and what has yet to be learned. This serves as a class record of progress. The teacher may wish to make notes on individual children whose progress differs markedly from the rest of the class, and the reasons for it. The White Rose practice books are used to record assessments from each daily lesson. Teachers record the children’s understanding of the lesson on the contents page, using an arrow system or similar to show when children have achieved, need further practice or have worked at greater depth during the lesson. The children self-assess their own work using a smiley face system/RAG system or similar next to the title of that day’s lesson to assess their own understanding.

End of unit Evaluations

At the end of each unit of work, White Rose end of block assessments will be used.

Termly Evaluation

At the end of each term, the White Rose termly assessments are used to formally assess the children and this is used alongside teacher judgement in helping place the children on the 9 point assessment scale. Percentage scores are recorded on the class assessment grid. It should be noted that Autumn and Spring assessments are not cumulative as they assess mainly the objectives taught within these terms. Y3-5 use the QCA end of year assessments during the Summer term instead of the White Rose assessments.

Results from these tests also give teachers an idea of where misconceptions have occurred and how they may be addressed in further planning.

Reception Class

Children are baseline tested on entry and are then assessed at the end of each term using the age/stage bands of Development matters and then against the early learning goals at the end of the year.

1. Reporting to parents

Reports are completed before the end of the summer term and parents and carers are given the opportunity to discuss their child’s progress on two separate occasions.

Parents and carers will be kept informed of children's achievement and curriculum targets through reports, parent consultation evenings and through curriculum overviews issued half termly.

Teachers use the information gathered from their half termly assessments to help them comment on individual children’s progress.

If the end of year assessment data on the 9 point assessment scale falls below the level achieved the previous year, teachers discuss the results with the parents before the end of year reports go home.

1. S.E.N./ vulnerable children and pupil premium children

Children with SEN are taught within the daily mathematics lesson and are encouraged to take part when and where possible.

Children who are on the provision map should have up to 3 separate targets identified from the year group objectives and teachers keep these objectives in mind when planning work. These children will be assessed each half-term on the provision map.

When additional support staff are available to support groups or individual children they work collaboratively with the class teacher.

Within the daily mathematics lesson, teachers not only provide activities to support children who find mathematics difficult but also activities that provide appropriate challenges for children who are high achievers in mathematics through quality first teaching.

1. Equal opportunities

All children regardless of race, gender or ability should have the opportunity to develop their proficiency in numeracy. We endeavour to ensure that all children have equal access to the mathematics curriculum, that all children are given equal opportunities and that wherever possible resources are appropriate and relevant to the needs of the child.

1. Monitoring and evaluation

It is the role of the mathematics subject leader in consultation with the head teacher and staff to monitor the effectiveness of this policy. It should therefore be reviewed and updated regularly.

The over-riding task must be to provide support for all who teach mathematics and so improve the quality and continuity of mathematics teaching and learning throughout the school.

1. Resources

All teachers should organise an area within their classrooms or bays dedicated to mathematics resources. This area is easily accessible to all children and allows them to become familiar with all resources.

Large resources that are not used or required regularly are stored centrally in the resource room.

Important publications for teacher’s use are kept on a shelf in the staffroom.

An up-to-date list of resources is attached in the Appendix

1. Appendix

RESOURCES

Reception

Abacus

Number square

Number fans 0-9

Number lines 1-20

Counters

Unifix

Unifix tray & numbers

Unifix 1-100 boards

Teddy bears / Frogs / Elephants

Plastic animals & vehicles

Bricks (3D shapes)

Logic blocks

Magnetic numbers / boards & shapes

Wooden clock

Jigsaws

Sand timers 1min & 3 mins

Y1 & Y2 Bay

Rechargeable stop watches

Number lines

Digit cards / fans

Place value cards / arrow cards

100 squares

Counters & 2 coloured counters

Multilink

Coins

Dice

Rulers

Interlocking Base 10

Calculators – 15 x Texas TI-106

Card coins

Coloured lolly sticks

Heinemann maths games

DK puzzle sum games

Magnetic digits & numbers to 100 + boards

Missing coin number sentence cards

2D & 3D shapes

Number tiles

Dominoes

2D shape dominoes

Geared clocks – class set

Metre sticks x2

Clixi

Circles & lines

KS2 resource boxes (6 per bay)

2 coloured counters

1-6 dice

0-9 dice 100 squares

Bead strings

Coins & notes

Base 10

Tape measures

Small shapes

Number lines

Multiplication squares

Y3 & Y4 Bay (Main resource cupboard)

Rechargeable stop watches

Trundle wheels x6

m rulers x8

Scales x2

Interlocking Base 10

Calculators – 30 x Aurora HC 133

IWB Calculator emulator

Polydron – class set

Cuisenaire rods

Unifix x3

Multilink

Number fans

Negative / decimal numbers

Set squares

Protractors

Tape measures

Mirrors

Marbles & cards

Dice

Money

Loop cards

Multiply & divide boards

Fractions – Decimal Tower

Fractions – Decimal dominoes

Fractions

Polydron

Geostrips

2D shapes x5

3D shapes x3

Geometrical models & folding shapes

Nets

ATM tiles x3

Tak Tiles

Tak Tiles Symmetry

Geared clocks – class set

Clock ink stamps x2

Measuring spoons 5 10 25 50 60ml

Weights 5g 10g 20g

Weights 100g x2

Weights 10g 20g 50g 200g

Weights 500g

Weights 1kg x2

Y5 & Y6 Bay

Rechargeable stop watches

Calculators – 36 x Aurora HC 133

IWB Calculator emulator

Loop cards x8

Mirrors

Protractors

Set squares

Compasses (teachers desk)

Resource room (large boxes)

Capacity

Kitchen scales

Pan balances x2

Pin boards

Clocks

Lower KS2 resource boxes

Base 10

2 coloured counters

1-6 dice x12

0-9 dice x6

0-9 cards x3

100 squares x6

Bead strings x3

Tape measures x3

0-1000 Number lines x3

Multiplication squares x3

Coins & notes

Small shapes

Upper KS2 resource boxes

Base 10

2 coloured counters

1-6 dice x12

0-9 dice x6

0-9 cards x3

100 squares x6

Bead strings x3

Tape measures x3

Multiplication squares x3

Coins & notes

Small shapes

Main teacher resources

White Rose:

Practice books

Power Maths:

Textbooks

Workbooks

On-line planning & resources on Google Drive

Google drive - School Improvement folder: (including links to White Rose resources)

1 - Planning

2 - White Rose planning & assessment

3 - Progression in calculations

4 - Reasoning & problem solving

5 - Targets & teacher assessment

6 - ICT

7 - Intervention

Websites:

White Rose website - Premium subscribers

My Maths

NCETM website

STEM website

Nrich website

BEAM website

Abacus scheme:

New curriculum books in Y3, Y4 & Y5

Reasoning & problem solving:

Brain Academy

Mathematical challenges for able pupils in KS1 &2

Using & appyling maths

National strategies problem solving with EYFS, KS1 & KS2 children

CAME maths (Y5 & Y6)

Mental calculations:

Teaching children to calculate mentally (x-drive – progression in calculations)

BEAM- Teaching mental strategies

Hot Maths Topics

Above & below expected year group:

Spotlight (more able)

Folens- Maths for more able children

Number World (less able Y4&5)

Number Connections (less able Y5)

Maths made easy

Securing levels & Overcoming barriers in mathematics (x-drive)

Maths on Target ( extension work only)

Folens maths for the more able Bk 3,4,5

Wave 3 maths

Springboard 3,4,5,6

Number Connections – Green

Key stage 3 school packs

July 2011

Updated October 2011

Updated December 2014

Updated March 2015

Updated October 2015

Updated October 2017

Updated September 2019

Updated November 2020