

# **GREAT CHART PRIMARY SCHOOL**

## **MATHS POLICY**

September 2022



*Our vision is to create a school community where children participate, succeed and are proud of their achievements. We strive to actively promote British values and prepare our children to become role models, thus preparing them for life in modern Britain. It is our belief that children come to Great Chart Primary School to be happy, successful and to be the best they can be. Our core value is Respect and forms part of our school rules. We also have termly values: Community, Ambition, Responsibility, Resilience, Kindness & Independence*

Written by:

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## **INTENT**

At Great Chart Primary School, our mathematicians are happy, confident learners who approach all aspects of maths with a positive mind-set. We work to equip all children with the knowledge and skills needed to be a competent mathematician, both with mental computation as well as with paper/pencil calculations.

In order to fulfil this, children are given varied opportunities to become fluent with place knowledge, numerical skills and mental computation for the four operations  $+$   $-$   $\times$   $\div$ . These then permeate the areas of mathematics; Geometry, Statistics, Fractions, Measurement, Ratio, Proportion and Algebra.

Reasoning and problem solving is integral in all learning to prepare children with the skills needed to manage maths in the real world.

Progressive learning across the key stages ensures that skills and knowledge are built upon.

The school's core values permeate the attitudes encouraged within this subject. Particularly relevant to the subject are; resilience to conquer new skills and knowledge; aspiration to be the best they can be as a mathematician; responsibility to do their best at all times; independence with tackling their learning and challenging themselves. Through global citizenship experiences, children consider issues pertinent to making lives better for others (such as trade) particularly with the developing countries.

## **IMPLEMENTATION**

Teaching and learning follow the National Curriculum expectations. Planning is based on the White Rose Long/Medium and Short Term Planning which links directly to the National Curriculum programmes of Study. Staff use their expertise to plan activities that broaden and deepen understanding, skills and knowledge from a variety of sources, including teacher made. 'Maths Talk' is central to all learning; new vocabulary is teacher modelled and developed through stem sentences

This development has taken place over a number of years, moving away from using a 'published scheme' so that the mathematics planned and taught was linked to the needs of individual pupils.

Interventions take place as necessary and, where possible, are carried out in class. There are opportunities for children who need extra support from the previous days lesson, to pre teach if this is more appropriate.

New concepts are developed through the CIA approach to learning known within our school as 'Make it, Draw it, Write it'. Manipulates, drawings and jottings are acknowledged to be an important aspect of mathematical development.

Courses and personal professional development ensures what we are delivering at GCPS is up to date and relevant. The subject leader makes sure up to date information or initiatives are disseminated to staff. The subject leader identifies 'staff need' (including TAs) and addresses this through carefully prepared INSET.

Maths takes place daily; up to 60 mins in KS1, up to 95mins in KS2.

Staff are supported by a calculation policy which clearly exemplifies the methods taught and how these link to the use of manipulatives.

Termly meetings for Maths Leaders are attended for professional development and up to date information from the government. There are links with other Ashford schools too (CATS).

## **IMPACT**

Attainment is assessed using the White Rose Assessments at the end of each block of learning. Termly White Rose Assessments are also used.

Arbor monitors the progress and attainment of pupils and is completed 4x annually. Here, any vulnerable group or individual can be identified and interventions designed to meet these needs.

For the past few years, attainment and progress at the end of KS1 and KS2 has been above local and national achievements. However, due to COVID, we have not had this 'measure' for the past two summers.

Children are confident at broaching all mathematics in class; practise using and applying through problem solving. Reasoning skills are used at all junctures for children to express themselves mathematically.

## **THE NATURE OF MATHEMATICS at Great Chart Primary School**

**At Great Chart Primary**, we view Mathematics as a tool for everyday life; a network of concepts and relationships which provide a way of viewing and making sense of the world, central importance for everyday life. At our school we equip children to be curious about mathematics, making connections between concepts and reasoning mathematically. We foster analytical minds and confident communicators of information and ideas to tackle a range of practical tasks and real life problems. We therefore believe it is important to ensure all children have the best possible mathematics opportunities, including as a cross curricular learning tool.

We have a commitment to high achievement in mathematics by children regardless of gender, race, class or disability.

**We uphold and nurture the following** underlying principles for the teaching and learning of mathematics in our school, aiming 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 and procedural 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, e.g. "*Convince me that...*" or "*I know that...so...*"
- 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 **Bar Model** device is used throughout the school to support problem solving.
- Are taught through the **Concrete → Representational → Abstract** sequence, known as '**Make It! Draw It! Write It!**' at GCPS, to ensure they gain a thorough understanding of the mathematical concepts/skills they are learning.
- Should be given the opportunity for every relevant subject to develop their mathematical fluency and mathematical skills.

Using the Maths Curriculum 2014, the philosophies embedded within as well as its Programmes of

Study, we aim to develop:

- a positive attitude towards mathematics and an awareness of the fascination of mathematics
- competence and confidence in mathematical knowledge, concepts, language and skills
- an ability to talk mathematically, 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 and mathematically
- 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

## **SCHOOL POLICY AND THE NATIONAL CURRICULUM**

### Knowledge, Skills and Understanding

At KS1 and KS2 teachers plan their lessons following the statutory guidance and instruction of the Mathematics Curriculum 2014 through the 2019 White Rose Blocks.

Through careful planning and preparation, we aim to ensure that throughout the school children are given opportunities for:

- becoming fluent with mathematical language, knowledge and skills
- taking on challenges and reasoning mathematically
- practical activities and mathematical games
- problem solving
- individual, group and whole class discussions, activities and decisions
- open and closed tasks
- a range of methods of calculating eg. mental, pencil and paper, jottings on white boards, for example.
- working with computers as a mathematical tool
- Embedding maths within other areas of the curriculum, as appropriate.

## SCHEME OF WORK

Our school scheme of work is a working document and as such is composed of:

- Long Term Maps, following the 2021 White Rose Mathematics Curriculum Maps, exemplifying the breadth of coverage across each year group.
- Medium term plans, following the 2021 White Rose Blocks. These plans progressively cover the PoS as set out in the Maths Curriculum 2014 for each year group.
- Ongoing plans are produced on a week by week basis and reviewed daily as necessary. These are developed from the Medium Term plans, taking into consideration the needs of our children. They are based on the varied approach as outlined by White Rose Mathematics but may be sourced from other websites or teacher created..
- Teachers in Foundation Stage base their teaching and learning on objectives within the Framework for Foundation Stage; this ensures that they are working towards the 'Early Learning Goals For Mathematical Development'. Towards the end of the Foundation Stage, teachers aim to draw the elements of a daily mathematics lesson together so that by the time children move into Year 1 they are familiar with a 45-minute lesson.

## CROSS-CURRICULAR OPPORTUNITIES

Throughout the whole curriculum opportunities exist to use and apply, extend and promote mathematics. Teachers seek to take advantage of all opportunities.

## TEACHERS' PLANNING AND ORGANISATION

Each class teacher is responsible for the mathematics in their class in consultation with and with guidance from the Maths Leader.

The approach to the teaching of mathematics within the school is based on three key principles:

- **a mathematics lesson every day**
- **carefully planned in opportunities for language development and use**
- **a clear focus on posing a problem** (e.g. 'How can we work this out?'), **seeking a solution** (e.g. investigating using manipulatives, diagrams, jottings...), **teacher modelling, developing mathematical thinking, interactive oral work both with the whole class and with groups**
- **an emphasis on fluency, reasoning, using and applying knowledge and skills and problem solving**

- **Manipulatives** are available and used to support concrete learning
- **Procedural and Conceptual Variation** is recognised as necessary for mastery in learning.
- The '**Bar Model**' is promoted and modelled by all staff as a vehicle to aid problem solving
- Times tables and related facts are rehearsed daily in years 1 – 5.

In Foundation Stage, the children participate in a 45 minute lesson daily, taking advantage of the outdoor area and self-initiated learning, as well as having teacher directed and adult lead activities during the week.

In KS1 each class organises a daily lesson of approx 60 minutes. Daily lessons foster a balance of fluency practise, reasoning as well as using and applying/problem solving.

In KS2 each class organises approx 5 hours of mathematics per week. Lessons foster a balance of fluency practise, reasoning as well as using and applying/problem solving.

Lessons are planned using a common planning format (see Appendix) and are collected and monitored by the mathematics leader

Lesson plans set out daily objectives that progress towards the 'Expected' outcomes for their year group.

Teachers work in year group teams to produce their planning.

From Year Two, children are organised into sets within their year group for their daily maths lesson.

## **ADDITIONAL EDUCATIONAL NEEDS and VULNERABLE GROUPS**

Children with AEN or in Vulnerable Groups are taught within the daily mathematics lesson and are encouraged to take part and are specifically differentiated for when the need arises.

Where applicable, children's IEPs incorporate suitable objectives to bring learning forward and teachers keep these objectives in mind when planning work.

Teaching Assistants are designated to support in certain sets and work with groups or individual children. They work collaboratively with the class teacher, liaising closely on a day to day basis to ensure everyone is kept informed.

Where children are finding areas of mathematics particularly challenging, interventions are used to give the opportunity for practise and support in addition to the daily lesson. Across the school, in KS1 And KS2, these take place in the form of a 'Booster Session' where support is given directly in response to the previous day's learning where misconceptions arise or further practise is needed.

'Dynamo' maths, a specifically designed programme for children with extreme maths needs, is used as

an intervention for the most needy children and is used to develop fluency and understanding under the close support of Teaching Assistants in addition to the daily maths lesson.

Selected children work in a small maths class, supported by a TA who also has teacher Training and is an expert in AEN and speech and language needs.

Extra Teaching Sessions are made available once a week during three of the six terms. These are specifically targeted at Pupil Premium children.

## **EQUAL OPPORTUNITIES**

Where appropriate, opportunities are optimised to develop the multi-cultural aspects of mathematics. On a yearly basis, Maths Week dovetails with cultural week giving children the opportunity to experience and learn maths within another culture. (See appendix for photos).

*We incorporate mathematics into a wide range of cross-curricular subjects and seek to take advantage of multi-cultural aspects of mathematics.*

*In the daily mathematics lesson we support children with English as an additional language in a variety of ways, e.g. Repeating instructions, speaking clearly, emphasising key words, using picture cues, playing mathematical games, encouraging children to join in counting, chanting, finger games, rhymes etc...*

Where needed and if practicable, EAL children are supported during mathematical activities according to their individual need.

## **PUPILS' RECORDS OF THEIR WORK**

Children are taught a variety of methods for recording their work and they are encouraged and helped to use the most appropriate and efficient method of recording.

Children are encouraged to create 'pictures in their heads' before recording a written algorithm to ensure understanding is fostered. These approaches are following by picture drawing, diagrams (including the bar model) and by jottings; Make It! Draw It! Write It!

Aspects of mathematical investigations are recorded with evidence of written calculations, reasoning, and conclusions.

Use of photographs is used as a means of recording, as appropriate.

Children are encouraged to:

- master new concepts and methods as exemplified within the calculation policy
- Record and communicate their mathematics in a variety of ways e.g. pictorial, through use of charts...
- Explain their understanding and reasoning fluently, using the correct mathematical language

- Develop informal and personal methods of calculation.
- Compare and discuss different methods of calculation.
- Write the learning objective of each lesson and the day's date for all pieces of work.
- Use recording as an efficient means to a goal.
- work tidily and neatly when recording their work
- Present their work in line with our Presentation Policy.

All children, in all keystages, work in plain books to allow for 'freedom' of recording, especially to foster the **Concrete** → **Representational** → **Abstract** stages of learning . Where squared paper or other formats are required for recording, these are stuck into their books e.g. when learning how to set out work in column addition. This is, however, with the exception of Y5 and Y6 who use a squared paper book for skills based work.

We value talk for learning and group work; where children have collaborated in their working using large sheets of paper.

## **MARKING**

Marking is supportive, diagnostic and summative thus informing future learning.

Where there are mistakes or misconceptions, one or more of the following should be used :-

Adult modelling

Adult explanation of mistake made

A written question that will help the child to realise their mistake

Highlighting where the mistake has been made

Giving a further example for the child to practise

Verbal Feedback

Maths vocabulary needs to be spelt correctly and modelled if specific vocabulary has not been used.

### **Other could include:-**

Verbal Praise

Instant Feedback (IF)

Stickers and other Reward Systems

Children marking their own work where appropriate

Children marking work with their maths partner where appropriate

Children's written response to written feedback (written in green pen)- when appropriate

## **ASSESSMENT AND RECORD KEEPING**

Informal Assessment takes places daily, throughout each lesson as an ongoing, diagnostic tool.

Weekly plans allow space for recording specific notes of assessment.

Booster sessions run 4x weekly to support children who:



- May need misconceptions unravelled from the previous day's learning
- May need extra 'practise' to consolidate skills
- To deepen learning
- 

or

- To extend learning

Teachers are expected to make regular assessment of each child's progress and to record these systematically on Target Tracker.

Pupil Progress Meetings at the end of term's 2,4 and 6 focus on APP information and Teacher Assessments and target children in need of extra support or intervention.

Target Tracker contains the end of year objectives in line with the New Curriculum 2014 and, with completing these, teachers have a clear vision as to which stage of learning each individual is at.

Target Tracker and formative assessments provided by White Rose clearly show where there are any 'gaps' in learning.

Parents are informed of their children's progress:

- At the end of terms 2, 4 and 6 by way of reporting Teacher Assessment levels.

## **SOCIAL, MORAL, SPIRITUAL AND CULTURAL OPPORTUNITIES**

The mathematics curriculum promotes the British values of tolerance and resilience through problem solving and understanding of concepts, encouraging pupils to persevere and try different methods to arrive at a correct solution. Teamwork through talk partners, peer assessment and group work underpins our teaching and learning style. Children work together in all areas of the maths curriculum to support each other and build mutual respect for one another.

Children are taught to use 'mistakes' in a positive light and learn from them in all maths lessons. This fosters confidence and builds self-esteem and encourages them to take risks and become lifelong learners whilst using their mathematical skills in all aspects of life.

Children are encouraged to:

- Sustain their self-esteem in their learning experience
- Develop ability for independent thought
- Recognise the unique value of each individual
- Listen and respond appropriately to the views of others
- Be confident to respond to errors proactively
- Show respect for resources
- Display a willingness to participate
- The School's Core Values are promoted throughout all maths lessons, as appropriate.

## REPORTING TO PARENTS

Teachers use the information gathered from children's work as well as their half termly assessments for formative assessment. Summative Achievement is recorded onto **Arbor** and progress is tracked. Parents are informed of their child's summative attainment and progress at the ends of Term 2, Term 4 and Term 6 by an Interim Report. Formative reporting takes place at the end of Term 6. These detail progress, achievement, attitude and next steps for learning.

In addition, parents are expected to attend two consultations a year with their child's class teacher where progress, attainment and attitude is given verbally. Pupils with AEN will have an additional meeting at the end of the year.

## COLLECTING EVIDENCE

Evidence of achievement is exemplified in individual exercise books and, in some classes, maths jotters. In addition to this, where appropriate, group investigation work is exemplified through photographs and annotations by the children and/or an adult.

## PARENTAL INVOLVEMENT

- \* Parents are invited into school twice yearly to look at their children's work.
- \* An open evening is held once a year.
- \* When significant changes have been/are made to the mathematics curriculum parents are invited to a meeting or sent information via the half termly newsletter.
- \* Parent sessions are presented by teachers in each year group annually, informing parents of the strategies we use for computation as well as making them aware of the importance/relevance of Make It! Draw It! Write It!

## DIFFERENTIATION

- Stepped Activities which become more difficult and demanding but cater for the less able in the early sections.
- Common Tasks which are open ended activities/investigations where differentiation is by

*outcome.*

- *Resourcing which provides a variety of resources depending on abilities eg. counters, cubes, 100 squares, number lines, mirrors.*
- *Grouping according to ability so that the groups can be given different tasks when appropriate. Activities are based on the same theme and usually at no more than three levels.*

Guidance for teachers on possibilities for differentiation is provided during INSET.

Ability groups are flexible for different mathematical activities.

Is the mathematics offered to children taken from a variety of sources, not from any one scheme.

## **MONITORING AND EVALUATION**

The leader/member of senior management take part in monitoring standards and quality in mathematics through lesson observations, book scrutiny and monitoring of plans and APPs. This is to ensure adherence to the agreed maths policy as well as monitoring quality of teaching.

As appropriate, the mathematics leader is released regularly from their classroom in order to work alongside other teachers. This time is used to monitor and evaluate the quality and standards of mathematics throughout the school and enables the leader to support teachers in their own classrooms.

Opportunities for teachers to review planning, policy and published materials are given on a regular basis during staff meetings.

Opportunities are made to review planning, policy and the published materials used for mathematics.

## **STAFFING AND RESOURCES**

Regular provision is made for the mathematical development of staff including CPD and INSET within school from the Maths Leader. This includes both teachers and teaching assistants.

The leader has a job description which is reviewed annually at performance management interviews. An action plan for mathematics is developed annually and is agreed with by the headteacher. The Maths Leader meets with the 'Maths Governor' 3 x yearly to report on the progress of mathematics within the school.

A wealth of resources are readily available to both children and staff.

### Practical Resources

All teachers organise an area within the classroom dedicated to mathematics resources. This area is easily accessible to all children and allows them to become familiar with all resources. All classes have a maths working wall which supports the learning in class.

Resources which are not used or required regularly are stored centrally:

- \* **In the Maths Cupboard in the Small Hall.**
- \* **In cupboard along the corridor between the Small Hall and the Group Learning Room.**
- \* **In the PPA Room.**

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

Through CDP and INSET, staff made aware of using resources to their full potential.

## **THE GOVERNING BODY**

A numeracy governor is identified and meets 3x yearly with the maths leader to be updated on progress towards school targets and to update him on the school action plan for maths.

The maths governor is invited to attend maths INSET or given feedback on INSET that has taken place.

The maths governor attends school on occasions to take part in class activities and/or observe learning that is taking place.

A range of governors have the opportunity to observe lessons across the school throughout the year.

The maths governor reports on his meeting with the maths leader and any visits to school for observations/INSET to the *curriculum committee* /whole governing body.

## **HOMELEARNING**

It is our school policy to provide parents and carers with opportunities to work with their children at home. These activities may only be brief, but are valuable in promoting children's learning in mathematics.

Activities are sent home on a regular basis (see the separate school Homework Policy) and take the form of number games and tasks with some formal exercises for older children.

Homework reinforces and practises tasks in class to develop fluency and reasoning skills.

## KS2

Times tables learning is set on a weekly basis in addition to one maths homework that supports current learning or revisits prior learning.

## KS1

Y1–, A maths activity weekly to support work covered in class or revisits prior learning.. It may be a game, problem solving or practice calculations

Y2– Times tables and a maths activity weekly

## Foundation Stage

A weekly activity sheet sharing what has been covered that week in maths for parents to reinforce the learning at home. Eg number rhymes, formation of numbers, counting games etc.

**This policy is to be reviewed as necessary in light of any changes to or further information for the New Maths Curriculum 2014 or assessment arrangements.**

C. Fillmore July 2022