# GOLDINGTON GREEN ACADEMY

# Mathematics Policy

(To be used in conjunction with GGA Calculation Policy, Times Table policy and The Assessment Recording and Reporting Policy)

## Safeguarding

Goldington Green Academy recognises it has a statutory duty under Section 175 of the Education Act 2002 to ensure arrangements are in place for safeguarding and promoting the welfare of children.
We recognise that children who are abused or witness violence may find it difficult to develop a sense of self-worth and that school may be the only stable, secure and predictable element in the lives of children at risk. Our school will endeavour to support these pupils by providing an ethos which promotes a positive, supportive and secure environment, providing a sense of being valued.
All staff, governors and volunteers must be made aware of, and adhere to the safeguarding policy and procedures within the school.
At Goldington Green we recognise our legal and ethical duty to keep pupils safe from radicalisation and extremism. As such we incorporate the principles of the PREVENT agenda into all practice including the curriculum. Additionally, we ensure that all speakers are carefully vetted by senior staff and that all material available in school, both electronic and otherwise, is suitable. We also ensure that sufficient training is in place so that all staff understand what radicalisation means and why people may be vulnerable to being drawn into terrorism as a consequence of it. Staff know what measures are available to prevent people from becoming drawn into terrorism and how to challenge the extremist ideology that can be associated with it. Any concerns are dealt with in line with our safeguarding policy working in conjunction with Bedfordshire Police and other agencies as appropriate.

## Equal Opportunities

The Equality Act 2010 makes it unlawful for staff to discriminate directly or indirectly, or to harass staff or pupils due to any of the nine protected characteristics.
Goldington Green Academy aims to create a culture that respects and values each other's differences, that promotes dignity, equality and diversity, and that encourages individuals to develop and maximise their true potential.
Everyone within the school community has a responsibility to ensure that this statement is adhered to. Senior Leaders in particular, should lead by example, identify any inappropriate behaviour when it happens and take prompt action to deal with inappropriate behaviour.
We aim to remove any barriers, bias or discrimination that prevents individuals or groups from realising their potential and contributing fully to our school's performance. In removing these barriers, we aim to develop a school culture that positively values diversity.
We are committed wherever practicable, to achieving and maintaining a workforce that broadly reflects the local community in which we operate.

Every possible step will be taken to ensure that individuals are treated fairly in all aspects of their employment, engagement or whilst volunteering at our school

## Philosophy

It is our policy to ensure that mathematics is a creative and valuable activity requiring not only facts and skills, but also an understanding gained through exploration, application to real life situations and discussion. As a school we have made the decision to adapt and adopt the Shanghai Mastery Maths approach to support our children in deepening their understanding of mathematics and the skills of reasoning, fluency and problem solving across all aspects of the subject.

## Aims

- To follow the Calculation Policy
- To maintain a balance between tasks developing knowledge, skills and understanding and those developing the ability to solve problems and carry out investigations.
- To develop the children's use of mental arithmetic.
- To ensure that the children can apply mathematics to real life situations, in addition to working in purely mathematical contexts.
- To experience both open-ended and closed tasks which demand different forms of thinking.
- To experience practical work at all stages of learning.
- To have the opportunity for individual and collaborative learning.
- To encourage the use of appropriate and varied methods of recording.
- To develop children's confidence to select and use a wide range of equipment.
- To develop an understanding and use of mathematical language.
- To ensure opportunities for the consolidation and practice of fundamental skills and routines, as well as the ability to apply learning to new and real life situations.
- To ensure children develop mastery in mathematics
- To provide appropriate stimuli to develop questioning and enquiring minds.
- To ensure that the children experience a variety of teaching methods - whole class exposition, small groups and individual enquiry.
- To use different types of technology to enhance learning and teaching.
- To develop Mathematics in the outdoors. Learning in the outdoors and through the outdoor environment.
- Use of evidence requiring degrees of basic skills
- Differentiated group tasks
- Differentiation by the teachers' response to the outcome
- Differentiated presentation
- Differentiation in resources used to support a child's learning
- Next step and challenge tasks as appropriate
- Planned intervention for vulnerable groups and individual pupils.
- Teachers' knowledge of different teaching and learning styles, including Teaching for Mastery pedagogy.

## Long Term and Medium Term Plans

The long and medium term plans follow The White Rose Planning blocks. These are available via The White Rose Hub Website. It is the expectation that these will be followed to ensure each year group's curriculum is fully covered. The maths knowledge and skills documents for each year group ensure the correct vocabulary, knowledge and skills are covered for every unit.
Pre-School units provide "Small Steps to Progression". These small steps break down which learning objectives children need to master, and in what order, to build firm foundations of maths topics, and gradually develop their reasoning and problem-solving skills.

## Short Term Weekly Plans

Class teachers complete weekly planning using Smart Notebook,Powerpoint or paper, ensuring that this includes questioning and instructions for teachers to follow. Teachers can also use the template provided (see appendix A) if they feel that extra information for the lessons is necessary. It is up to the year group how planning is completed, ensuring that the non-negotiables are included. Staff are able to use the White Rose lesson powerpoints, Power Maths or 'Master the Curriculum planning to ensure elements of Teaching for Mastery is within their daily lessons. Weekly planning is shared with support staff, who will pass assessment information to the teacher by the use of post-it notes or communicating verbally during or after the lesson. Planning is saved weekly on GGA T: drive under 'Planning.' It is expected that the following elements with the support of White Rose powerpoints and Power Maths lessons, will be included in a daily maths lesson:

- **Coherence** - Are there thinks to previous learning? **-** Connecting new ideas to ideas already learnt. e.g. Linking x to repeated + - Making connections
- An **opener** to the session to assess children's previous knowledge e.g. How many crayons do the children have altogether? How could we work this out?
- **Representation and Structure** - Opportunities for children to relate the mathematical concept to:
- **Concrete:** Using manipulatives e.g. Base 10
- **Pictorial:** Using/ drawing pictures e.g. Part whole model
- **Abstract:** Writing and solving equations e.g. Using bus stop method to solve division problems
- **Stem sentences –** Precise use of mathematical language e.g. When we partition a number we partition into hundreds, tens and ones.
- **Variation** – **Procedural and Conceptual**
- **Procedural variation** – Is variation used in the examples used to draw attention to certain features and to provide opportunities **for intelligent practice** (Doing the same concept in different ways)? e.g. teaching <, > and =

| | |
|---|---|
| 7 __ 9, | 8 > __ |
| Seven tens > | 4 tens + 3 ones < _____ |

- **Conceptual variation** – Is the concept presented in different ways? e.g. Finding 5X table facts – pictures of children in boats, apples in bags, leaves on trees etc.

Teaching the **whole class** together

- **Two parts to the session.**
- **Session 1** – 'ping pong' teacher guided practice e.g. 37 given, children partition into T and 1s etc…
- **Session 2** – Intelligence Practice/ Independent work e.g children complete the same independent work to practice what they have learnt in the first part of the lesson. Children use the Power Maths workbooks to practice the learning step for the day and are progressed with their thinking and knowledge through the use of different variations and challenged in the books to support this. The following elements are also ensured to be covered through the use of the Power Maths workbooks during the children's independent practice:
- **Fluency** – Are there opportunities for the quick and efficient recall of facts and procedures?

Are children given opportunities to move between different contexts and representations of mathematics (where pertinent)? e.g. going from rolling numbers, to multiplication facts, to long multiplication / division.

- **Mathematical Thinking** - reasoning – Opportunities for all children to go deeper in their learning (depth) e.g. Bob says if he has a number that is a multiple of 3, the number will always be odd because 3 is odd. Is Bob correct? Explain.
- Opportunities to **share and critique** their answers and strategies. This is during the reflect part at the end of each session in the Power Maths Workbooks.

Early Years units are delivered through a range of whole school, group and individual inputs, depending on the needs of the child. Children also have the opportunity to enhance their mathematical skills through the provision provided during 'Challenge Time.'

## Basic Skills in Mathematics

Basic skills are practiced through basic skills lessons in years 1-6, including number formation. It is expected that these sessions will ensure children revisit mathematical concepts little and often as the long term plan teaching blocks focus on a particular area of maths for either two or three weeks.

Reception, Year 1 and Year 2 follow the NCTEM 'Mastering Number' program. **Over time, through participating in Mastering Number sessions, our children will:**

- Develop fluency in calculation and a flexibility with number that exemplifies good number sense.
- Be able to clearly communicate their mathematical ideas.
- Make good progress towards the Early Learning Goals and Key Stage 1 year group expectations.

Year 3 access White Rose Fluency Bee resources to aid the teaching and learning of number sense; additive reasoning and moving into multiplicative reasoning.

Year 4 and Year 5 follow the KS2 Mastering Number sessions to develop automaticity in multiplication and division facts through regular practice and an understanding of how pupils progress in their knowledge and understanding of multiplicative concepts.

## Flashback 4s

Flashback 4's should be accessed by all children years 1-6 to ensure that children are consolidating learning from the last lesson, last week, last term and last year. This can be accessed via the interactive board or from printed out sheets.

## Weekly Pixl Arithmetic Tests

Children complete weekly pixl arithmetic tests during one of their basic maths skills sessions to ensure their arithmetic skills are practiced little and often. Children are timed (depending on their year group and age) and then scores are recorded on a class spreadsheet to keep track of children's progress. Children are encouraged to take these home to share with adults at home so that skills that need to be worked on can be shown at home. This is to help with children's growth mindset as it is encouraged to try to get more completed in the time / one more mark every week.

## Resources

Each classroom in years 1-6 has their own maths trolley of equipment that fully supports the teaching of learning of maths for their year group's age related expectations. The resources are regularly monitored by the maths leaders and an inventory is attached to each trolley so class teachers are familiar with the resources they have.
Early Years have a range of shared resources, including resources that allow children to explore maths through their daily experiemces. For example telephones to develop recognition of numerals.

In years 1-6, children have access to 'TT Rockstars,' / Numbots which is an app/ website that supports the teaching and learning of times tables / number bonds. This app is used both in the classroom and at home.

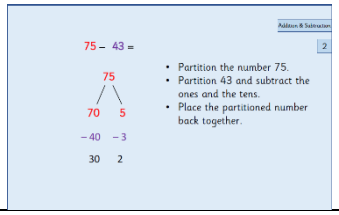
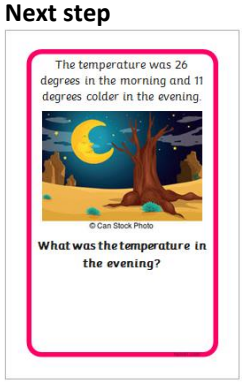
## Homework

In years 1-6, children complete weekly maths tasks on Google Classroom that their teacher has set. The tasks are set weekly by the class teacher and marked at home by the child's parent/carer. This is then looked at by the child's class teacher, ready for the next task to be set. Children may also be set times tables or number facts to learn on a weekly basis. These will then be tested on a weekly basis at school.
Reception children are set weekly home learning opportunities on Tapestry. These activities link to the learning explored that week in class and include the vocabulary/stem sentence that we have encourage the children to use. As a result adults at home can also focus on using the correct vocabulary when discussing mathematical concepts.

Reviewed September 2024

This policy will be reviewed every three years by the Curriculum Committee.

## Appendix A

<table>
<tr><td rowspan="3">DAY 1</td><td><u>WALT:</u> Know how to subtract 2- digit numbers</td><td><u>Guided Learning</u></td><td><u>Basic Maths Skills</u></td></tr>
<tr><td><u>Focus Activity</u><br>Ask the children to try subtracting two number<br>23-11=<br>What strategies have the children used?</td><td>Slide 78- share the calculation and ask the children to solve using partitioning before you share the method<br>  </td><td><u>Reasoning Challenge</u><br>Jasmine has 33 stickers.<br>Ollie has 54 stickers.<br>How many more stickers does Ollie have?<br>What method did you use to solve the problem?</td></tr>
<tr><td><u>Shared Learning</u><br><br>Stem- start with the bigger number<br>Slides 75 +<br>Today we are taking away being careful that we do not cross the tens<br><br>Work through the slides emphasising the value of each digit, finding the tens and ones and move in to column method.<br>Mathematical talk<br>Do we need to make both numbers in the subtraction before we<br>take away?<br>Which number do we need to make? The larger number or the<br>smaller?<br>What are the numbers worth? Tens or Ones?<br>What happens if we have nothing left in a column? Which number<br>do we write?</td><td><u>Independent Learning</u><br><br>Guided<br>Using counters take away numbers physically moving the counters.<br>All attainers<br>Solve the calculations by partitioning like on slide 78<br>76-33=<br>98-72=<br>59-34=<br><br>Next step<br>  </td><td><u>Guidance</u><br>This step is an important step before children start to look at<br>subtraction where they cross a tens boundary.<br>Children need to use concrete materials but also draw images of<br>the base 10 so they can independently solve problems</td></tr>
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**Daily Mastery Maths Lesson Slide Non-Negotiables Yrs1-6**

We agreed as a staff that these are the non-negotiables that we will include on our daily maths lesson delivery slides. Subject leaders will use the non-negotiables checklist to support their monitoring and evaluating of the planning of maths.

| **Non-Negotiable** | |
|---|---|
| ➢ **LI/ WALT** clearly visible on every slide (these will be linked to White Rose small step assessment sheets). | |
| ➢ **Stem sentences** used in every lesson. | |
| ➢ **Small steps** to be made in the lesson are identified. | |
| ➢ **Focus activity** – to initially assess children's understanding of the concept that is going to be taught within the lesson. | |
| ➢ The **resources** that will be used in the lesson – based on the CPA model. This includes representations/ structures – what would be the best way to show the concept? | |
| ➢ **Independent work expectations.** Including '**helping hand'** for children who need additional small step consolidation, independent learning for all attainers (**starting point**, **more practice**), **next step**, **reasoning /problem solving** tasks (with opportunity for children to explain their answer) and an open ended challenge (which could involve collaborative learning with their peers).<br>➢ **Use of the Power Maths Workbooks linked to the daily lesson.** | |
| ➢ **Two parts to the lesson** – First part – **guided practice** where children practice as a whole class concept taught including procedural and conceptual variation. Second part children **work independently** to complete activities as described above. | |
| ➢ **Fluency** – including opportunities for children to apply ideas that they has learnt in other maths lessons. | |
| ➢ **Key words**/ Vocabulary | |
| ➢ **Key questions** to ask children | |
| **Desirable** | |
| ➢ 'What do you already know about this concept?' slide. | |
| ➢ An answers slide | |
| ➢ Squared background | |
| ➢ Slides 'pacey' and progressive to cover a full lesson. | |
| ➢ Different coloured background for each day. | |