Goldington Green Academy

Maths 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.

Intent

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.

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The aim of this policy is to ensure consistency of the teaching, learning and calculation methods across the school. By giving children a firm foundation in maths knowledge and skills, this will enable pupils to build upon their knowledge and skills in mathematics throughout the Early Years, Key Stage 1 and Key Stage 2.

- 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.
- Differentiation by the teachers' response to the outcome.
- 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.

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Implementation

Mathematics is a National Curriculum core subject. Our plans follow a clear structure based on the New Primary Mathematics expectations for each year group.

Year 1 programme of study	
Number	Number and place value Addition and subtraction Multiplication and division Number fractions
Measurement	Lengths and heights Mass/weight Capacity and volume Time
Geometry	Properties of shape
Geometry	Position and direction
Year 2 programme of study	
Number	Number and place value Addition and subtraction Multiplication and division Number fractions
Measurement	Lengths and heights Mass/weight Capacity and volume Time
Geometry	Properties of shape
Geometry	Position and direction
Statistics	Tally charts and bar charts
Year 3 programme of study	
Number	Number and place value Addition and subtraction Multiplication and division Number fractions
Measurement	Lengths and heights Mass/weight Capacity and volume Time
Geometry	Properties of shape
Statistics	Tally charts, bar charts, pictorgrams and ask or answer questions about categorical data.
Year 4 programme of study	

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Number	Number and place value Addition and subtraction Multiplication and division Number fractions Decimal fractions
Measurement	Lengths and heights Mass/weight Capacity and volume Time
Geometry	Properties of shape
Geometry	Position and direction
Statistics	Interpret and present data using bar charts, tally charts and solve one and two step questions.
Year 5 programme of study	
Number	Number and place value Addition and subtraction Multiplication and division Number fractions Decimal fractions Percentages
Measurement	Lengths and heights Mass/weight Capacity and volume Time
Geometry	Properties of shape
Geometry	Position and direction
Statistics	Solve comparison, sum and difference problems using information presented in a line graph. Complete, read and interpret information including timetables.

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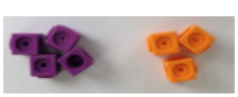
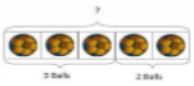
Year 6 programme of study	
Number	Number and place value Addition and subtraction Multiplication and division Number fractions Decimal fractions
Measurement	Lengths and heights Mass/weight Capacity and volume Time
Ratio and Proportion	
Algebra	
Geometry	Properties of shape
Geometry	Position and direction
Statistics	Interpret and construct pie charts and line graphs to solve problems. Calculate the mean as an average.

Calculation

Addition

Combining two parts to make a whole; part – whole model
Connections between models should be made, enabling children to understand the same mathematics can be represented in different ways.

Concrete	Pictorial	Abstract
   Use cubes to add two numbers together as a group or in a bar. 	    Use pictures to add two numbers together as a group or in a bar. 	4 + 3 = 7 10= 6 + 4  Use the part-part whole diagram as shown above to move into the abstract.

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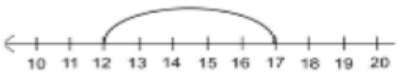
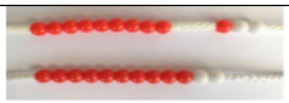
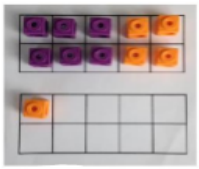
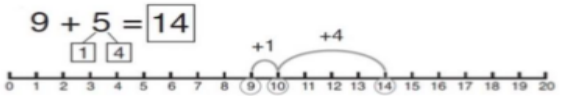
Starting at the bigger number and counting on

At Goldington Green Academy, we embed 'counting on' as a foundation to early calculating.

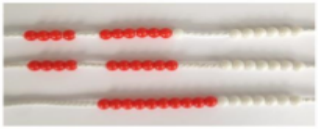
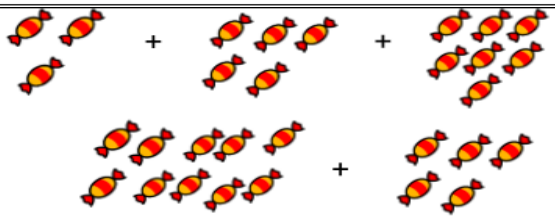
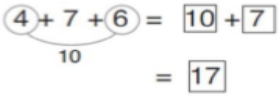
Concrete	Pictorial	Abstract
 Start with the larger number on the bead string and then count on to the smaller number 1 by 1 to find the answer.	12 + 5 = 17  Start at the larger number on the number line and count on in ones or in one jump to find the answer.	5 + 12 = 17 Place the larger number in your head and count on the smaller number to find your answer.

Regrouping to make 10

We call making 10 "magic 10", as it is helpful to make 10 and this will make calculation easier.

Concrete	Pictorial	Abstract
 6 + 5 = 11  Start with the bigger number and use the smaller number to make 10.	 3 + 9 = Use pictures or a number line. Regroup or partition the smaller number to make 10.  9 + 5 = 14 1 4 +1 +4	7 + 4= 11 If I am at seven, how many more do I need to make 10. How many more do I add on now?

Adding three single digits

Concrete	Pictorial	Abstract
4 + 7 + 6= 17 Put 4 and 6 together to make 10. Add on 7.  Following on from making 10, make 10 with 2 of the digits (if possible) then add on the third digit.	 Add together three groups of objects. Draw a picture to recombine the groups to make 10.	 Combine the two numbers that make 10 and then add on the remainder.

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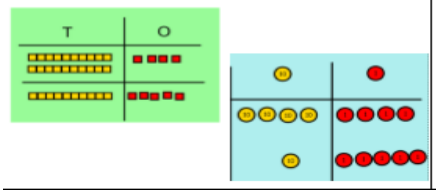
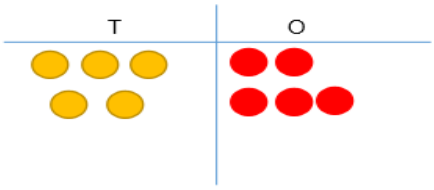
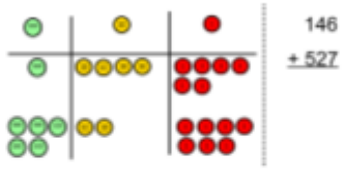
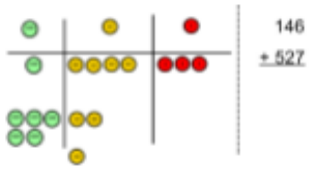
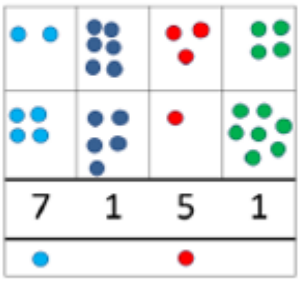
Column method – no regrouping

Teaching the column method for calculation, provides opportunity to develop fluency in calculating.

Concrete	Pictorial	Abstract
24 + 15= Add together the ones first then add the tens. Use the Base 10 blocks first before moving onto place value counters. 	After practically using the base 10 blocks and place value counters, children can draw the counters to help them to solve additions. 	Calculations 21 + 42 = 21 + 42

Column method – regrouping

Concrete	Pictorial	Abstract
Make both numbers on a place value grid.  Add up the units and exchange 10 ones for one 10.  Add up the rest of the columns, exchanging the 10 counters from one column for the next place value column until every column has been added. This can also be done with Base 10 to help children clearly see that 10 ones equal 1 ten and 10 tens equal 100. As children move on to decimals, money and decimal place value counters can be used to support learning.	Children can draw a pictoral representation of the columns and place value counters to further support their learning and understanding. 	Start by partitioning the numbers before moving on to clearly show the exchange below the addition. 20 + 5 40 + 8 60 + 13 = 73 As the children move on, introduce decimals with the same number of decimal places and different. Money can be used here. 536 + 85 621 11 72.8 + 54.6 127.4 11 £23.59 + £7.55 £31.14 11 23.361 9.088 59.770 + 1.300 93.511 21 2

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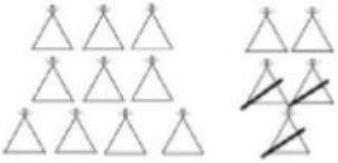
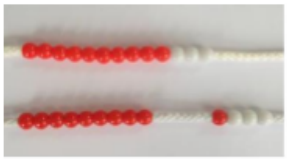
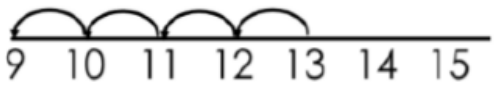
Subtraction

Taking away ones

Concrete	Pictorial	Abstract
Use physical objects, counters, cubes etc to show how objects can be taken away.  6 – 2 = 4   	Cross out drawn objects to show what has been taken away.  15 – 3 = 12	18 -3= 15 8 – 2 = 6

Counting back

Concrete	Pictorial	Abstract
Make the larger number in your subtraction. Move the beads along your bead string as you count backwards in ones.  13 – 4 Use counters and move them away from the group as you take them away counting backwards as you go. 	Count back on a number line or number track  9 10 11 12 13 14 15 Start at the bigger number and count back the smaller number showing the jumps on the number line.  -1 -1 -1 -10 -10 34 35 36 37 47 57 This can progress all the way to counting back using two 2 digit numbers.	Put 13 in your head, count back 4. What number are you at? Use your fingers to help.

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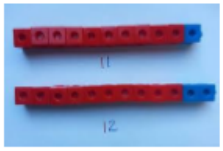
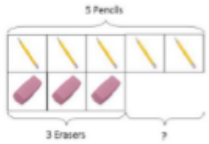
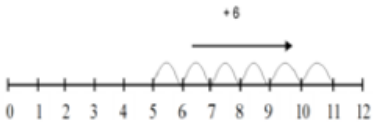
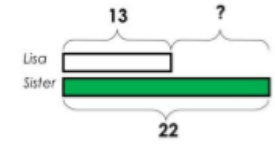
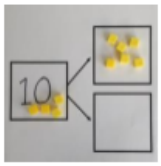
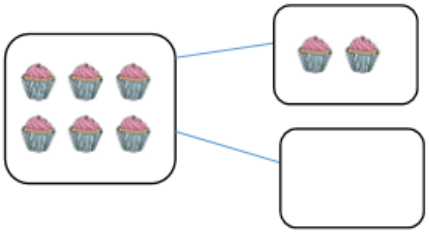
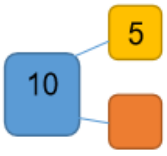
Find the difference

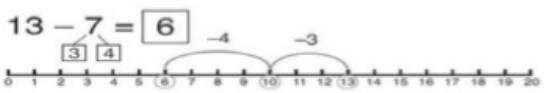
Concrete	Pictorial	Abstract
Compare amounts and objects to find the difference.  Use cubes to build towers or make bars to find the difference  Use basic bar models with items to find the difference	 Count on to find the difference. Draw bars to find the difference between 2 numbers.  Comparison Bar Models Lisa is 13 years old. Her sister is 22 years old. Find the difference in age between them. 13 ? Lisa Sister 22	Hannah has 23 sandwiches, Helen has 15 sandwiches. Find the difference between the number of sandwiches. Lessons about addition and subtraction could start with a contextual story. This will help children to develop their understanding of

Part Part Whole Model

Getting children to illustrate that the same structure can be applied to any number enables children to generalise mathematical ideas. This can build up from simple numbers to more complex numbers, so that children can see the numbers will change, but the structure stays the same.

Concrete	Pictorial	Abstract
 Link to addition- use the part whole model to help explain the inverse between addition and subtraction. If 10 is the whole and 6 is one of the parts. What is the other part? 10 - 6 =	Use a pictorial representation of objects to show the part part whole model. 	 Move to using numbers within the part whole model.

Make 10

Concrete	Pictorial	Abstract
14 – 9 =  Make 14 on the ten frame. Take away the four first to make 10 and then takeaway one more so you have taken away 5. You are left with the answer of 9.	 Start at 13. Take away 3 to reach 10. Then take away the remaining 4 so you have taken away 7 altogether. You have reached your answer.	16 – 8= How many do we take off to reach the next 10? How many do we have left to take off?

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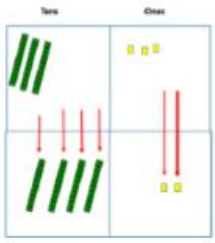
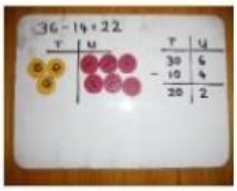
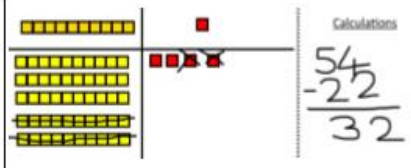
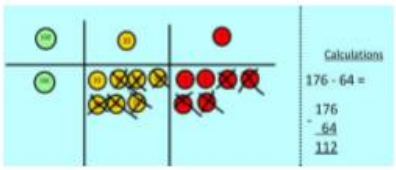
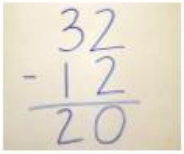
Column method without regrouping

Concrete	Pictorial	Abstract
 Use Base 10 to make the bigger number then take the smaller number away. Show how you partition numbers to subtract. Again make the larger number first. 	 Draw the Base 10 or place value counters alongside the written calculation to help to show working. 	47 − 24 = 23 40 + 7 − 20 + 4 20 + 3 This will lead to a clear written column subtraction. 

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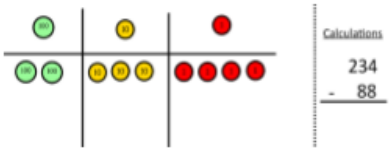
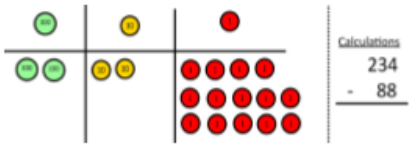
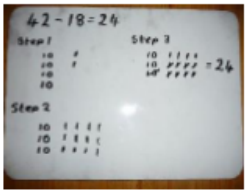
Column method with regrouping

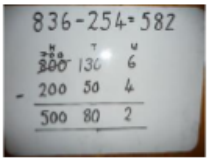
<table>
<tr><th>Concrete</th><th>Pictorial</th><th>Abstract</th></tr>
<tr>
<td>Use Base 10 to start with before moving on to place value counters. Start with one exchange before moving onto subtractions with 2 exchanges.

Make the larger number with the place value counters
 
Calculations
234
- 88

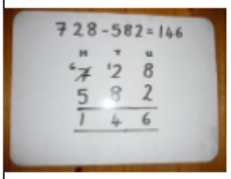
Start with the ones, can I take away 8 from 4 easily? I need to exchange one of my tens for ten ones.
 
Calculations
234
- 88</td>
<td> 
Hundreds Tens Ones
5 12 6
- 2 7 5
3 5 1

Draw the counters onto a place value grid and show what you have taken away by crossing the counters out as well as clearly showing the exchanges you make.

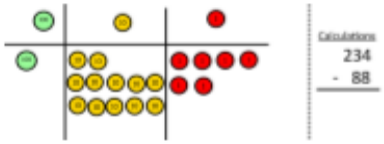
 
When confident, children can find their own way to record the exchange/regrouping.

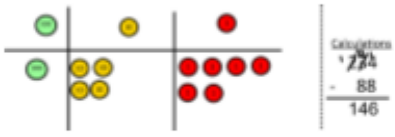
Just writing the numbers as shown here shows that the child understands the method and knows when to exchange/regroup.</td>
<td> 
836-254=582
H T U
800 130 6
- 200 50 4
500 80 2

Children can start their formal written method by partitioning the number into clear place value columns.

 
728-582=146
H T U
6 7 12 8
5 8 2
1 4 6

Moving forward the children use a more compact method.</td>
</tr>
<tr>
<td>Now I can subtract my ones.
 
Calculations
234
- 88

Now look at the tens, can I take away 8 tens easily? I need to exchange one hundred for ten tens.
 
Calculations
234
- 88

Now I can take away eight tens and complete my subtraction
 
Calculations
234
- 88
146

Show children how the concrete method links to the written method alongside your working. Cross out the numbers when exchanging and show where we write our new amount.</td>
<td></td>
<td>This will lead to an understanding of subtracting any number including decimals.

5 12 1
2 6 3 . 0
- 2 6 . 5
2 3 6 . 5</td>
</tr>
</table>

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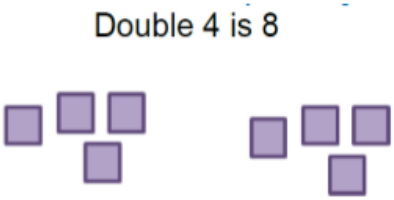
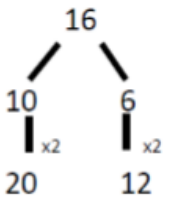
Maths Policy

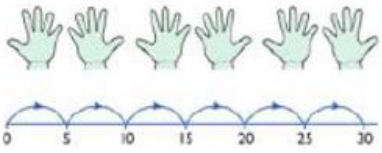
Multiplication

Doubling

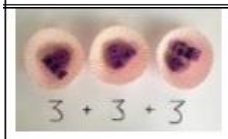
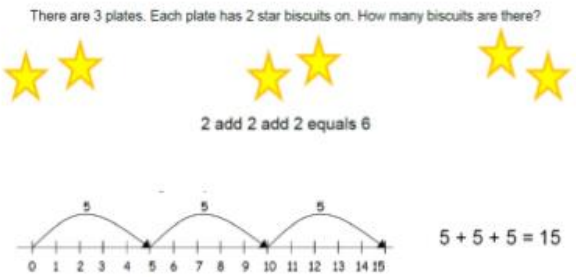
This forms the foundation of multiplication, so that when children learn their times tables they notice relationships with numbers.

Concrete	Pictorial	Abstract
Use practical activities to show how to double a number.  	Draw pictures to show how to double a number.  	 Partition a number and then double each part before recombining it back together.

Counting in multiples

Concrete	Pictorial	Abstract
  Count in multiples supported by concrete objects in equal groups.	 Use a number line or pictures to continue support in counting in multiples.	Count in multiples of a number aloud. Write sequences with multiples of numbers. 2, 4, 6, 8, 10 5, 10, 15, 20, 25 , 30

Repeated addition

Concrete	Pictorial	Abstract
   Use different objects to add equal groups.	 	Write addition sentences to describe objects and pictures. 

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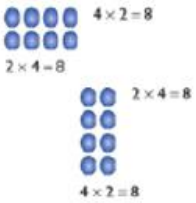
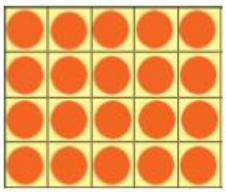
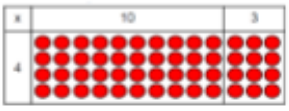
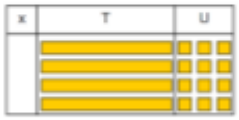
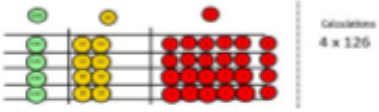
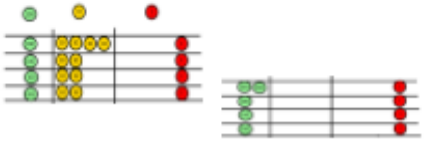
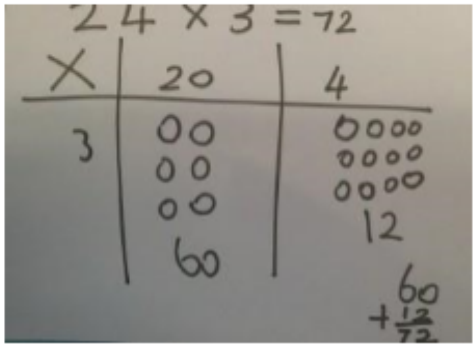
Arrays – showing commutative multiplication

Concrete	Pictorial	Abstract
Create arrays using counters/ cubes to show multiplication sentences.  	Draw arrays in different rotations to find **commutative** multiplication sentences.   Link arrays to area of rectangles.	Use an array to write multiplication sentences and reinforce repeated addition.  5 + 5 + 5 = 15 3 + 3 + 3 + 3 + 3 = 15 5 x 3 = 15 3 x 5 = 15

Grid method

Concrete	Pictorial	Abstract
Show the link with arrays to first introduce the grid method.  4 rows of 10 4 rows of 3 Move on to using Base 10 to move towards a more compact method.  4 rows of 13 Move on to place value counters to show how we are finding groups of a number.We are multiplying by 4 so we need 4 rows.  Fill each row with 126.  Add up each column, starting with the ones making any exchanges needed.  Then you have your answer.	Children can represent the work they have done with place value counters in a way that they understand. They can draw the counters, using colours to show different amounts or just use circles in the different columns to show their thinking as shown below.  	Start with multiplying by one digit numbers and showing the clear addition alongside the grid. **×** | **30** | **5** **7** | **210** | **35** **210 + 35 = 245** Moving forward, multiply by a 2 digit number showing the different rows within the grid method. **10** | **8** **10** | **100** | **80** **3** | **30** | **24** **X** | **1000** | **300** | **40** | **2** **10** | 10000 | 3000 | 400 | 20 **8** | 8000 | 2400 | 320 | 16

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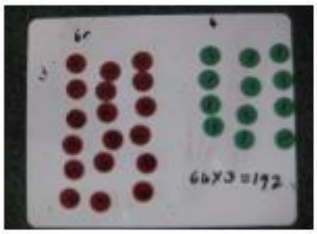
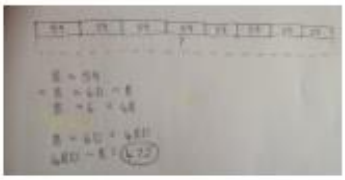
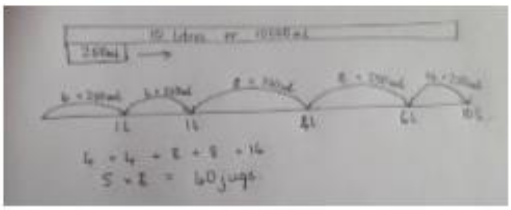
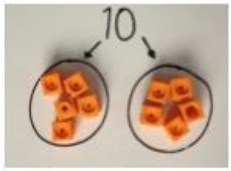
Column multiplication

Concrete	Pictorial	Abstract
Children can continue to be supported by place value counters at the stage of multiplication.  It is important at this stage that they always multiply the ones first and note down their answer followed by the tens which they note below.	Bar modelling and number lines can support learners when solving problems with multiplication alongside the formal written methods.  	Start with long multiplication, reminding the children about lining up their numbers clearly in columns. If it helps, children can write out what they are solving next to their answer. 32 x 24 8 (4 x 2) 120 (4 x 30) 40 (20 x 2) 600 (20 x 30) 768  This moves to the more compact method. 1342 x 18 13420 10736 24156

Division

Sharing objects into groups

Concrete	Pictorial	Abstract
   I have 10 cubes, can you share them equally in 2 groups?	Children use pictures or shapes to share quantities.  8 ÷ 2 = 4	Share 9 buns between three people. 9 ÷ 3 = 3

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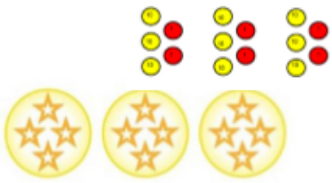
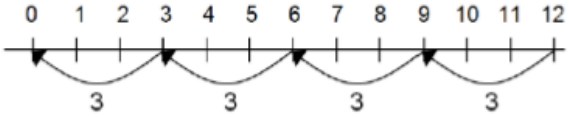
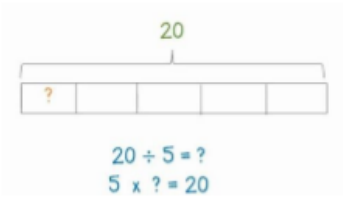
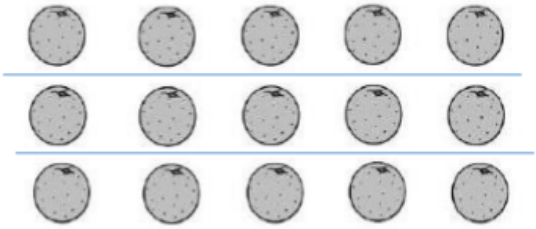
Division as grouping

Concrete	Pictorial	Abstract
Divide quantities into equal groups. Use cubes, counters, objects or place value counters to aid understanding.   96 ÷ 3 = 32 	Use a number line to show jumps in groups. The number of jumps equals the number of groups.  Think of the bar as a whole. Split it into the number of groups you are dividing by and work out how many would be within each group.  	28 ÷ 7 = 4 Divide 28 into 7 groups. How many are in each group?

Division within arrays

Concrete	Pictorial	Abstract
 Link division to multiplication by creating an array and thinking about the number sentences that can be created. Eg 15 ÷ 3 = 5 5 x 3 = 15 15 ÷ 5 = 3 3 x 5 = 15	 Draw an array and use lines to split the array into groups to make multiplication and division sentences.	Find the inverse of multiplication and division sentences by creating four linking number sentences. 7 x 4 = 28 4 x 7 = 28 28 ÷ 7 = 4 28 ÷ 4 = 7

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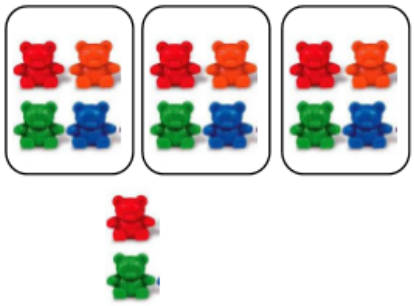
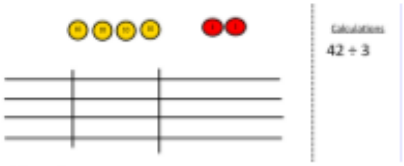
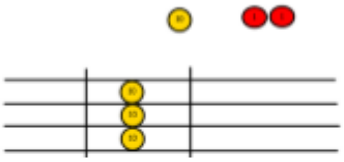
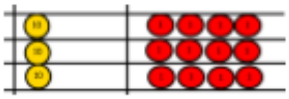
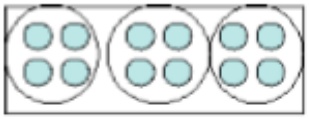
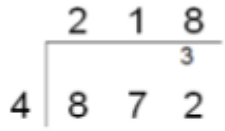
Division with a remainder

Concrete	Pictorial	Abstract
14 ÷ 3 = Divide objects between groups and see how much is left over 	Jump forward in equal jumps on a number line then see how many more you need to jump to find a remainder.  Draw dots and group them to divide an amount and clearly show a remainder.  	Complete written divisions and show the remainder using r. 

Short Division

Concrete	Pictorial	Abstract
 Use place value counters to divide using the bus stop method alongside  42 ÷ 3= Start with the biggest place value, we are sharing 40 into three groups. We can put 1 ten in each group and we have 1 ten left over.  We exchange this ten for ten ones and then share the ones equally among the groups.  We look how much in 1 group so the answer is 14.	Students can continue to use drawn diagrams with dots or circles to help them divide numbers into equal groups.  Encourage them to move towards counting in multiples to divide more efficiently.	Begin with divisions that divide equally with no remainder.  Move onto divisions with a remainder.  Finally move into decimal places to divide the total accurately. 

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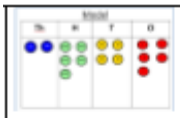
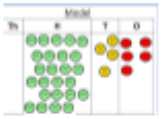
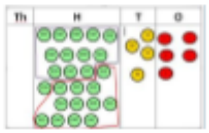
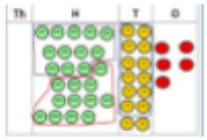
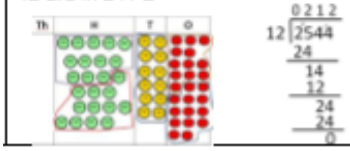
Long Division

Concrete	Pictorial	Abstract
 2544 ÷ 12 How many groups of 12 thousands do we have? None Exchange 2 thousand for 20 hundreds.  0 / 12 | 2544 How many groups of 12 are in 25 hundreds? 2 groups. Circle them. We have grouped 24 hundreds so can take them off and we are left with one.  02 / 12 | 2544 / 24 / 1 Exchange the one hundred for ten tens so now we have 14 tens. How many groups of 12 are in 14? 1 remainder 2  021 / 12 | 2544 / 24 / 14 / 12 / 2 Exchange the two tens for twenty ones so now we have 24 ones. How many groups of 12 are in 24? 2  0212 / 12 | 2544 / 24 / 14 / 12 / 24 / 24 / 0	Instead of using physical counters, students can draw the counters and circle the groups on a whiteboard or in their books. Use this method to explain what is happening and as soon as they have understood what move on to the abstract method as this can be a time consuming process.	0 3 1 8 r 5 20 | 6 3 6 5 −6 0 3 6 2 0 1 6 5 1 6 0 5

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.

Short Term Weekly Plans

Class teachers complete weekly planning using Smart Notebook, 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 (see appendix B). 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 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 = , such as; 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.
    - Session 2 – Intelligence Practice/ Independent work.
- 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

Basic Skills in Mathematics

Basic skills are practiced through daily basic skills lessons in years 1-6, including number formation. It is expected that these daily 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. Maths Basic Skill sessions should also include learning of the current half term KIRFs focus once a week.

Maths Memory Builders

Daily memory builders 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. Years 3-6 should have evidence of this in their books.

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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.
In years 1-6, children have access to 'TT Rockstars,' which is an app/ website that supports the teaching and learning of times tables. This app is used both in the classroom and at home.
To support the teaching and learning of maths with a teaching for mastery approach, teachers have access to Power Maths online teaching guide and resources. Teachers are encouraged not to use this solely but to use in correlation with other Mastery Maths teaching and learning tools such as www.masterthecurriculum.co.uk, White Rose Maths Hub and the NCETM Hub website.

Homework

In years 1-6, children complete weekly maths tasks in a 'Mathematics Workbook' published by CGP. 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.
Each half term, children are given a new KIRFs (Key Instant Recall Facts) focus. This is to be worked on at home over the half term.

Times Tables

Effective understanding and recall of times tables is the foundation of most of the maths that children will do at primary school and the curriculum puts a huge emphasis on knowing them early Year 4 times tables test).

In order to help ensure this happens, children will be given a times table to focus on at home each week (either multiplication / division) and then mixed towards the end of the year. We will also use the following certificate reward system:

- BATMAN- 2x, 5x, 10x (By the end of year 2)
- HAWK-GIRL- 3X, 4X, 6X, 8X (By the end of year 3)
- THOR, 7X, 8X
- BLACK WIDOW- 9X, 11X, 12X
- SUPERMAN- All with division (By the end of year 4)
- CATWOMAN- All with place value- THU and tenths (By the end of year 5)*
- IRONMAN- 2 digits X 1 digit (e.g. 74 X 7)
- WONDEROWMAN- Fractions, decimals and percentages of quantities (e.g. 20% of 25, ¼ of 50)

To pass Hawk-Girl, Thor and Black Widow, multiplication facts from previous certificates need to be retained as they will be tested. There will be a 5 second time limit on each question up to and including Cat Woman level.

In order to help children to understand that multiplication and division represents real-life situations, teaching of times tables in KS1 and lower KS2 will use concrete and pictorial methods, such as asking them to spilt groups of objects into a number of equal groups and find the total of groups of objects.

As well as practicing in class, children will have time to practice once a week using Times Table Rockstars, in order to prepare for their certificate tests.

* E.g. 6 X 4 = 24 is a known number fact so children could be asked questions including:

60 X 4 =	240 ÷ 40 =	0.4 x 6 =	24 ÷ 0.4 =	2.4 ÷ 6 =
60 X 40 =	600 X 4 =	0.4 X 0.6 =	40 X 0.6 =	600 X 0.4 =
240 ÷ 60 =	2400 ÷ 600 =	etc		

Impact

Assessment and recording in Maths adheres to the guidelines set out within the school's assessment and recording policy.

Progress for daily maths lessons will be tracked and assessed using the maths assessment grids for each unit. This will be used for all pupils in Year 1 – Year 6. This assessment information will be used to identify gaps in knowledge and inform future planning and interventions.

At the end of each unit, children will be given an end of unit assessment (White Rose). This assessment information will be used to identify gaps within 1 particular unit and inform planning for maths basic skills and intervention groups.

Classes will have a test once a week to practice their times table that has been focused on at home. Year 3 will be given a time limit of 8 seconds per calculation and Year 4 will be given 6 seconds per calculation. This is in line with the multiplication test children will administer at the end of Year 4.

Each week, children in Years 3 and 4 will times table superhero challenge where they will be given the opportunity to collect their times table certificates. They will be given 4 mins and 30 seconds in Year 3 and 3 minutes 50 seconds in Year 4. Due to the different time limits, children will restart at Batman in each year group. In Year groups below Year 3, children can have the opportunity but it is not compulsory.

Monitoring

Subject leaders monitor and assess the effectiveness of teaching and learning through following the annual monitoring and evaluating timeline. Policy and practice are monitored by the Headteacher and the subject leaders on an annual/termly basis through: -

- Scrutinising planning
- Scrutinising books and other work produced

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- Learning walks and lesson observations
- Collating pupil voice
- Data analysis

Subject leaders triangulate these aspects to ensure standards are at least good.

Reviewed date: April 2020

Next review date: October 2024

Date: 22.04.2020

Staff responsible: Tammy Nurse

Goldington Green Academy

Maths Policy

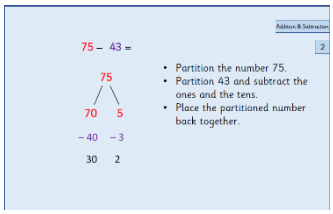
Appendix A:

<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>

Ask the children to try subtracting two number

23-11=

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

 
</td><td><u>Reasoning Challenge</u>

Jasmine has 33 stickers.

Ollie has 54 stickers.

How many more stickers does Ollie have?

What method did you use to solve the problem?</td></tr>
<tr><td><u>Shared Learning</u>

Stem- start with the bigger number

Slides 75 +

Today we are taking away being careful that we do not cross the tens

Work through the slides emphasising the value of each digit, finding the tens and ones and move in to column method.

Mathematical talk

Do we need to make both numbers in the subtraction before we

take away?</td><td><u>Independent Learning</u>

Guided

Using counters take away numbers physically moving the counters.

All attainers

Solve the calculations by partitioning like on slide 78

76-33=

98-72=

59-34=

Next step</td><td><u>Guidance</u>

This step is an important step before children start to look at

subtraction where they cross a tens boundary.

Children need to use concrete materials but also draw images of

the base 10 so they can independently solve problems</td></tr>
</table>

	Which number do we need to make? The larger number or the smaller? What are the numbers worth? Tens or Ones? What happens if we have nothing left in a column? Which number do we write?		

Goldington Green Academy

Maths Policy

Appendix B:

Daily Mastery Maths Lesson Slide Non-Negotiables

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).	
➢ **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.	