

Phillimore Community Primary School



Maths Handbook
2025/2026

Maths Handbook – How we teach Maths at Phillimore

Maths Vision:

At Phillimore we strive to create an environment where pupils are confident and resilient learners who can transfer their mathematical skills to the world around them.

Our vision is for pupils to have a secure knowledge of key mathematical vocabulary and a deep understanding of number and place value. Pupils can work both independently and collaboratively to become effective problem solvers. Pupils are able to explain their reasoning clearly and see mistakes as part of the learning process. Pupils leave Phillimore in Y6 enthusiastic about mathematics and feel positive about developing their skills throughout the next stage of their education.

What qualities/skills/abilities do you want a Y6 child to have when they leave Phillimore?
65 responses

In order to achieve this as a school, we will:

Place a high emphasis on place value and number.

Give opportunities for the pupils to use manipulatives and visual resources.

Model reasoning skills through an I do, you do, we do approach.

Ensure problem solving and reasoning skills have a high importance and are taught daily in maths lessons.

Encourage pupils to explain their reasoning, using sentence structures to help support their answers.

Give opportunities for pupils to work collaboratively and to explain their reasoning to each other.

Provide opportunities for pupils to apply maths skills to real life contexts.

Consolidate learning and make sure pupils are secure in a concept or skill before moving on. Recap and revisit previous learning with pupils.

Run competitions and challenges for pupils and offer a range of home learning opportunities for pupils to further their enjoyment of maths.



Overview of the units taught

In the first term of the year (Autumn 1), maths lessons throughout school have a large focus on number. This involves pupils learning about place value (eg. That a 7 in 25,789 is seven hundreds) and the importance of knowing a method for the four operations: addition, subtraction, multiplication and division.

This is in line with the approach recommended by White Rose Maths Hubs. Here is an example of the Year 4 maths yearly overview:

Year 4 (v3)

	Scheme of learning												Supporting materials
	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	
Autumn term	Number Place value VIEW			Free trial	Number Addition and subtraction VIEW			Measurement Area VIEW	Number Multiplication and division A VIEW			Consolidation	
Spring term	Number Multiplication and division B VIEW		Measurement Length and perimeter VIEW		Number Fractions VIEW				Number Decimals A VIEW				
Summer term	Number Decimals B VIEW	Measurement Money VIEW	Measurement Time VIEW		Consolidation		Geometry Shape VIEW		Statistics VIEW		Geometry Position and direction VIEW		

Maths lessons

As a school, teachers follow the White Rose scheme of learning and use Gareth Metcalfe resources (I see maths) and NCETM curriculum prioritisation materials to supplement this. Teachers make informed decisions as to the more effective way to deliver a lesson and will take time to embed concepts before moving pupils on.

Maths lessons at Phillimore begin with a recap of previous learning. This could be learning from the previous day as well as a previous maths unit. Flashback 4 is also used which is a quick recap slide where pupils can work with their partner, work on whiteboards or simply answer the questions independently. This gives the pupils a chance to apply the knowledge and skills that they have learnt while this practise and repetition helps pupils to retain the learning in their long term memory.

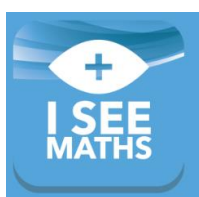
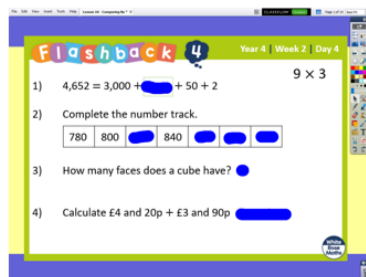
Converting Fractions	Adding	Dividing
$2\frac{3}{4} \rightarrow$	$\frac{3}{5} + \frac{1}{4} =$	$154,644 \div 3$
$3\frac{1}{4} \rightarrow$		$97,773 \div 13$
$\frac{58}{5} \rightarrow$	$2\frac{1}{3} + \frac{1}{5} =$	★ $234,864 \div 36$
Percentages		$24 \div 4$
1) 10% of 120		$32 \div 4$
2) $30\% \times 80$	Multiplying and Dividing	$36 \div 3$
1) 12% of 180	$78 \times 34 =$	$75 \div 5$
2) $16\% \times 40$	$764 \times 65 =$	★ $706 \div 10 =$
		★ $3.05 \times 100 =$

The main teaching then follows and a plenary at the end of the lesson helps to recap on what has been taught. A True or False reasoning question is then given to pupils where they can discuss and reason their thoughts with their maths partner.



What to include on your slides:

- Flashback 4
- Recaps of previous few days learning
- Checklist
- PowerPoint
- Copy of some questions they might get stuck on – I do, we do, you do,
- Activity
- True or False plenary
- Revisit checklist and self assessment.



NCETM
NATIONAL CENTRE FOR EXCELLENCE
IN THE TEACHING OF MATHEMATICS

School focus on developing reasoning skills

Our school priority this year is to develop pupils' reasoning skills. This will help them in maths lessons but also later in life and enable them to be better equipped to deal with challenges in the future. Pupils are exposed to reasoning questions daily and have opportunities to discuss their ideas with their maths partners or as a class. Teachers follow the *I do, WE do, YOU do* process with teachers explaining their reasoning for a question to model their thought processes. Pupils will then complete a question together as a class (often similar to the I do that the teacher modelled) before the final part where pupils complete the challenges independently. Questions often have a real-life context and relate to themes that pupils are familiar with.





How can we answer this question?

WE Do

When rounded to the nearest 10, there are 440 children at Phillimore School.

How many children could there be? Find all the possible answers.



Reasoning Challenge

At the end of each unit 2 lessons are dedicated to reasoning questions which are linked to the learning covered in that unit. Blue questions are usually from the year group below, green questions are the expected level for the year group and purple challenge questions are to challenge pupils working at a greater depth standard.

Hundreds	Tens	Ones
		

631 = + +

7 Tom has three digit cards. 3 8 6

He makes a 3-digit number greater than 500
What number could he have made?

Partition your number.

= + +

Tiny is thinking of a number.

- It is greater than 4,200 but less than 5,800
- The digits sum to 16

What number could Tiny be thinking of?
Give four possible answers.



Key stage 1 pupils take part in the Mastering Number programme which is an excellent programme. Mastering Number sessions take place daily and give pupils the opportunity to explore concepts deeply through a mastery approach. This helps to develop pupils' reasoning skills and ensure they have a deep understanding of the fundamentals of maths before moving onto the KS2 curriculum.

STEM sentences

Teachers are encouraged to use STEM sentences to help structure pupil's reasoning discussions. Sometimes the teacher will model how to use the STEM sentence before the whole class follows the process. Other times pupils will be asked to explain how to solve the question on the board using the STEM sentence. This helps pupils articulate their reasoning more effectively and justify the mathematical decisions that they are making.

 **1853 - 625 = _____**

Th H T O



"Firstly, I know
that 3 ones
subtract 5 ones
means I need to
ex_____."

I can ex_____ a
___ for ___ ones."

Above, the STEM sentence is particularly useful to use it encourages pupils to explain the process of this column subtraction. Pupils therefore become familiar with mathematical vocabulary such as exchanging and regrouping and understand the process on a deeper level, embedding it in their long term memory.

Concrete, pictorial and abstract



In maths lessons, it is important that pupils see maths visually while also having a chance to feel and manipulate resources. This helps to reinforce their understanding, especially when new mathematical ideas and concepts are introduced.

CPA stands for Concrete, Pictorial and Abstract. This means that firstly the pupils will touch and manipulate resources (such as Numicon) physically to gain an understanding (**concrete**). They will then move into the **pictorial** where they will see visual representations, often on the Interactive Whiteboard. Finally the **abstract** is where the challenge comes in and pupils apply their learning so far. This also means that the maths problem may be presented to the pupils in a slightly different way than they have been taught so far to make sure that they deeply understand the concept.

Presentation policy

In maths books, pupils are expected to present their learning to a high standard. This includes using each box for a digit, leaving a line between each question and using a ruler for any mathematical drawing. Below is an example of the expectations required and this poster is displayed in all classrooms for the pupils to adhere to.

Maths Presentation and Marking Policy

- Champion Checklist at the top of the page.
- Short date on Champion Checklist: 04/09/25
- A clear challenge on the Champion Checklist.
- Use both sides of the book although you can start a new page each lesson.
- **1 digit per box** – set a high expectation for this!
- Question number in a circle or a bracket. No dots!
① 480 – 145
- Leave a line before starting your next question.
- Ruler used for any lines such as:
drawing shapes, lines for angles, number lines etc.

Date: 10/10/25
WALT: I can subtract numbers with exchanging.
Context: Class dojos, goals in football, attendances and charity.
WILF: I can set up a column subtraction and put the digits in the correct column.
I can subtract each column up starting with the ones (right hand side).
If the top digit is larger than the bottom digit, I can exchange from the column to the left.
Example:
$$\begin{array}{r} 343 \\ - 237 \\ \hline 106 \end{array}$$

Challenge: I can try the challenge questions.

Examples on the checklist to support independence.

Evidence of WILF achieved.
Self-assessed and teacher assessed.

Opportunities for challenges and further learning.
Children respond regularly to feedback given.

Challenge:
$$\begin{array}{r} 23006 \\ - 89 \\ \hline 14106 \end{array}$$

Red pen to edit learning and complete wishes.

Calculation policy

The maths calculation policy was produced with other SSEL P schools in order to make sure all pupils in the locality are taught the same methods in preparation for secondary school.

The policy includes methods for all four operations (addition, subtraction, multiplication and division) with pictures and diagrams showing the working out needed.

Furthermore, pupils helped to create calculation videos (see below) that show each step of the policy with an example. These videos are useful for parents and pupils to look at and use to help with home learning.

MULTIPLICATION

Step 1-15

Begin to lay the foundations for multiplying by maximising opportunities when counting.

Number rhymes such as two, four, six, eight...

Counting in pairs
e.g. pairs of children, socks, animals legs, eggs in an egg box.

How many wheels do we need to make three cars?

groups of multiply number patterns lots of counting

Step 16-18

Multiplication is related to doubling and counting groups of the same size.

Looking at columns
 $2 \times 2 = 2 + 2$
3 groups of 2

Looking at rows
 $3 \times 3 = 3 + 3$
2 groups of 3

Counting using a variety of practical resources
Counting in 2s e.g. counting socks, shoes, animal's legs...
Counting in 3s e.g. counting fingers, fingers in gloves, toes...
Counting in 10s e.g. fingers, toes...

Pictures / marks
There are 3 sweets in one bag.
How many sweets are there in 5 of these bags?

Arrays and repeated addition
An array
 4×2 or $2 + 2 + 2 + 2$
or
 2×4 or $4 + 4$
2 lots of 4

times table array doubling multiplication repeated addition

Step 19-21

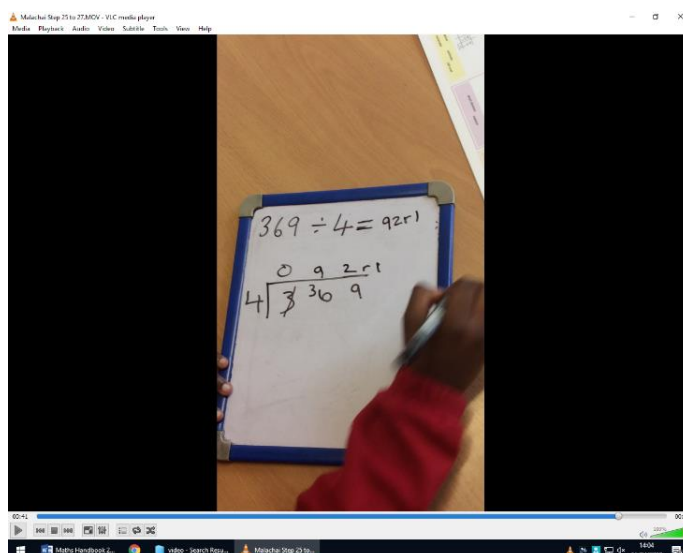
Mentally know times tables 2,5 and 10

Number sentences
 $7 \times 2 = 14$ $7 \times 7 = 49$
 $7 \times 7 = 49$ $14 \times 7 = 98$
 $14 \times 7 = 98$ $14 \times 3 = 42$
 $14 \times 3 = 42$ $14 \times 7 = 98$

Repeated addition using number line

Doubling multiples of 5 up to 50
 $15 \times 2 = 30$
 $20 \times 2 = 40$
 $25 \times 2 = 50$

equivalent commutative
inverse multiples



Arithmetic

Pupils in Year 2 and Year 6 take an Arithmetic test as part of their SATS assessments. This test assesses the pupils on their understanding of number including fractions, decimals (Y6) and percentages (Y6). Pupils learn a range of methods as they progress through school and are encouraged to choose a method that they are comfortable with. By the end of Year 6 however, pupils should be competent at using short methods for each operation.

Here are some example questions from the optional Year 2 SATS arithmetic test:

11

$20 + \boxed{} = 70$

☐ 1 mark

20

$92 - 60 = \boxed{}$

☐ 1 mark

Here are some example questions from the Year 6 SATS arithmetic test:

13

$\boxed{} - 100 = 1,059$

☐ 1 mark

29

$45\% \text{ of } 460 =$

☐ 1 mark

Champions checklist

Each lesson, pupils stick in a Champions Checklist before they begin their learning. There is a challenge each day for the pupils to complete if they finish their task. With lessons that require it, an example will be given on the checklist to help pupils during the lesson.

Date: 10/10/25		1	2	3	4	5
WALT:	I can subtract numbers with exchanging.					
Context:	Class dojos, goals in football, attendances and charity.					
WILF:	O					
						
						
 						
Example:	$\begin{array}{r} 6 \text{ } 1 \text{ } 2 \\ 5 \text{ } 6 \text{ } - \\ \hline 1 \text{ } 6 \end{array}$ $\begin{array}{r} 3 \text{ } 3 \text{ } 1 \\ 2 \text{ } 3 \text{ } 7 \\ \hline 1 \text{ } 0 \text{ } 6 \end{array}$					
Challenge:	I can try the challenge questions.					

Times tables

The government has announced that from 2021, Year 4 pupils all around the country will be tested on their times tables knowledge. Being confident with times tables helps pupils in many areas of the maths curriculum including: short division, area and perimeter, word problems and how to multiply larger numbers such as 900×3 to give a few examples.

If your child is in the one of the following year groups, their aim by the end of the year is to be confident and to respond quickly to these times tables:

- **Y1 – 2,5 and 10**
- **Y2 – 2,3,5 and 10**
- **Y3 – 2,3,4,5,8 and 10**
- **Y4 – 2,3,4,5,6,7,8,9,10,11 and 12**
- **Y5/Y6 – ALL up to 12×12**



Monthly competitions

Each month KS1 and KS2 run times table competitions with the winners earning a mini gold trophy! Each month has a different times tables focus and pupils can collect times tables from the maths display to learn. They are always great fun and pupils are very excited to take part.

Times tables grids

Each week pupils are given the following times tables grids to fill in. They are set a challenge to beat their score each week and aim for full marks. Once they have achieved full marks, the challenge is to complete it in a quicker time each week. Here is an example grid.

These are available from Class 9 if parents want to complete them at home with their pupils too.

Times Table challenge!									
	3	4	10	6	9	5	2	7	8
5									
3									
10									
9									
2									
4									
6									
7									
8									

My Name:

My Time:

Helping your child at home



As a school we subscribe to **IXL** maths each year. It is a fantastic resource, full of maths questions on all topics. Pupils can select their year group and the questions that come up are about everything they are learning about in school. Should a child have forgotten their password, they can ask their teacher or Mr Wray. IXL has greatly helped pupils improve their arithmetic and reasoning skills and pupils that use it have made more than expected progress.

Times Tables Rock Stars is suitable for all ages and pupils absolutely love it! They can customise their avatar, challenge their friends and become quicker and quicker at solving their times tables. There is a display in the dining hall which shows the fastest pupils in the school!

Timestables.co.uk is a great website for practising times tables. Pupils can choose which times tables to practise and challenge themselves at the Multiplication tables check which pupils complete at the end of Year 4.

Learn your times tables

At timestables.co.uk you can easily practise all of your tables. The arithmetic problems are clear and simple so you can immediately get started on practicing your tables. Select one of the times tables you wish to practise from the list below and show what you can do on the speed test, Multiplication Tables Check or printout great worksheets.

Which times tables do you want to learn?

1 times table	2 times table	3 times table	4 times table
5 times table	6 times table	7 times table	8 times table
9 times table	10 times table	11 times table	12 times table

Practise the Multiplication tables check



Multiplication tables check

Play against other players!



Multiplayer Speed Quiz

As a parent/carers, if you ever want to know what you can do to help your child in maths please speak to your child's class teacher or visit Mr Wray in Class 9.