



# Mathematics

## At

### Kehelland Village School

### 2021

Developed by Kyra Orchard - Maths Lead  
With support from the staff at Kehelland Village School.

## **Intent**

At Kehelland School our maths curriculum has been developed to ensure that every child has a sound understanding of the intricacies of mathematics. We aim for them to leave our school equipped with the required skills for life.

By integrating calculation, reasoning and problem solving into a series of lessons we ensure links are made and prior knowledge are being tested throughout.

Our aspiration is for every child to enjoy maths and see themselves as a mathematician, using resilience and perseverance to help demonstrate a confident attitude towards tackling problems both in and out of the classroom and understanding the importance of maths in the wider world.

## **Implementation**

We implement the following procedures in order to achieve desired outcomes.






### **Number Fluency**

At Kehelland we have a good understand of how 'mastery' should be taught and how it looks in books and ultimately in the children themselves. We are working on improving our skills further by both teachers and teaching assistants undergoing regular training and updating our knowledge and skills. We encourage rapid recall of known facts in all 4 calculations with the building blocks of this starting in the foundation stage with verbal and practical demonstration of skills and understanding. We have just introduced 'Number Sense' to the early years and KS1 in the hope to raise









standards further and increase the children's knowledge of Key number facts. We use 'Mathletics' and TTRockstars to reinforce the learning and also part of homework tasks for this that may wish to do more at home.

From year 1 onwards we use weekly times tables tests and arithmetic tests in the form of 'Popcorn' maths that include missing numbers and equals on the opposite sides to encourage depth of understanding.

Y1 Au8	YEAR 1 - AUTUMN TEST 8		
First Name		Class	
Last Name		Date	
	TOTAL MARKS		/10

1	$4 + 1 =$	<input type="text"/>		<input type="text"/>	1 mark
2	$3 + 2 =$	<input type="text"/>		<input type="text"/>	1 mark
3	$\square = 4 + 0$	<input type="text"/>		<input type="text"/>	1 mark
4	$4 + 2 =$	<input type="text"/>		<input type="text"/>	1 mark
5	$\square = 1 + 5$	<input type="text"/>		<input type="text"/>	1 mark

Y6 Au1	YEAR 6 - AUTUMN TEST 1		
First Name		Class	
Last Name		Date	
	TOTAL MARKS		/24

1	$5^2 =$	<input type="text"/>		<input type="text"/>	1 mark
2	$2^3 =$	<input type="text"/>		<input type="text"/>	1 mark
3	$4 \times 0 =$	<input type="text"/>		<input type="text"/>	1 mark
4	$\square = 1 - 0.5$	<input type="text"/>		<input type="text"/>	1 mark
5	$217 \times 1 =$	<input type="text"/>		<input type="text"/>	1 mark
6	$9^2 =$	<input type="text"/>		<input type="text"/>	1 mark
7	$\frac{3}{5} + \frac{1}{10} =$	<input type="text"/>		<input type="text"/>	1 mark
8	$192 \div 1 =$	<input type="text"/>		<input type="text"/>	1 mark

From year 2 onwards we use the online programme of 'Times Tables Rockstars' to improve fluency and speed of recalling multiplication and division facts, helping to prepare the year 4's for the curriculum Check starting in 2020. There are also weekly timed tests that work alongside. In this, the children earn rewards in the form of coins to upgrade their avatar as they move on and improve. They can also play along to music if they wish. They can be set challenges where they play against each other or other schools in a 'stadium' mode as well as independent practice that is automatically regulated and adjusted. Children are moved on when they are ready and have reached a required speed. We encourage the use of this at school, home, before and after school where possible.

### Planning, lesson design and books

When planning our lessons, we follow the model of:

**'Teach, Learn, Confuse, Understand'**

This model will be presented sometimes within a single lesson but mostly it will be evident within a group of lessons which will be highlighted within the child's maths book.



Prior to each new maths topic area teachers will update their maths working wall with the year groups learning Intention clearly shown. Staff look back at the previous year groups expectations using 'White Rose' or 'NCETM Ready To Progress materials' as a starting point and plug any gaps or misconceptions before moving on. We may also display the 'sentence stems'. From looking at the working wall, everyone including the children, staff and parents know where the learning is going.

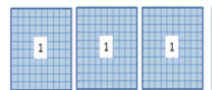
Learning Objective: To understand decimal quantities > 1

A good example of a child's work (WAGOLL) may also be displayed.

Most individual lessons are planned from a framework of



Sam has written some different ways to describe the picture. Tick or cross to show if he is right or wrong. Where he is wrong, write a correct expression:



$$(30 \times 0.1) + (1 \times 0.1)$$

$$0.3 + 1$$

$$3 - 0.1$$

$$\frac{31}{10}$$

$$\frac{40}{10} - \frac{9}{10}$$

$$1 + 0.1 + 2$$

Try these

$$6.1 - 0.7 = 5.4$$

$$4 - 0.2 = 3.8$$

$$7.3 - 0.8 = 6.5$$

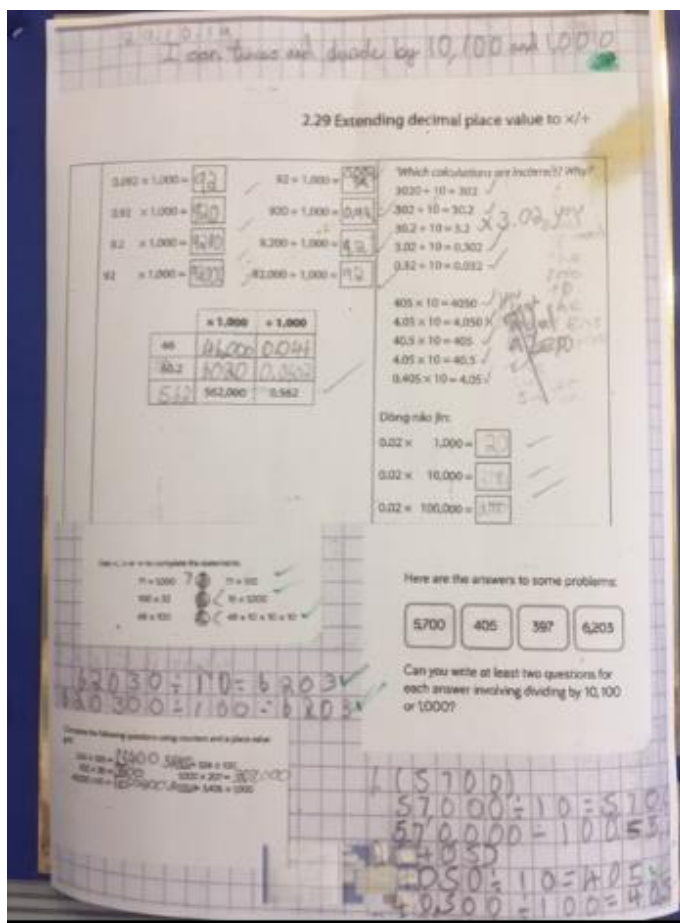
$$5 - 0.5 = 4.5$$

$$4 - 0.8 = 3.2$$

$$2 - 0.4 = 1.6$$

$$3 - 1.4 = 1.6$$

PowerPoint/notebook slides which provide a clear progression of skills and calculations are chosen carefully in order to maximise lesson effectiveness. This maybe Whiterose slides/powerpoint, NCETM R+P materials or Powermaths.



We have a high expectation of presentation within books where the children write in one digit per square in their books. Each lesson will have the short date and the Learning objective to describe the learning.

We encourage the use of the operation sign to be written on the RIGHT hand side of the sum as if written on the left it can get in the way and confuse the children. They may see it written on the left in the text books such as 'Powermaths' but we explain to the children why we encourage them to put it on the right.

e.g 4 5 6

1 2 +

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4 6 8

-----

Where numbers have been reversed this will be circled and the child will correct and rewrite the number several times to practice. Work is marked in a green pen and where a mistake has been made this will be crossed in green pen and the child will correct it the same day or if time doesn't allow, the following day. The child may be required to complete a few more similar questions to ensure a deeper understanding.

Children's books will show their mathematical journey and tell a story of the learning, building on skills with well planned activities to stretch and challenge all learners.



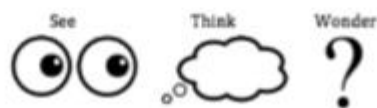
These activities will be based around fluency, reasoning and problems solving and may take the form of:

- See, think, wonder

What do you see? What do you notice?

3    6    9    12    15    18    24    30

33    36    39    42    45    48    54    60



- Missing number questions

1. $\Delta + 5 = 6 + 4$	6. $15 + 5 = \Delta + 14$
2. $\Delta + 6 = 7 + 3$	7. $14 + 6 = \Delta + 17$
3. $\Delta + 7 = 8 + 2$	8. $13 + 7 = \Delta + 18$
4. $\Delta + 8 = 9 + 1$	9. $12 + 8 = \Delta + 19$
5. $\Delta + 1 = 10 + 0$	10. $10 + 10 = \Delta + 20$

- Conjecture

Capatain Conjecture thinks that if he continues to counts in 2's he will reach the number 29. Is he correct?

He is wrong! I  
know this because it  
would always end in 2, 4, 6, 8, 0



- Sometimes, always, never

### Reasoning

Always/Sometimes/Never:

To divide a number by 10,  
you just remove the zero



- Odd one out

RECAP - which is the odd one out? How do you know?

$$7 + 3 = 10$$

$$6 + 4 = 10$$

$$9 + 1 = 10$$

$$8 + 4 = 12$$



- Convince me

Extension - **Circle** the larger number - how  
do you know it is **larger**? **78** or **87**

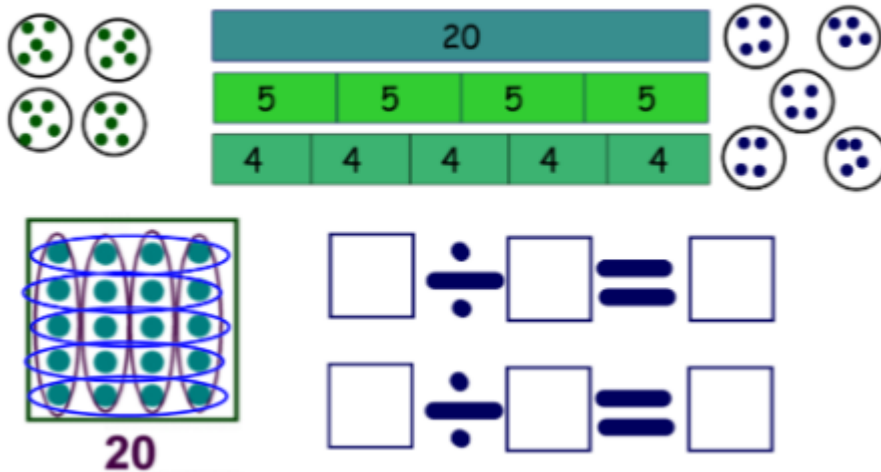
It is **larger** because.....

.....  
.....

- Well planned number questions eg )  $401 - 10$ ,  $93 - 39$ ,  
 $4001 + 10$
- What's the question?



- Pictorial representations



- Investigate and explain

True or false?

The student has drawn four shapes and written explanations for each:

- Top Left:** A square divided into two equal triangles by a diagonal. The bottom-left triangle is shaded blue and labeled  $\frac{1}{2}$ . The student marked it with an 'x' and wrote: "I know that the top left drawing is not ~~1/2~~ true because all the parts are not equal. I know the that shape is ~~1/2~~ false."
- Top Right:** A large square divided into four smaller squares. The top-left square is shaded blue. The student marked it with an 'x' and wrote: "I know that the top right sh shape is false because there are only 5 cubes which means that it can't be  $\frac{2}{3}$ ."
- Bottom Left:** A large square divided into four smaller squares. The top-left square is shaded blue. The student marked it with a checkmark and wrote: "I know that the bottom left shape is true because if you split the shape up it is  $\frac{4}{4}$  that is 1 whole in 4 which is the same as  $\frac{2}{2}$ . So that shape is true."
- Bottom Right:** A large square divided into four smaller squares. The top-left square is shaded blue. The student marked it with a checkmark and wrote: "I know that the bottom right shape is true because there is  $\frac{5}{4}$  coloured in and  $\frac{5}{4}$  is equivalent to  $\frac{2}{3}$  so that means that is true."

- Practical hands on activities



- Recapping previous skills

Fluency fitness	
1.	$3 \times 5 =$
2.	$4 \times 5 =$
3.	$2 \times 5 =$
4.	$5 \times 1 =$
5.	$\underline{\quad} \times 5 = 50$
6.	$45 \div 5 =$
7.	$\underline{\quad} \div 5 = 5$
8.	$60 \div 5 =$

### Calculation Policy (see Appendix 1)

Our calculation policy has been written to ensure clear progression from the foundation stage to Y6, building upon skills. All staff are aware of its importance and each teacher is aware of the mathematical journey the children have been on. This is reviewed every year and is also revisited with each member of new staff during induction.

## Impact

Both boys and girls are equally as positive about maths and see themselves as mathematicians. We have organised days where we focus on maths to keep children excited about their learning. These may take the form of 'Magic Maths' where we have had a maths magician in for the day to share his skills and teach the children tricks with maths. Leading up to SATs the Year 6 children have been inspired by mathematician Josh Lury who is a local Maths Lead.

Parents also have a key role in this. They are encouraged to help the children with learning the times tables and division facts for weekly tests. From year 4 onwards, the children also bring home a weekly homework task to support what they have been learning in class that week. We often use CGP books for this. From Year 1 onwards the children also have online accounts with 'Mathletics' and TTRockstars where they are expected to complete weekly tasks wherever possible. These are also linked to their learning for that week or based on key skills.

In the Spring term during year 6 there is a lunch time club where year 6's are encouraged to come along and carry out some fun mathematical investigations in groups as part of further SATs practice and preparation.

## Interventions

We provide precision teaching and breaking barriers delivered by teachers or skilled teaching assistants who pin point the exact area of need. This usually happens after the main maths lesson or during the afternoon session. We may use 'Hands on' maths books for this or further fluency from 'Power maths' practice books.

Data

Foundation Stage

	Expected	Exceeding
2019		
2020		
2021		

End of KS1

	Expected	Greater Depth
2019	75% (NA 76%)	13 %
2020		
2021		

End of KS2

	Expected	Greater Depth	Progress	Average scaled score
2019	92.3% (NA 79%)	7.7%		104.62
2020				
2021				