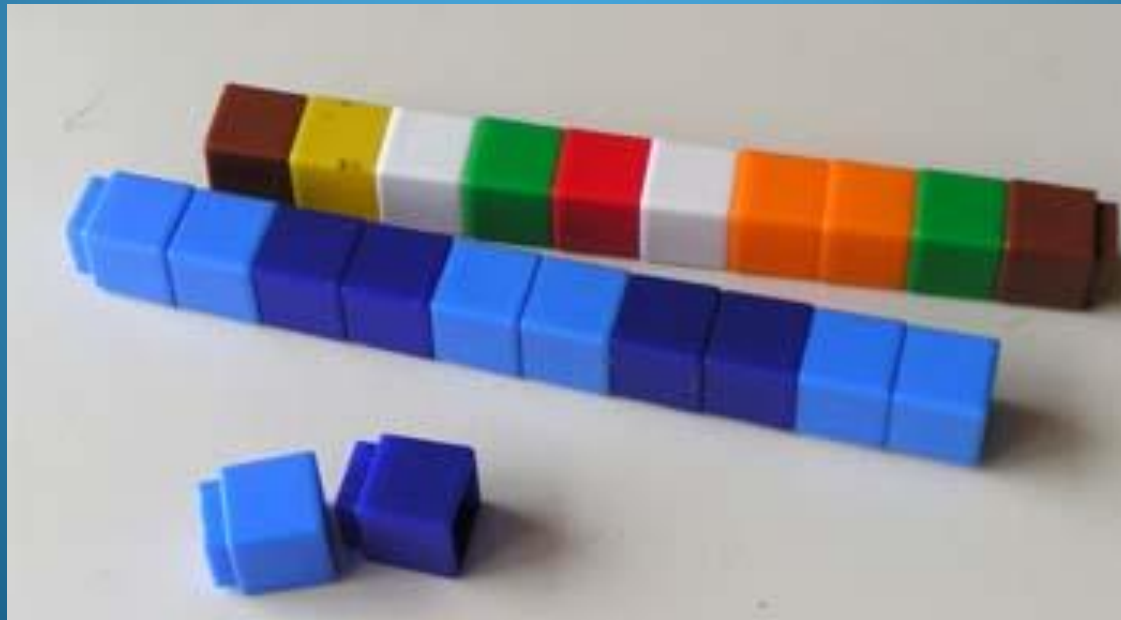


# Canon Popham KS1 Maths

What we learn and our  
methods of teaching



# Maths Mastery Curriculum

Children should:

- Become **fluent** in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to **recall and apply knowledge rapidly and accurately**.
- **Reason mathematically** by following a line of enquiry, conjecturing relationships and generalisations and developing an argument, justification or **proof using mathematical language**.
- **Solve problems** by applying their mathematics to a variety of problems with increasing sophistication, including **breaking down problems into a series of simpler steps and persevering in seeking solutions**.

# Core belief

Mathematics Mastery schools want every child to succeed in maths, no matter what their backgrounds and starting points.

- Success in mathematics for every child **is possible**.
- Mathematical ability is not innate, and is **increased through effort**.

# What is mastery?

*“In mathematics, you know you’ve mastered something when you can apply it to a totally new problem in an unfamiliar situation.”*

# What do we teach in KS1 Maths?

- Number bonds to 10, 20 and 100 ( ie  $7+3=10$ ,  $18+2= 20$ )
- **Basic multiplication and division (  $\times 2, \times 5, \times 10$ )**
- Fractions (  $\frac{1}{2}$  ,  $\frac{1}{4}$ ,  $\frac{1}{3}$  )
- **Addition and subtraction to 100**
- **Place value ( ones, tens and hundreds)**
- Time ( o'clock, half past, quarter to, quarter past)
- Measurement ( mass, length, capacity)
- Money ( everyday money- calculating change)
- Problem solving
- Geometry (2D shape, 3D shape, position and direction)

# Lesson structure

- All our lessons follow the Teach Simply lesson structure. This keeps the lesson pace, gives flow and allows more opportunities to teach creatively, give feedback and assess learning.
- Pupils have access to **plenty of concrete materials** such as bead strings and cubes/counters so that they have time to fully explore mathematics.

# Mathematical language

Our Mastery lessons provide opportunities for pupils to communicate and develop mathematical language through:

- **Revisit: Sharing essential vocabulary** at the beginning of every lesson and insisting on its use throughout
- **Teach: Modelling clear sentence structures using mathematical language**
- **Practise:** Paired language development activities, known as **Talk Tasks.**
- **Apply: independent learning opportunities**
- **Assess: Plenaries** which give a further opportunity to assess understanding through pupil explanations.

# **Key Instant Recall Facts (KIRF's)**

- **To develop children's fluency and mental maths skills, we are introducing KIRFs (Key Instant Recall Facts) throughout school. KIRFS are a way of helping our children to learn by heart, key facts and information which they need to have instant recall of.**
- **KIRFs are designed to support the development of mental maths skills that underpin much of the maths work in our school. They are particularly useful when calculating, adding, subtracting, multiplying or dividing. They contain number facts such as number bonds and times tables that need constant practise and rehearsal, so children can recall them quickly and accurately.**
- **Instant recall of facts helps enormously with mental agility in maths lessons. When children move onto written calculations, knowing these key facts is very beneficial. For a child to become more efficient in recalling them easily, they need to be practised frequently and for short periods of time.**
- **Each half term, children will focus on a Key Instant Recall Fact (KIRF) to practise and learn at home for the half term.**
- **Throughout the half term, the KIRFs will also be practised in school and your child's teacher will assess whether they have been retained.**

**Please click on the link in the Maths section of the class webpage to view the Key Instant Recall Facts your child will be focusing on this term.**



# Number Sense!

Children need to understand our number system, starting with counting numbers, building an understanding of how our numbers work and fit together. This includes exploring place value and comparing and ordering numbers then applying this understanding in different contexts.



# 1. Recalling facts

- It is important that children recognise number bonds, different pairs of numbers with the same total.

10

$7 + 3$

$6 + 4$



8

$6 + 2$

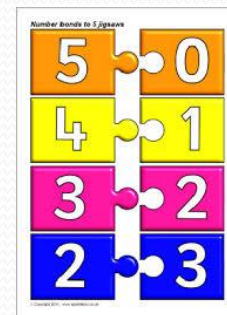
$5 + 3$



$3 + 2$

5

$1 + 4$



$6 + 1$

7

$3 + 4$

6

$5 + 1$

$3 + 3$



9



Complete the number tracks.

1		3	4	5	6		8	9	10
---	--	---	---	---	---	--	---	---	----

one		three	four	five	six		eight	nine	ten
-----	--	-------	------	------	-----	--	-------	------	-----

Fill in the missing numbers.

(a) , 1, 2, 3,      (b) 3, 4, , 6      (c) 1, , 3,

(d) six, , , nine

Katy is counting.

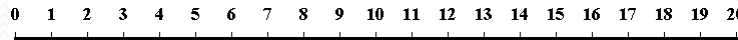


Is she counting forwards or backwards?

How do you know?

# Resources

- Number line
- Counters
- Online Games
- Unifix sticks

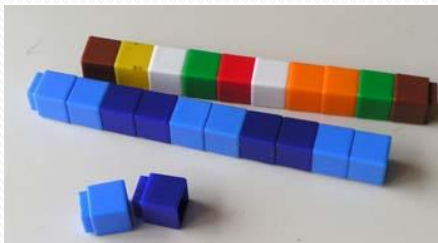


Number square

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Place value cards

Dienes



## 2. Place Value

- Place value is at the heart of the number system. All digits have a value and a secure understanding of this will enable children to use and understand different calculation methods.



## 2. Place Value Resources

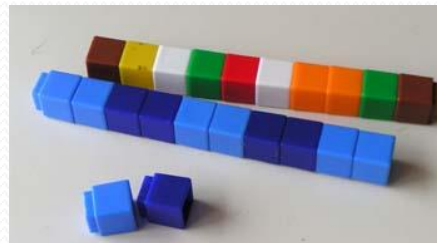
- We use place value cards in combination with Unifix cubes, Dienes and 100 squares to recognize values of numbers.

i.e. make the number 45

Step 1: separate the digits to its value

4 tens and 5 units

Step 2: make that number with either Dienes, cubes or a value card.



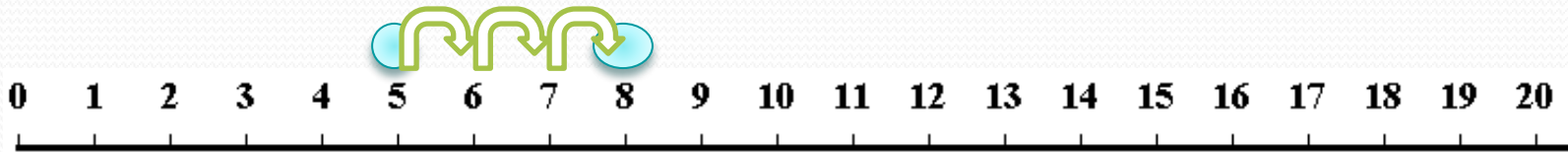
# Using Place Value: Written Method

- $25 + 33 = 58$
- Step 1: partition numbers ( tens  $20 + 30$ ) (ones  $5+3$ )
- Step 2: add up the Tens (  $20 + 30 = 50$ )
- Step 3: add up the Ones (  $5+ 3 = 8$ )
- Step 4: add both (  $50 + 8 = 58$ )
  
- $55 + 26$  ( T  $50 + 20 = 70$ ) (O  $5+6 = 11$ )
- $70 + 11 =$  ( T  $70 + 10 = 80$  ) (O  $0+1=1$ )
- $80+1=81$

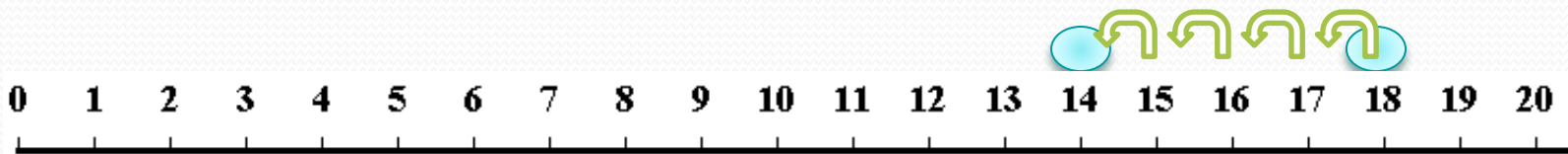


# Using a Number Line

- Adding  $5 + 3 = 8$
- Step 1 start on the biggest number and count on in jumps.

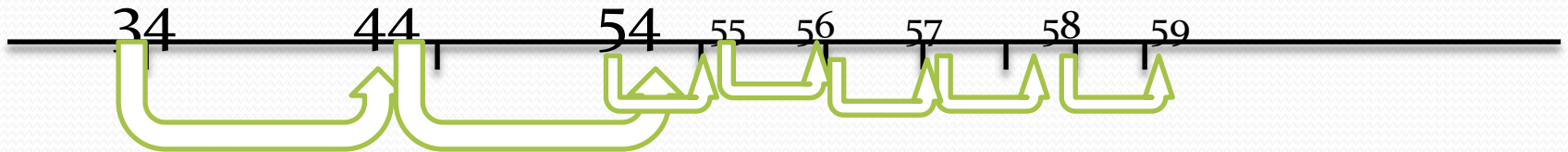


- Subtracting  $18 - 4 =$
- Step 1: start on the biggest number and count back in jumps.



# Using a blank number line

- $34 + 25 = 59$

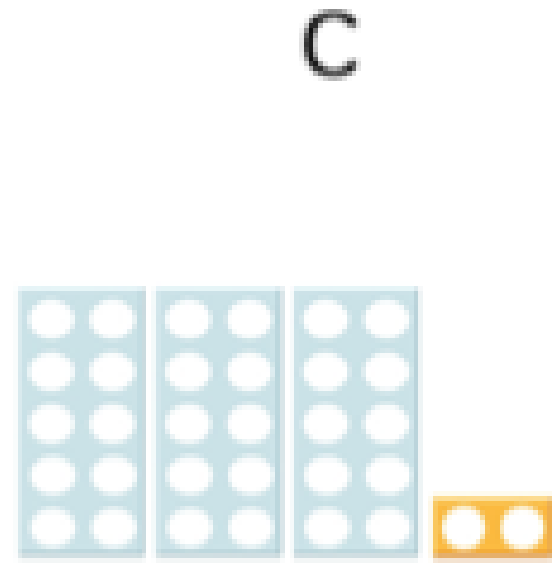
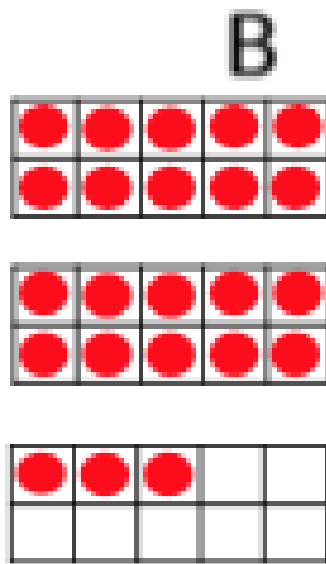
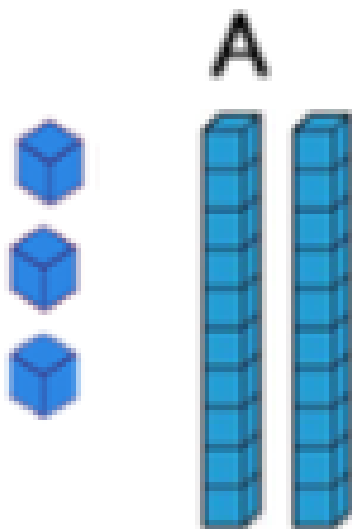


Step 1: partition 2<sup>nd</sup> number ( 25- 2 tens (20) and 5 units)

Step 2: jump the 10's ( 2 tens)

Step 3: jump the units ( 5)

One of these images does not show 23.  
Can you explain the mistake?



# Place Value Activity Ideas



- Draw a line. Mark 0 and 100 (or any number range needed). Roll a dice. Decide where that number would go and write it in. Repeat. This could also be played with playing cards. You can also start at any number and include whatever your child needs.
- Inbetweenies

39

40

50

67

Start by asking for a 2 digit number. Place it at the start of the line. Now ask for a higher 2 digit number and place at the end of the line. Which numbers fall inbetween? Why do you think that?



# 3. Addition and Subtraction with a number square

- Adding 12

- $54 + 12 = 66$

- Step 1 :Partition the number (one 10, two units) 10 & 2
- Step 2: add on the 10 ( down 1)
- Step 3 add on the units ( right 2)

- Adding 10 go down 1

- Subtracting 10 up 1

- Adding 1 go right 1

- Subtracting 1 go left 1

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
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81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

# Addition and Subtraction with a number square

Adding 9 :

$$25 + 9 = 34$$

Step 1: find 25 on number square

Step 2: simplify the equation ( add 10 -1).

To add 10 simple go down one on the number Grid then then take 1 to make 9 ( go left 1 space)

Down 1 left 1

Subtracting 9:

$$25 - 9 = 16$$

Step 1: find 25 on the number grid

Step 2: simplify the equation ( take 10 +1)

Step 3: to take ten go up 1 then take 1 by going Right 1.

Up 1 right 1

1	2	3	4	5	6	7	8	9	10
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91	92	93	94	95	96	97	98	99	100

# 4. Multiplication in KS1

- First recognize that multiplication is repeated addition

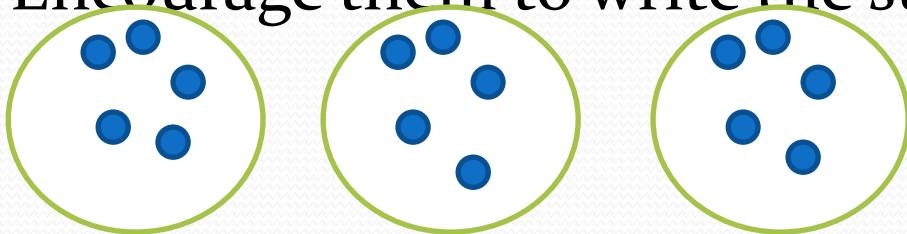
• No of lots                      how many per group                      total

•  $3 \quad \times \quad 5 \quad = \quad 15$

- Is the same as 2 lots of 5 or  $5 + 5 + 5 = 15$

- Use pictorial cues to represent a x sum.

- Encourage them to write the sum:



•  $5 + 5 + 5 = 15$

# Using a number grid for patterns and multiplication

- Colour in the even numbers to recognize odd and even
- Learn the [2, 5 and 10 x table](#)
- [number square](#)
- [Variations for the number square](#)
- Hiding numbers on a [number square](#)

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
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# How can I become involved?

- Talk to your child about their learning, what they learned in their maths lessons each day.
- **Discuss numbers all around you**: door numbers, bus numbers etc.
- Encourage your child to predict what number will come next in a sequence of door numbers – are they odd or even?
- **Cooking and shopping** with your child, getting them to weigh ingredients, using language such as “more” and “less/fewer”.

# Practical maths

Making maths practical by using real materials. Try some of these at home with your child.

- Using coins



using food

- Using measuring cups



cooking



# GETTING TO KNOW ACTIVITIES

## Getting to know...

What do  
you  
know  
about....?

Can you show  
me....?

24

Where have  
you  
seen....?

How many  
different  
ways can you  
make....?  
Using +, -, x, ÷?

What is special  
about the  
number....?



Nearly  
half of 50



'My aunt was  
24 last year'

# 24



$14 + 10$

Christmas  
Eve

Approximate  
weight in grams  
of a slice of  
bread



It is half of 48.

It is 2 dozen.