Thursday 26th January 2023

MATHS WORKSHOP

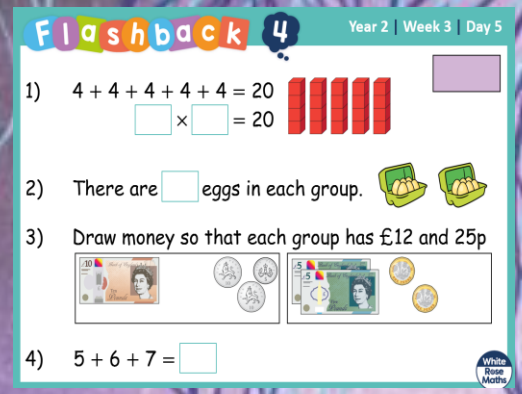
Our Philosophy:

Learning maths at school provides our children with the fundamental skills that enable them the opportunities for a successful future.

Maths is a life skill and is not just learnt through mathematics teaching but across the whole curriculum so that learners gain a clear understanding of the mathematical skills but they can also have a context for their learning.

For example: Collecting and analysing data in Science or History, measuring how far you jump in PE, using knowledge of geometry (position and direction) in Geography for mapping skills. The list is endless!

How do we teach Maths?



- Maths is taught daily for 45 minutes - 1 hour.
- The children have a daily recap of what they have learnt so far this year and recap different ways to answer questions.
- New content is introduced and practised together. This could be on whiteboards/in books/using resources/on technology.
- On that day or the next the new learning is applied in many ways, in different contexts and in word problems that the children unpick.
- It is essential for us to have daily reasoning-A chance for children to discuss and explain their answers to questions/why an answer is correct or incorrect or what strategy they have used to answer the question. This promotes the correct use of vocabulary.
- Learning walls in classrooms are rich with vocabulary, examples of how to answer questions and activities to complete in MOLT (KS1)
- The children mainly get on the spot feedback but also feedback from marking. The children don't move on to anything new until they are secure in the concept that they are working on.

Learning attitudes

In order for our children to succeed in Maths we ask the children to regularly reflect on their learning attitude to promote a positive approach.

The children need to be:

- Good listeners
- Able to follow instructions
- Able to make links
- Able to use the vocabulary shared with them
- Resilient
- Risk takers

What to expect in this session

- An interactive session for you to take part in.
- An insight into how we teach key concepts.
- Ways to support your child at home.
- Tea/coffee and biscuits!

Place Value

Probably the most important strand in maths and the basis for most maths teaching. Here are some of the key objectives for each year group.

R	1	2	3	4	5	6
To know the value of **numbers to 10.** To **read numbers to 10** and are encouraged to write these. **Count forwards to 20 in 1s** and beyond and count backwards securely from 10.	**Count to and across 100** forwards and backwards. To read and write numbers from **1-20 in numerals and words.** Count in steps of **2, 5 and 10**.	To recognise the value of each digit in a **two-digit number.** To read and write numbers to at least 100 in numerals and words. Count in steps of **2, 3, 5 and 10** (10 from any number.)	To recognise the value of each digit in a **three-digit number.** To read and write numbers to 1000 in numerals and words. Count in steps of **4, 8, 50 and 100**.	To recognise the value of each digit in a **four-digit number.** To read Roman numerals to 100. Count in multiples of **6, 7, 9, 25 and 100.** **TIMES TABLE TEST**	To count forwards and backwards with **positive and negative numbers and in steps of powers of 10.** To read, write and order numbers to at least 1000 000 and determine the value of each digit. Read Roman numerals to 1000.	Pupils use the **whole number system,** including reading and writing numbers. To read, write, order numbers up to 10 000 000 and know the value of each digit. Solve number and practical problems that involve all above. **KS2 SATS test**

Place value

Place Value is important because it **provides the foundation for grouping numbers, multiple-digit addition, multiplication, division, subtraction, and more in the decimal system, as well as a starting point for other calculations.**

- When we begin place value we use a range of resources to embed understanding of this concept….

  (We use a concrete, pictorial and abstract approach.)

- On your table are a range of resources. Have a go at making the number 34 in as many ways as you can using concrete materials.

Concrete Resources

Multilink, bead strings, tens and ones, tens frames, place value counters, Numicon

Pictorial methods

Pictures, Bar model, part whole model, drawing dienes

Abstract Methods

Problem solving, empty number boxes

Addition – We are in the process of developing written progressions to share with parents which will be available on the website. However, to support your child's ability to complete these methods, key strategies continue to hold some children back.

The Hollybrook Schools Infant and Junior

Written strategies for Addition.

add
plus
sum of

EYFS

Have a deep understanding of number to 10, including the composition of each number.

Strategies include:

Using Numicon to spot patterns:



= 1 and 2

Counting up a number track:

1	2	3	4	5	6	7	8	9	10

Adding set using objects:

5 + 2 = 7



Counting on from the larger set.
3 + 6 = 9

(6 in head) then 7, 8, 9 Children could use fingers or objects to count on.

Year 1

To find one more and one less
To use + - and = signs
To add and subtract one-digit and two-digit numbers to 20, including zero.

Strategies include:

Using objects to add on from the largest number.

15 + 6 = 21



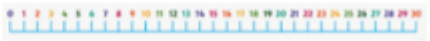
16 17 18 19 20 21

Drawing dots to help count

14 + 5 = 19



Using number lines or 100 squares to jump on:
12 + 5 = 17



Year 2

To add a one-digit to a two digit.
To add a two-digit number and tens.
To add two two-digit numbers.
To add three one-digit numbers.

Strategies include:

Using number bonds:

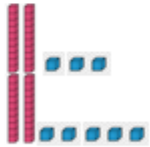
18 + 5 = 23
18 + 2 + 3 = 23

Looking for facts:

6 + 4 + 3 = 13 (number bonds)
6 + 5 + 6 = 17 (doubles)
7 + 6 + 2 = 15 (near doubles)

Partitioning:
40
23 + 25 = 48
8

Tens and ones:



20 + 20 = 40
5 + 3 = 8
40 + 8 = 48

Expanded Column method:

23
+ 54
7 (3 + 4 = 7)
70 (50+20 =70)
77

Year 3

To add a three-digit number and ones.
To add a three-digit number and tens
To add a three-digit number and 100s.
To add and subtract with numbers up to 3 digits.

Expanded Column method:

23
+ 54
7 (4 + 3 = 7)
70 (50+20 =70)
77

Column method 3 digit and 2 digit:

451
+ 23
474

Column method of 3-digit + 3-digit:

	7	8	9
+	6	4	2
1	4	3	1
	1	1	

Year 4

To add up to four-digit numbers using formal written methods.
To estimate and use inverse operations to check answers to a calculation.

Column method with up to 4 digit numbers.

2362
+ 4564
6926
11

Year 5 and 6

To add up with more than four-digit numbers using formal written methods.

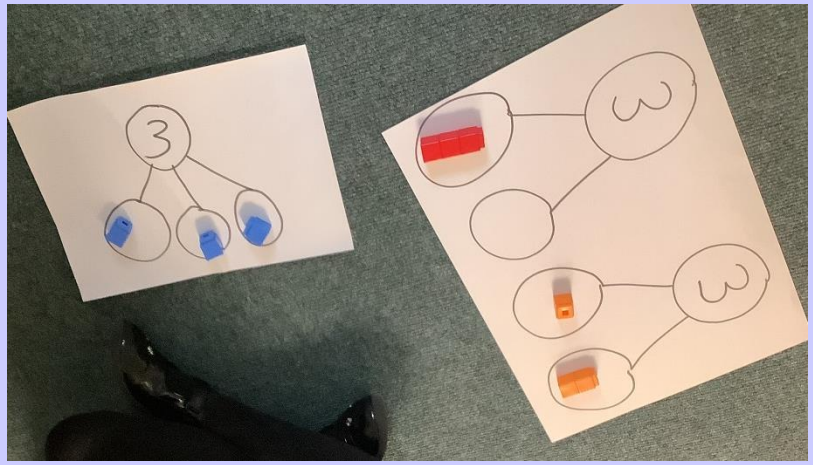
To include the use of decimals:
6.7 + 3.84 =

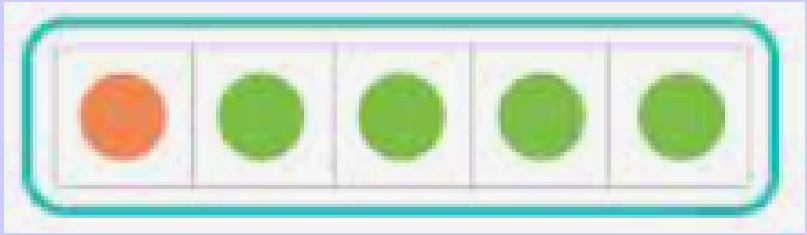
6.70
+ 3.84
10.54
1

Number bonds

Year R

To know number bonds to 5



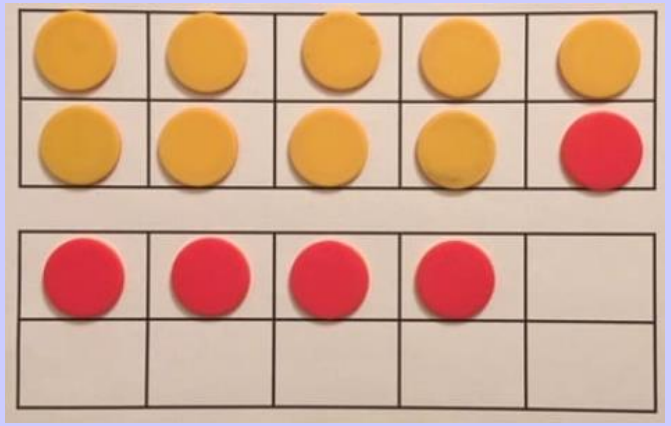


Year 1

To know number bonds to 10 securely and begin to recognise to 20

- Recall by heart
- Find the inverse
- Solve problems
- Use for addition/subtraction

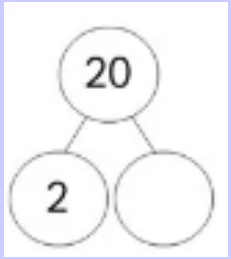
9 + 5 = 14

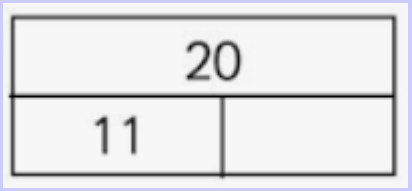


Year 2

To know number bonds to 20 and 100.

10 + 90 = 100, 20 + 80 = 100





There were 20 frogs in a pond. 8 are on the lily pad, how many are under the water?

Spot number bonds when adding three digit numbers…

3 + 6 + 7 = ☐

It is applied in money and other contexts?

I bought a pencil from the shop for 40p.

How much change from a £1?



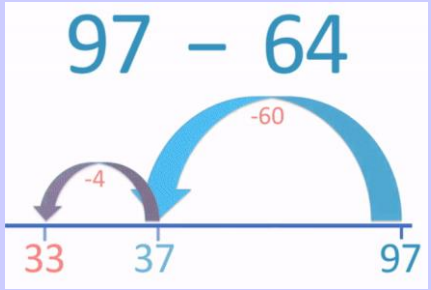
Number bonds support addition

7 + 8 = 15

They may work this out as **7 + 3 = 10 then add the 5.**

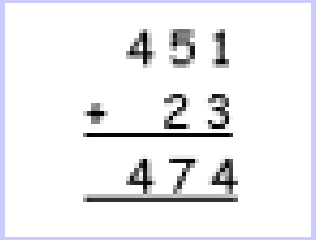
This is an efficient and fluent method rather than counting on in their head or using their fingers.

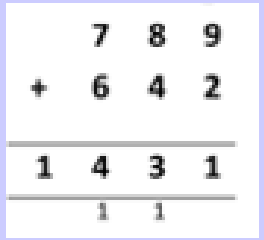
Number bonds support subtraction

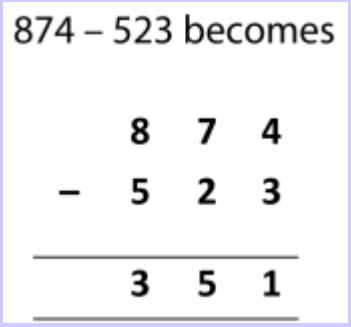


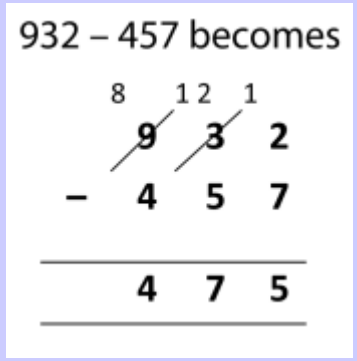
Year 3 - 6

- Number bonds are used within addition and subtraction column methods.









- Using number bonds for decimals

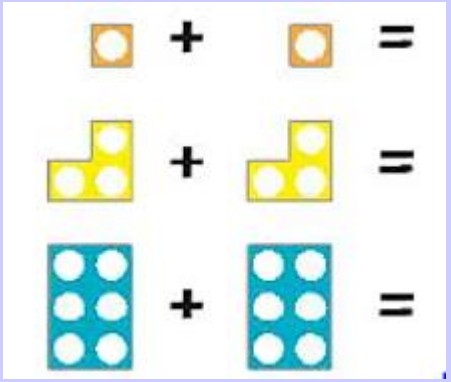
0.2 + 0.8 = 1

1.6 + ? = 2

6,155 + 501 + 499 =

Doubles and Halves

- These are just as important as number bonds and **begin in year R**.





- They can be used to solve addition calculations e.g. 4 + 3 + 4 = 11

- The next step is near doubles e.g. **6 + 7 = 13** because double 6 is 12 plus 1. (This is an alternative strategy to number bonds.)

- This strategy is effective when adding tens e.g. **60 + 70 = 130**

Year 3 - 6

- This would be followed by doubling two digit numbers:
- E.g. Double 24 = 48

- Then more complex that would require partitioning and recombining to work out:
- E.g. Double 72 = 144

  (double 70 = 140 double 2 = 4 and add together)

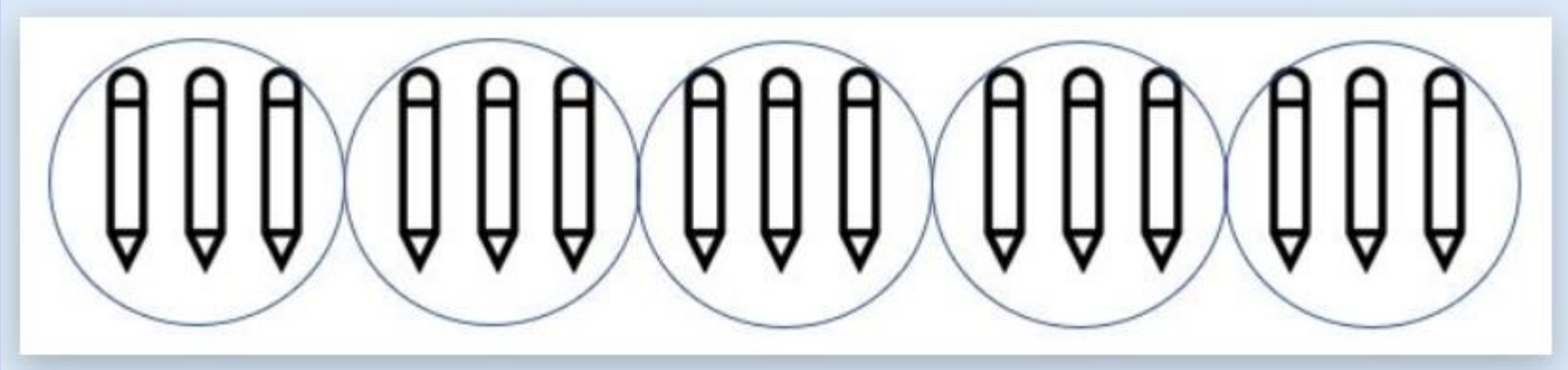
- This applies to times tables e.g. x 2 and ÷ 2

- They are used within decimals e.g. 3.4 + 3.4 = 6.8

Times tables

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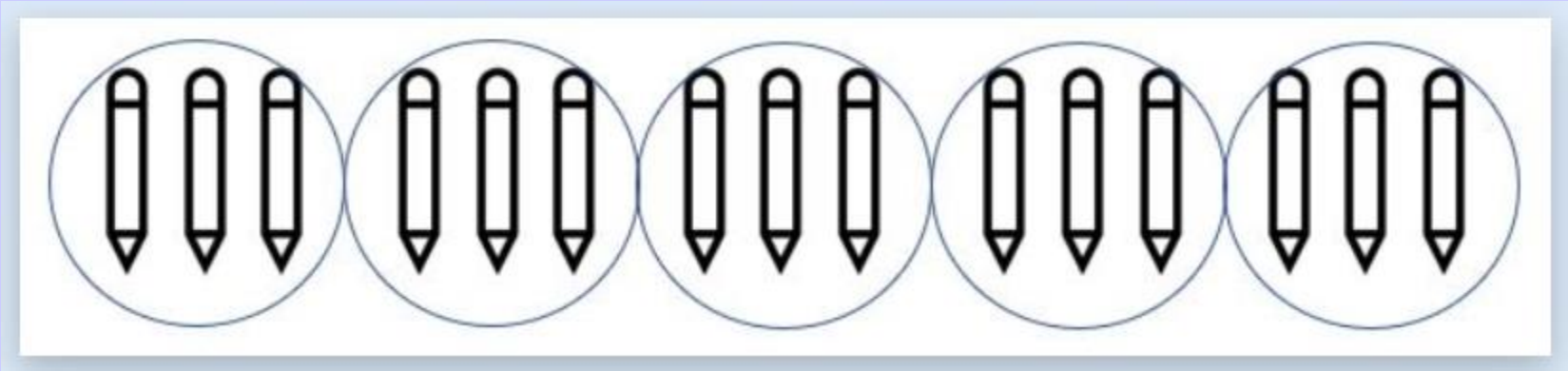
Children need to understand that with **multiplication** **and division**, you are working with equal groups.



How many equal groups? 5
How many in each group? 3

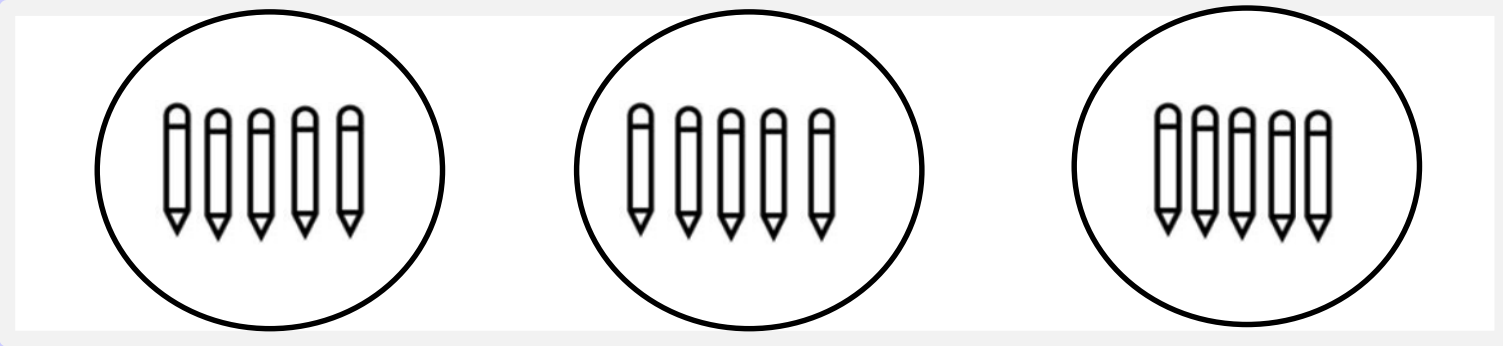
What is the calculation? 5 lots of 3, 5 equal groups of 3 or 5 x 3

For **division** they use their knowledge of equal groups to understand the concept…



- **15 shared between 5 = 3** We call this ‘peas on a plate’. <u>SHARING</u>

- **15 grouped into 5 = 3** groups <u>GROUPING</u>



From year 2 onwards, times tables need to be taught for rapid recall.

24 × 6 becomes

$$\begin{array}{r} 2\ 4 \\ \times\quad 6 \\ \hline 1\ 4\ 4 \\ \hline 2 \end{array}$$

124 × 26 becomes

$$\begin{array}{r} {\scriptstyle 1\ \ 2\ \ } \\ 1\ 2\ 4 \\ \times\quad 2\ 6 \\ \hline 7\ 4\ 4 \\ 2\ 4\ 8\ 0 \\ \hline 3\ 2\ 2\ 4 \\ \hline {\scriptstyle 1\ \ 1\ \ } \end{array}$$

432 ÷ 15 becomes

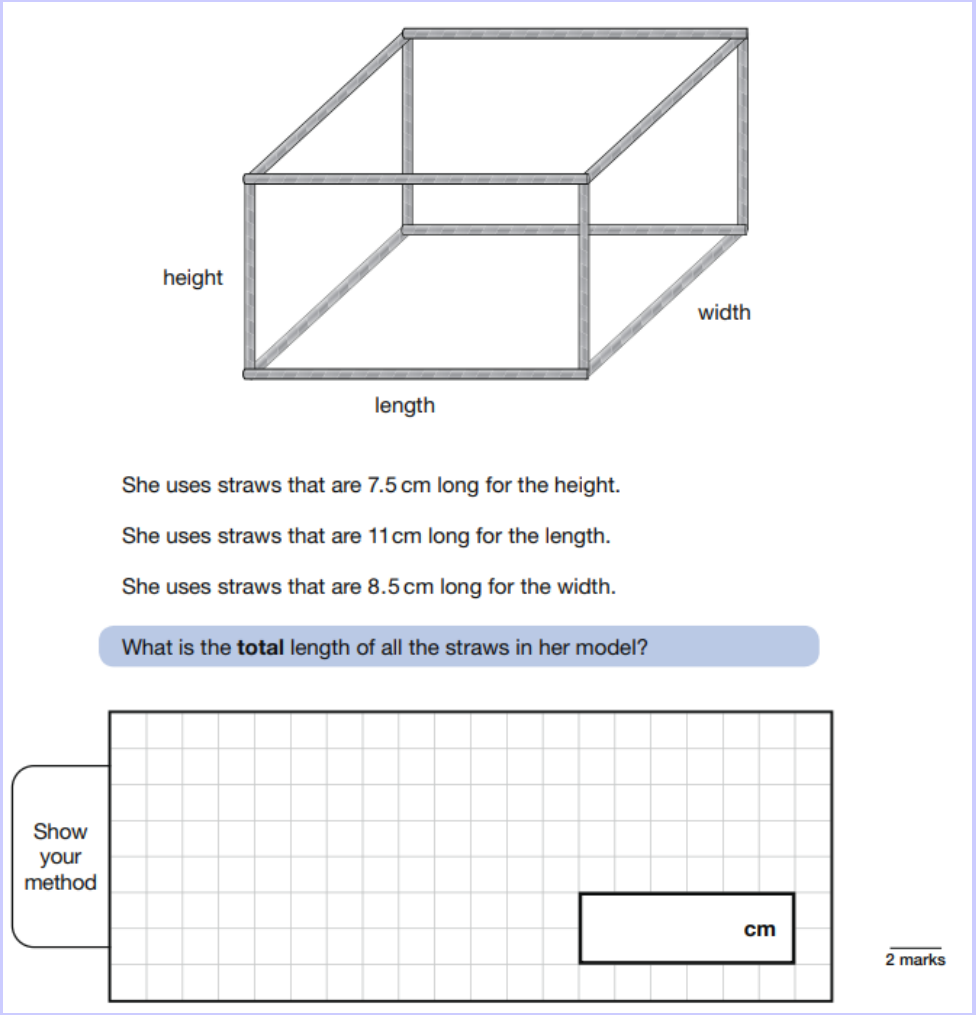
$$\begin{array}{r} 2\ 8 \cdot 8 \\ 1\ 5\ \overline{)\ 4\ 3\ 2 \cdot 0} \\ \quad 3\ 0 \\ \hline \quad 1\ 3\ 2 \\ \quad 1\ 2\ 0 \\ \hline \quad\quad 1\ 2\ 0 \\ \quad\quad 1\ 2\ 0 \\ \hline \quad\quad\quad 0 \end{array}$$

496 ÷ 11 becomes

$$\begin{array}{r} 4\ 5\ \text{r}\,1 \\ 1\ 1\ \overline{)\ 4\ 9\ 6} \\ \quad 5 \end{array}$$

Answer: $45\frac{1}{11}$

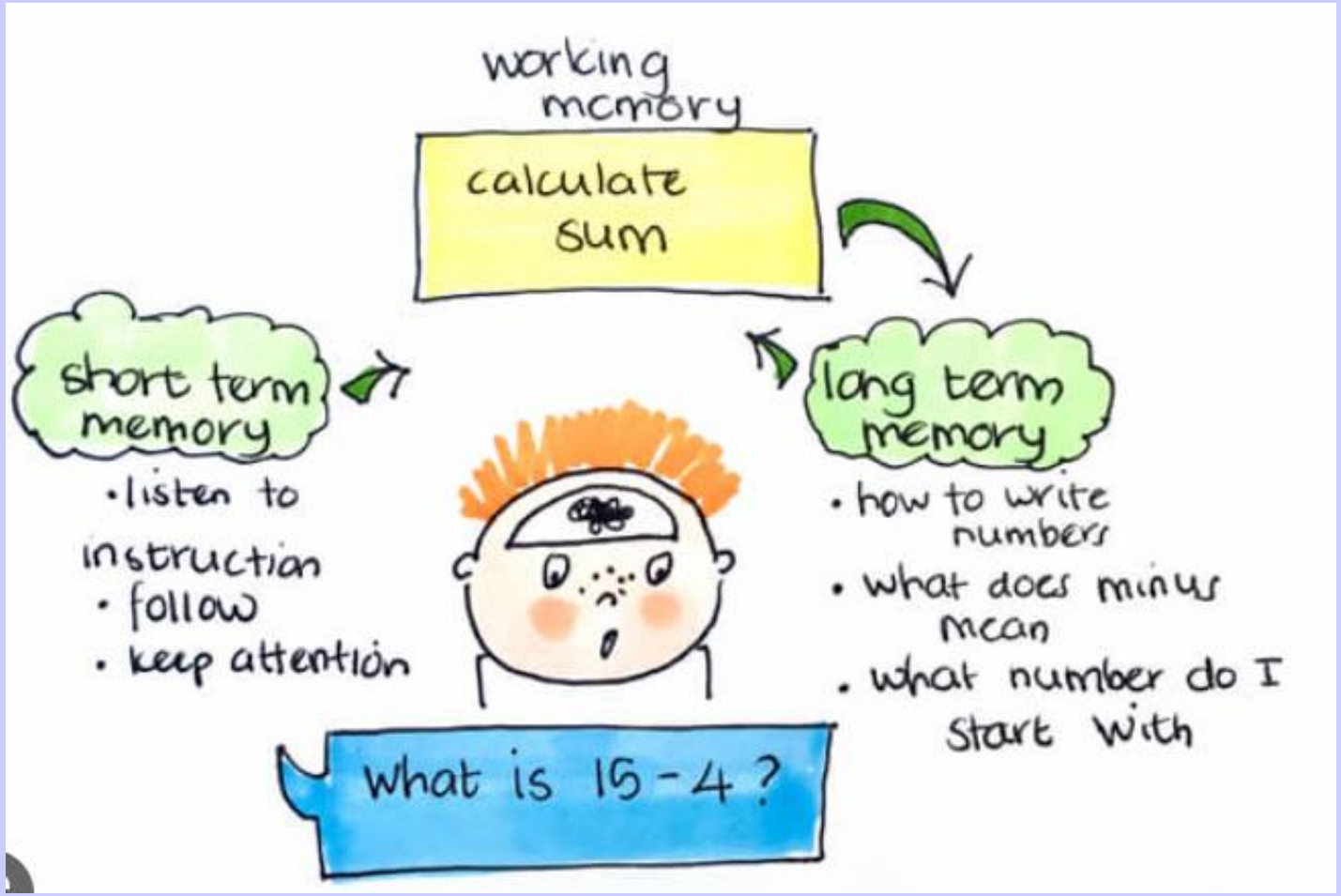
An example question from Ks2 Maths SAT paper last year…



What strategies do the children need to use to answer this question?

Did you use any number bonds, doubles or times table facts?

If we can embed these key concepts, it will support your child's working memory.



Ways to help your child at home…

- **Practise…**
- Number bonds
- Doubles and halves
- Times tables
- Telling the time on an analogue clock
- Talk about numbers and engage in conversations over more or less



SATs meetings 2023

- **Ks1** Maths meeting March 20th at 2.15
- **Ks2** SATs meeting March 20th at 5.00

Letters will be sent out nearer the time.