

# North-East Hants and Surrey Maths Hub

## Mastering Number- What next?

How can we continue the positive impact  
of the mastering number programme in to  
KS2?

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## Guidance for SLT at Mastering Number Cohort 1 schools, looking ahead to 2022/23

### Vision

Having seen what Mastering Number can do, what is your vision for the future?

- It will become an embedded element of the curriculum and written into policies, etc.
- All staff, including KS2, will understand its role and purpose.

Debbie Morgan

# Year 2 Mastering Number

Week	Strand	Content
17	Number facts and arithmetic	Calculate across the 10 boundary: add 3 numbers with a total > 10 by identifying bonds of 10
18	Number facts and arithmetic	Calculate across the 10 boundary: bridging through 10 to add
19	Number facts and arithmetic	Calculate across the 10 boundary: bridging through 10 to add
20	Number facts and arithmetic	Calculate across the 10 boundary: bridging through 10 to subtract
21	Number facts and arithmetic	Calculate across the 10 boundary: bridging through 10 to subtract

<b>AS</b>	<b>1AS-1</b> Compose numbers to 10 from 2 parts, and partition numbers to 10 into parts, including recognising odd and even numbers.	<b>2AS-1</b> Add and subtract across 10.	<b>3AS-1</b> Calculate complements to 100.
	<b>1AS-2</b> Read, write and interpret equations containing addition (+), subtraction (-) and equals (=) symbols, and relate additive expressions and equations to real-life contexts.	<b>2AS-2</b> Recognise the subtraction structure of 'difference' and answer questions of the form "How many more...?".	<b>3AS-2</b> Add and subtract up to three-digit numbers using columnar methods.
<b>NF</b>	<b>1NF-1</b> Develop fluency in addition and subtraction facts within 10. →	<b>2NF-1</b> Secure fluency in addition and subtraction facts within 10, through continued practice. →	<b>3NF-1</b> Secure fluency in addition and subtraction facts that bridge 10, through continued practice.

## ADDING AND SUBTRACTING ACROSS 10

Unit 1 – 2 weeks

### Learning outcomes



- | # | Title   |
|---|---|
| 1 | Pupils add 3 addends  |
| 2 | Pupils use a 'First.. Then... Now" story to add 3 addends             |
| 3 | Pupils explain that addends can be added in any order                 |
| 4 | Pupils add 3 addends efficiently                                      |
| 5 | Pupils add 3 addends efficiently by finding two addends that total 10 |
| 6 | Pupils add two numbers that bridge through 10                         |
| 7 | Pupils subtract two numbers that bridge through 10                    |

## Consistency of language and gesture

+	0	1	2	3	4	5	6	7	8	9	10
0	0+0	0+1	0+2	0+3	0+4	0+5	0+6	0+7	0+8	0+9	0+10
1	1+0	1+1	1+2	1+3	1+4	1+5	1+6	1+7	1+8	1+9	1+10
2	2+0	2+1	2+2	2+3	2+4	2+5	2+6	2+7	2+8	2+9	2+10
3	3+0	3+1	3+2	3+3	3+4	3+5	3+6	3+7	3+8	3+9	3+10
4	4+0	4+1	4+2	4+3	4+4	4+5	4+6	4+7	4+8	4+9	4+10
5	5+0	5+1	5+2	5+3	5+4	5+5	5+6	5+7	5+8	5+9	5+10
6	6+0	6+1	6+2	6+3	6+4	6+5	6+6	6+7	6+8	6+9	6+10
7	7+0	7+1	7+2	7+3	7+4	7+5	7+6	7+7	7+8	7+9	7+10
8	8+0	8+1	8+2	8+3	8+4	8+5	8+6	8+7	8+8	8+9	8+10
9	9+0	9+1	9+2	9+3	9+4	9+5	9+6	9+7	9+8	9+9	9+10
10	10+0	10+1	10+2	10+3	10+4	10+5	10+6	10+7	10+8	10+9	10+10

When one of the addends is **0**, the sum is equal to the other addend.

\_\_ is made of \_\_ and \_\_ and double \_\_ is \_\_

When **adding 1**, the sum is the next number on the number line.

When **adding 2** to an even number, I get the next even number.

When **adding 2** to an odd number, I get the next odd number.

Double the smaller number and add 1 or double the bigger number and subtract 1.

Number bonds to 10

Bridging- ten and then

When one of the addends is 10 the other addend replaces the 0.

- The DfE guidance, alongside development of deep conceptual understanding, places significant emphasis on procedural and factual fluency.
- Why is this important?

*In teaching procedural and factual knowledge, ensure that students get to **automaticity**. Explain to students that automaticity with procedures and facts is important because it frees their minds to think about concepts. (Willingham 2009 p19)*

**3NF-1** Secure fluency in addition and subtraction facts that bridge 10, through continued practice.

**3NF-2** Recall multiplication facts, and corresponding division facts, in the 10, 5, 2, 4 and 8 multiplication tables, and recognise products in these multiplication tables as multiples of the corresponding number.



**3NF-3** Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 10).





Learning additive facts is different from learning multiplicative facts and happens in a different part of the brain.

Multiplicative facts are stored in our verbal memory; saying (and hearing) the sound pattern of the phrase (e.g. seven threes are twenty one) is important.

Additive facts are built up in a different part of the brain and rely initially on thinking about relationships.

(Piazza and Dehaene)

- Phase one counting on in ones
- Phase two reasoning with connected facts  
( $6 + 5 = 5 + 5 + 1 = 11$ )
- Phase 3 instant recall of facts ( $6 + 5 = 11$ )  
(Baroody)

Phase 2 reflects ‘thinking about relationships’. This is a very important stage

- 9 needs 1 to make ten, and then....

9	9 + 0	9 + 1	9 + 2	9 + 3	9 + 4	9 + 5	9 + 6	9 + 7	9 + 8	9 + 9	9 + 10
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# Step 1



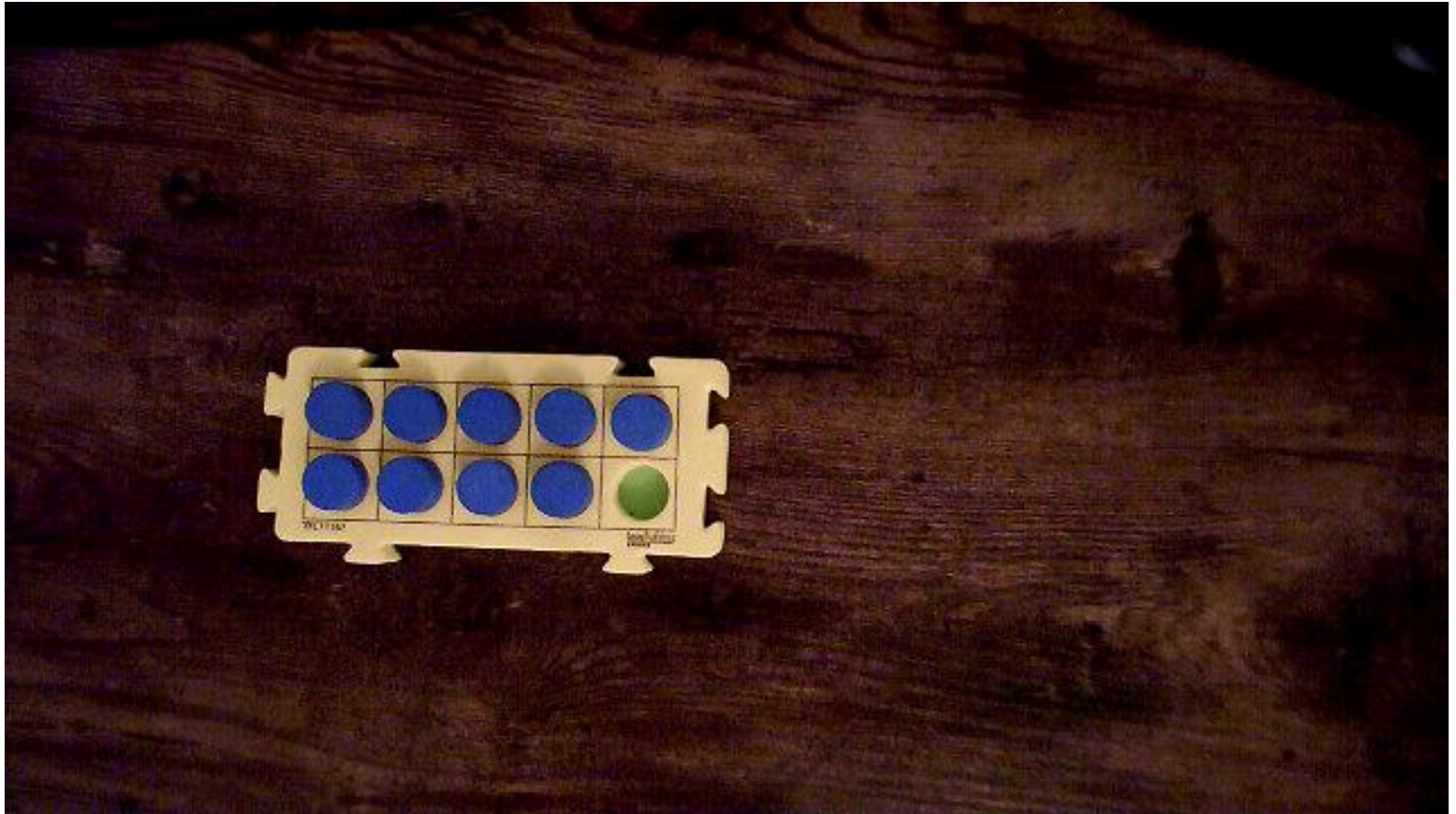
# Step 2



# Step 3



# Step 4



Step 4a





Step 5



## What did you notice?

- Please take some time to discuss what you have seen and formulate any questions.

# Thank you for having me!

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