

Secure recall and fluency with number is the phonics of the maths world!

Number

Supporting children with Maths



Everyone can be a great mathematician

~~I don't like maths~~

~~Maths isn't my thing~~

~~I can't do maths~~

Maths is essential ✓

I can't do that…yet! ✓

I'll have to think more deeply about that ✓

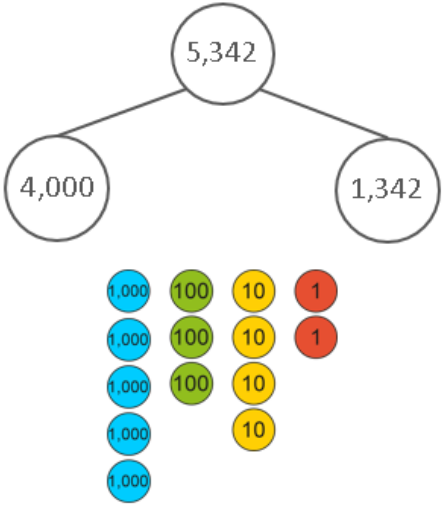
Aims:

- To understand how to support children to compose and decompose numbers
- To consider the importance of composition and decomposition as a concept and how it underpins knowledge of number facts
- To understand how representations can be used to both support and develop a deeper understanding of this concept

Composition and Decomposition

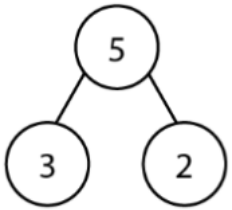
	Blue	Red
	0	5
	1	4
	2	3
	3	2
	4	1
	5	0



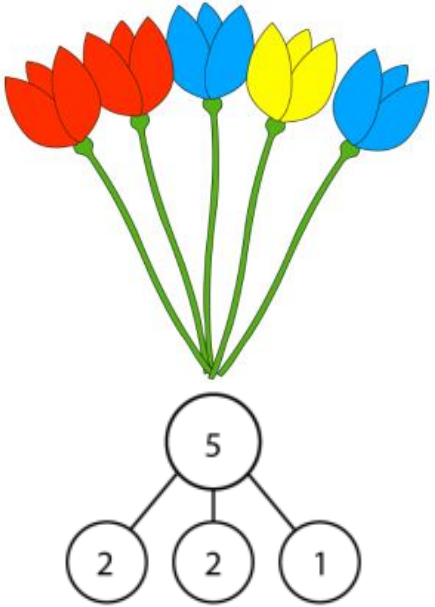


- Within EYs and KS1, children need to explore a range of ways to partition a whole number

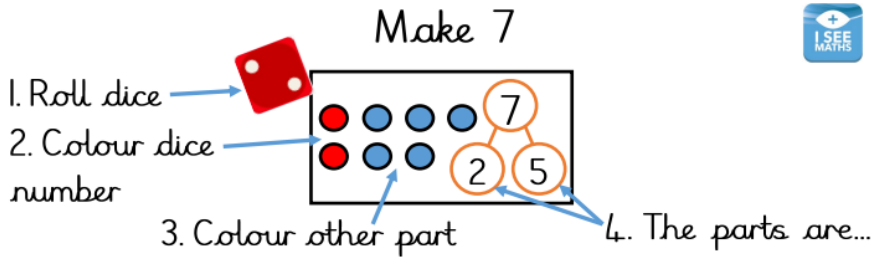


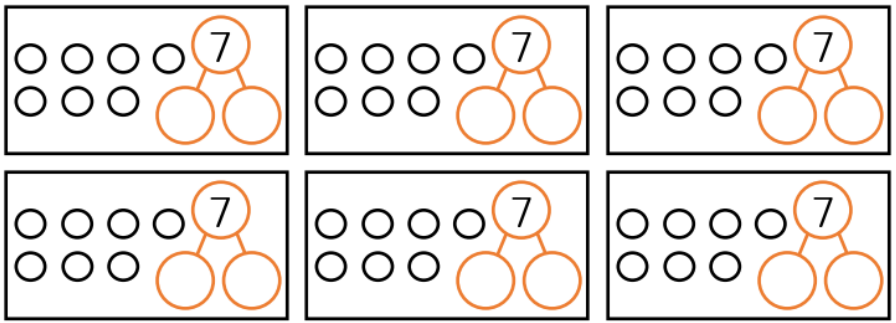


- Activities designed to give children the physical opportunity to separate and construct numbers will allow for deeper understanding



Number Fluency: Make 7



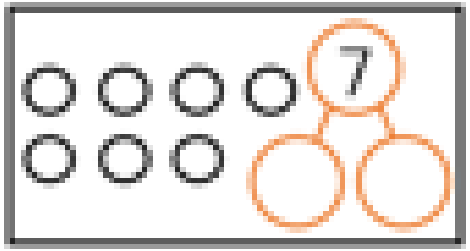


7 is made of ___ and ___, ___ and ___ make *7*.

5 needs ___ to make *7*, 5 and ___ make *7*.

‘Seven toys go into a tent, then two come out. How many are left in the tent?’

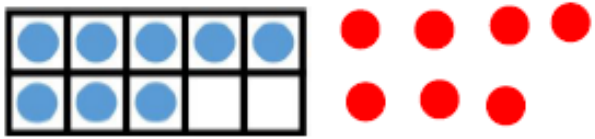




7 is made of ___ and ___, ___ and ___ make 7.

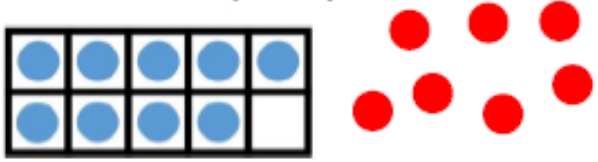
If I know what makes 7, then I know...

8 + 7



Split 7 into 2 and 5

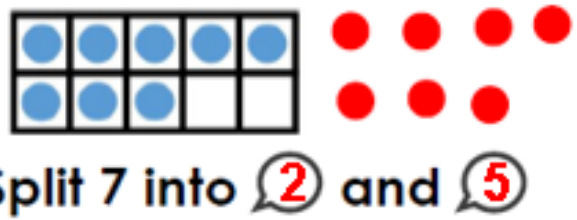
9 + 7

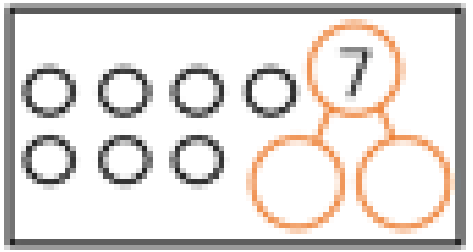


Split 7 into 1 and 6

Future Applications – Year 6

$\square = 8{,}275 + 82$





How would you respond?

Explain, using representations, how you know which is a correct and which is an incorrect bond?

Correct bond to 100	Incorrect bond to 100

62 + 48

43 + 67

28 + 72

39 + 71

55 + 45

84 + 16

Jack has been asked to write the number ‘ten thousand and twenty-three’. He writes ‘1023’. Can you use a representation to help Jack write the number correctly?

1023

Discuss...

Did you notice?

Correct bond to 100	Incorrect bond to 100
28 + 72 55 + 45 84 + 16	62 + 48 39 + 71 43 + 67

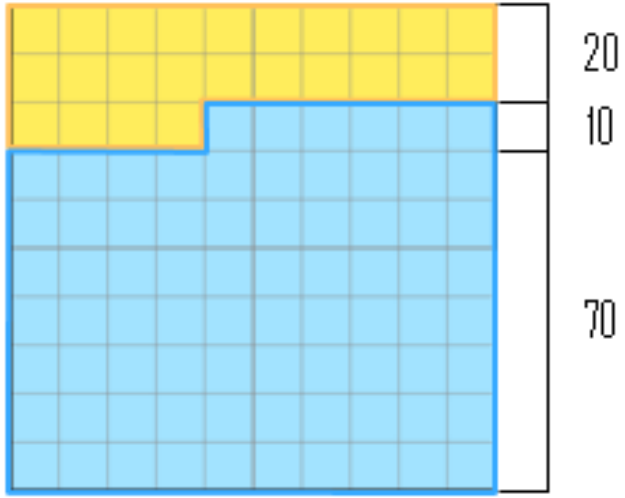
<u>Misconception:</u>

62 + 48

2 and 8 make 10, 60 and 40 make 100

Some children don't notice that the total is over 100.

24 + 76 = 100



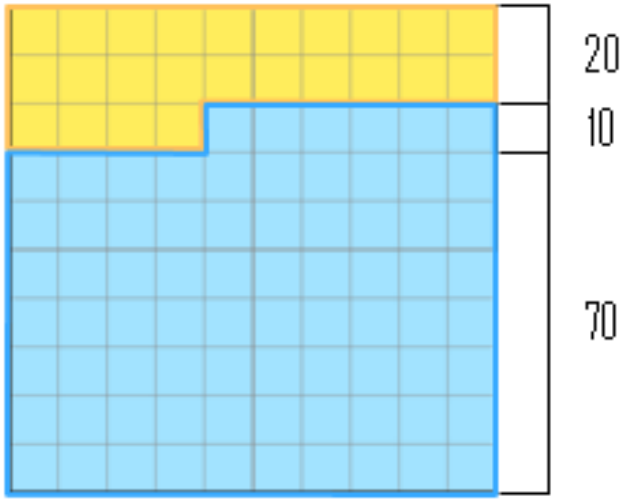
What do you notice about pairs of numbers that bond to 100? What's the same? What's different?

Rules/Generalisations

- X The ones always bond to ten
- X The tens always bond to 90

Correct bond to 100
28 + 72
55 + 45
84 + 16

24 + 76 = 100



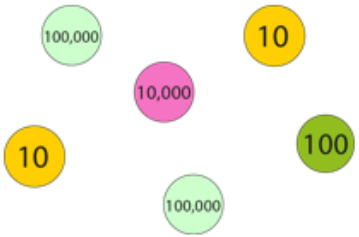
Did you notice?

1023

Zero is a place holder

Thousands			Ones		
100s	10s	1s	100s	10s	1s
	1	0	0	2	3

- As children reach Y6, they need to understand the composition of larger numbers.



- Here the PVC have been arranged randomly, meaning the children have to have secure understanding of their value to compose and write the number.

- Some children can only decompose numbers by place value
- (300+20+4)
- Not understanding that numbers can be decomposed differently
- (250+70+3+1)

6NPV-2 Place value in numbers up to 10,000,000

7,348,562

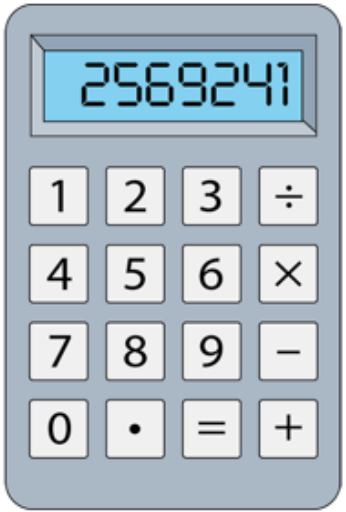
7,348,562 – 40,000 = 7,308,562

- Play ‘zap the digit’.
- Enter the number shown on a calculator.
- Using subtract on the calculator, zap the digit 4 and write the equation that you entered.
- Repeat with other digits.
- Repeat with other numbers.



2,569,241

Millions			Thousands			Ones		
100s	10s	1s	100s	10s	1s	100s	10s	1s
		2	5	6	9	2	4	1



- What number has been entered on the calculator? Write it with commas used as separators correctly and say the number out loud.

2,569,241

The number shown is two million, five hundred and sixty-nine thousand, two hundred and forty-one.

- Create other numbers on a calculator, up to 7 digits, by multiplying different combinations of numbers with different numbers of digits. Record each number created, using commas correctly.

- Time spent securing children's understanding in the **composition** and **decomposition** of number will develop their confidence in the **structure** of the place value system, supporting their ability to manipulate numbers and enhancing their **mathematical fluency**



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Supporting Materials:

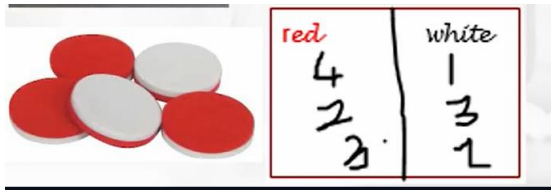
- EEF Guidance – Improving Mathematics at Early Years, KS1 and KS2
- Teacher Handbook: SEND (page 61)
- I see reasoning website https://www.iseemaths.com/games-resources/
- Ready to Progress power points- https://www.ncetm.org.uk/classroom-resources/exemplification-of-ready-to-progress-criteria/

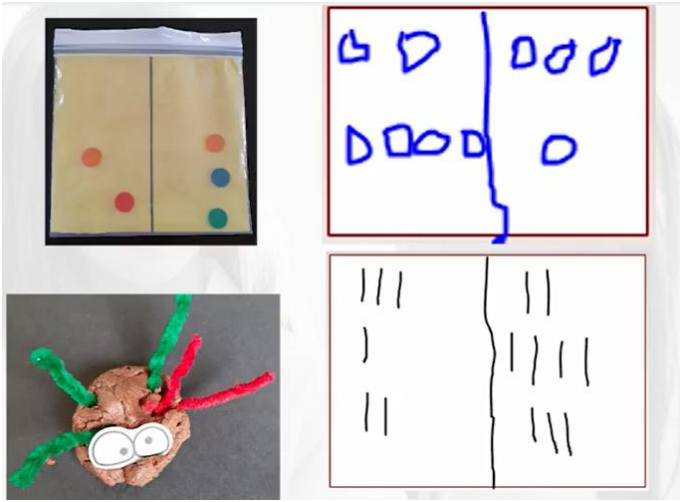
- Numicon towers: layering up Numicon pieces of the same total. How many ways can you make…?



- putting things into two containers in different ways

- Spill the Beans: using double-sided counters or beans, where one side is coloured, throw the collection and note how many of each type can be seen and how many altogether





- One is snail and ten is a crab: use this story to create many different combinations of legs to make set amounts
- Bunny Ears: using your fingers like bunny ears. 'With two hands, show me five fingers. Can you do it in a different way?' Or, 'Show five fingers altogether with a friend'
- using six bean bags with different fabric on each side, throw the collection and note how many of each type can be seen.
- Purposeful partitioning – create a number bracelet using beads of different colours or placing them in two halves.

