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Maths Parent Presentation November 2024

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-What is Mastery?
-The maths curriculum
-What does Maths Mastery look like across the school?
-Supporting your child at home
-Time for questions

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What is Mastery?

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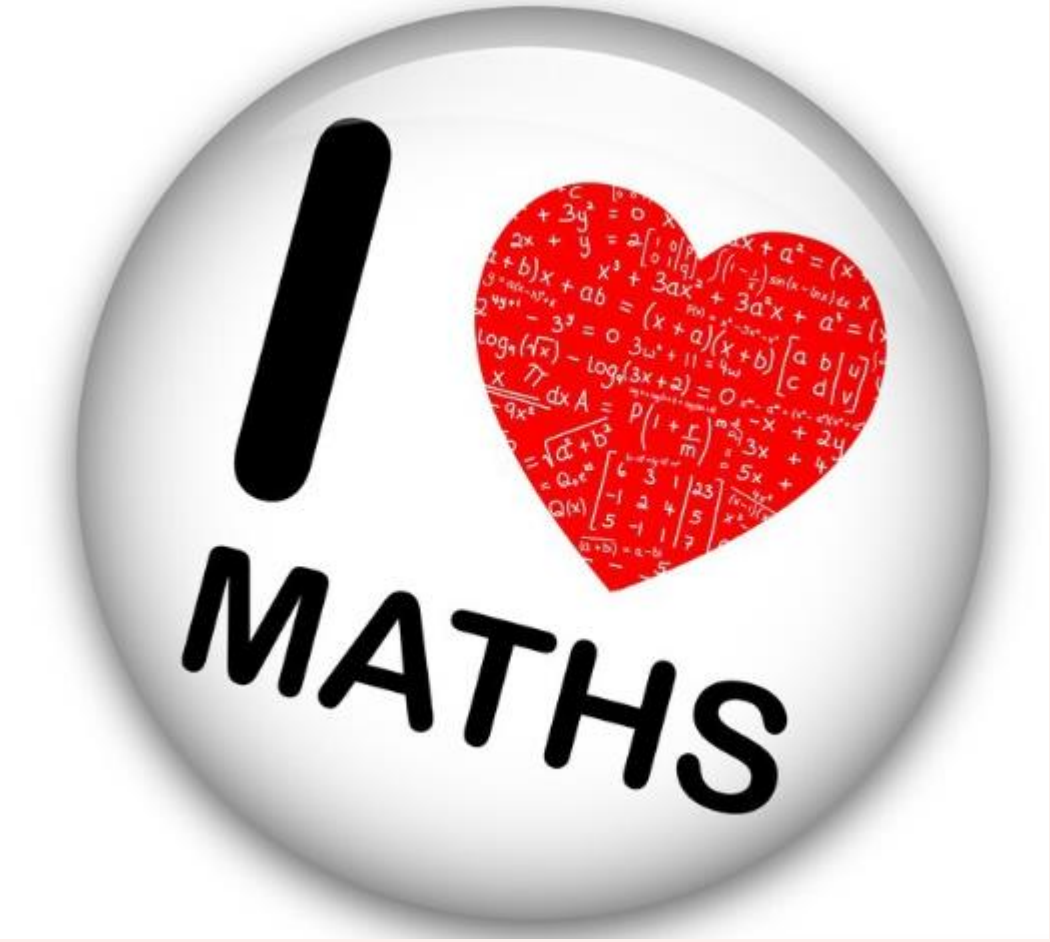
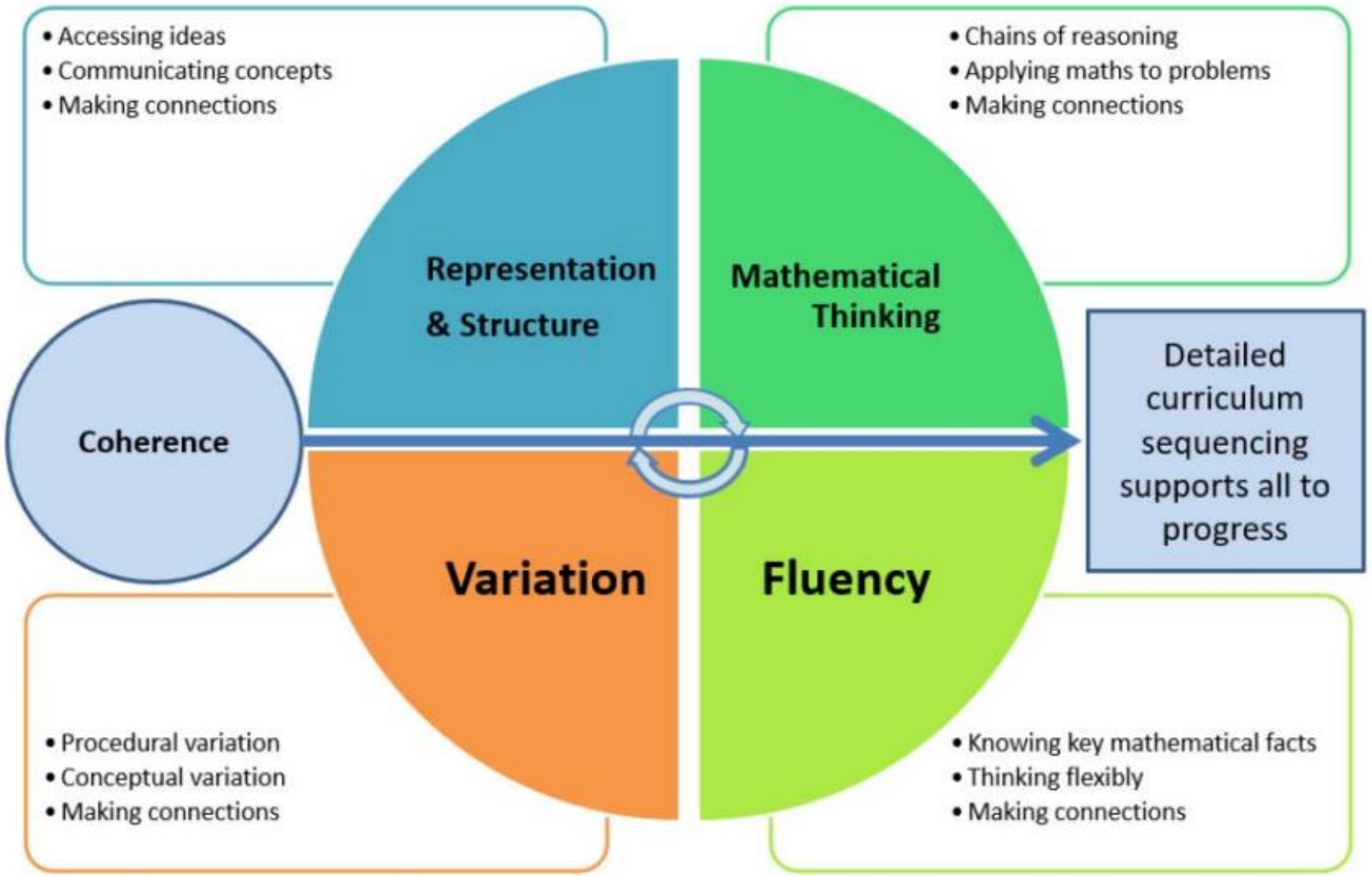


Teaching for Mastery



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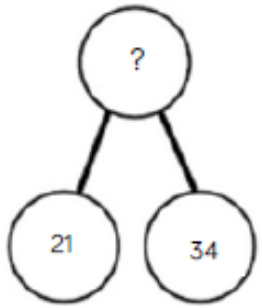
Variation

Conceptual variation; different ways to ask children to solve 21 + 34



?	
21	34

Word problems:
In year 3, there are 21 children and in year 4, there are 34 children.
How many children in total?

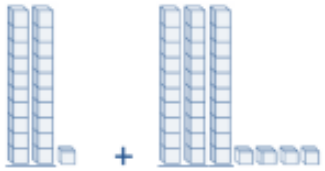
21 + 34 = 55. Prove it

21
+34
——

21 + 34 =

☐ = 21 + 34

Calculate the sum of twenty-one and thirty-four.



Missing digit problems:

10s	1s
10 10	1
10 10 10	?
?	5

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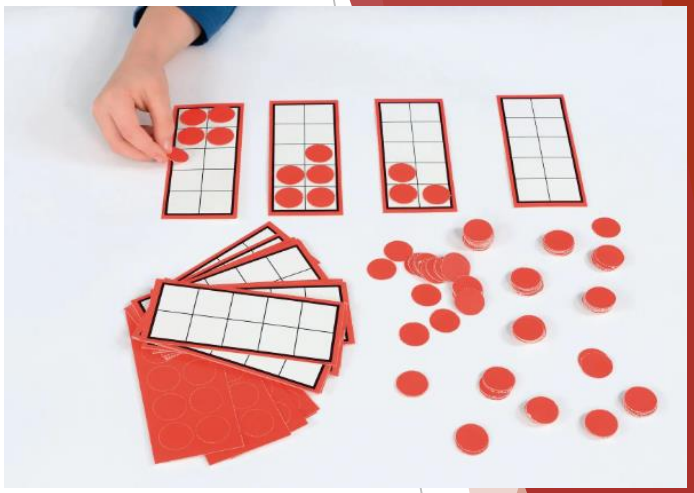

Representation and structure

Concrete

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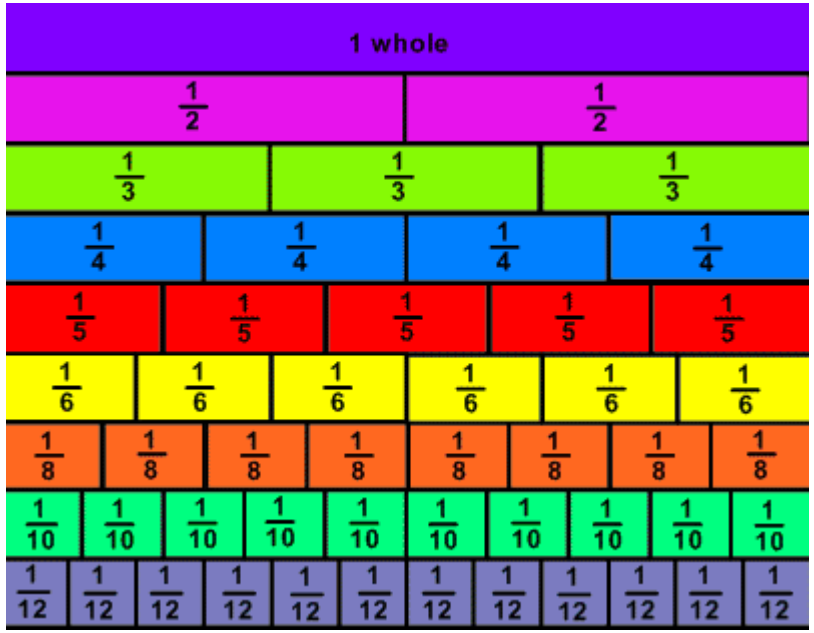
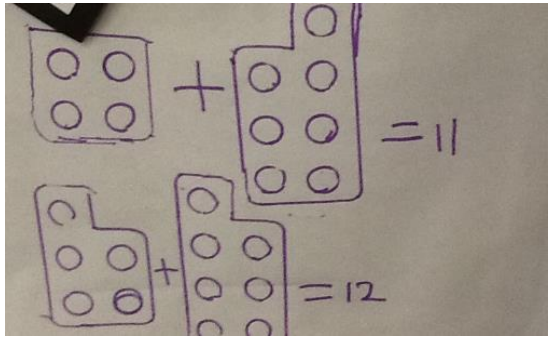
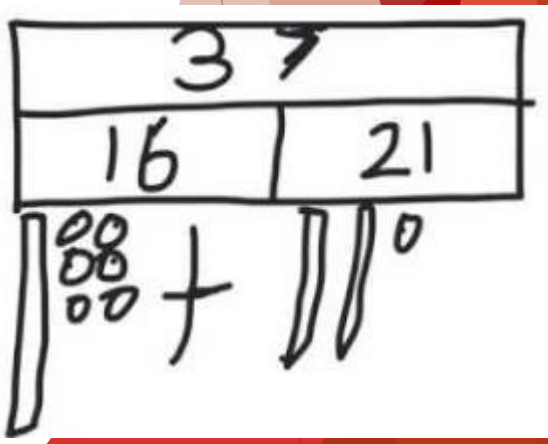
3	?
7	

Pictorial







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Abstract

$2 \times 5 = 10$

$66 + 32 = 98$

$12 + \square = 17$

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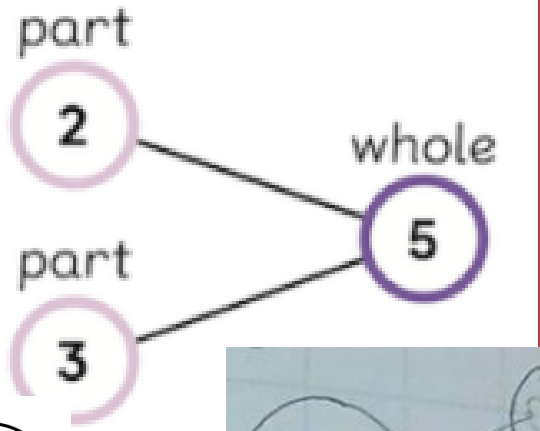
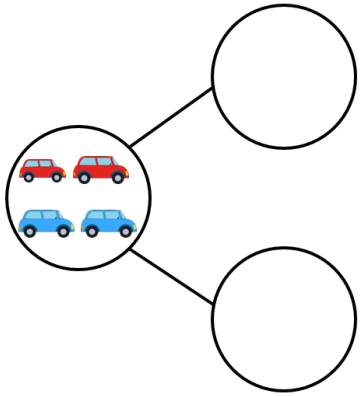
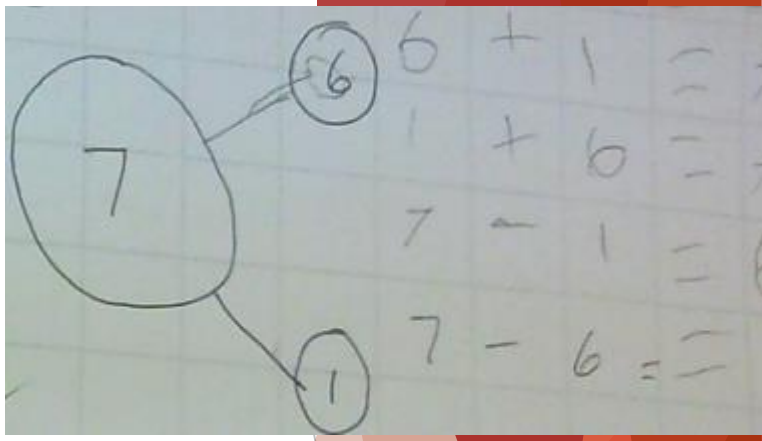
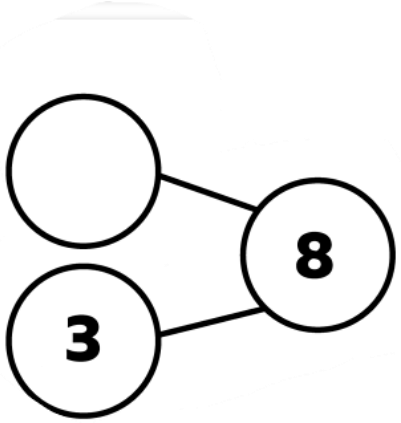
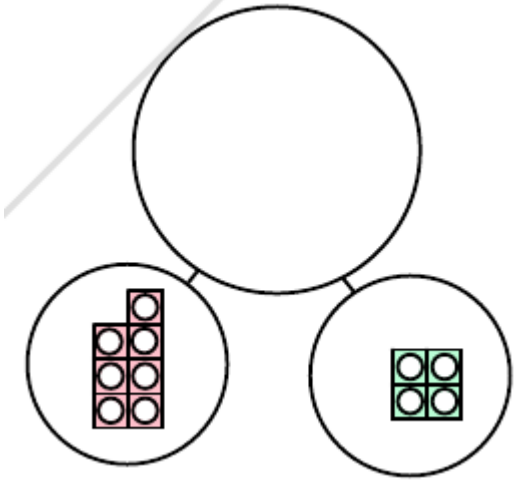


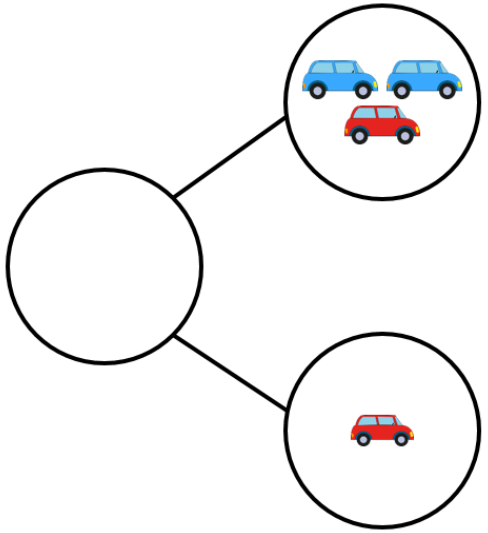
Part Part Whole

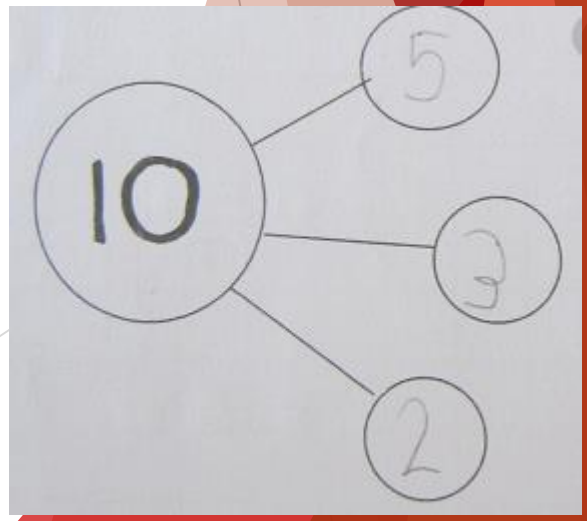












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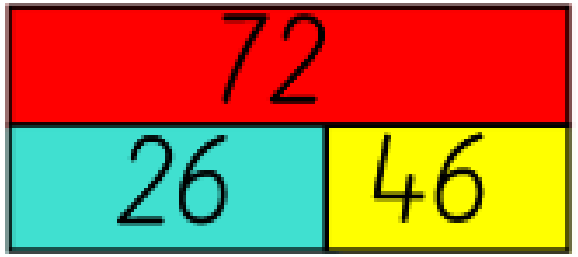
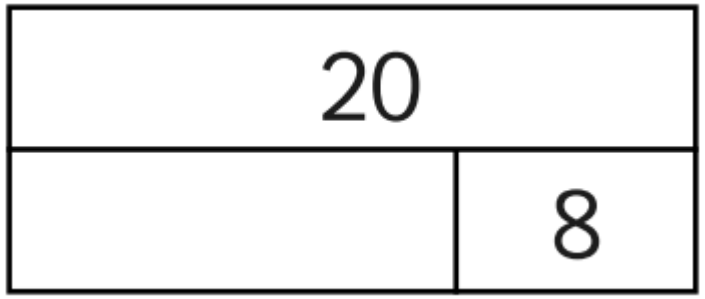


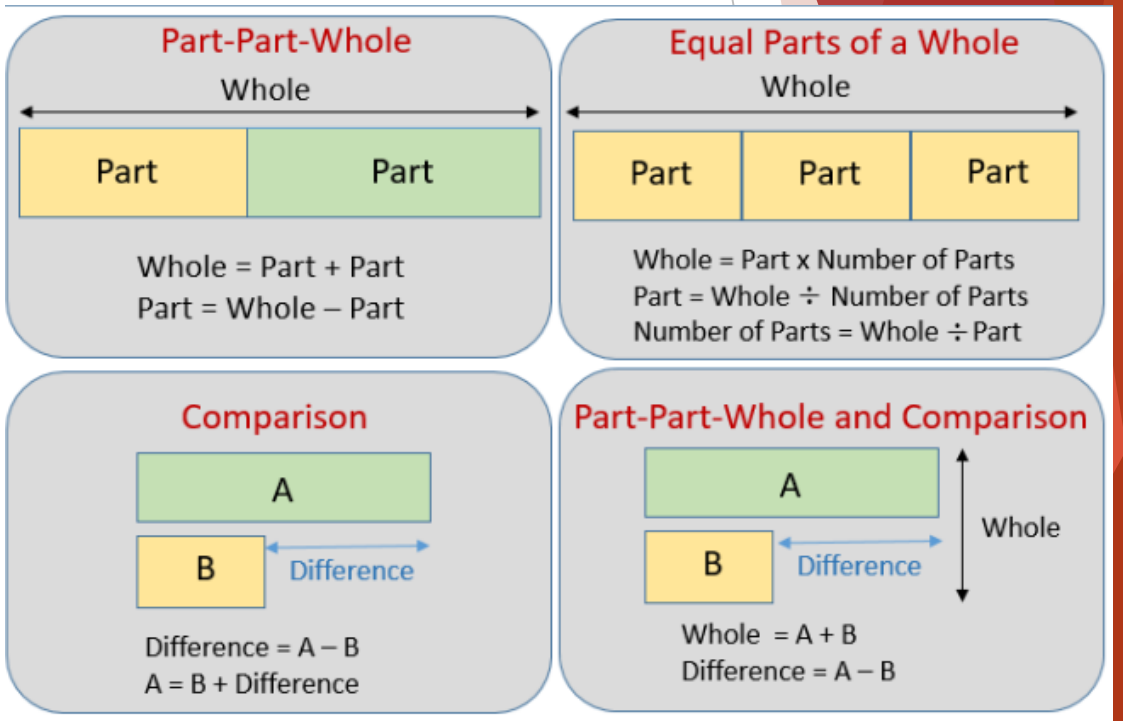
Bar Model



24 In a class, 18 of the children are girls.

A quarter of the children in the class are boys.

Altogether, how many children are there in the class?



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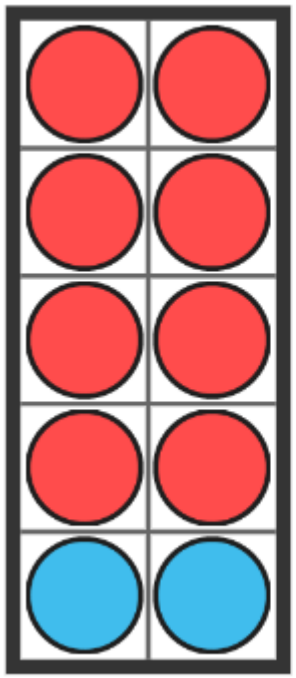
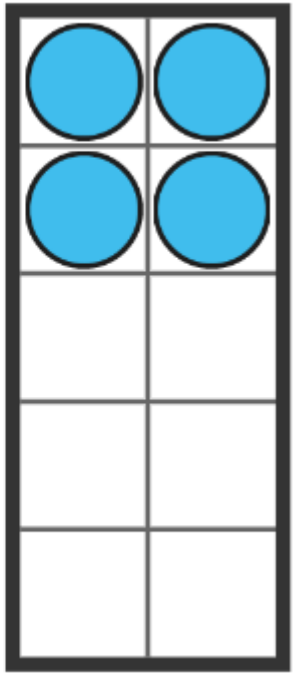
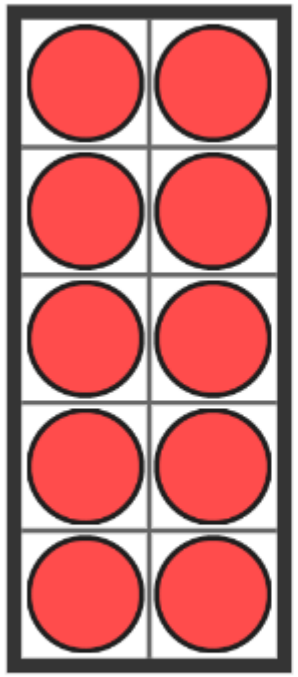
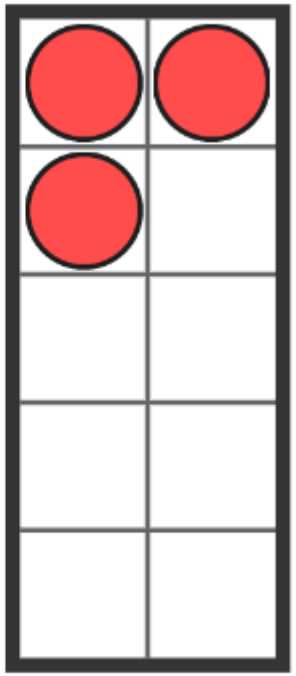
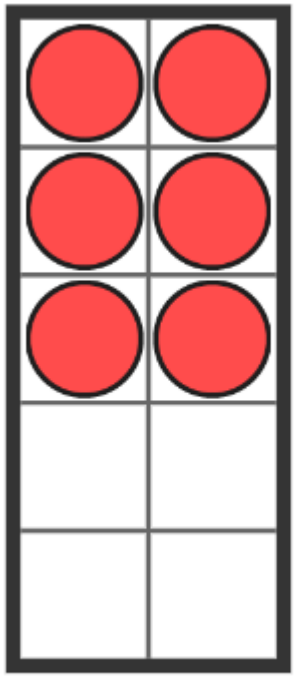
Tens Frames











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The Maths Curriculum

Focus on:

-Fluency

-Reasoning

-Problem solving

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Fluency

To be fluent in mathematics children should be able to…

-grasp the fundamentals of mathematics

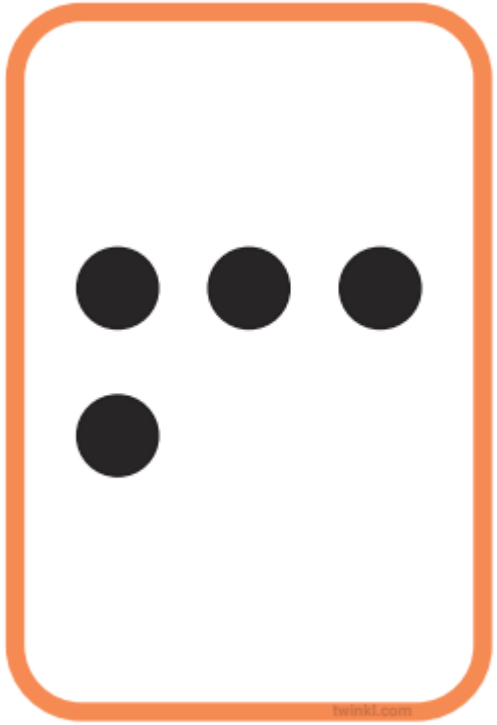
- practice arithmetic skills

- make connections

- become more confident with written and mental methods

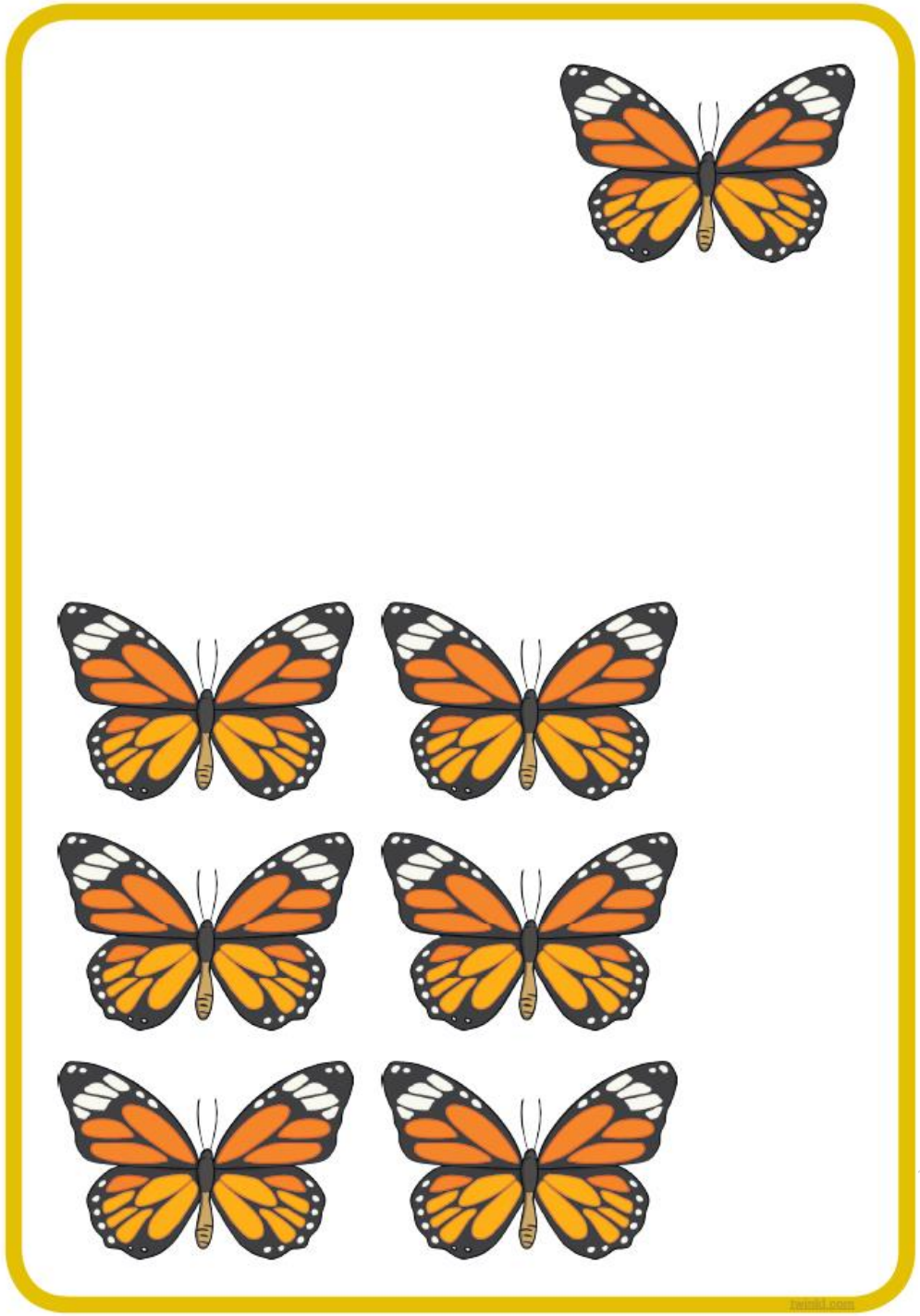
- be confident with what they are doing and why

- recall and apply their knowledge rapidly and accurately

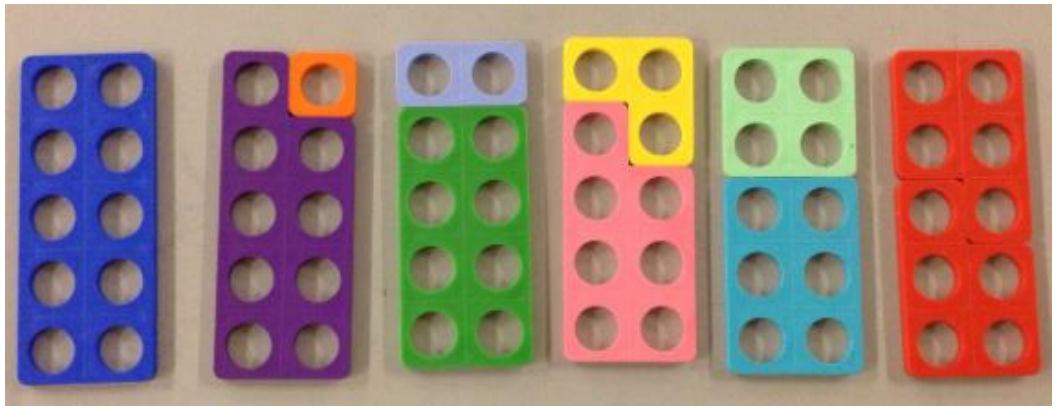


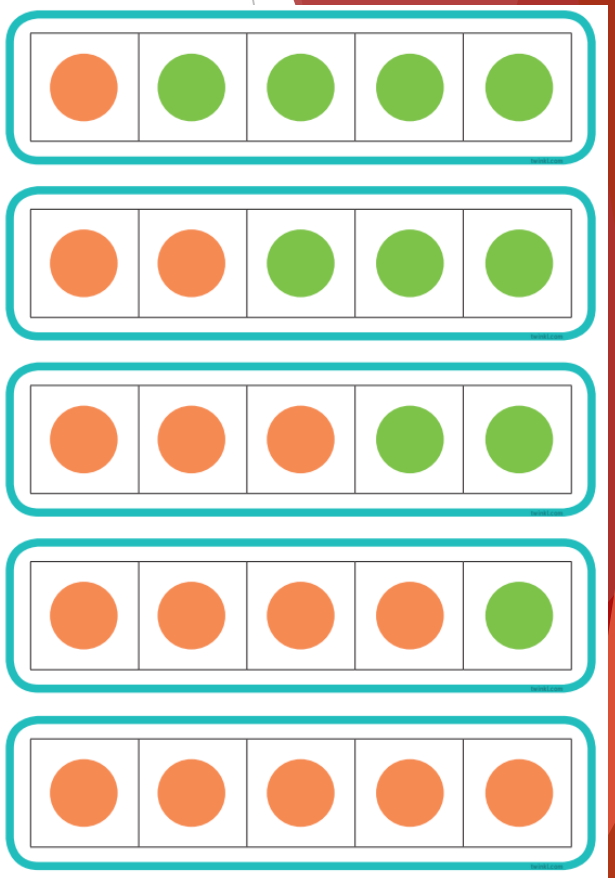
Subitising

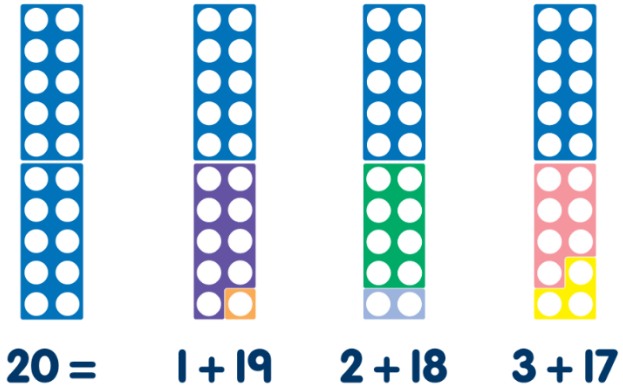
Subitising is the ability to look at a small set of objects and instantly know how many there are without counting them. For example, when rolling a dice we don't need to count the dots to know what we have rolled.

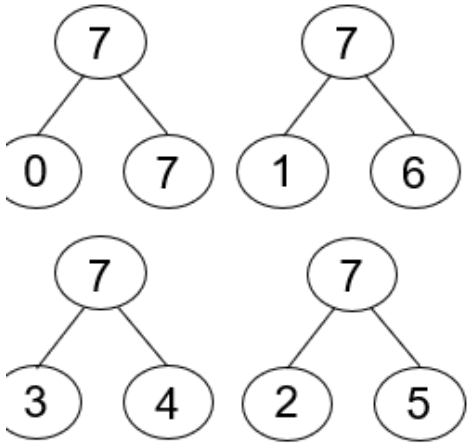


What are number bonds and why are they important?









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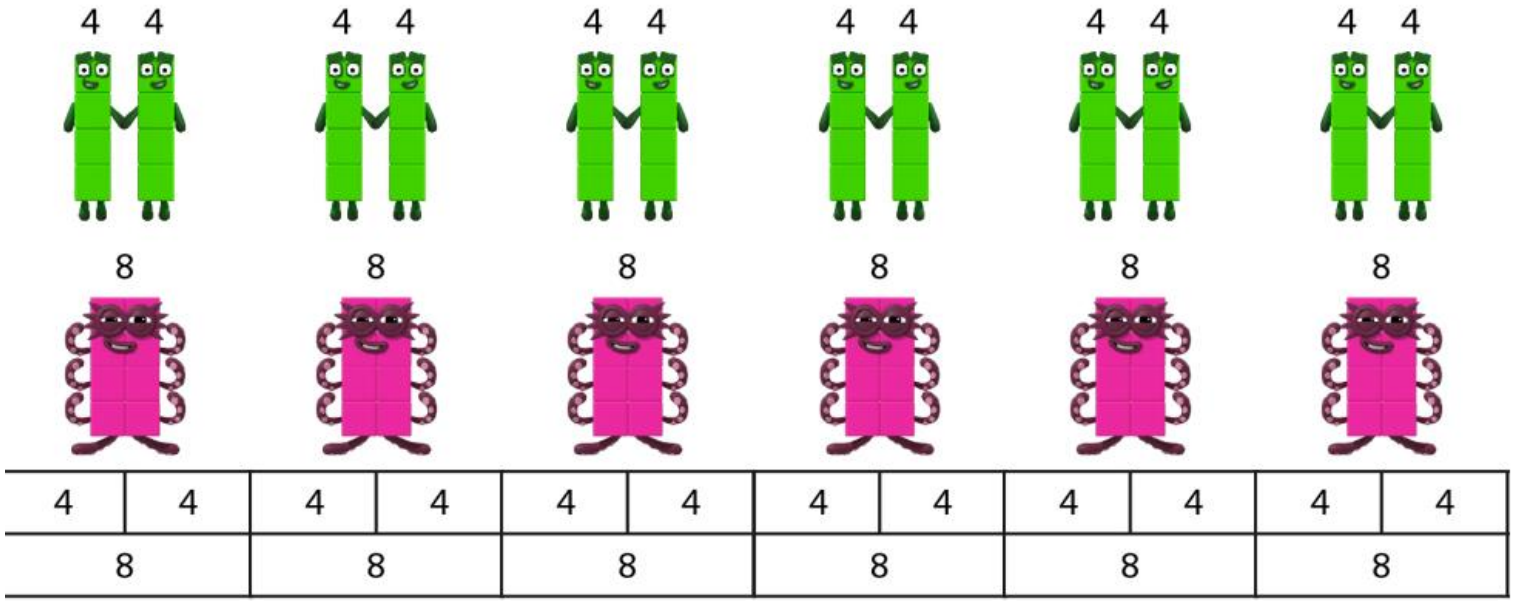
Fluency in Key Stage 2
(Sapphire and Emerald Class)



×	0	1	2	3	4	5	6	7	8	9	10	11	12
0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10	11	12
2	0	2	4	6	8	10	12	14	16	18	20	22	24
3	0	3	6		12	15			24		30		
4	0	4	8	12	16	20	24	28	32	36	40	44	48
5	0	5	10	15	20	25	30	35	40	45	50	55	60
6	0	6	12		24	30			48		60		
7	0	7	14		28	35			56		70		
8	0	8	16	24	32	40	48	56	64	72	80	88	96
9	0	9	18		36	45			72		90		
10	0	10	20	30	40	50	60	70	80	90	100	110	120
11	0	11	22		44	55			88		110		
12	0	12	24		48	60			96		120		

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Reasoning

Through reasoning problems children should…

- be able to explain why an answer is right or wrong

- follow a line of enquiry to a logical conclusion

- prove theories using mathematical language

Which would you rather have?

2 x 5 toys

or

5 x 2 toys

A quarter is when we share something into two equal pieces.

True or false?

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Problem Solving

Children should be able to…

- apply their mathematics to a variety of routine and non-routine situations

- put maths into context

- break down problems into a series of manageable steps

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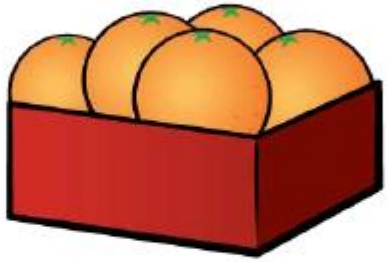
1 Des has some oranges.

He packs them into boxes.

Each box holds 5 oranges.



He fills 7 boxes.

He has 29 oranges left.

How many oranges does he have in total?

Noah

Noah saw 12 legs walk by into the Ark.

How many creatures could he have seen?

How many different answers can you find?

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Our lesson Structure

Reconnect: reviewing key knowledge that children will need for the session

Vocabulary: Key language from the unit is explicitly taught

New learning: adult model – I do

New learning: pair work- we do

New learning: independent- you do

Reasoning and problem-solving challenges will be embedded into both paired and independent tasks. We call these 'Star Challenges'.

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What does Mastery look like across the school?

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Mastery in Reception

Mastering Number

Reception Overview

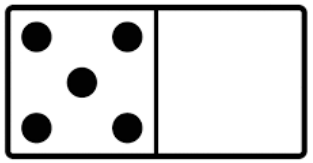
Term 1	Term 2	Term 3
Pupils will build on previous experiences of number from their home and nursery environments, and further develop their subitising and counting skills. They will explore the composition of numbers within 5. They will begin to compare sets of objects and use the language of comparison.	Pupils will continue to develop their subitising and counting skills and explore the composition of numbers within and beyond 5. They will begin to identify when two sets are equal or unequal and connect two equal groups to doubles. They will begin to connect quantities to numerals.	Pupils will consolidate their counting skills, counting to larger numbers and developing a wider range of counting strategies. They will secure knowledge of number facts through varied practice.

Sarah

Mastering 5

Show me 5.
Show me 5 in another way?

5



How do you know they are the same number? What is the same or different about these fives?

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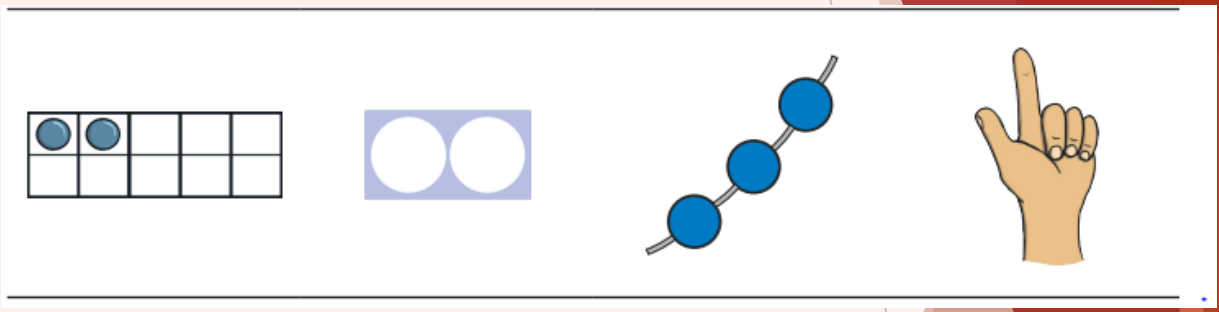
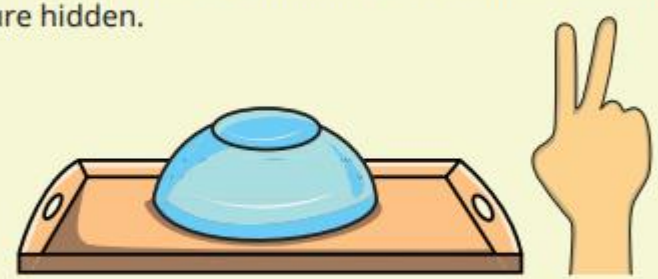
Hen says these all show 2. True or false?



Challenge

With children, count out 1, 2 or 3 items and hide them.

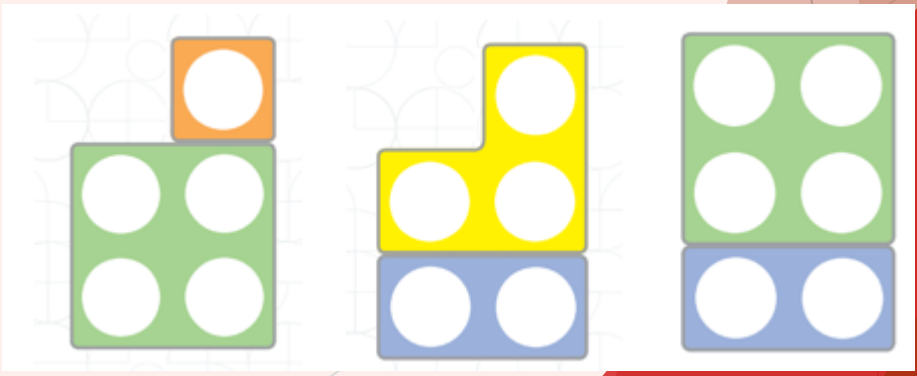
Ask children to use their fingers to show how many are hidden.



Ask children to watch as you add 1 more item to the hidden group.

How many are hidden now? What if you take one out?

Which one is the odd one out? Explain your ideas to a grown up.



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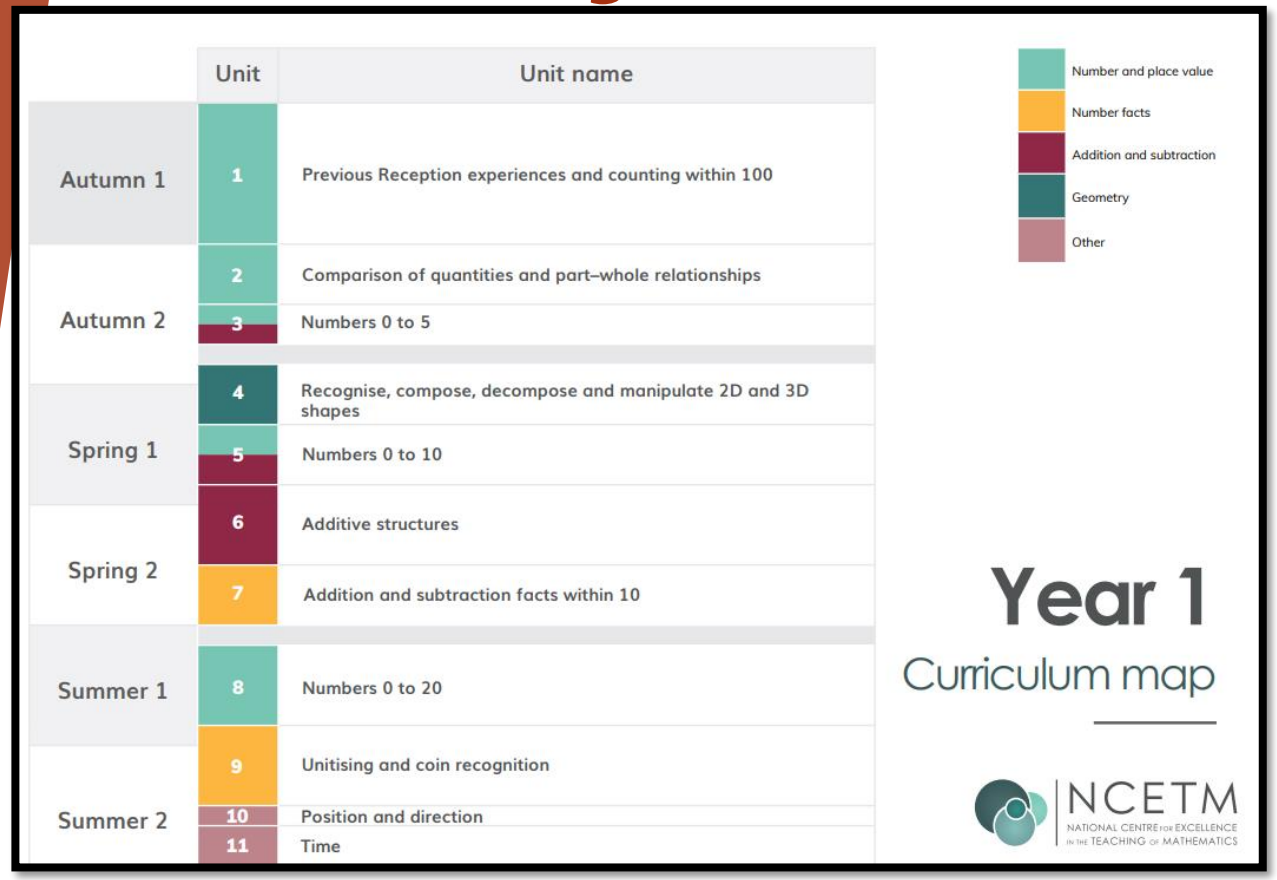
Maths in years 1 and 2

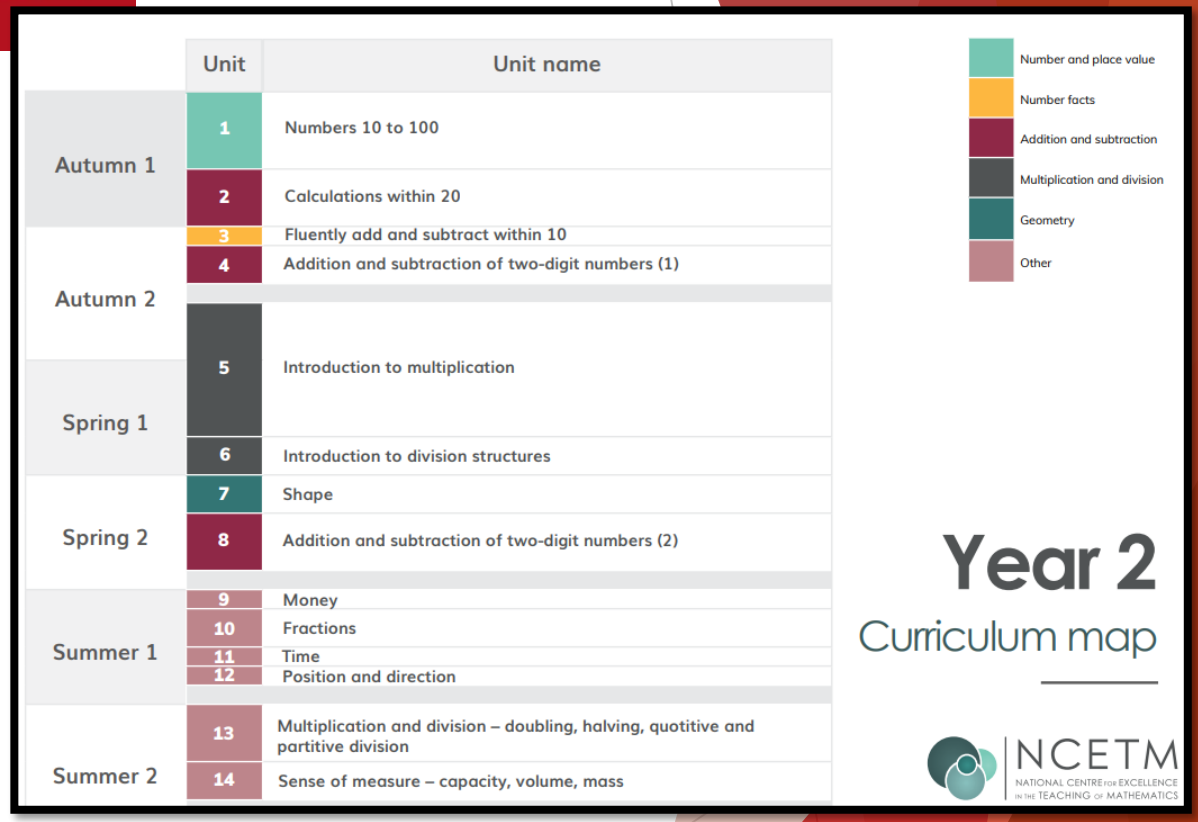


	Unit	Unit name
Autumn 1	1	Previous Reception experiences and counting within 100
Autumn 2	2	Comparison of quantities and part–whole relationships
	3	Numbers 0 to 5
Spring 1	4	Recognise, compose, decompose and manipulate 2D and 3D shapes
	5	Numbers 0 to 10
Spring 2	6	Additive structures
	7	Addition and subtraction facts within 10
Summer 1	8	Numbers 0 to 20
Summer 2	9	Unitising and coin recognition
	10	Position and direction
	11	Time

Number and place value
Number facts
Addition and subtraction
Geometry
Other

Year 1
Curriculum map

NCETM
NATIONAL CENTRE FOR EXCELLENCE IN THE TEACHING OF MATHEMATICS



	Unit	Unit name
Autumn 1	1	Numbers 10 to 100
	2	Calculations within 20
Autumn 2	3	Fluently add and subtract within 10
	4	Addition and subtraction of two-digit numbers (1)
Spring 1	5	Introduction to multiplication
	6	Introduction to division structures
Spring 2	7	Shape
	8	Addition and subtraction of two-digit numbers (2)
Summer 1	9	Money
	10	Fractions
	11	Time
	12	Position and direction
Summer 2	13	Multiplication and division – doubling, halving, quotitive and partitive division
	14	Sense of measure – capacity, volume, mass

Number and place value
Number facts
Addition and subtraction
Multiplication and division
Geometry
Other

Year 2
Curriculum map

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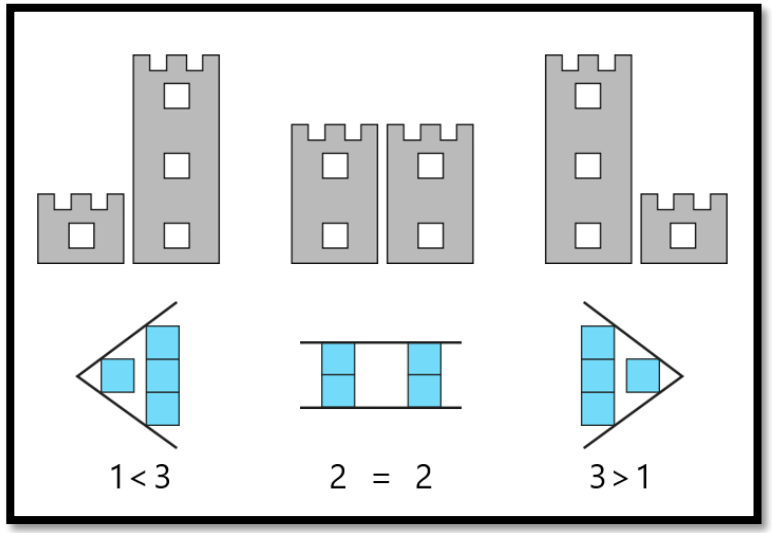
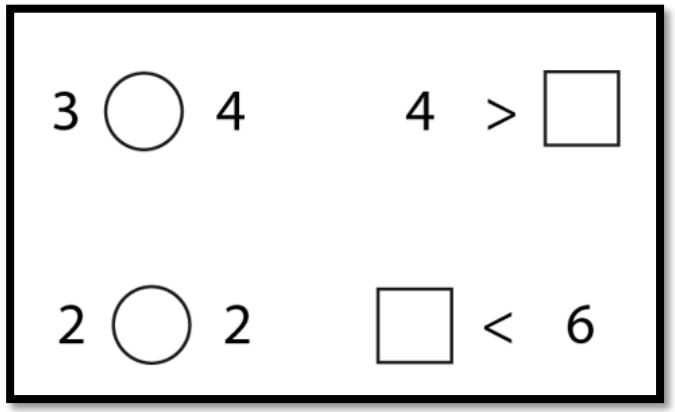
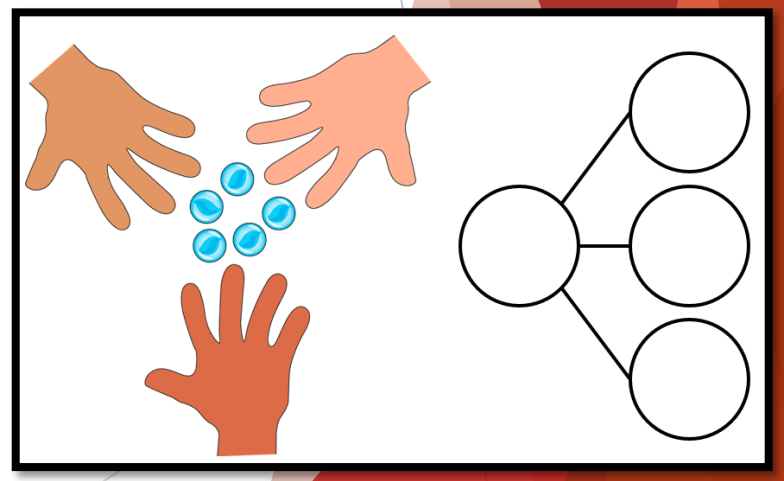
Maths in year 1

Comparison of quantities and part-whole relationships







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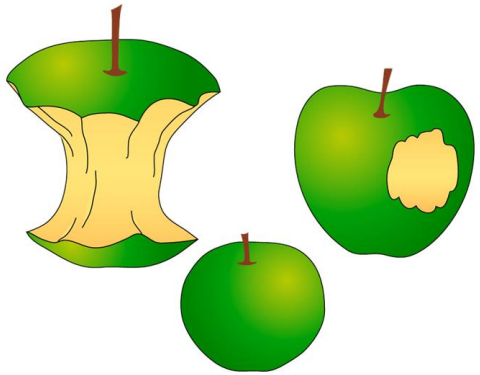
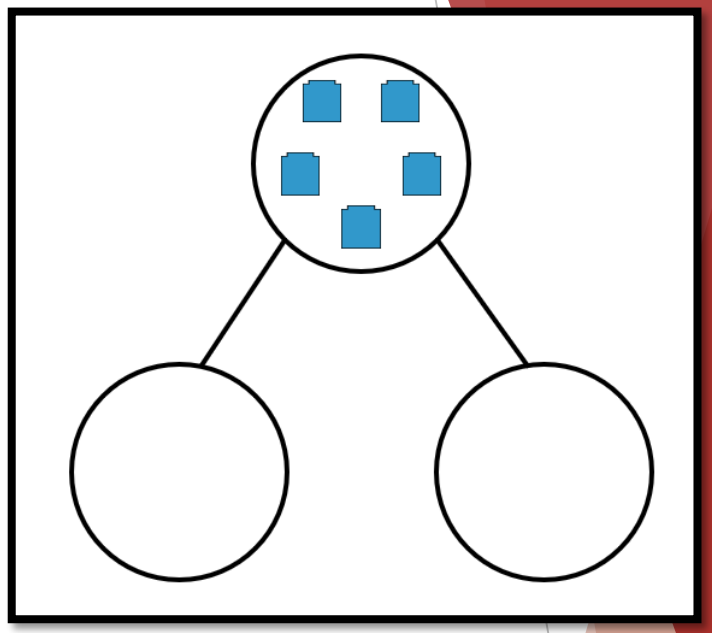
Is the stalk a part of the whole apple?



‘This is a whole____,because I have all of it.’
‘This is not a whole___, because I only have part of it.’



Liam says ‘I have five cakes. I can put three cakes on one plate and three cakes on another plate.’ Is he right? Explain your thinking.

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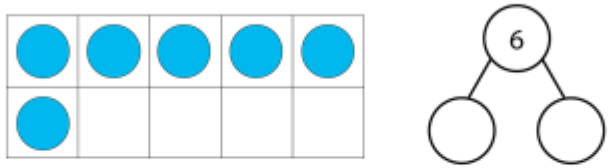
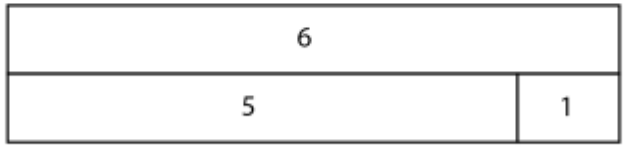
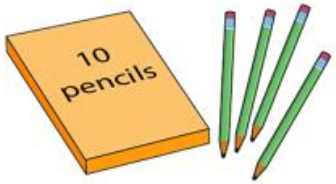
Composition of numbers to 20







10s	1s

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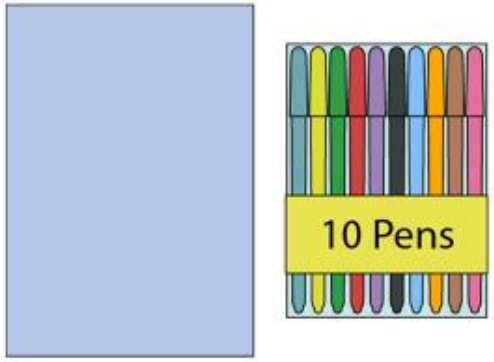
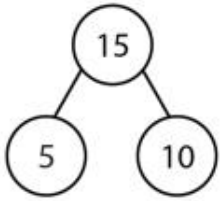
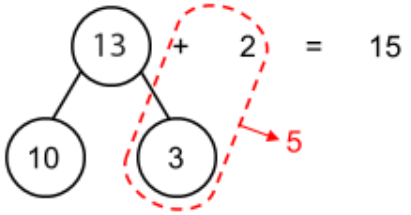
Composition of numbers to 20







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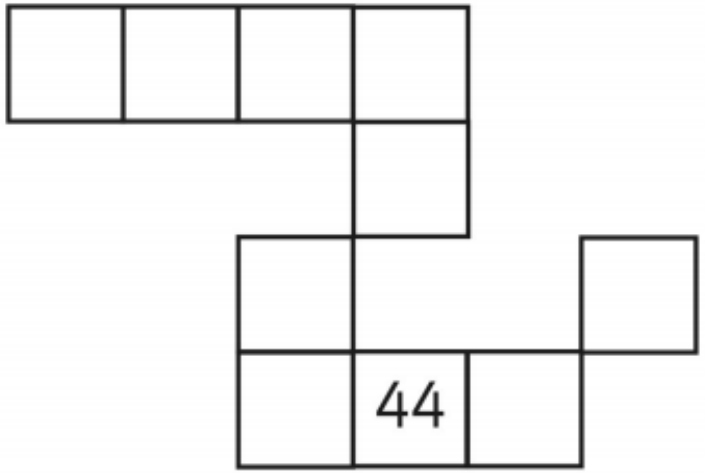
Maths in year 2

Numbers to 100



Place 47 on each of these empty number lines.

0 100

40 60

33 50

Max labels an odd number on the number line.

He spills some paint over his number.

What could Max's number be?

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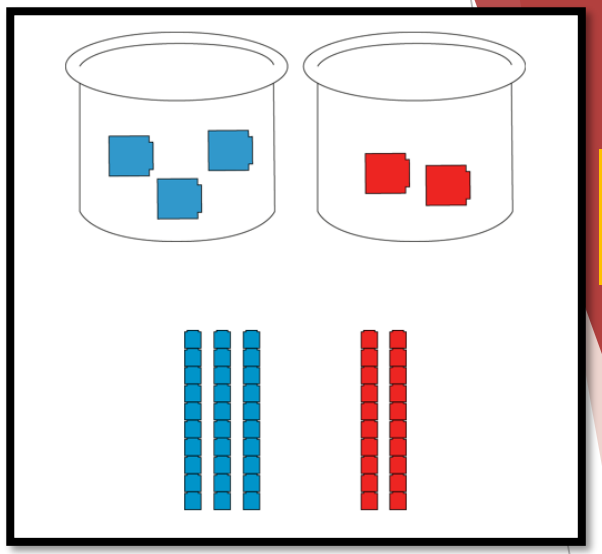
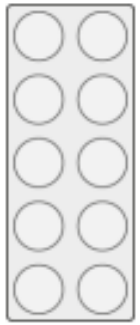
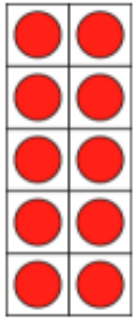
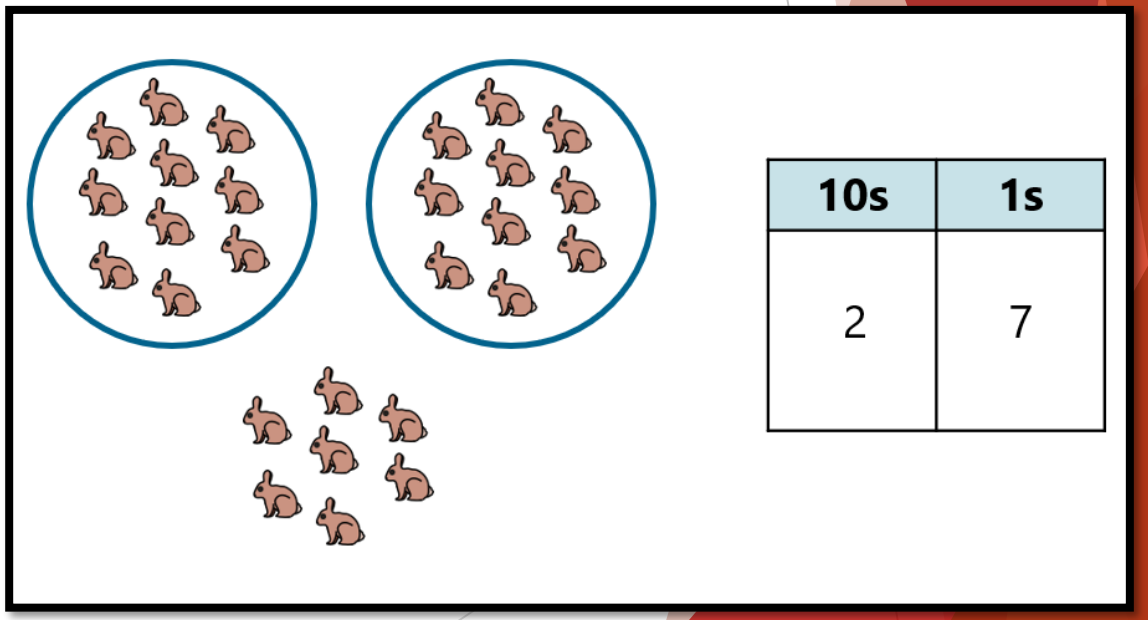


I know that…
So I know…

Dienes ten rod	Base-ten number board	Tens frame
		

Is this a group of ten? How do we know?
‘Ten ones are equal to one ten.’



10s	1s
2	7

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Challenge – explain your method to your talk partner

How many dots are there altogether?
How could you count these efficiently?

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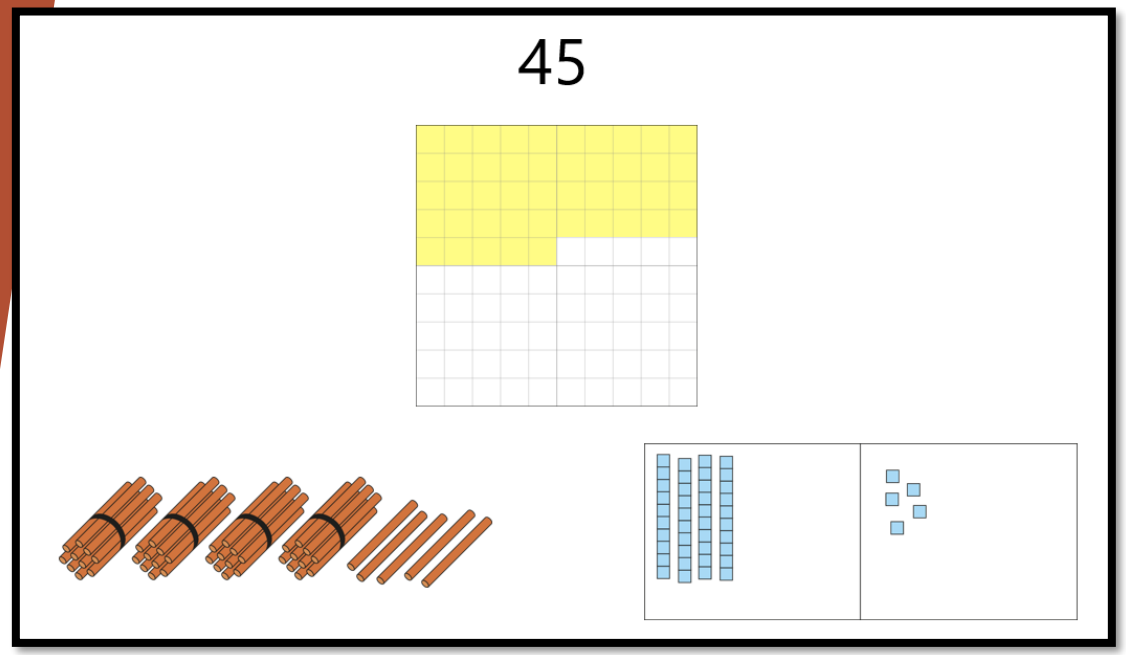
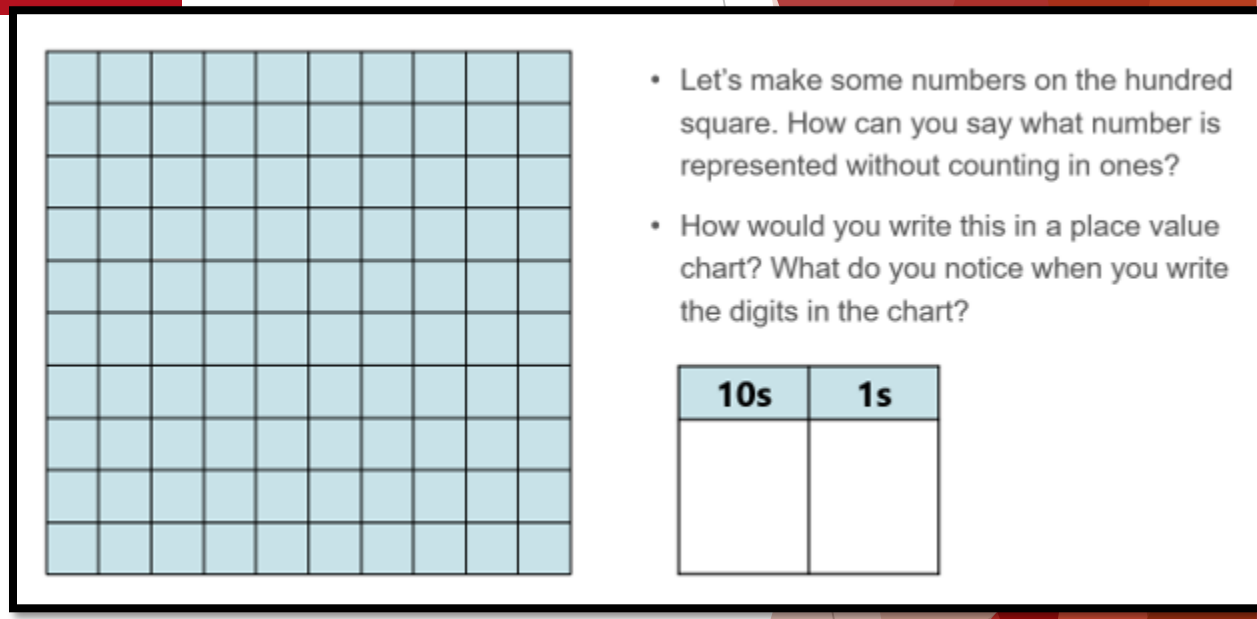


Show me 45!



I am thinking of a two-digit number. The first digit is four greater than the second digit. What could my number be?

Challenge – Are there any other possible answers?

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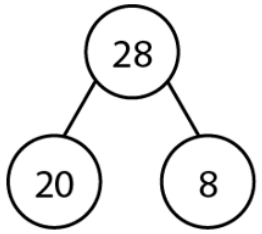

28	
20	8

$20 + 8 = 28$

$8 + 20 = 28$

$28 = 20 + 8$

$28 = 8 + 20$

$28 - 20 = 8$

$28 - 8 = 20$

$8 = 28 - 20$

$20 = 28 - 8$

What equations can you write to match the part-part-whole model?

Challenge – Fill in the missing symbols <, > or =

$50 + 6 \bigcirc 65$	$17 \bigcirc 1 + 70$
$50 + 6 \bigcirc 56$	$71 \bigcirc 1 + 70$
$2 + 30 \bigcirc 3 + 20$	$40 + 6 \bigcirc 6 + 40$
$45 - 5 \bigcirc 56 - 6$	$45 - 5 \bigcirc 46 - 6$
$45 - 40 \bigcirc 72 - 70$	$45 - 40 \bigcirc 46 - 40$

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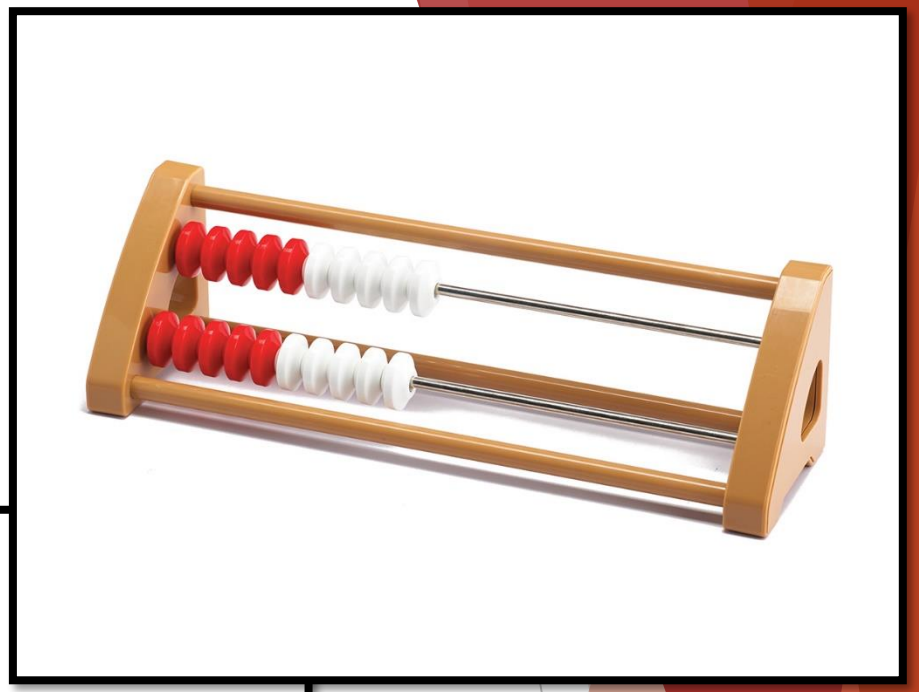
Fluency in Year 1 and 2



Mastering Number

Year 1 Overview

Term 1	Term 2	Term 3
Pupils will have an opportunity to consolidate the Early Learning Goals and continue to explore the composition of numbers within 10, and the position of these numbers in the linear number system.	Pupils will continue to explore the composition of numbers within 10 and explore addition and subtraction structures and the related language (without the use of symbols).	Pupils will explore the composition of numbers within 20 and their position in the linear number system. They will connect addition and subtraction expressions and equations to 'number stories').

Year 2 Overview

Term 1	Term 2	Term 3
Pupils will have an opportunity to consolidate their understanding and recall of number bonds within 10; they will re-cap the composition of the numbers 11 to 20 and reason about their position within the linear number system.	Pupils will have an opportunity to use their knowledge of the composition of numbers within 10 to calculate within 20; they will explore the links between the numbers in the linear number system within 10 to numbers within 100, focusing on multiples of 10 and the midpoint of 50.	Pupils will have further opportunities to use their knowledge of the composition of numbers within 10 to calculate within 20 and to reason about equations and inequalities.

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Maths in years 3 and 4

Y3/4 A	1	2	3	4	5	6	7	8	9	10	11	12	13
C1	**Unit 1 (NCETM Y3)**		**Unit 2 (NCETM Y3)**										
	Adding and subtracting across 10 ⚓		Numbers to 1,000 ⚓										Consolidation
C2	**Unit 3 (NCETM Y4 – Unit 2)**					**Unit 4 (NCETM Y3 Unit 5 and Y4 Unit 1)** Column addition		**Unit 5 (NCETM Y3 Unit 7 and Y4 Unit 1)** Column subtraction	**Unit 6 (NCETM Y4 Unit 4)**				
	Numbers to 10,000					Review of column addition ⚓		Review of column subtraction ⚓	3, 6, 9 times tables				Consolidation
C3	**Unit 7 (NCETM Y4 Unit 4)**		**Unit 8 (NCETM Y4 Unit 8)**	**Unit 9 (NCETM Y3 Unit 8)**	**Unit 10 (NCETM Y3 Unit 9)**	**Unit 11 (NCETM Y4 Unit 9)**				**Unit 12 (NCETM Y3 Unit 10)**		**Unit 13 (NCETM Y4 Unit 10)**	
	7 times table and patterns		Review of fractions from KS1	Unit fractions ⚓	Non-unit fractions ⚓	Fractions greater than 1 ⚓				Parallel and perpendicular sides in polygons		Symmetry in 2D shapes	Consolidation

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Maths in year 3 and 4

1000	2000	3000	4000	5000	6000	7000	8000	9000
100	200	300	400	500	600	700	800	900
10	20	30	40	50	60	70	80	90
1	2	3	4	5	6	7	8	9

342

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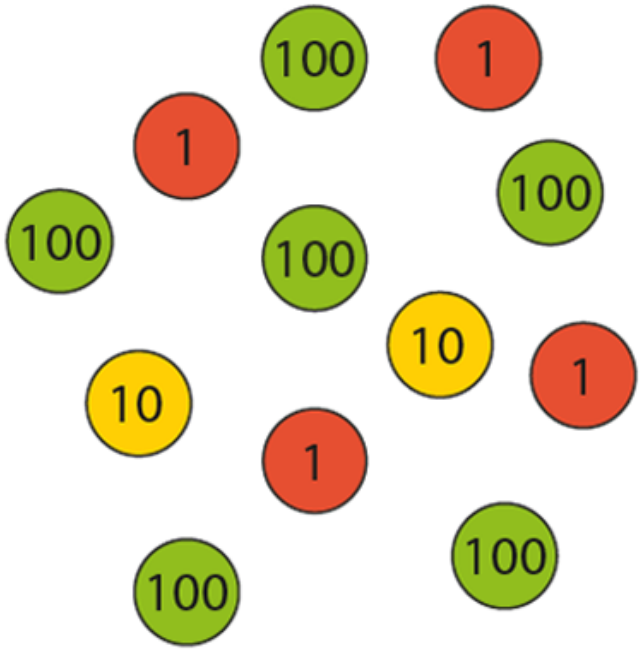
What 3 digit number do you see here?
Write it in your book?



Explain your answer to your talk partner
using the correct place value.

There are _____ hundreds, _____ tens and
_____ ones in _____.

624

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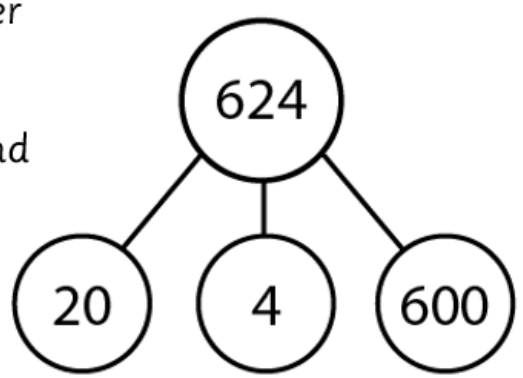
What 3 digit number do you see here?
write it in your book?

Explain your answer to your talk partner using the correct place value.

There are _____ hundreds, _____ tens and _____ ones in _____.



624

What number does this represent?
This represents six-hundred and twenty-four.
624
What digit is in the tens place?
Two
2
What digit is the value of the tens digit?
Twenty
20
What does the '2' represent?
Two tens/twenty
2 tens/20

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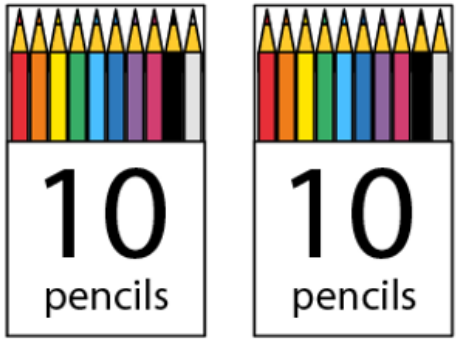
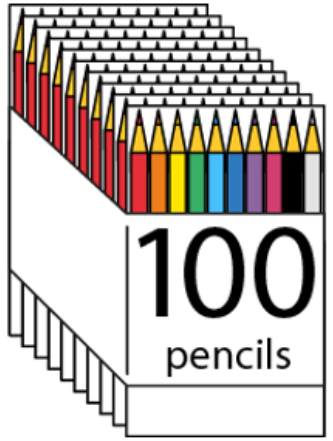
What 3 digit number do you see here?
Write it in your book?





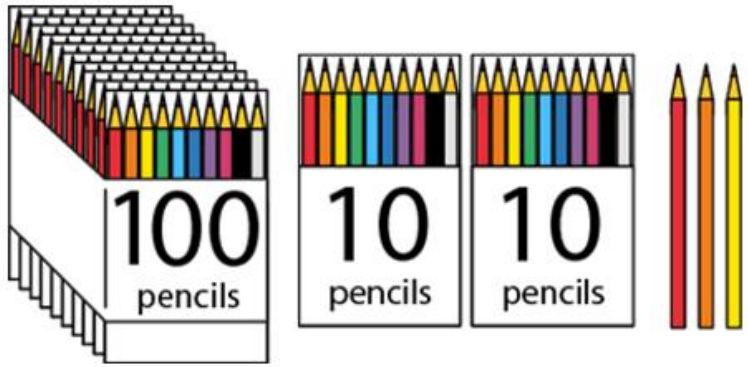
Explain your answer to your talk partner
using the correct place value.

123

There are _____ hundreds, _____ tens and
_____ ones in _____.

Is this the same amount as before?

Explain your answer.



123

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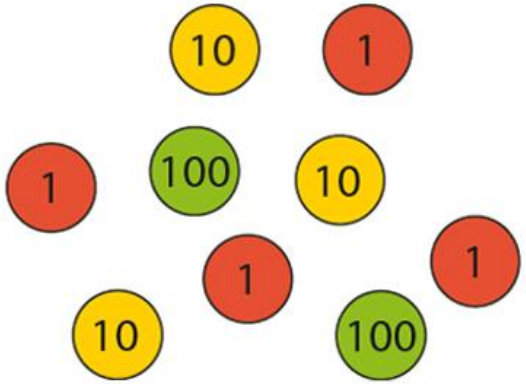
Draw part-part-part whole models to represent
The hundreds, tens and ones parts of each of these numbers.



234

If you were teacher how would you teach this to your class?

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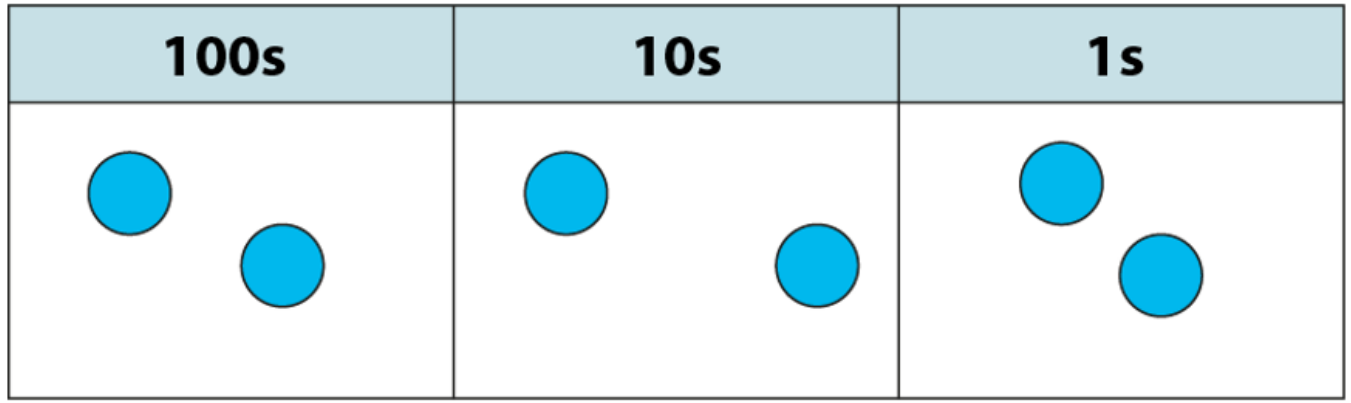
Using all of these counters, how many different three – digit numbers can you make?

Have you made all the possible numbers?
How do you know?



Can you represent your numbers in a different way?

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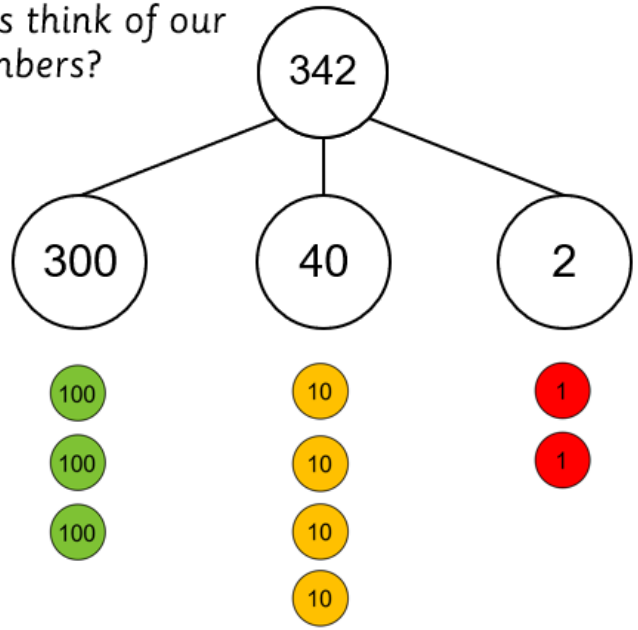
3NPV-2 Place value in three-digit numbers

Now let's think of our own numbers?



- Represent this number using place value counters and a part-part-whole model.
- What digit is in the tens place? What is the value of the hundreds digit?
- What does the 2 represent?

The 2 represents two ones.

- Repeat for different 3-digit numbers
- Show children representations of numbers either using part-part-whole or place value counters and ask them to write the value of each number represented.

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Maths in years 5 and 6

Key Vocabulary

Whole

Parts

Decimal

Tenths

Equal

Decimal Point

Generalisation

Place Value Column

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1,000s	100s	10s	1s
			
			
			
			

one tenth the size →

one tenth the size →

one tenth the size →

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If a digit is moved one column to the left, the number represented becomes ten time bigger/ten times the size.

1,000s	100s	10s	1s
1			
	1		
		1	
			1

one tenth the size →

one tenth the size →

one tenth the size →

If a digit is moved one column to the right, the number represented becomes ten time smaller; we can also say it becomes one tenth the size.

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What is missing?

What does the number on the second row of the place value chart represent?

What does the number on the bottom row of the place value chart represent?

1,000s	100s	10s	1s	tenths
1	0	0	0	0
	1	0	0	0
		1	0	0
			1	0
			0	1

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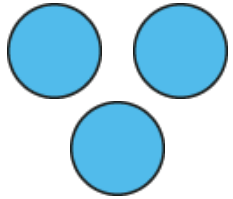
One tenth can be written as 0.1 so _____ tenths can be written as 0.____

1,000s	100s	10s	1s	0.1s
				

1,000s	100s	10s	1s	0.1s
				3

				3

			0	3

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One tenth can be written as 0.1 so _____ tenths can be written as 0.____

1,000s	100s	10s	1s	0.1s
				● ●

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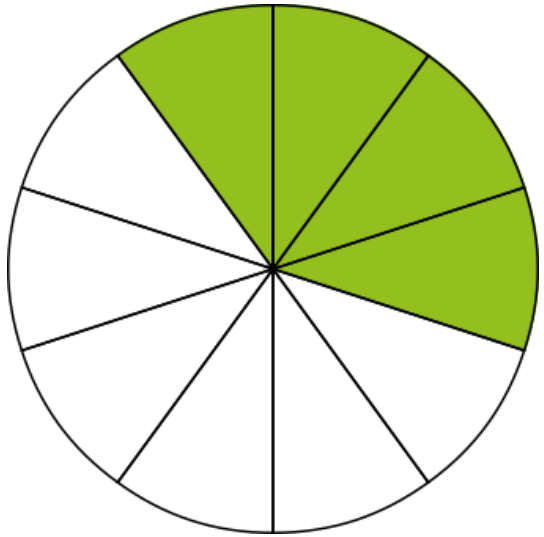
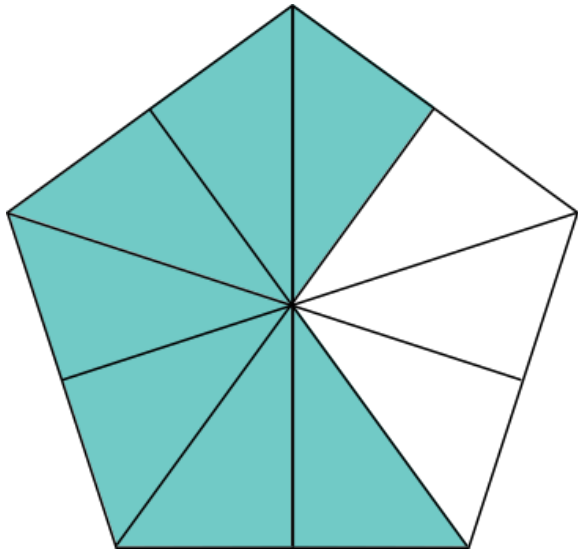
Colour the diagrams to represent the numbers shown.



0.4



0.7

Can you think of three more examples/ways?

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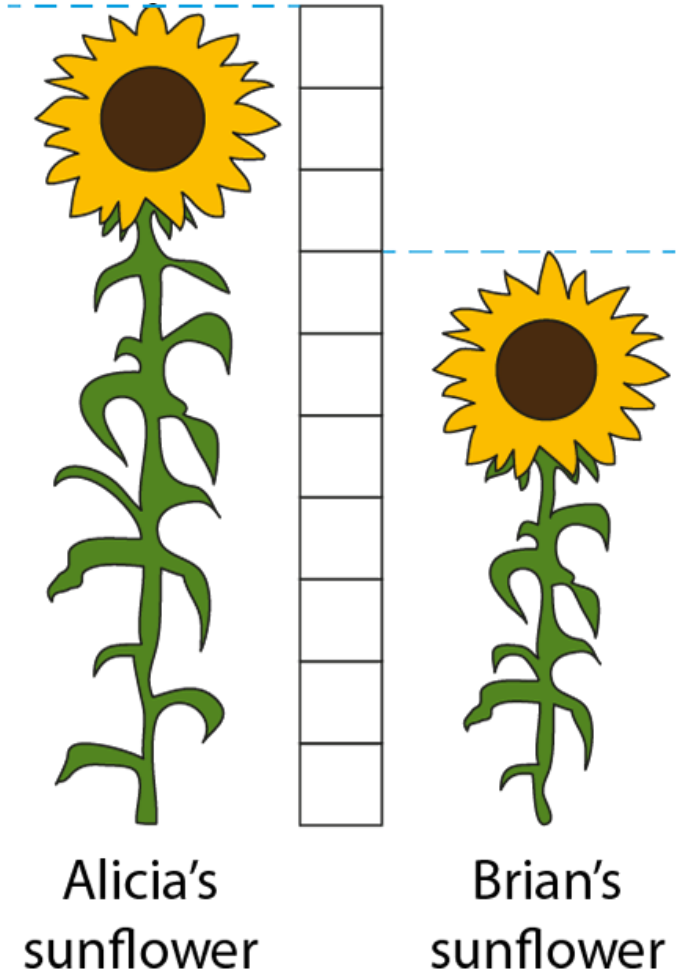
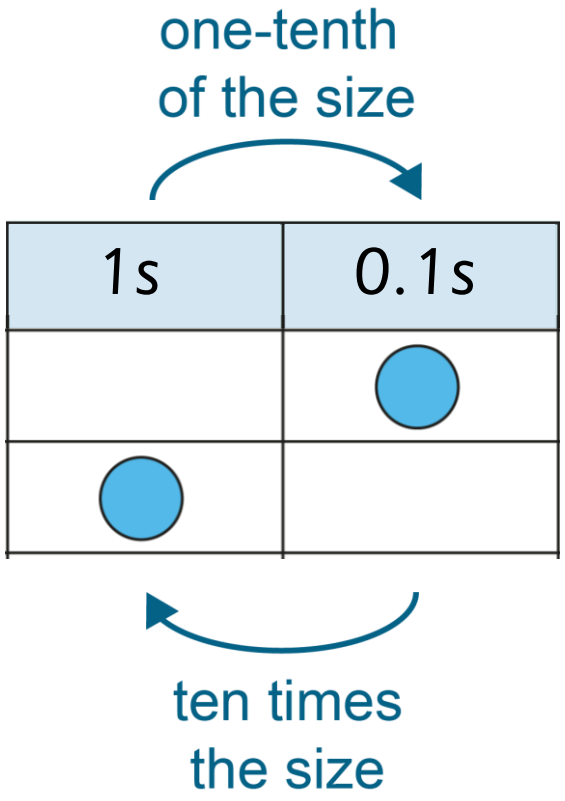
Brian's sunflower is _____ tenths the size of Alicia's sunflower.

We can write this as _____.



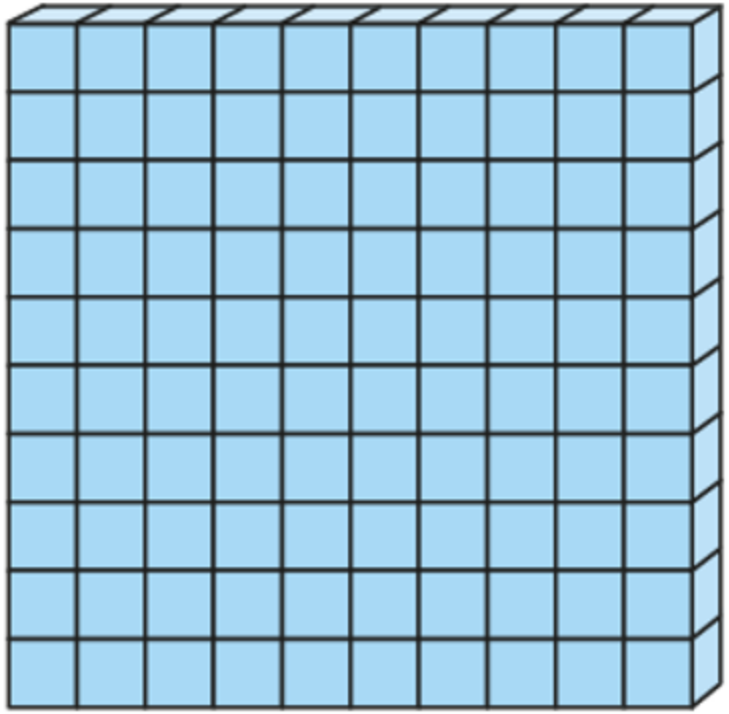
Surprise me – find something new in what you already know!



- *If the blue counter has a value of 1, what happens to its value when it moves from the ones column to the tenths column?*
- *What happens to the counter's value when you move it the other way?*

How would you teach this to a class if you were the teacher?

Compare the value of the units. What do you notice?



1 one

1 tenth

How could you represent this in a different way?

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Questioning

Why?

What happens if….?

How do you know?

Will that always happen?

Can you prove it to me?

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How can you support your child with maths at home?

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Key Instant Recall Facts – KIRFs

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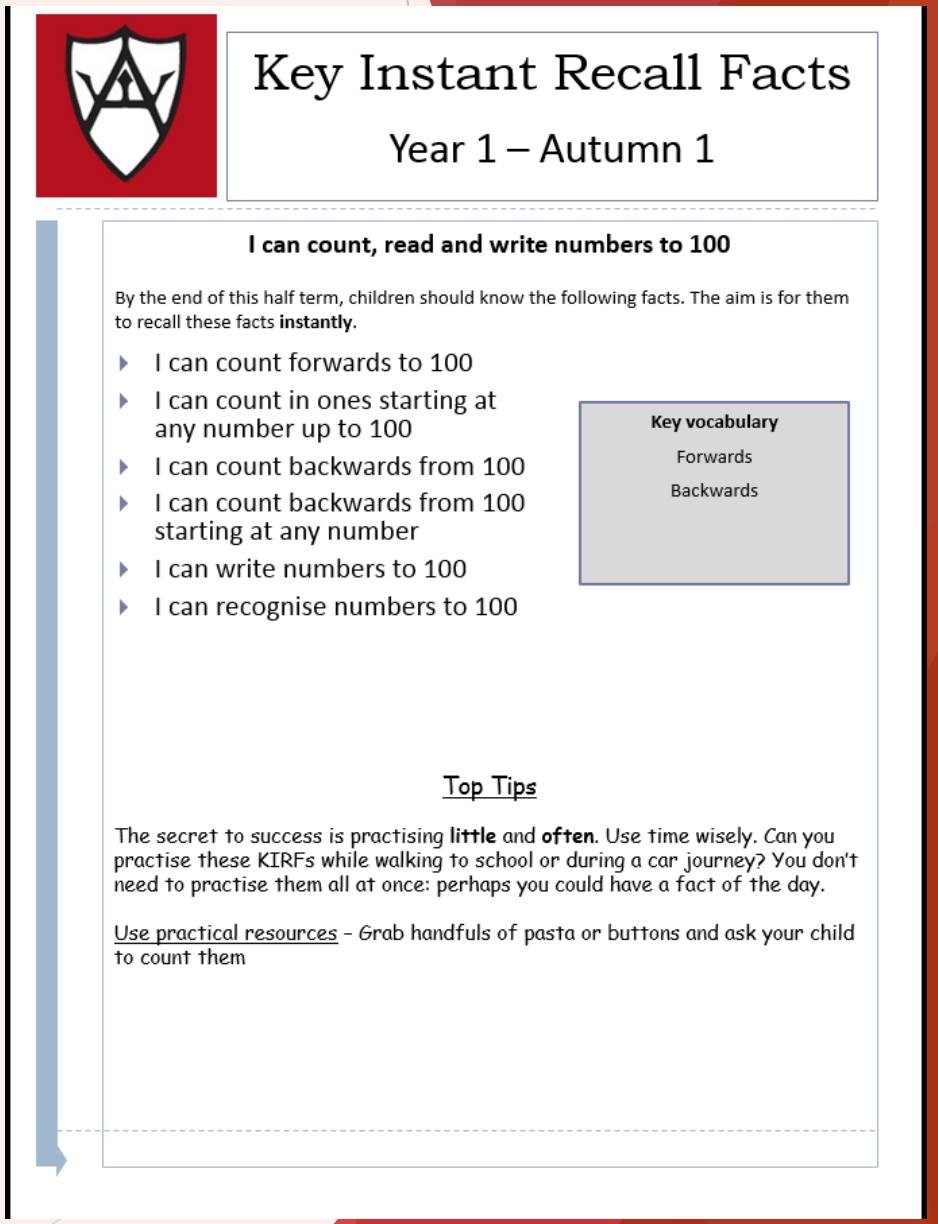
Key Instant Recall Facts – KIRFs

- Termly objectives
- Years Reception to 6
- Improve children's fluency
- Instant recall of facts

What are the best ways to work on these facts?



Key Instant Recall Facts

Year 1 – Autumn 1

I can count, read and write numbers to 100

By the end of this half term, children should know the following facts. The aim is for them to recall these facts **instantly**.

- I can count forwards to 100
- I can count in ones starting at any number up to 100
- I can count backwards from 100
- I can count backwards from 100 starting at any number
- I can write numbers to 100
- I can recognise numbers to 100

Key vocabulary

Forwards

Backwards

Top Tips

The secret to success is practising **little** and **often**. Use time wisely. Can you practise these KIRFs while walking to school or during a car journey? You don't need to practise them all at once: perhaps you could have a fact of the day.

Use practical resources – Grab handfuls of pasta or buttons and ask your child to count them

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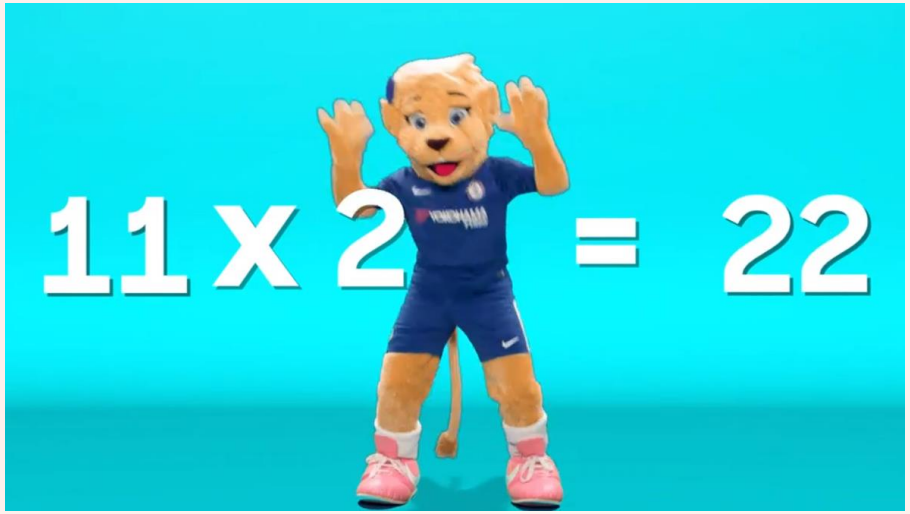
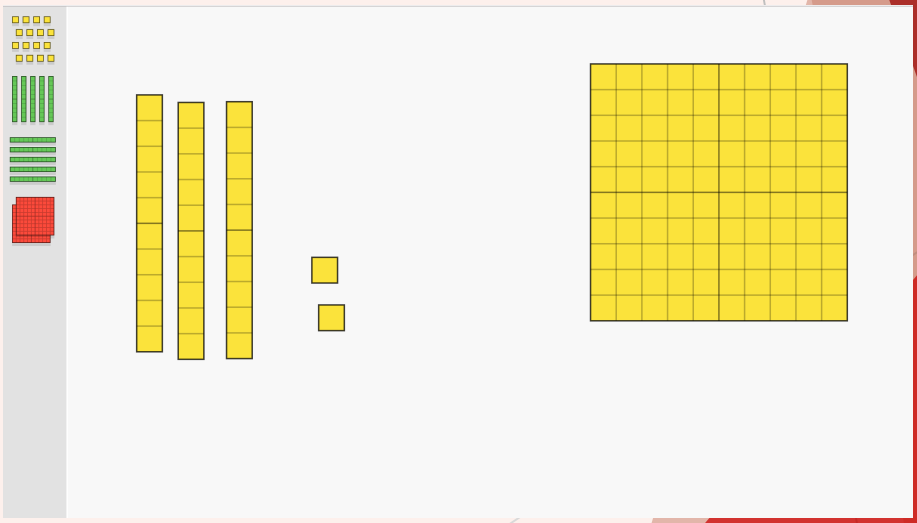
<u>On the website</u>

A list of websites which can be used to support home learning





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Questions

Thank you very much for coming