EYFS & Key Stage 1 Maths Parent Forum

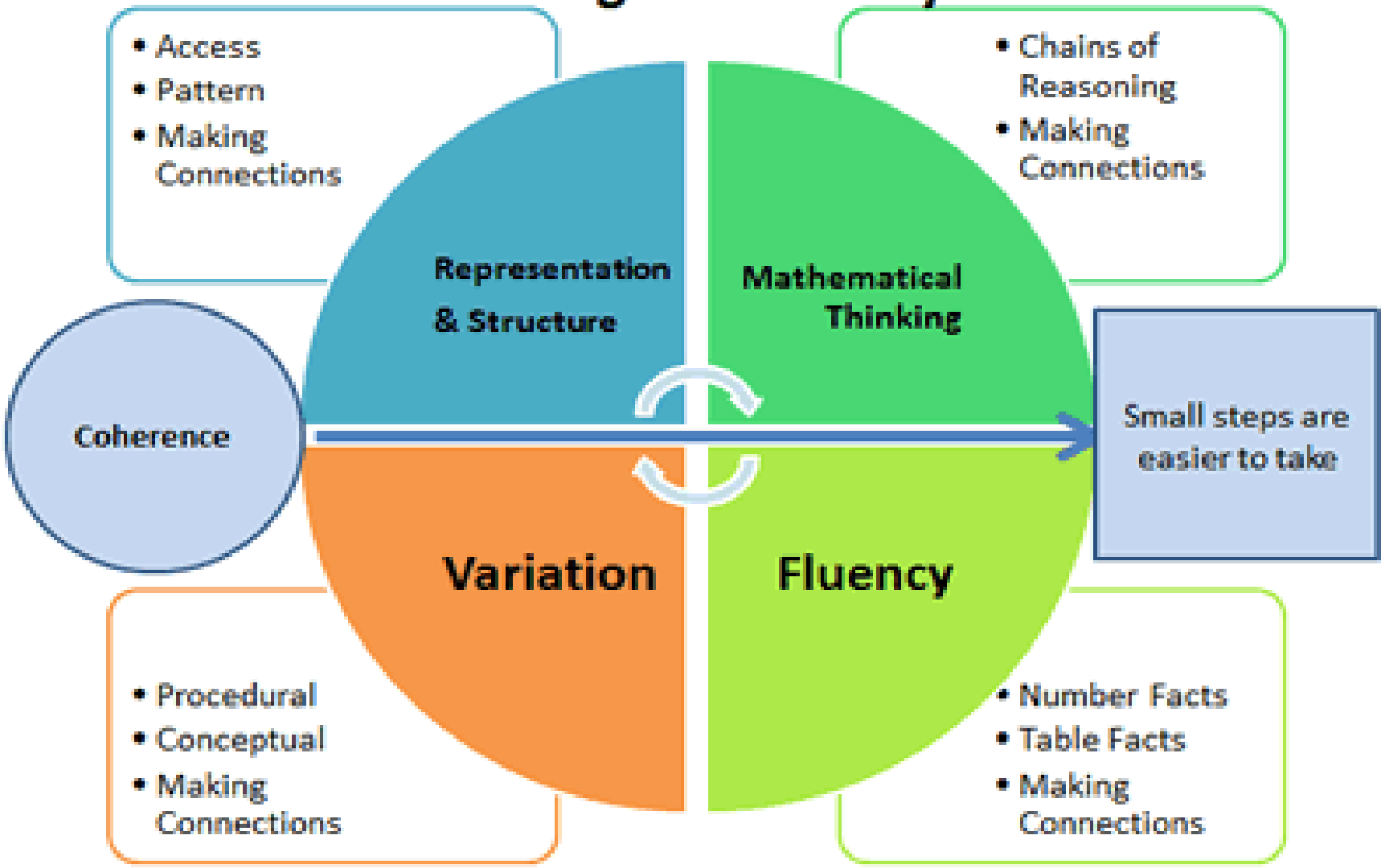
21.9.22

Welcome

Aims of the Forum:

- To provide information regarding our approach to maths at Bridgetown.
- To share resources, methods, updates and initiatives.
- To signpost helpful documents and policies.

Teaching for Mastery

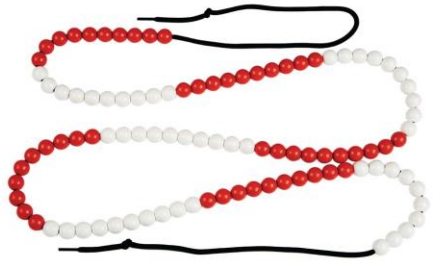


Representations and Structures

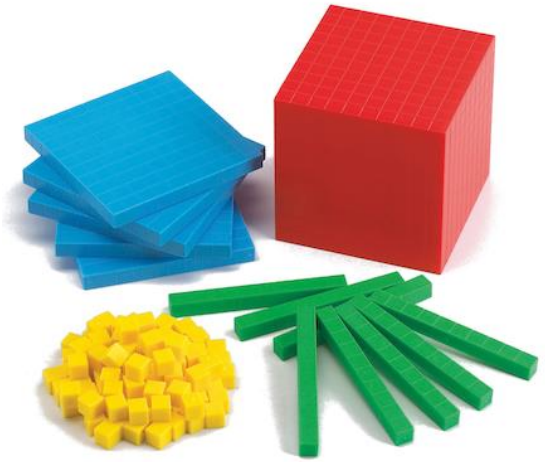
Use of manipulatives to support learning



Numicon



Bead strings



Diennes



Cuisenaire rods





Place Value Counters



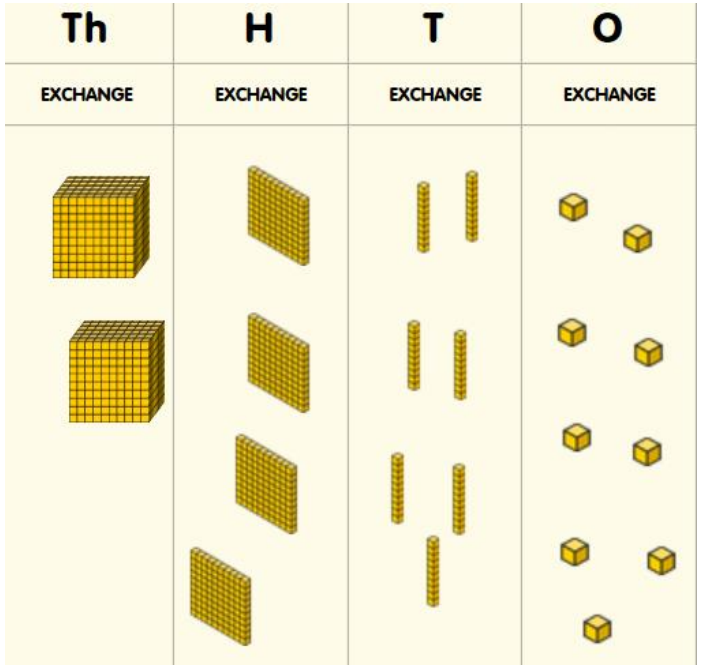
Interlocking Cubes

Representations and Structures

Use of visual images to support learning and make connections.

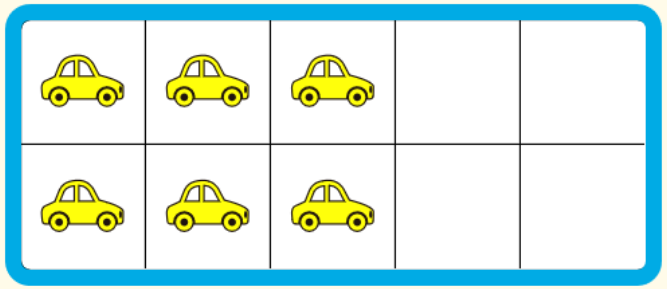
Number Square

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

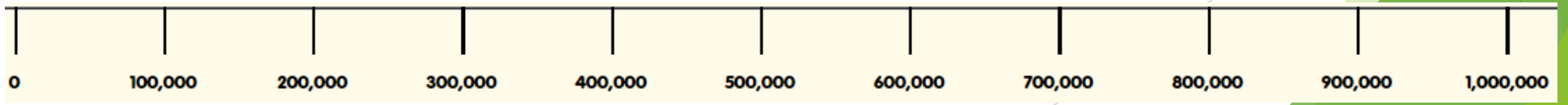


Place Value Grid

Tens Frame



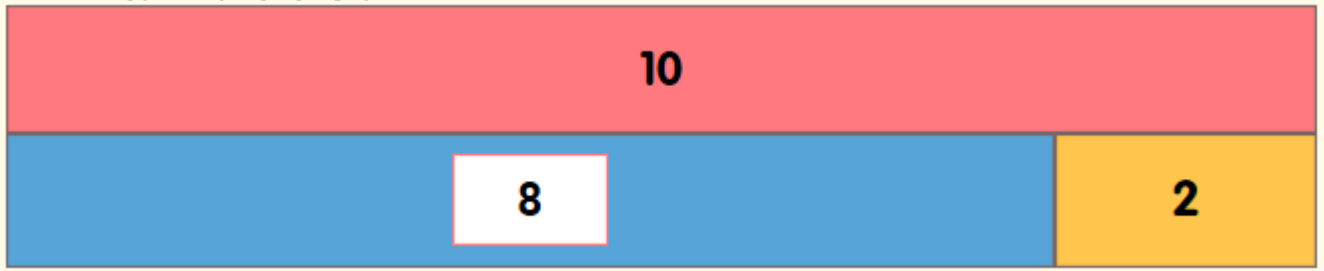
Number Line

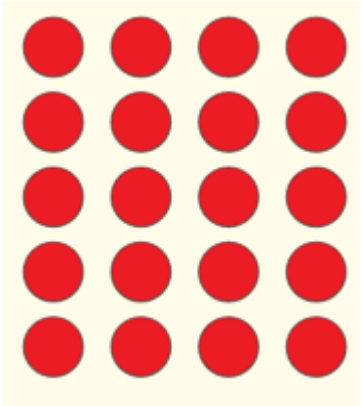


Representations and Structures

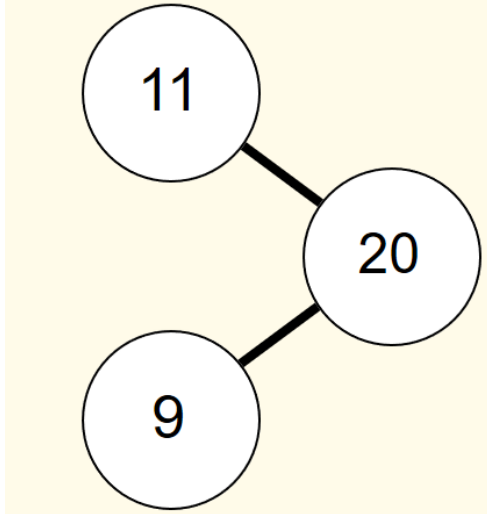
Use of visual images to support learning and make connections.

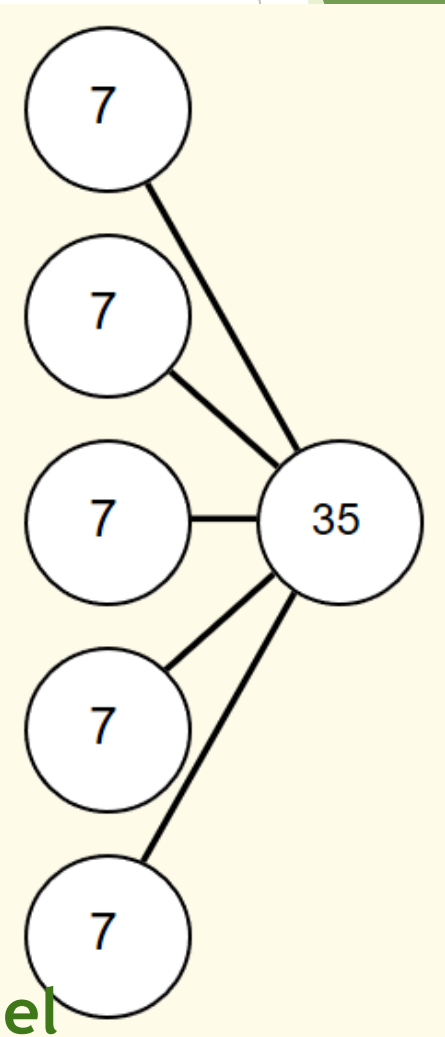
Bar Model





Array

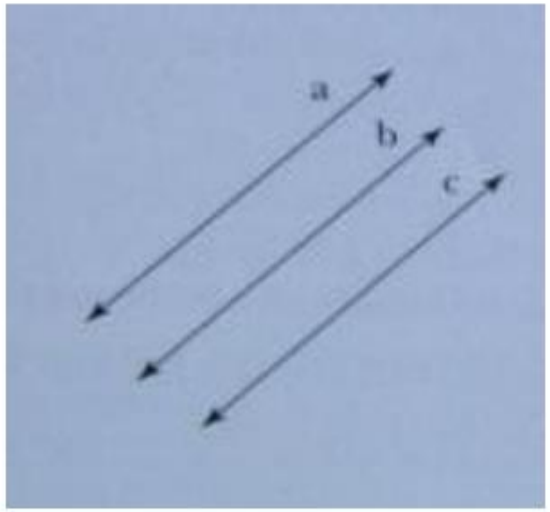




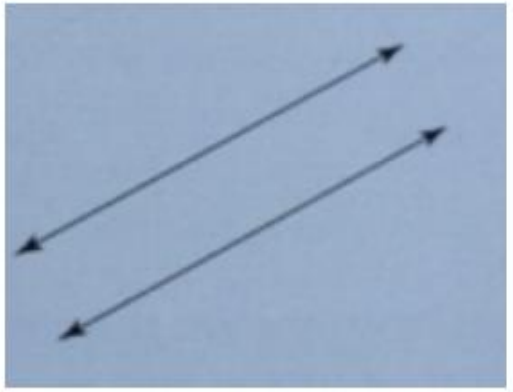
Part Whole Model

Conceptual Variation

11 year olds were asked: Is line a parallel to line c?



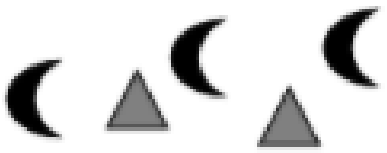
Most answered, 'No, because line b is in the way.'

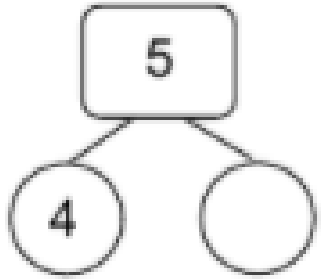


The concept of parallel lines is almost always illustrated like this.

Boaler, Jo. (2016) Mathematical Mindsets

Conceptual Variation





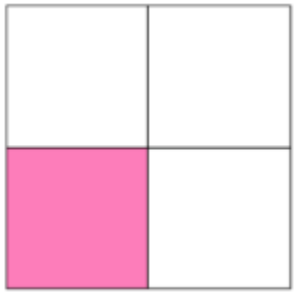
$5 = 2 + \square$

5	
	3



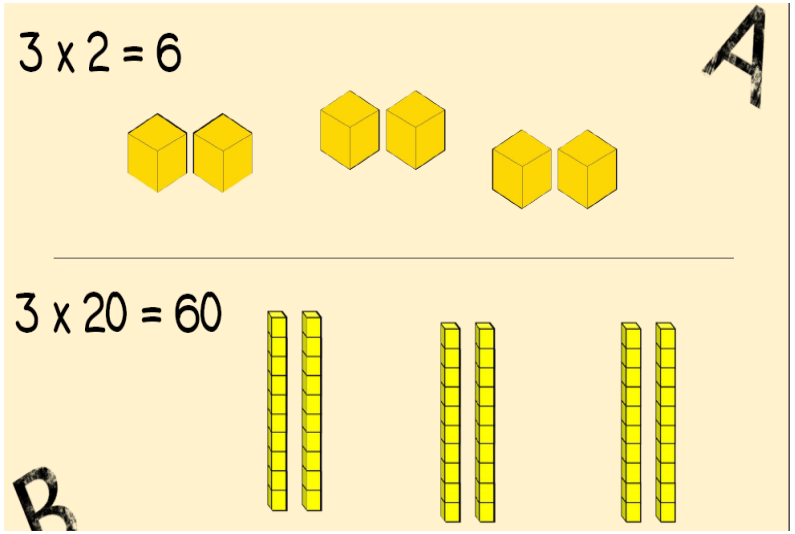








Procedural Variation



$2 \times 9 = 18$

$\square \times 9 = 180$

$2 \times \square = 180$

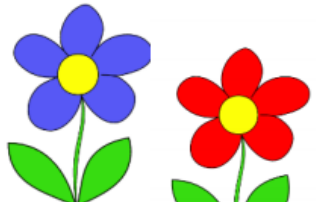
$2 \times 6 = 12$

$\square \times 6 = 120$

$6 \times \square = 120$

- There are 3 red flowers and 5 blue flowers. How many flowers are there altogether?
- There are 8 flowers; some are red and some are blue.

  If three of them are red, how many are blue?
- There are 8 flowers; some are red and some are blue. If there are two more blue flowers than red flowers, how many are there of each colour?



What are the expectations for our EYFS & KS1 pupils?

Year 1	Year 2
Represent and use number bonds and related subtraction facts within 10.	Recall and use addition and subtraction facts to 20 fluently, begin to derive and use related facts up to 100.
Add and subtract one-digit and two-digit numbers to 20, including zero.	Add and subtract numbers using concrete objects, pictorial representations, and mentally, including: • a two-digit number and ones • a two-digit number and tens • two two-digit numbers
Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs.	Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot be done.

Year 1	Year 2
Count in multiples of twos, fives and tens.	Count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward.
	Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers.

Area of Learning	Specific strand	Early Learning Goal - Children at the expected level of development will:
Mathematics	Number	• Have a deep understanding of number to 10, including the composition of each number • Subitise (recognise quantities without counting) up to 5 • Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10, including double facts.
	Numerical Patterns	• Verbally count beyond 20, recognising the pattern of the counting system • Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity • Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.

Number & Place Value	
Year 1	Year 2
Count within 100, forwards and backwards, starting with any number.	Recognise the place value of each digit in two-digit numbers, and compose and decompose two-digit numbers using standard and nonstandard partitioning.
Reason about the location of numbers to 20 within the linear number system, including comparing using < > and =	Reason about the location of any two-digit number in the linear number system, including identifying the previous and next multiple of 10.

Working at the expected standard (NCETM):

A child has mastered a mathematical concept, idea or technique if he or she can:

- describe it in his or her own words;
- represent it in a variety of ways (e.g. using concrete materials, pictures and symbols – the CPA approach)
- explain it to someone else;
- make up his or her own examples (and nonexamples) of it;
- see connections between it and other facts or ideas;
- recognise it in new situations and contexts;

How do we ensure we meet the needs of maths learners?

Small steps progression within daily maths lessons as part of the Power Maths approach.

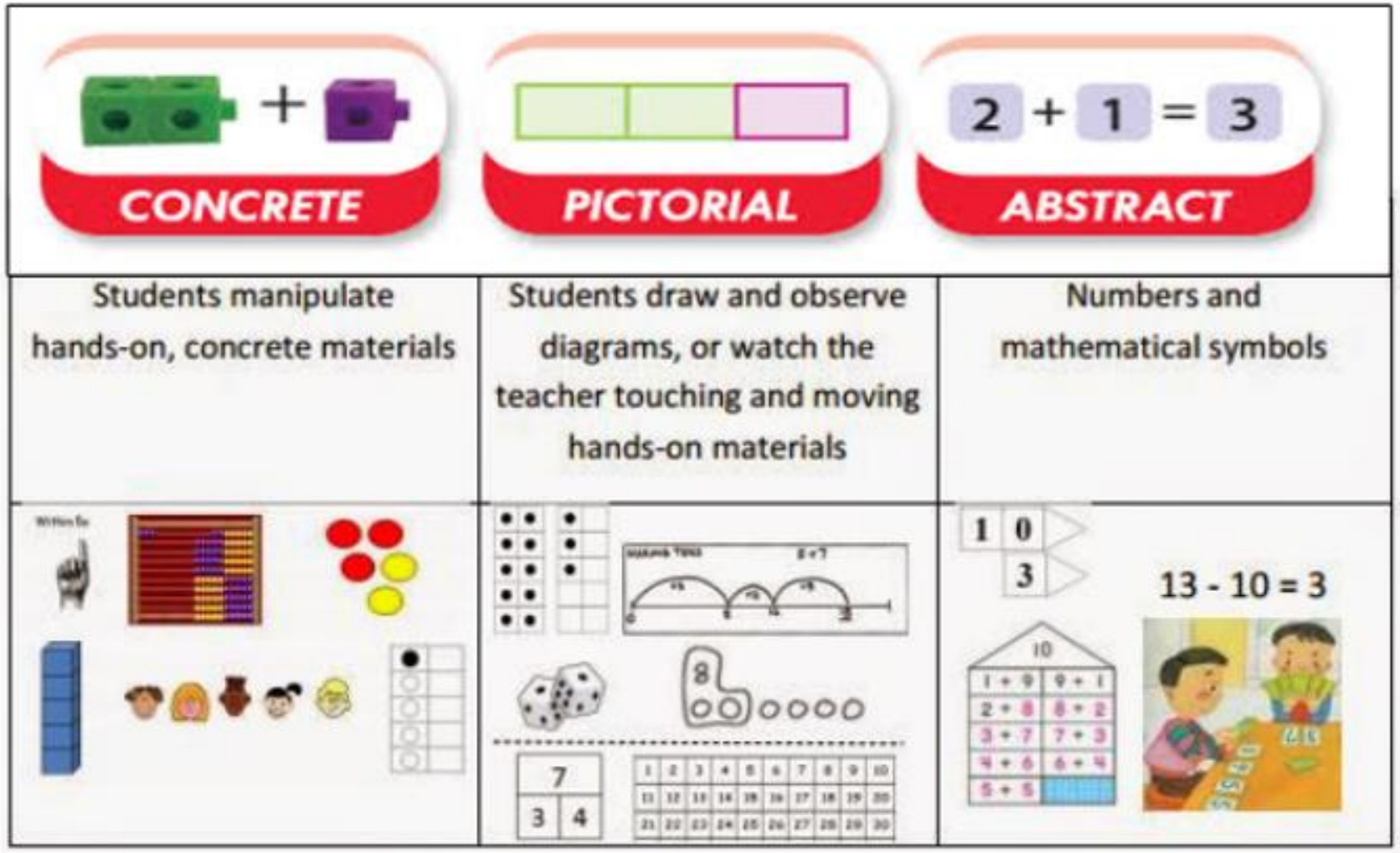
Large investment in practical resources.

Additional fluency practice through participation in the 'Mastering Number' programme.

Comprehensive training and support for all staff.

Small group interventions using accredited programmes such as 'Become First Class @ Number ' & 'Number Sense'

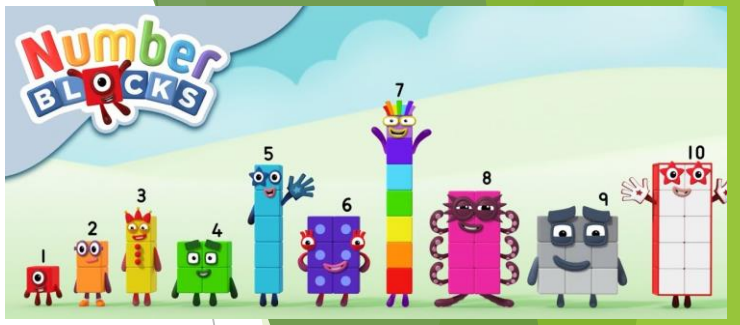
What does the Mastery approach look like in Key Stage 1?



Representations and Structures

- Mastering Number Programme – subitising, five and tens frames & rekenreks
- Part whole models
- Numicon

Mastering Number Programme



The Mastery programme has been created by NCETM and often uses the Number Blocks in their lessons.

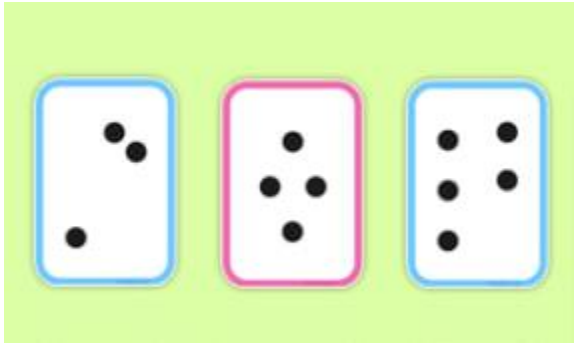
This begins in Reception and children throughout the KS1 have daily lessons to help improve their maths fluency and confidence .

They are short burst lessons for no longer than 15 minutes that build upon the mathematical concepts that children learn in their daily PowerMaths lessons.

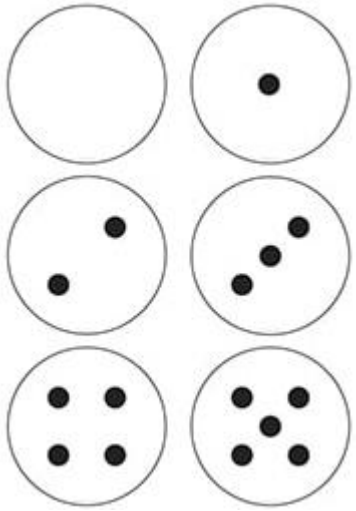
In Autumn, Reception have a focus on subitising, which is developed throughout the year, as well as also focusing on counting and number composition.

NCETM
NATIONAL CENTRE FOR EXCELLENCE IN THE TEACHING OF MATHEMATICS

Subitising



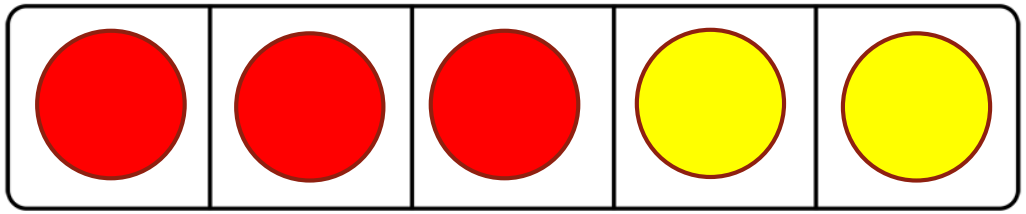
Subitising is when you are able to visualise the amount without counting.



Subitising is part of the Early Learning Goals, and children should be able to subitise the same amount as their age (up until 7). It is an important skill to develop to help maths fluency.

We teach children to subitise numbers in structured and random patterns. This is also covered in depth in the Mastering Number programme.

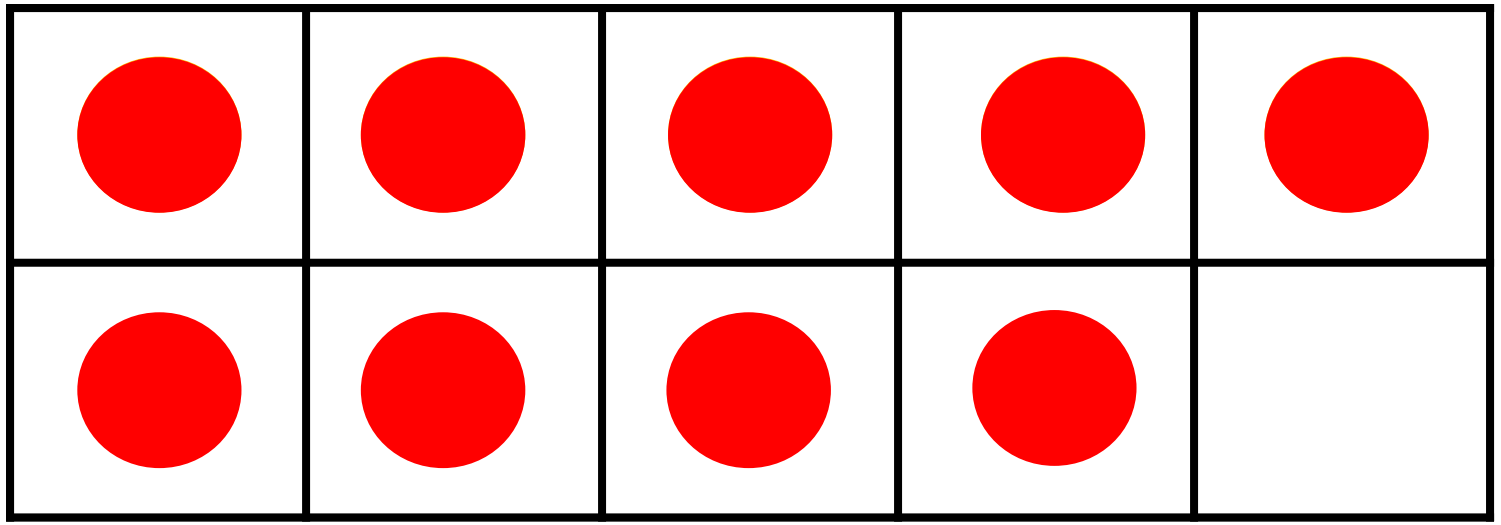
Five frames



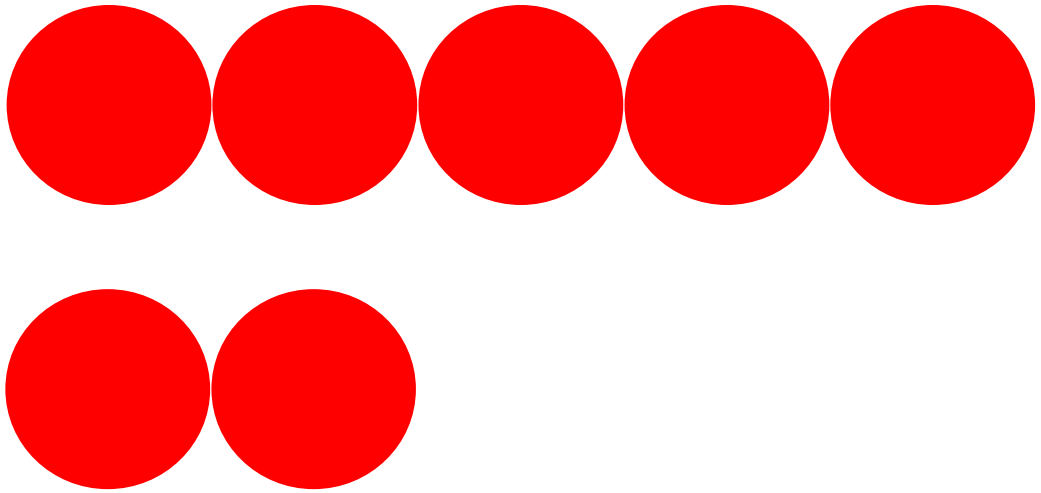
Five frames are concrete resources that encourage children to physically place items, each within a single box, to create a visual representation for numbers from 0-5.

We begin using them in Reception, and then move on to tens frames, both of which are used throughout the school.

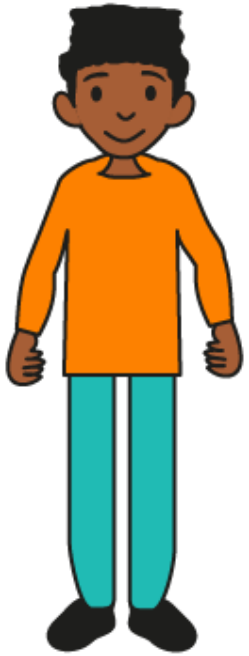
Children use five frames to practise 1-1 correspondence when counting, to understand different representations of 5 and to recognise amounts without having to count.



5 needs _____ to make _____ ; _____ is made of 5 and _____ .



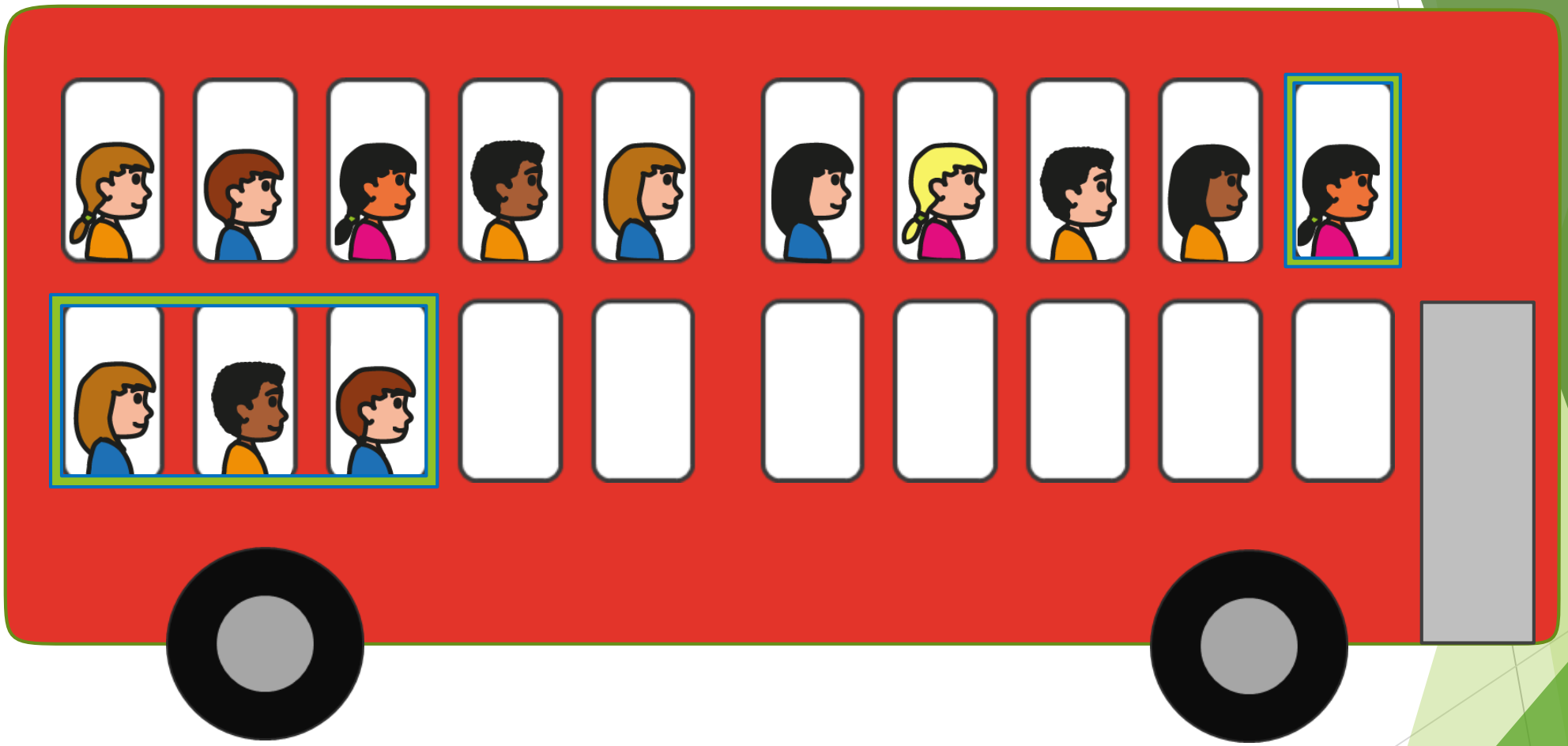
Use this sentence to show how the children will need to split up each time.





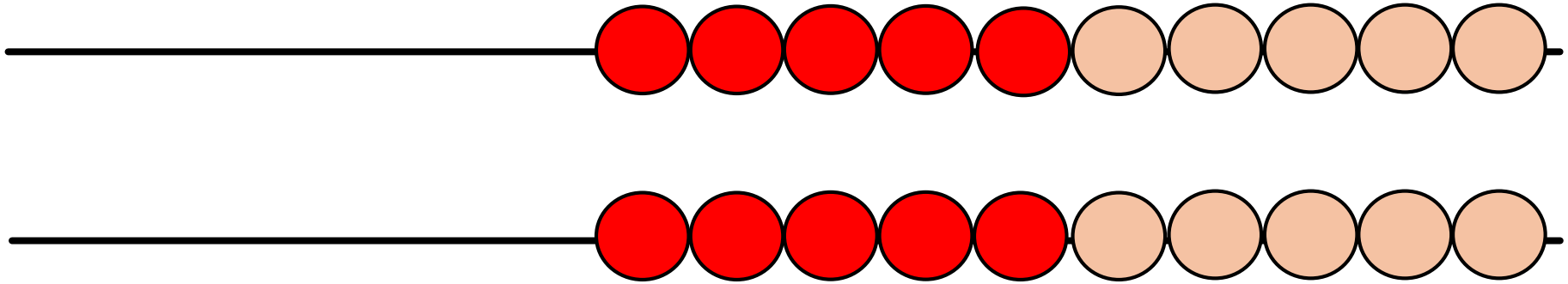
_____ can split into _____ and _____ .

First, there were **9** children on the bus. **Then**, **4** children got on.



_____ can split into _____ and _____ .

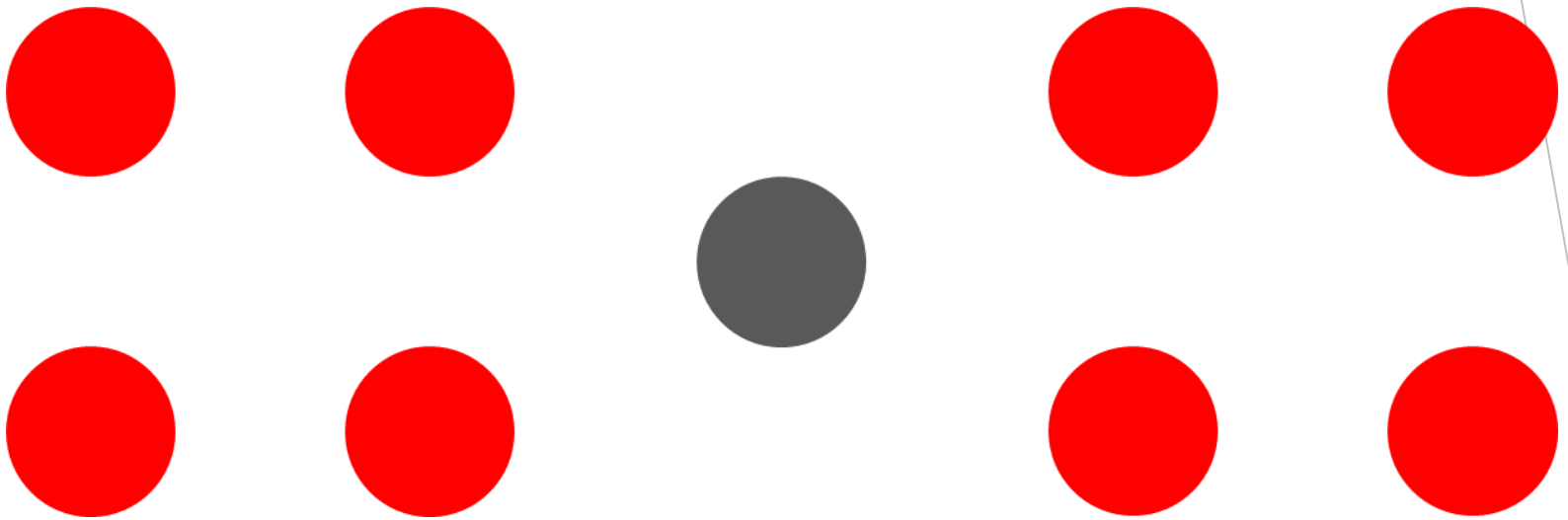
Can you show what the children did on your rekenrek?





6 + 6

6 + 7

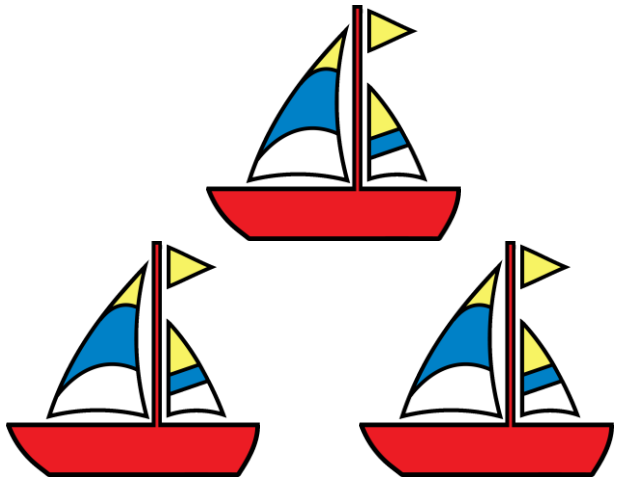


Double _____ is _____ ; add 1 is _____ .

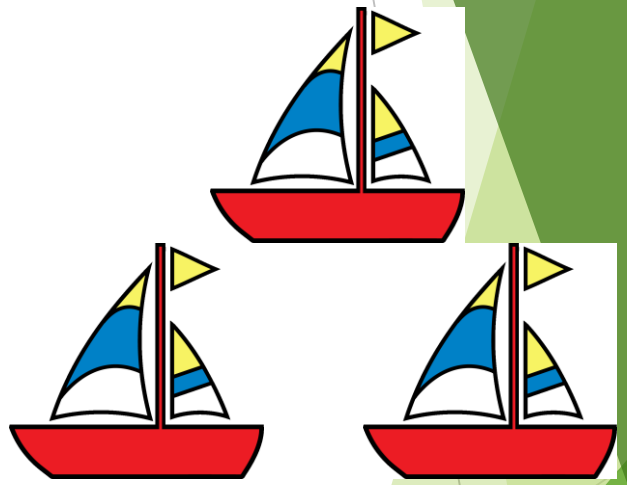
Let's quickly peek at some near doubles!
Can you say how many you can see?

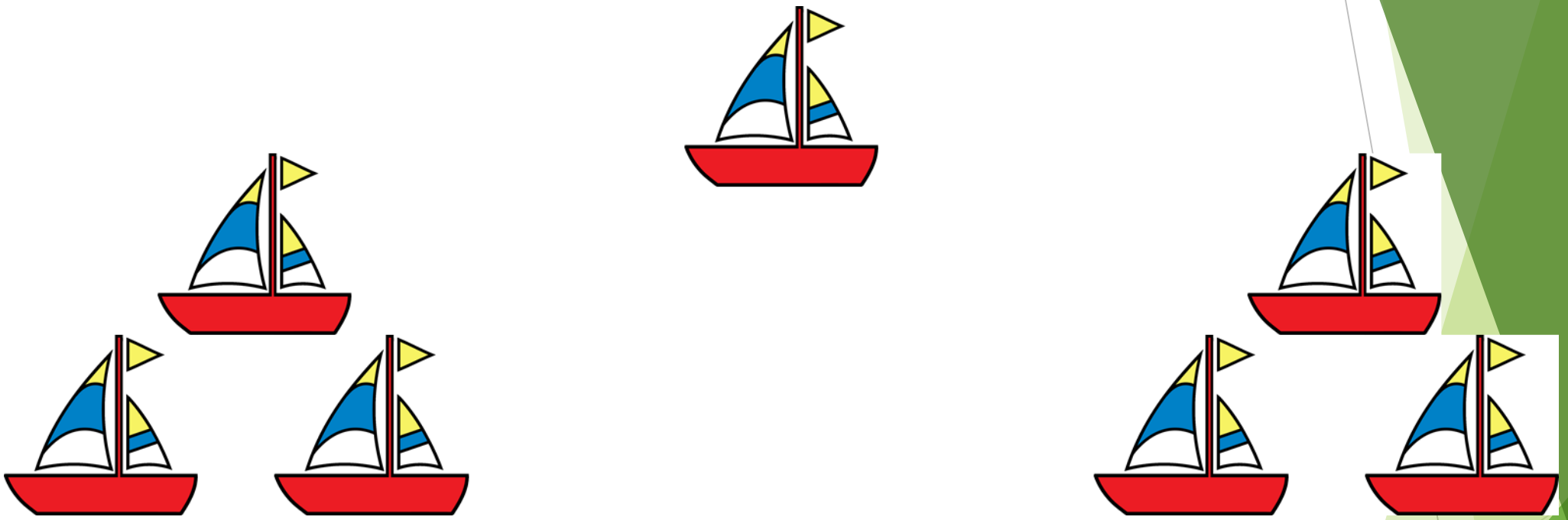


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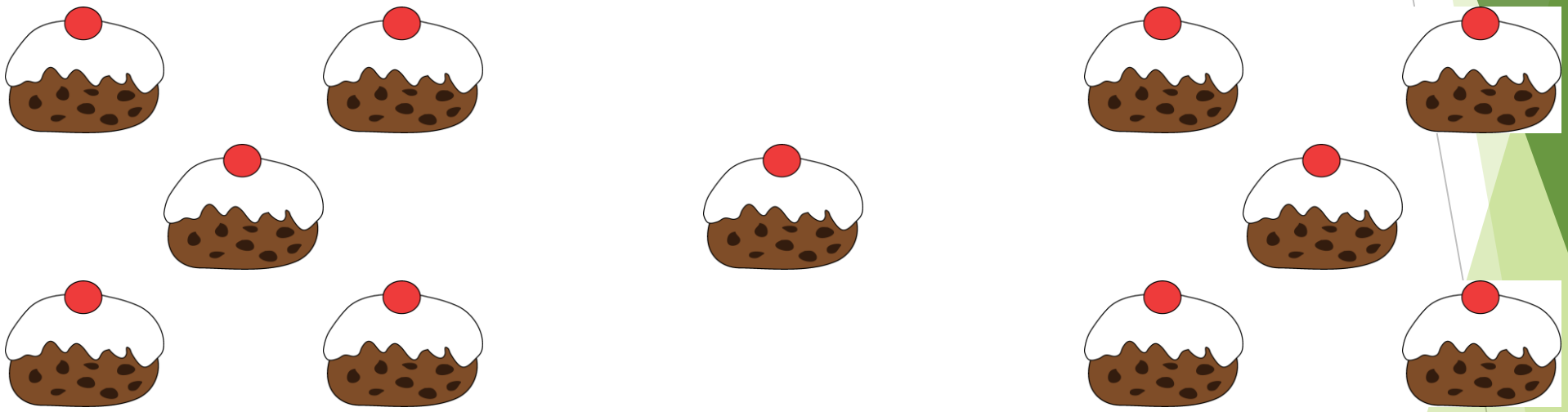


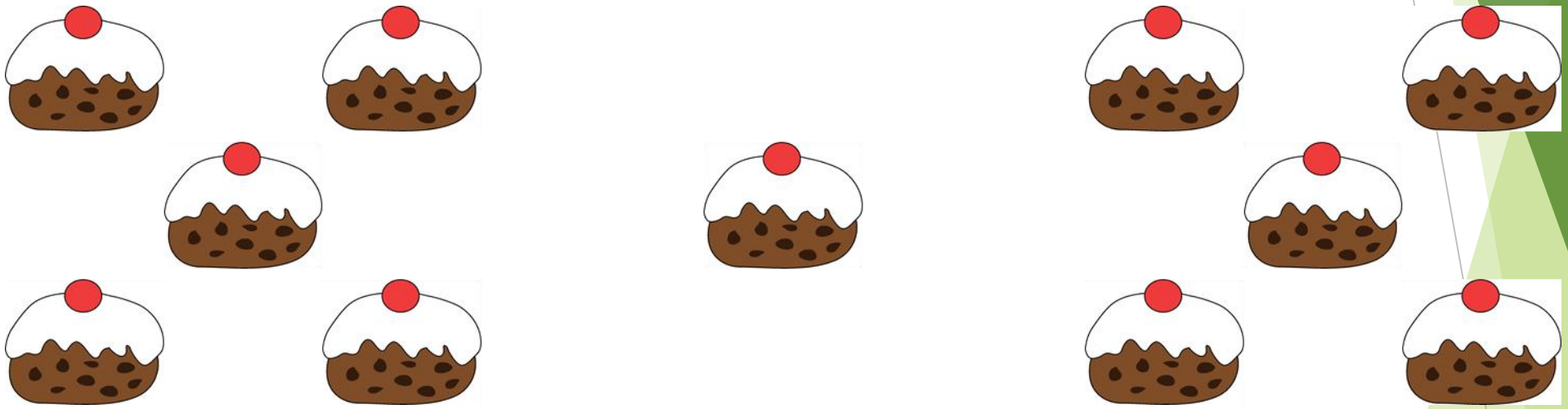




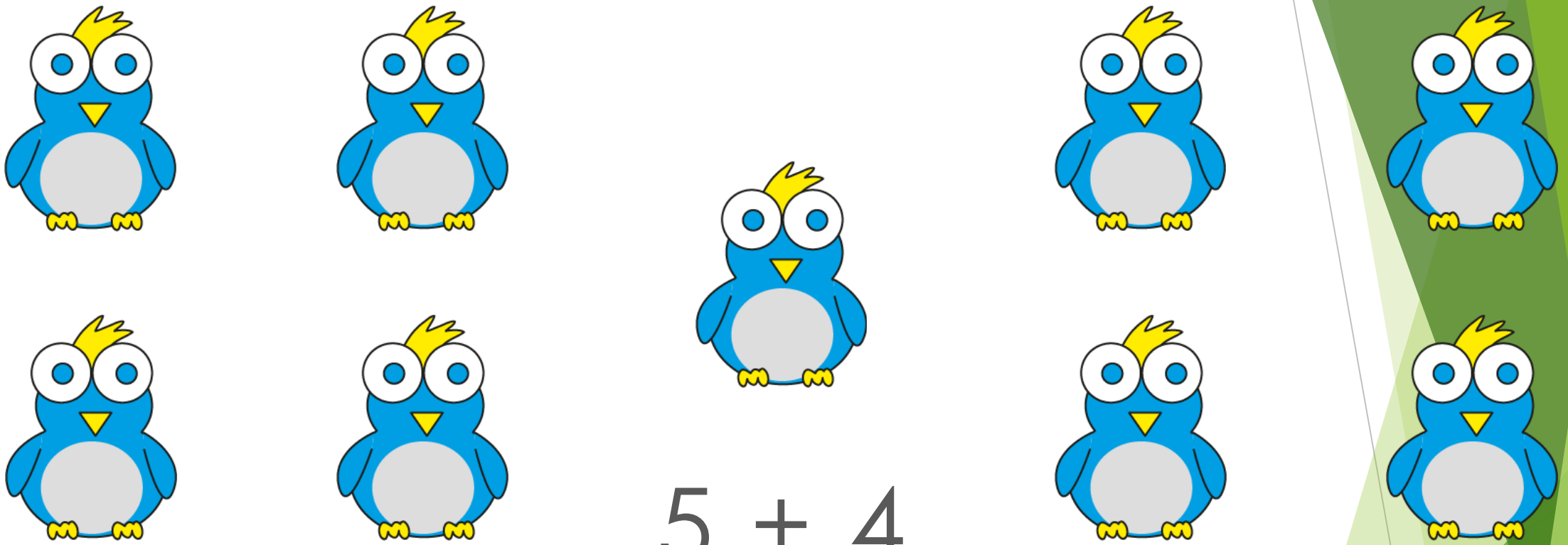


Double _____ is _____ ; add 1 is _____ .





Double _____ is _____ ; add 1 is _____ .



5 + 4

4 + 5

Double _____ is _____ ; add 1 is _____ .

Part-whole reasoning…

Part-part-whole reasoning or the part-whole model is the idea that numbers can be split into parts, which can be used in maths learning.

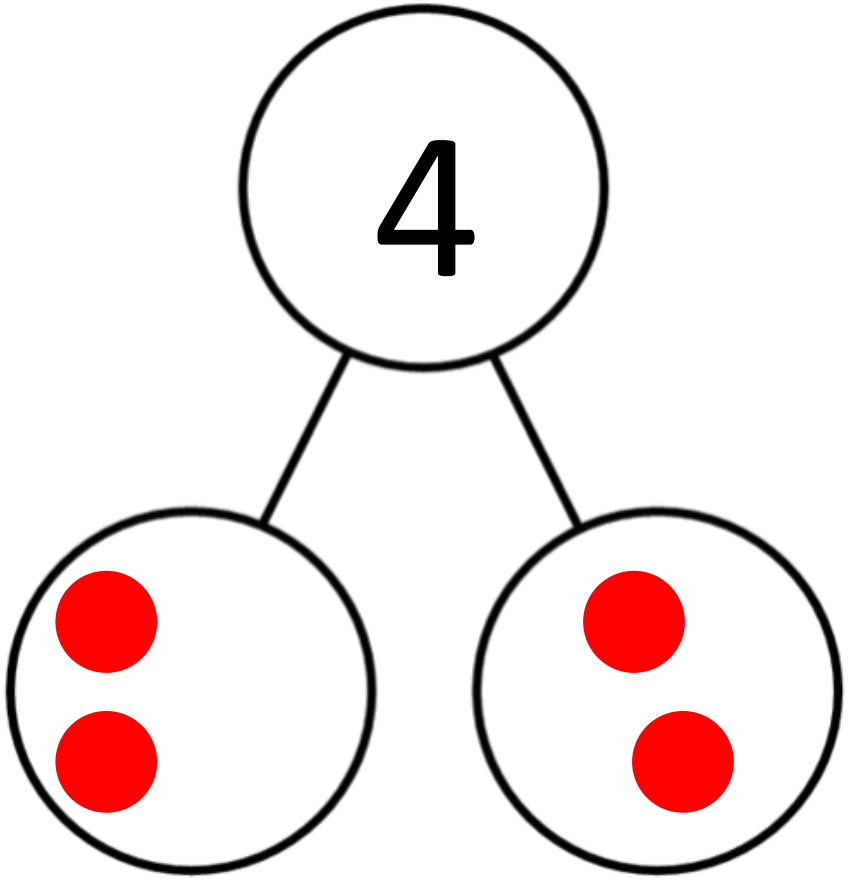
It helps learners to see the relationship between the whole number and its component parts.

It enables pupils to make the connections between addition and subtraction.

Part-part-whole reasoning also helps children to interpret, visualise, and solve word problems.

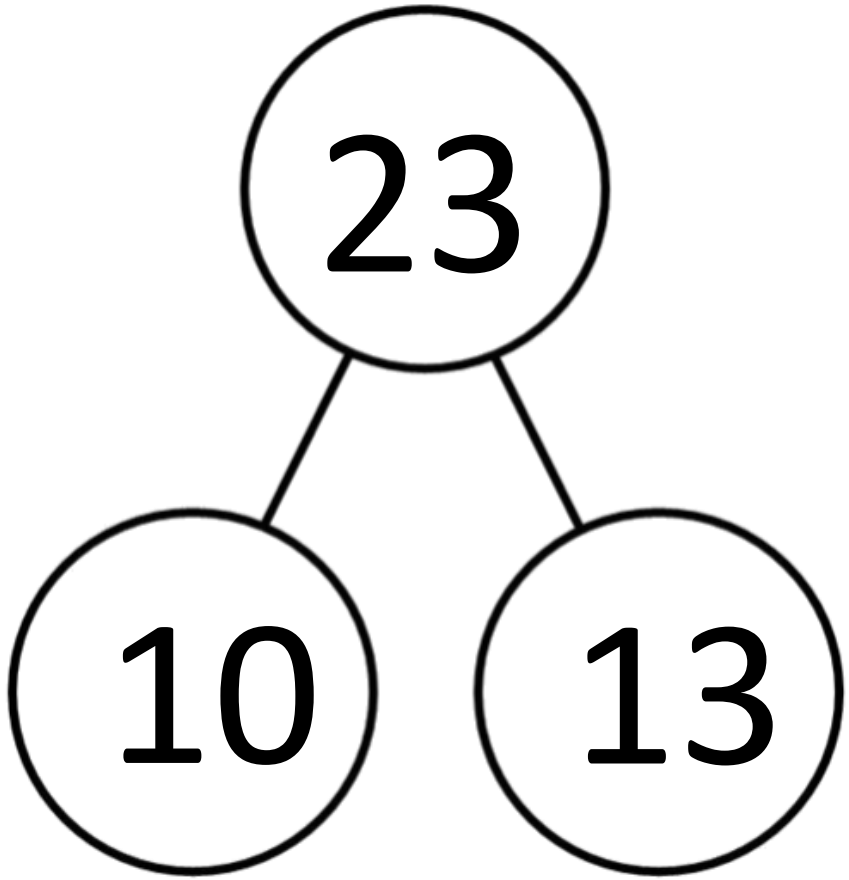
Part-whole models…

Part whole models are introduced as early as reception to support subitising.



Part-whole models…

'10 children are inside the classroom and 13 have gone out to play, how many children are in the class?'



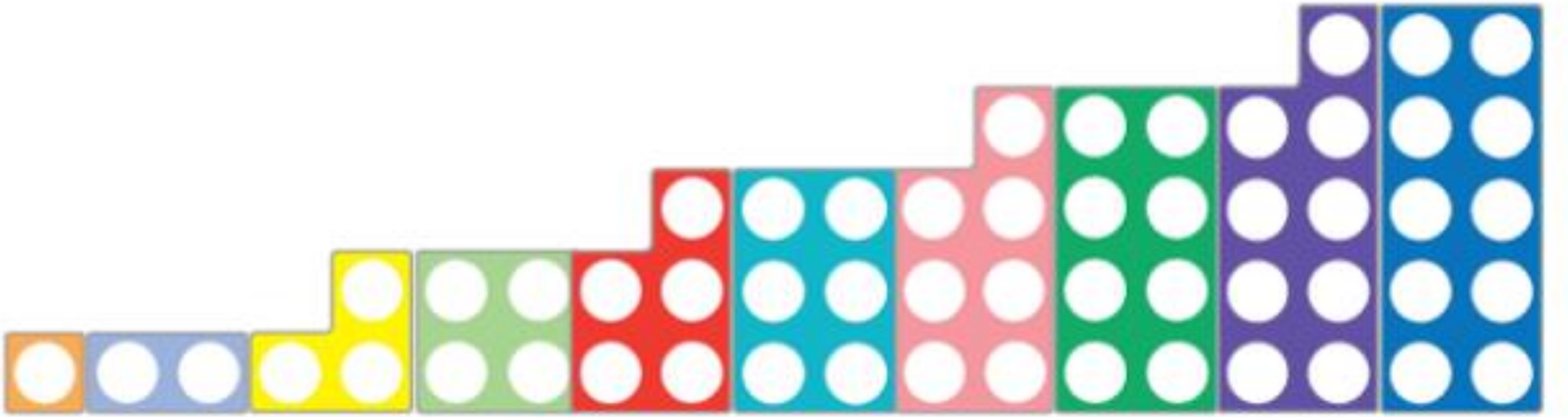
How part-whole models develop mathematical learning.

Pupils will realise that addition and subtraction are related.

Pupils will see addition is commutative but subtraction is not.

Pupils will see that situations can often be presented by addition and subtraction.

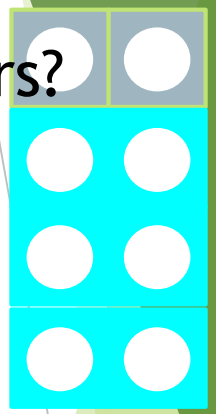
Numicon

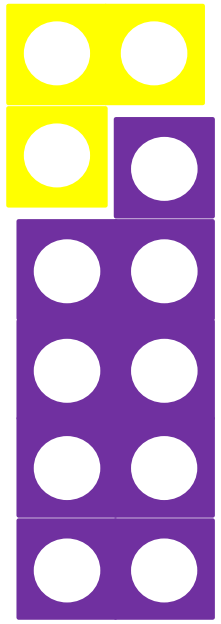


Odd and even numbers

Numicon

What happens if we add two even numbers?



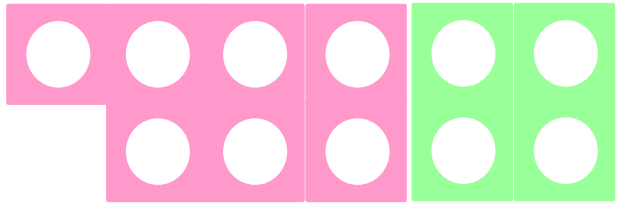


Numicon

What happens if we add two odd numbers?

Numicon

What happens if we add an odd number and an even number?



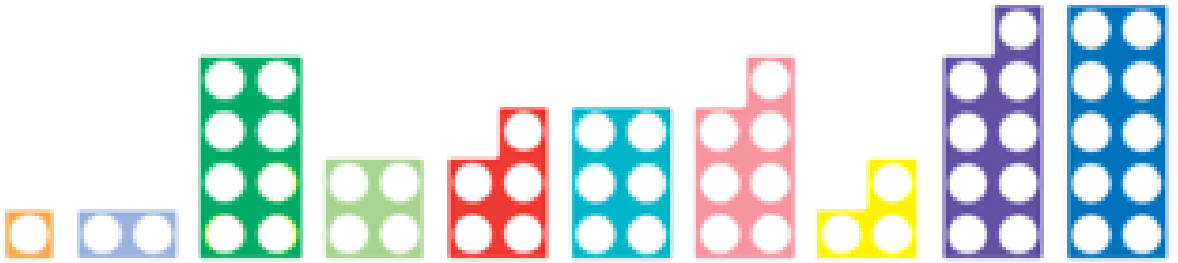
OXFORD UNIVERSITY PRESS

numicon

Feely bag activities

- The number before six
- A number between 4 and 8
- Double three
- Two shapes with a difference of three
- Two shapes equivalent to 9
- An odd number
- A number that appears in both the 5 and 10 times table
- A multiple of 2
- The number that is 1 fewer than 4

What has happened here?



Missing shape activity- Closing the gap



Which Numicon shape is missing?
How do you know?



Which Numicon shape is missing?
How do you know?

How can you support your child at home?

- KIRFS
- School Jam
- Active Learn Games

KIRFs Progression Map

Bridgetown Primary School 2022-23

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 1	I know number bonds to 5.	I know number bonds to 10.	I can recognise numbers to 50.	I know the doubles and halves of numbers to 10.	I know addition and subtraction facts within 10.	I can tell the time to the nearest half an hour.
Year 2	I know number bonds to 20.	I know the doubles and halves of numbers to 20.	I know the 2 times table (x and ÷).	I know the 10 times table (x and ÷).	I know the 5 times table (x and ÷).	I can tell the time to the nearest 5 minutes.
Year 3	I know number bonds for each number up to 20.	I know the 3 times table (× and ÷).	I know the 4 times table (× and ÷).	I know the 8 times table (× and ÷).	I can recall facts about durations of time.	I can tell the time to the nearest minute.
Year 4	I know number bonds of 100.	I know the 6 & 9 times tables (x and ÷).	I know the 7 & 11 times tables (x an ÷).	I know times table facts to 12x12 (x and ÷).	I can multiply and divide a single digit by 10 & 100.	I can recognise simple equivalent fractions.
Year 5	I can find factor pairs of a number.	I can identify prime numbers up to 50	I can recognise equivalent fractions and decimals.	I know decimal number bonds to 1 and 10.	I can recall metric conversions.	I can recall square numbers up to 12^2 and their square roots.
Year 6	I can instantly recall ALL times table facts and related division facts to 12x12 and use these to derive facts including decimal numbers.	I can identify common factors of a pair of numbers.	I can convert between decimals, fractions and percentages.	I can find a fraction of an amount.	I can find a percentage of an amount.	I know the formulae for finding the area of different shapes.

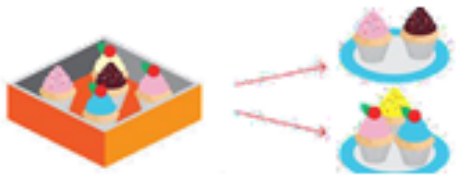
KIRF: I know number bonds to 5

Number bonds show us how numbers join together. They are very important for addition and subtraction. This half term, the children will be learning number bonds that make 5; they should be able to recall these independently.

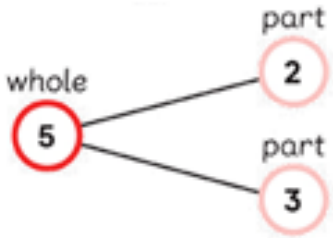
Year One – Autumn 1

What can this look like?

Concrete:



Pictorial:



Abstract:

2 and 3 make 5

2 + 3 = 5

5 – 2 = 3

Questions to ask at home

What do we need to **add** to 4 to make 5?

If I have 1, how **many more** do I need to get to 5?

What is the **difference** between 5 and 3?

Key vocabulary

What is 3 **add** 2?

What is 4 **plus** 1?

What is 5 **take away** 4?

What is 1 **less than** 5?

Things to try

Everyday Objects- Gather together 5 objects and separate them in as many different ways as possible, write the calculation to match each one.

Bunny ears- Decide on a number to make. Put your hands on your head as 'ears' and challenge your child to make 5, e.g. show two fingers on one hand and 3 on the other.

Put five small objects e.g. coins/ counters on a table – cover some of the objects with your hand or hide some behind your back e.g. 2 coins can your child calculate how many have been covered / hidden and say the corresponding number sentence e.g. 2 and 3 more is 5 / 2 add 3 is 5 / 2 plus 3 is 5.

Active Learn games: Rainy Daze (a,b,c)
https://www.activelearnprimary.co.uk/resource/1100232

Websites:

Save The Whale: Learn bonds of 10, 9, 8, 7, 6 or 5 (ictgames.com)

Add With Pictures up to 5 Worksheets - Kindergarten Year Maths (splashlearn.com)

School Jam & Active Learn

Year 1

Activities set weekly as homework.

Year 2

Weekly activities set in the Autumn Term from the Spring Term onwards, activity / task sheets will be sent home.

Active Learn Games

These can be accessed at any time using the Active Learn Platform.

All pupils in years 1 & 2 should have log in details in the back of their reading diaries

Counting and estimating is key in EYFS.

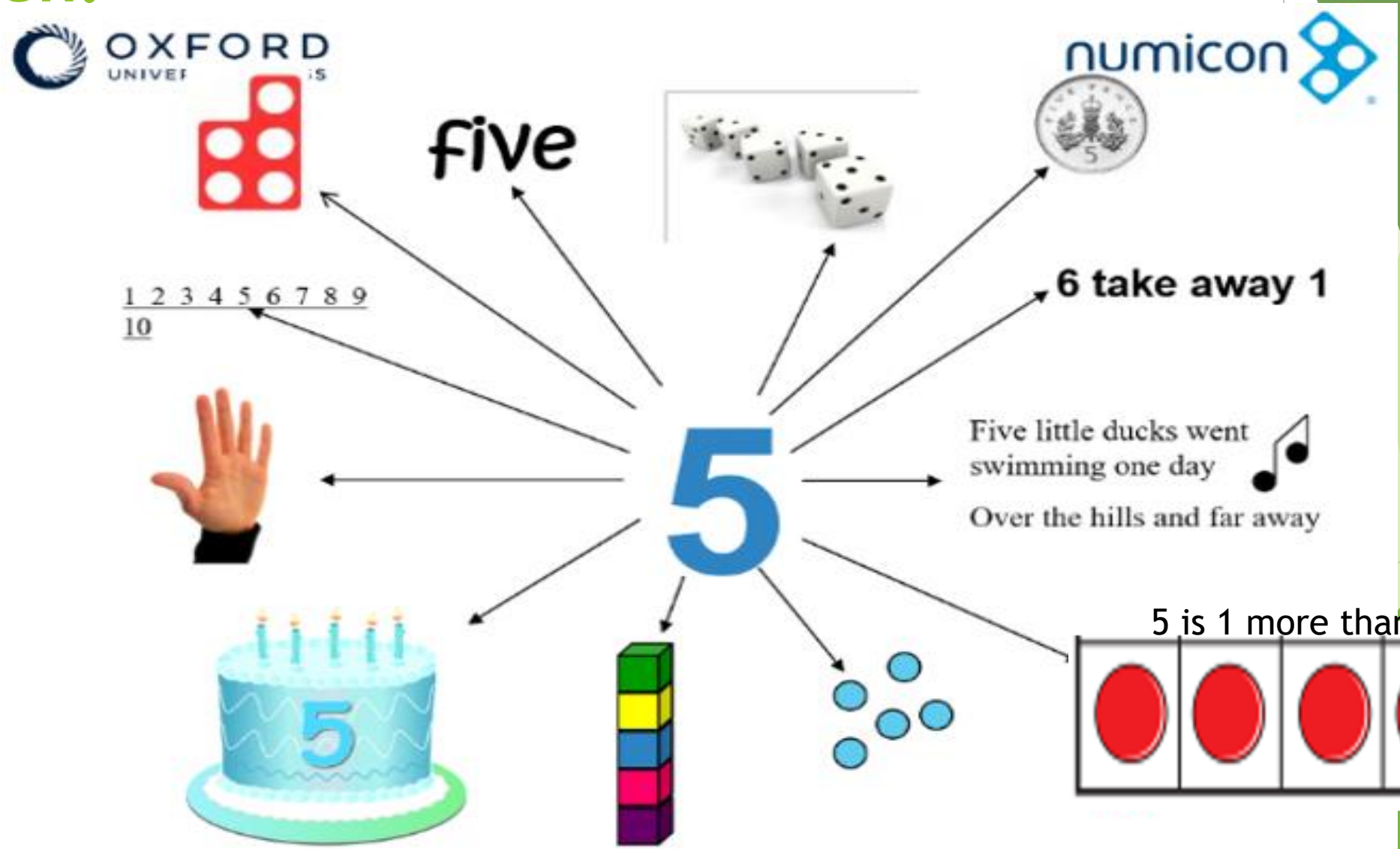
- Knowing the names in order.
- Recognising that the number associated with the last object touched is the total number of objects (cardinality).
- Recognising small numbers of objects without counting them (subitising).
- Counting thigs you cannot move, touch or see e.g. sounds, clicks of fingers, claps of hands.
- Recognising that if a group of objects already counted is rearranged, the total number stays the same (conservation).
- Recognising that if objects are added or removed the number of objects changes.
- Estimation is a really important skill.
- Research has shown that children's estimations are likely to be more accurate if the objects they are estimating have meaning for them.







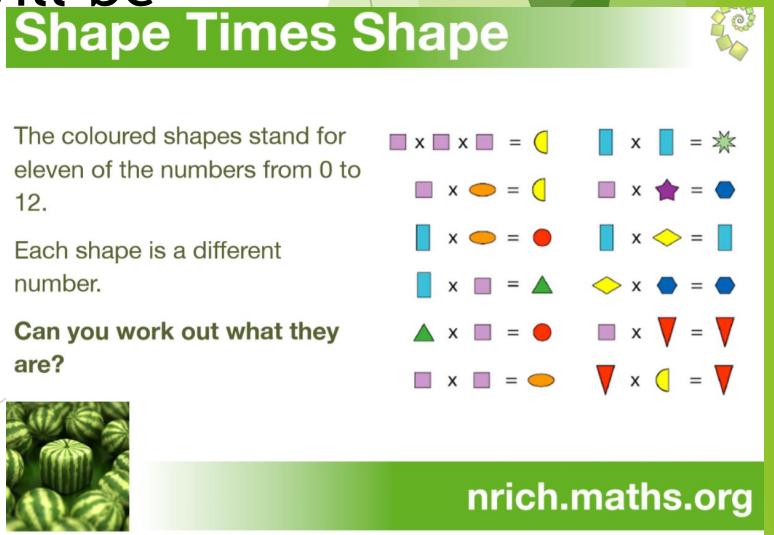
Establishing meaning for number names and symbols to ten.



Key Stage 2
Maths Parent Forum

21.9.22

Good evening, please feel free to look at some of the new Power Maths textbooks we are using this term.
Have a go at the times table shape problem – answers will be shared later on in the forum.

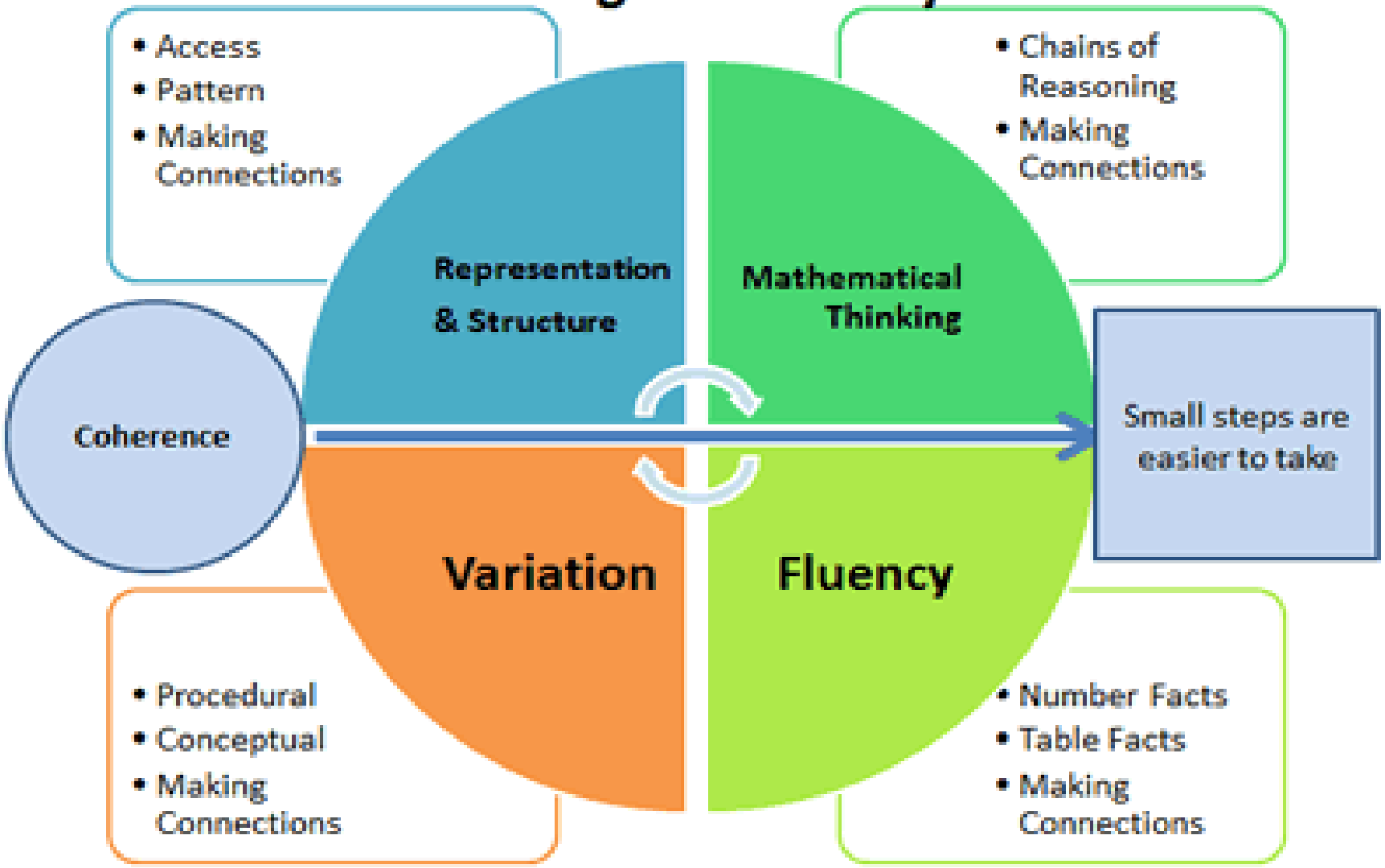


Welcome

Aims of the Forum:

- To provide information regarding our approach to maths at Bridgetown.
- To share resources, methods, updates and initiatives.
- To signpost helpful documents and policies.

Teaching for Mastery

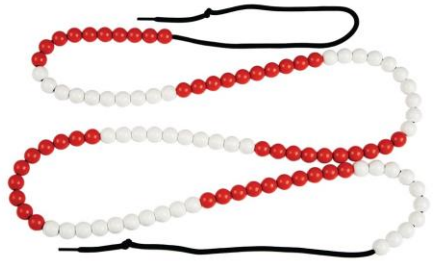


Representations and Structures

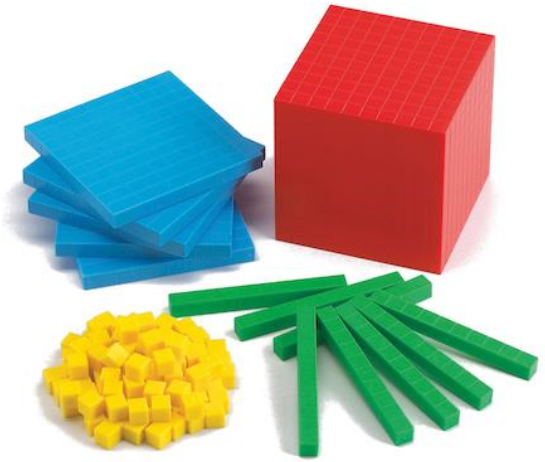
Use of manipulatives to support learning



Numicon



Bead strings



Diennes



Cuisenaire rods





Place Value Counters



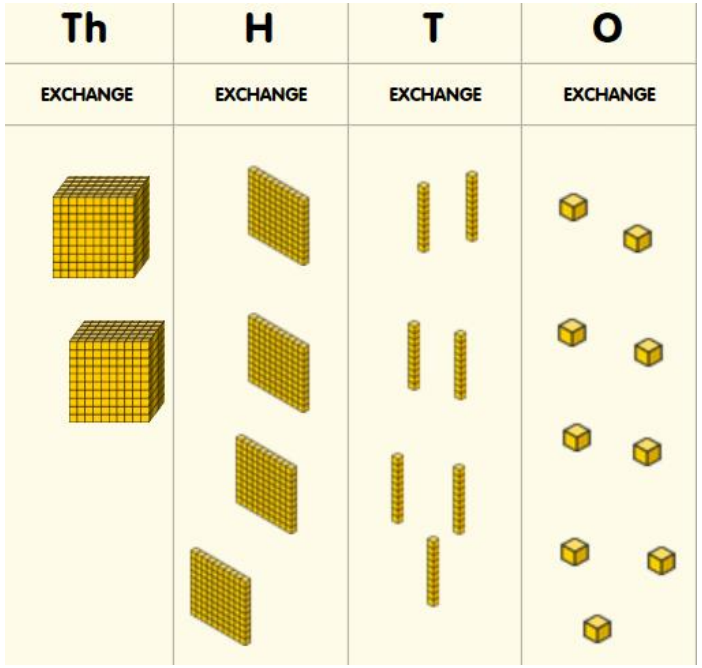
Interlocking Cubes

Representations and Structures

Use of visual images to support learning and make connections.

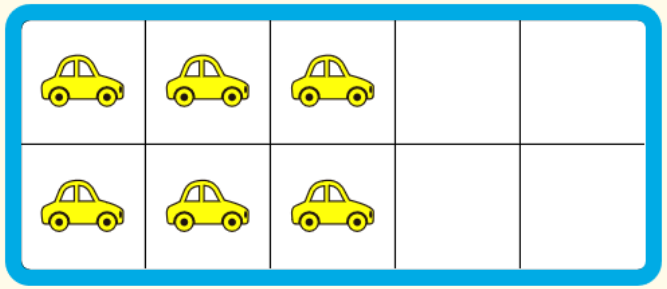
Number Square

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

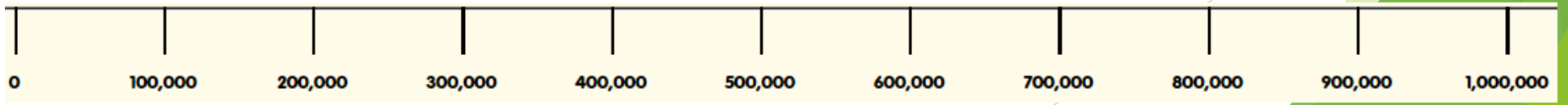


Place Value Grid

Tens Frame



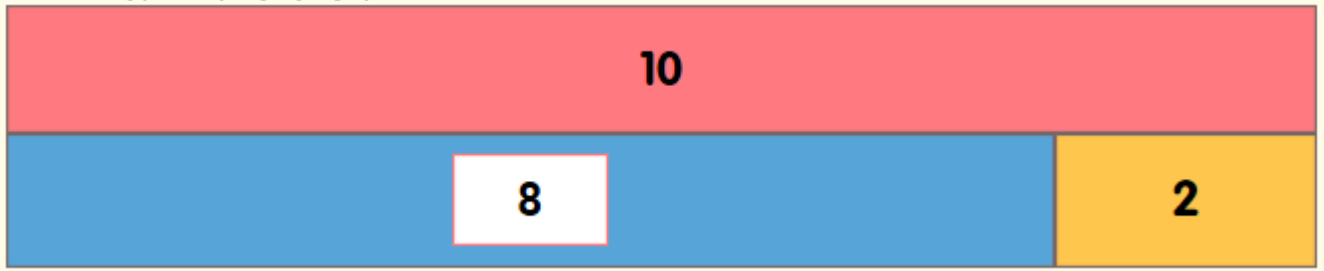
Number Line

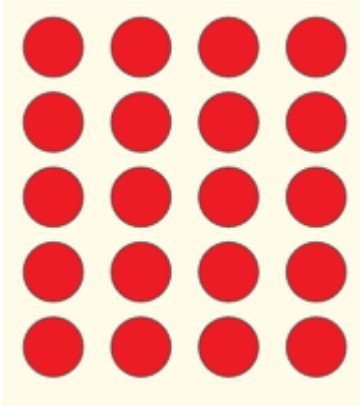


Representations and Structures

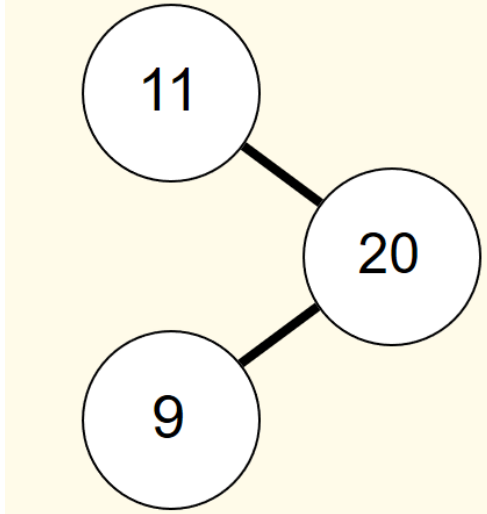
Use of visual images to support learning and make connections.

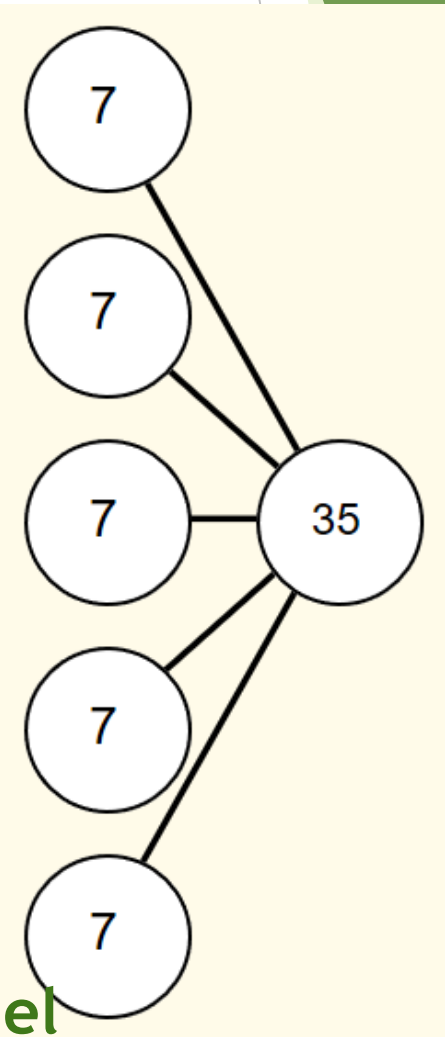
Bar Model





Array

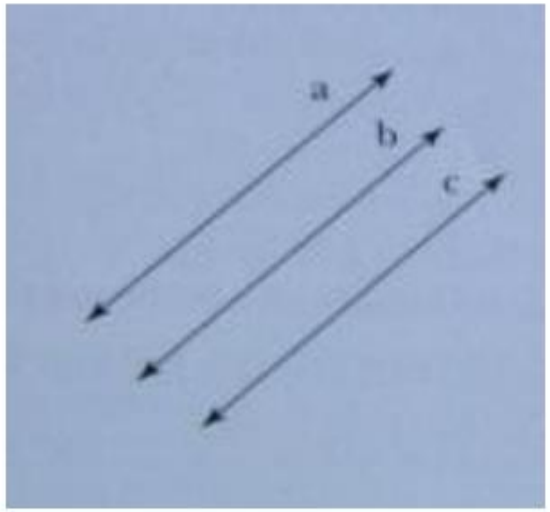




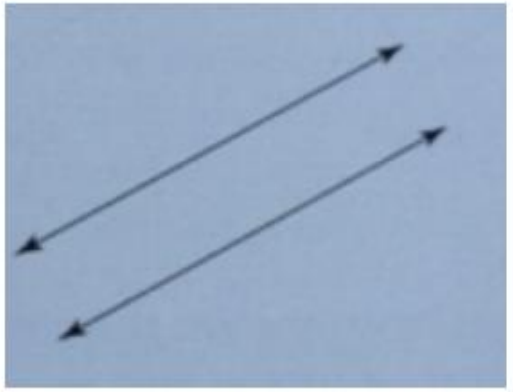
Part Whole Model

Conceptual Variation

11 year olds were asked: Is line a parallel to line c?



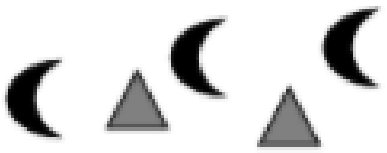
Most answered, 'No, because line b is in the way.'

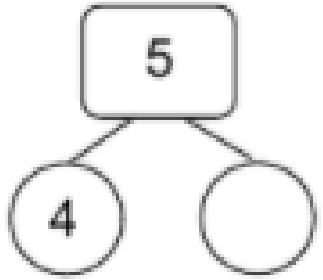


The concept of parallel lines is almost always illustrated like this.

Boaler, Jo. (2016) Mathematical Mindsets

Conceptual Variation





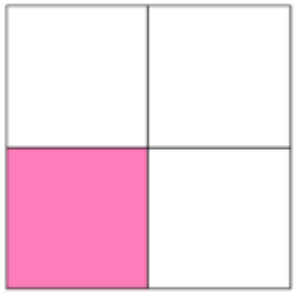
$5 = 2 + \square$

5	
	3



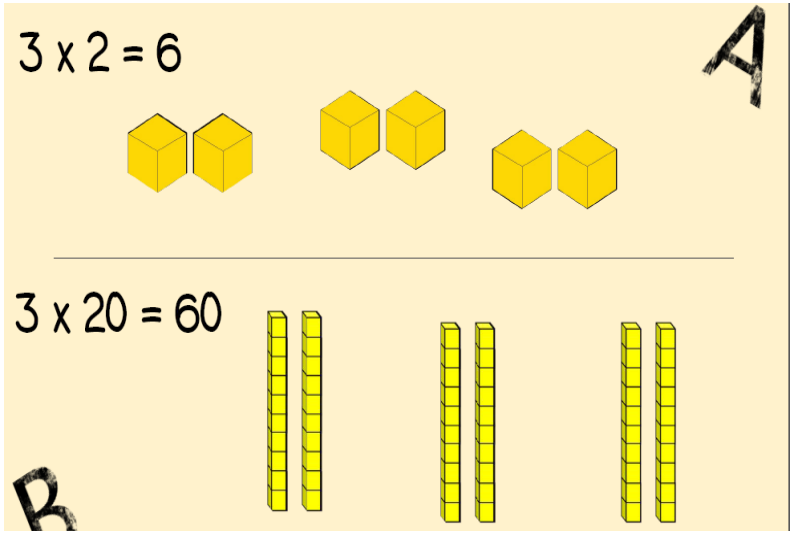








Procedural Variation



$2 \times 9 = 18$

$\square \times 9 = 180$

$2 \times \square = 180$

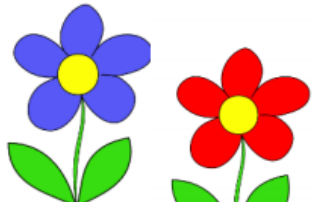
$2 \times 6 = 12$

$\square \times 6 = 120$

$6 \times \square = 120$

- There are 3 red flowers and 5 blue flowers. How many flowers are there altogether?
- There are 8 flowers; some are red and some are blue.

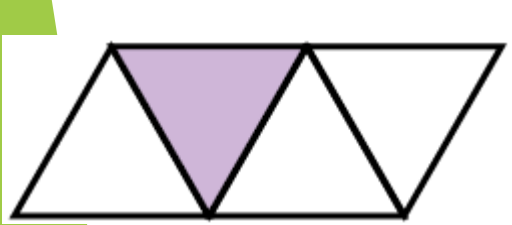
  If three of them are red, how many are blue?
- There are 8 flowers; some are red and some are blue. If there are two more blue flowers than red flowers, how many are there of each colour?

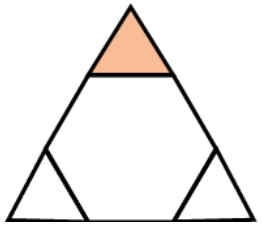


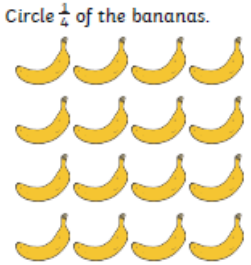
A child has mastered a mathematical concept, idea or technique if he or she can:

- describe it in his or her own words;
- represent it in a variety of ways (e.g. using concrete materials, pictures and symbols – the CPA approach)
- explain it to someone else;
- make up his or her own examples (and non-examples) of it;
- see connections between it and other facts or ideas;
- recognise it in new situations and contexts.









$\frac{1}{4}$ of 12 is _____.

What does the Mastery approach look like in Key Stage 2 Classrooms?

- Includes all children
- Short tasks, continual assessment by teachers
- Mix of individual / pair /group tasks
- Time for discussion
- Small steps of understanding to keep class together; skilful questioning to extend pupils who are quick to grasp concepts.
- Support for children to keep up
- Increasing cognitive demand
- Challenge for all through reasoning.

The Importance of Mathematical Fluency

- Lack of fluency of number facts is closely linked to low attainment in maths.

NUMBER BONDS					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Represent and use number bonds and related subtraction facts within 20.	Recall and use addition and subtraction facts to 20 fluently, begin to derive and use related facts up to 100.	Add and subtract 2- digit numbers, using known and derived facts.	Know all complements of numbers to 100.	Know decimal complements of numbers to 1.	
MENTAL CALCULATION					
Add and subtract one-digit and two-digit numbers to 20, including zero.	Add and subtract numbers using concrete objects, pictorial representations, and mentally, including: • a two-digit number and ones • a two-digit number and tens • two two-digit numbers	Add and subtract numbers mentally, including: • a three-digit number and ones • a three-digit number and tens • a three-digit number and hundreds.	Add and subtract numbers mentally, including: • a four-digit number and ones • a four-digit number and tens • a four-digit number and hundreds.	Add and subtract numbers mentally with increasingly large numbers.	Perform mental calculations, including with mixed operations and large numbers.
Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs.	Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot				Use their knowledge of the order of operations to carry out calculations involving the four operations.

MULTIPLICATION & DIVISION FACTS					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Count in multiples of twos, fives and tens.	Count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward.	Count from 0 in multiples of 4, 8, 50 and 100.	Count in multiples of 6, 7, 9, 25 and 1 000.	Count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000.	
	Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers.	Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables.	Recall multiplication and division facts for multiplication tables up to 12 × 12.		

Automaticity of facts

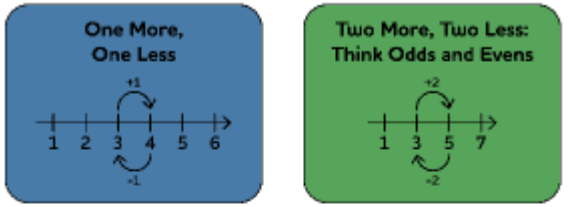
Addition Grid Facts

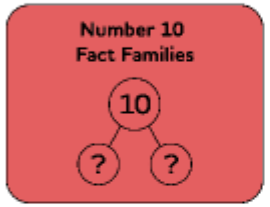
+	0	1	2	3	4	5	6	7	8	9	10
0	0 + 0	0 + 1	0 + 2	0 + 3	0 + 4	0 + 5	0 + 6	0 + 7	0 + 8	0 + 9	0 + 10
1	1 + 0	1 + 1	1 + 2	1 + 3	1 + 4	1 + 5	1 + 6	1 + 7	1 + 8	1 + 9	1 + 10
2	2 + 0	2 + 1	2 + 2	2 + 3	2 + 4	2 + 5	2 + 6	2 + 7	2 + 8	2 + 9	2 + 10
3	3 + 0	3 + 1	3 + 2	3 + 3	3 + 4	3 + 5	3 + 6	3 + 7	3 + 8	3 + 9	3 + 10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

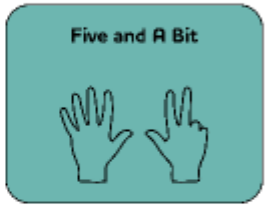
Subtraction Grid Facts

–	0	1	2	3	4	5	6	7	8	9	10
0	0 – 0										
1	1 – 0	1 – 1									
2	2 – 0	2 – 1	2 – 2								
3	3 – 0	3 – 1	3 – 2	3 – 3							
4	4 – 0	4 – 1	4 – 2	4 – 3	4 – 4						
5	5 – 0	5 – 1	5 – 2	5 – 3	5 – 4	5 – 5					
6	6 – 0	6 – 1	6 – 2	6 – 3	6 – 4	6 – 5	6 – 6				
7	7 – 0	7 – 1	7 – 2	7 – 3	7 – 4	7 – 5	7 – 6	7 – 7			
8	8 – 0	8 – 1	8 – 2	8 – 3	8 – 4	8 – 5	8 – 6	8 – 7	8 – 8		
9	9 – 0	9 – 1	9 – 2	9 – 3	9 – 4	9 – 5	9 – 6	9 – 7	9 – 8	9 – 9	
10	10 – 0	10 – 1	10 – 2	10 – 3	10 – 4	10 – 5	10 – 6	10 – 7	10 – 8	10 – 9	10 – 10
11		11 – 1	11 – 2	11 – 3	11 – 4	11 – 5	11 – 6	11 – 7	11 – 8	11 – 9	11 – 10
12			12 – 2	12 – 3	12 – 4	12 – 5	12 – 6	12 – 7	12 – 8	12 – 9	12 – 10
13				13 – 3	13 – 4	13 – 5	13 – 6	13 – 7	13 – 8	13 – 9	13 – 10
14					14 – 4	14 – 5	14 – 6	14 – 7	14 – 8	14 – 9	14 – 10
15						15 – 5	15 – 6	15 – 7	15 – 8	15 – 9	15 – 10
16							16 – 6	16 – 7	16 – 8	16 – 9	16 – 10
17								17 – 7	17 – 8	17 – 9	17 – 10
18									18 – 8	18 – 9	18 – 10
19										19 – 9	19 - 10
20											20 - 10

Calculation Strategies



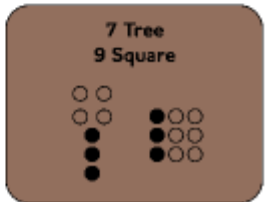


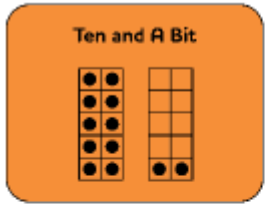


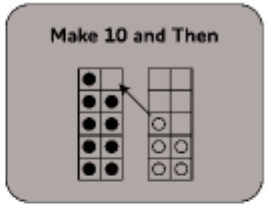




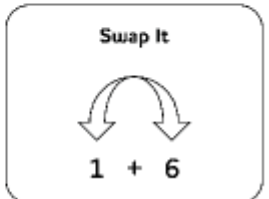




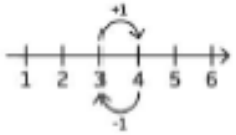
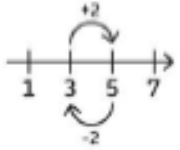
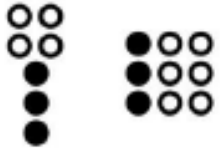
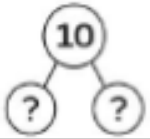
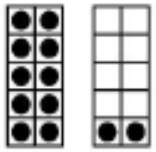
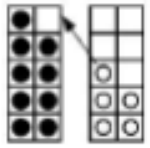
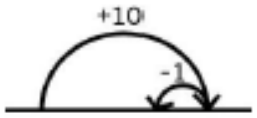








NSM Number Facts Calculation Strategies

One More, One Less 	When we add one, we get the next counting number. When we subtract one, we get the previous counting number (e.g. 5 – 1 = 4).	**Number Neighbours: Spot the Difference** 	Adjacent numbers have a difference of 1. Adjacent odds and evens have a difference of 2. Spot number neighbours (adjacent, odds or evens) to solve subtractions of adjacent numbers (e.g. 5 – 4 = 1), of adjacent odds (e.g. 9 – 7 = 2) or adjacent evens (e.g. 6 – 4 = 2)
Two More, Two Less: Think Odds and Evens 	If we add two to a number, we go from odd to next odd or even to next even. If we subtract two from a number, we go from odd to previous odd or even to previous even.	**7 Tree and 9 Square** 	Use these visual images to remember addition and subtractions fact families that children can find tricky. For example, visualising the 7 tree helps remember that 7 – 3 = 4. Visualising the 9 square helps remember that 3 + 6 = 9.
Number 10 Fact Families 	Go beyond just recalling the pairs of numbers that add to 10. Make sure that we can also spot additions and subtractions which we can use number bonds to 10 to solve.	**Ten and A Bit** 	The numbers 11 – 20 are made up of 'Ten and a Bit'. Recognising and understanding the 'Ten and a Bit' structure of these numbers enables addition and subtraction facts involving their constituent parts (e.g. 3 + 10 = 13, 17 – 7 = 10, 12 – 10 = 2).
Five and A Bit 	The numbers 6, 7, 8 and 9 are made up of 'five and a bit'. This can be shown on hands, and supports decomposition of these numbers into their five and a bit parts (e.g. 5 + 3 = 8, 9 – 5 = 4).	**Make Ten and Then...** 	Additions which cross the 10 boundary can be calculated by 'Making Ten' first, and then adding on the remaining amount (e.g. 8 + 6 can be calculated by thinking '8 + 2 = 10 and 4 more makes 14'). The same strategy can be applied to subtractions through 10.
Know about 0 **0**	When we add 0 to or subtract 0 from another number, the total remains the same. If we subtract a number from itself, the difference is 0.	**Adjust It** 	Any addition and subtraction can be calculated by adjusting from a fact you know already, (e.g. 6 + 9 is one less than 6 + 10).
Doubles and Near Doubles 	Memorise doubles of numbers to 10, using a visual approach. Then use these known double facts to calculate near doubles and hidden doubles. Once we know 6 + 6 = 12 then 6 +7 and 5 + 7 is easy.	**Swap It**  1 + 6	When the order of two numbers being added (addends) is exchanged the total remains the same. E.g. 1 + 8 = 8 + 1. Sometimes reversing the order of the two addends makes addition easier to think about conceptually.

Automaticity of facts

- **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.**

- When learning tables, break them down into small chunks, 2/3 new facts at a time.
- Say them out loud, ‘ping pong’ them back and forth, practise saying the whole fact rather than ‘skip counting’. Skip counting is useful to derive a fact, but isn’t helpful in developing automaticity.
- Times tables songs are helpful.

Ashley Down Schools - Helping your child with Maths

1 times tables	2 times tables	3 times tables	4 times tables	5 times tables	6 times tables	7 times tables	8 times tables	9 times tables	10 times tables	11 times tables	12 times tables
1 × 1 = 1	1 × 2 = 2	1 × 3 = 3	1 × 4 = 4	1 × 5 = 5	1 × 6 = 6	1 × 7 = 7	1 × 8 = 8	1 × 9 = 9	1 × 10 = 10	1 × 11 = 11	1 × 12 = 12
2 × 1 = 2	2 × 2 = 4	2 × 3 = 6	2 × 4 = 8	2 × 5 = 10	2 × 6 = 12	2 × 7 = 14	2 × 8 = 16	2 × 9 = 18	2 × 10 = 20	2 × 11 = 22	2 × 12 = 24
3 × 1 = 3	3 × 2 = 6	3 × 3 = 9	3 × 4 = 12	3 × 5 = 15	3 × 6 = 18	3 × 7 = 21	3 × 8 = 24	3 × 9 = 27	3 × 10 = 30	3 × 11 = 33	3 × 12 = 36
4 × 1 = 4	4 × 2 = 8	4 × 3 = 12	4 × 4 = 16	4 × 5 = 20	4 × 6 = 24	4 × 7 = 28	4 × 8 = 32	4 × 9 = 36	4 × 10 = 40	4 × 11 = 44	4 × 12 = 48
5 × 1 = 5	5 × 2 = 10	5 × 3 = 15	5 × 4 = 20	5 × 5 = 25	5 × 6 = 30	5 × 7 = 35	5 × 8 = 40	5 × 9 = 45	5 × 10 = 50	5 × 11 = 55	5 × 12 = 60
6 × 1 = 6	6 × 2 = 12	6 × 3 = 18	6 × 4 = 24	6 × 5 = 30	6 × 6 = 36	6 × 7 = 42	6 × 8 = 48	6 × 9 = 54	6 × 10 = 60	6 × 11 = 66	6 × 12 = 71
7 × 1 = 7	7 × 2 = 14	7 × 3 = 21	7 × 4 = 28	7 × 5 = 35	7 × 6 = 42	7 × 7 = 49	7 × 8 = 56	7 × 9 = 63	7 × 10 = 70	7 × 11 = 77	7 × 12 = 84
8 × 1 = 8	8 × 2 = 16	8 × 3 = 24	8 × 4 = 32	8 × 5 = 40	8 × 6 = 48	8 × 7 = 56	8 × 8 = 64	8 × 9 = 72	8 × 10 = 80	8 × 11 = 88	8 × 12 = 96
9 × 1 = 9	9 × 2 = 18	9 × 3 = 27	9 × 4 = 36	9 × 5 = 45	9 × 6 = 54	9 × 7 = 63	9 × 8 = 72	9 × 9 = 81	9 × 10 = 90	9 × 11 = 99	9 × 12 = 108
10 × 1 = 10	10 × 2 = 20	10 × 3 = 30	10 × 4 = 40	10 × 5 = 50	10 × 6 = 60	10 × 7 = 70	10 × 8 = 80	10 × 9 = 90	10 × 10 = 100	10 × 11 = 110	10 × 12 = 120
11 × 1 = 11	11 × 2 = 22	11 × 3 = 33	11 × 4 = 44	11 × 5 = 55	11 × 6 = 66	11 × 7 = 77	11 × 8 = 88	11 × 9 = 99	11 × 10 = 110	11 × 11 = 121	11 × 12 = 131
12 × 1 = 12	12 × 2 = 24	12 × 3 = 36	12 × 4 = 48	12 × 5 = 60	12 × 6 = 72	12 × 7 = 84	12 × 8 = 96	12 × 9 = 108	12 × 10 = 120	12 × 11 = 132	12 × 12 = 144

144 facts

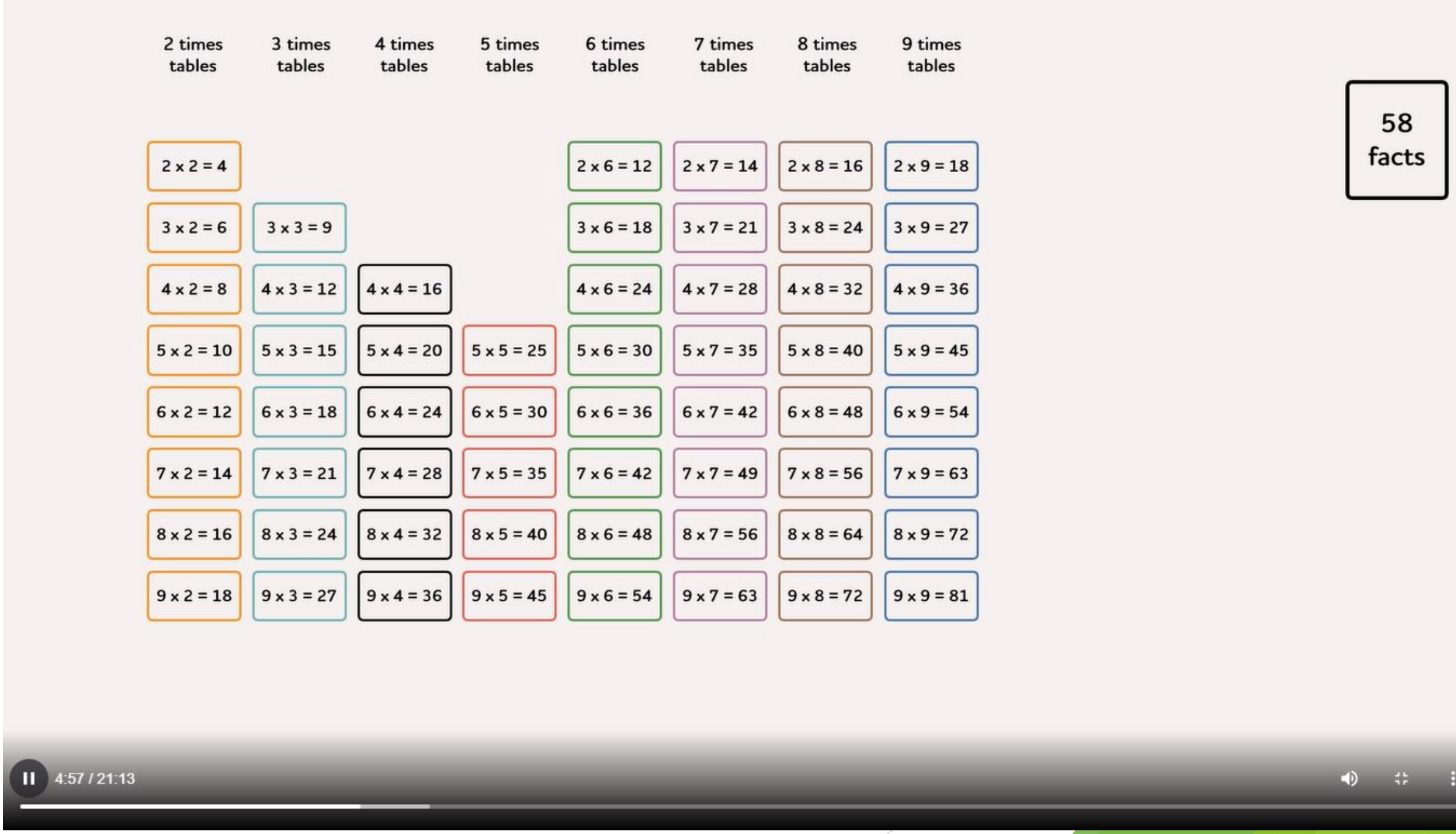
15:48 / 21:13

1 times tables	2 times tables	3 times tables	4 times tables	5 times tables	6 times tables	7 times tables	8 times tables	9 times tables	10 times tables
1 x 1 = 1	1 x 2 = 2	1 x 3 = 3	1 x 4 = 4	1 x 5 = 5	1 x 6 = 6	1 x 7 = 7	1 x 8 = 8	1 x 9 = 9	1 x 10 = 10
2 x 1 = 2	2 x 2 = 4	2 x 3 = 6	2 x 4 = 8	2 x 5 = 10	2 x 6 = 12	2 x 7 = 14	2 x 8 = 16	2 x 9 = 18	2 x 10 = 20
3 x 1 = 3	3 x 2 = 6	3 x 3 = 9	3 x 4 = 12	3 x 5 = 15	3 x 6 = 18	3 x 7 = 21	3 x 8 = 24	3 x 9 = 27	3 x 10 = 30
4 x 1 = 4	4 x 2 = 8	4 x 3 = 12	4 x 4 = 16	4 x 5 = 20	4 x 6 = 24	4 x 7 = 28	4 x 8 = 32	4 x 9 = 36	4 x 10 = 40
5 x 1 = 5	5 x 2 = 10	5 x 3 = 15	5 x 4 = 20	5 x 5 = 25	5 x 6 = 30	5 x 7 = 35	5 x 8 = 40	5 x 9 = 45	5 x 10 = 50
6 x 1 = 6	6 x 2 = 12	6 x 3 = 18	6 x 4 = 24	6 x 5 = 30	6 x 6 = 36	6 x 7 = 42	6 x 8 = 48	6 x 9 = 54	6 x 10 = 60
7 x 1 = 7	7 x 2 = 14	7 x 3 = 21	7 x 4 = 28	7 x 5 = 35	7 x 6 = 42	7 x 7 = 49	7 x 8 = 56	7 x 9 = 63	7 x 10 = 70
8 x 1 = 8	8 x 2 = 16	8 x 3 = 24	8 x 4 = 32	8 x 5 = 40	8 x 6 = 48	8 x 7 = 56	8 x 8 = 64	8 x 9 = 72	8 x 10 = 80
9 x 1 = 9	9 x 2 = 18	9 x 3 = 27	9 x 4 = 36	9 x 5 = 45	9 x 6 = 54	9 x 7 = 63	9 x 8 = 72	9 x 9 = 81	9 x 10 = 90
10 x 1 = 10	10 x 2 = 20	10 x 3 = 30	10 x 4 = 40	10 x 5 = 50	10 x 6 = 60	10 x 7 = 70	10 x 8 = 80	10 x 9 = 90	10 x 10 = 100
11 x 1 = 11	11 x 2 = 22	11 x 3 = 33	11 x 4 = 44	11 x 5 = 55	11 x 6 = 66	11 x 7 = 77	11 x 8 = 88	11 x 9 = 99	11 x 10 = 110
15:48 / 21:13	12 x 2 = 24	12 x 3 = 36	12 x 4 = 48	12 x 5 = 60	12 x 6 = 72	12 x 7 = 84	12 x 8 = 96	12 x 9 = 108	12 x 10 = 120

Prioritise facts needed for short division.

HTO X O
TH HTO X O

2 times tables	3 times tables	4 times tables	5 times tables	6 times tables	7 times tables	8 times tables	9 times tables
1 x 2 = 2	1 x 3 = 3	1 x 4 = 4	1 x 5 = 5	1 x 6 = 6	1 x 7 = 7	1 x 8 = 8	1 x 9 = 9
2 x 2 = 4	2 x 3 = 6	2 x 4 = 8	2 x 5 = 10	2 x 6 = 12	2 x 7 = 14	2 x 8 = 16	2 x 9 = 18
3 x 2 = 6	3 x 3 = 9	3 x 4 = 12	3 x 5 = 15	3 x 6 = 18	3 x 7 = 21	3 x 8 = 24	3 x 9 = 27
4 x 2 = 8	4 x 3 = 12	4 x 4 = 16	4 x 5 = 20	4 x 6 = 24	4 x 7 = 28	4 x 8 = 32	4 x 9 = 36
5 x 2 = 10	5 x 3 = 15	5 x 4 = 20	5 x 5 = 25	5 x 6 = 30	5 x 7 = 35	5 x 8 = 40	5 x 9 = 45
6 x 2 = 12	6 x 3 = 18	6 x 4 = 24	6 x 5 = 30	6 x 6 = 36	6 x 7 = 42	6 x 8 = 48	6 x 9 = 54
7 x 2 = 14	7 x 3 = 21	7 x 4 = 28	7 x 5 = 35	7 x 6 = 42	7 x 7 = 49	7 x 8 = 56	7 x 9 = 63
8 x 2 = 16	8 x 3 = 24	8 x 4 = 32	8 x 5 = 40	8 x 6 = 48	8 x 7 = 56	8 x 8 = 64	8 x 9 = 72
9 x 2 = 18	9 x 3 = 27	9 x 4 = 36	9 x 5 = 45	9 x 6 = 54	9 x 7 = 63	9 x 8 = 72	9 x 9 = 81


2 times tables
3 times tables
4 times tables
5 times tables
6 times tables
7 times tables
8 times tables
9 times tables
58 facts
2 x 2 = 4
2 x 6 = 12
2 x 7 = 14
2 x 8 = 16
2 x 9 = 18
3 x 2 = 6
3 x 3 = 9
3 x 6 = 18
3 x 7 = 21
3 x 8 = 24
3 x 9 = 27
4 x 2 = 8
4 x 3 = 12
4 x 4 = 16
4 x 6 = 24
4 x 7 = 28
4 x 8 = 32
4 x 9 = 36
5 x 2 = 10
5 x 3 = 15
5 x 4 = 20
5 x 5 = 25
5 x 6 = 30
5 x 7 = 35
5 x 8 = 40
5 x 9 = 45
6 x 2 = 12
6 x 3 = 18
6 x 4 = 24
6 x 5 = 30
6 x 6 = 36
6 x 7 = 42
6 x 8 = 48
6 x 9 = 54
7 x 2 = 14
7 x 3 = 21
7 x 4 = 28
7 x 5 = 35
7 x 6 = 42
7 x 7 = 49
7 x 8 = 56
7 x 9 = 63
8 x 2 = 16
8 x 3 = 24
8 x 4 = 32
8 x 5 = 40
8 x 6 = 48
8 x 7 = 56
8 x 8 = 64
8 x 9 = 72
9 x 2 = 18
9 x 3 = 27
9 x 4 = 36
9 x 5 = 45
9 x 6 = 54
9 x 7 = 63
9 x 8 = 72
9 x 9 = 81
4:57 / 21:13

2 times tables	3 times tables	4 times tables	5 times tables	6 times tables	7 times tables	8 times tables	9 times tables
2 x 2 = 4							
3 x 2 = 6	3 x 3 = 9						
4 x 2 = 8	4 x 3 = 12	4 x 4 = 16					
5 x 2 = 10	5 x 3 = 15	5 x 4 = 20	5 x 5 = 25				
6 x 2 = 12	6 x 3 = 18	6 x 4 = 24	6 x 5 = 30	6 x 6 = 36			
7 x 2 = 14	7 x 3 = 21	7 x 4 = 28	7 x 5 = 35	7 x 6 = 42	7 x 7 = 49		
8 x 2 = 16	8 x 3 = 24	8 x 4 = 32	8 x 5 = 40	8 x 6 = 48	8 x 7 = 56	8 x 8 = 64	
9 x 2 = 18	9 x 3 = 27	9 x 4 = 36	9 x 5 = 45	9 x 6 = 54	9 x 7 = 63	9 x 8 = 72	9 x 9 = 81

36 facts

Mathematical Calculations in Years 5 & 6

	1	2	7	4	
×			3	2	
	2	5	4	8	1,274 × 2
3	8	2	2	0	1,274 × 30
4	0	7	6	8	1,274 × 32

TTh	Th	H	T	O
	1	9	1	7	5
+	1	8	4	1	7
	3	7	5	9	2

TTh	Th	H	T	O
	5 ~~6~~	11 ~~7~~	1 0	9	7
−	1	8	5	3	4
	4	3	5	6	3

```
      3 8
   ┌──────
21 │ 7 9 8
 − 6 3 0
   ─────
     1 6 8
   − 1 6 8
   ───────
         0
```

Years 5 & 6

Mixed numbers to improper fractions

Discover



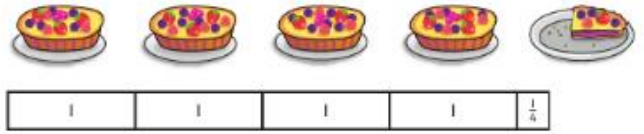
1 a) Write the total amount of fruit tarts as a mixed number.

b) Convert the mixed number to an improper fraction.

Share

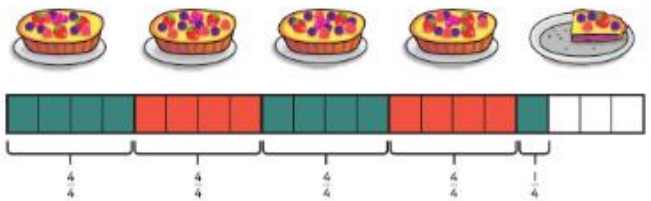
a) There are 4 whole fruit tarts and one quarter of a fruit tart.

Each whole fruit tart splits into 4 quarters.

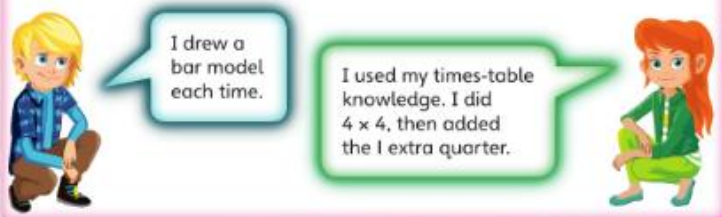


There are $4\frac{1}{4}$ fruit tarts.

b)



$4\frac{1}{4} = \frac{17}{4}$



5 Find different solutions to this problem.

CHALLENGE

$\frac{▲}{10} = ■\frac{★}{10}$

I will just pick some numbers to start with and then change one to make the calculation correct.

Discuss with a partner.

Mathematical reasoning & problem solving

a)

		TTh	Th	H	T	O	
		1	6	4	0	4	
	+	2	7	3	4	9	

Max is working out 26,348 + 6,293.

a) What mistake has Max made?

	TTh	Th	H	T	O
	2	6	3	4	8
+	6	2	9	3	
	8	9	2	7	8

5 Fill in the missing digits.

a)

		TTh	Th	H	T	O	
		2	5	7	8		
	+		6	2		1	
		6			1	5	

6 Use the digits on the cards to make the additions correct.
Use each digit card once in each addition.

CHALLENGE

0	1	2	3	4	5	6	7	8	9

a)

		TTh	Th	H	T	O	
	+						
		9	9	6	5	7	

b)

		TTh	Th	H	T	O	
	+						
		9	0	0	0	0	

Developing **mastery with greater depth** is characterised by pupils' ability to:

- Solve problems of greater complexity (i.e. where the approach is not immediately obvious), demonstrating creativity and imagination.
- Independently explore and investigate mathematical contexts and structures, communicate results clearly and systematically explain and generalise the mathematics.

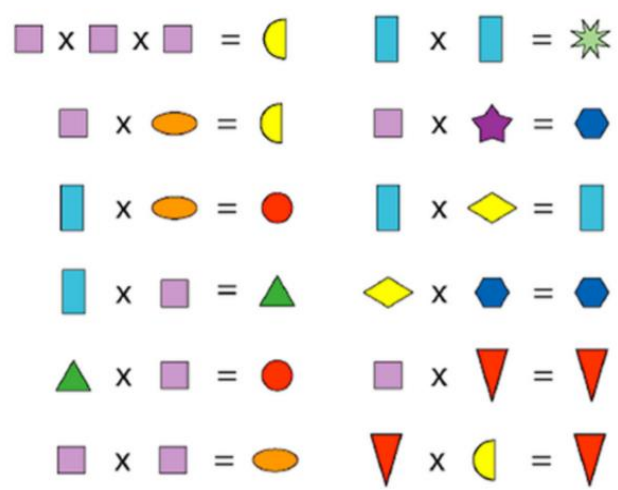
What is the same? What is different?
Can you group these ..... in some way?
Can you see a pattern?
How can this pattern help you find an answer?
What do think comes next? Why?
Is there a way to record what you've found that might help us see more patterns?
What would happen if....? How could you sort these.....?
How many ways can you find to ..... ?
What happens when we ..... ?
What can be made from....?
How many different ways ..... can be found?
What have you discovered?
Why do you think that?
What made you decide to do it that way?

Shape Times Shape

The coloured shapes stand for eleven of the numbers from 0 to 12.

Each shape is a different number.

Can you work out what they are?





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Vocabulary

Glossary

Correct modelling of mathematical vocabulary is essential in order for pupils to explain and understand mathematical structures. The following terms should be introduced as pupils progress throughout the school. Just as we have technical terms for phonics, e.g. diagraph, trigraph, which we teach from a young age, we should not shy away from using the appropriate vocabulary to describe numbers in mathematical contexts e.g. addend, subtrahend.

Addend A number to be added to another number. e.g. 7+8= 15 7 and 8 are addends	**Aggregation** To combine 2 or more quantities or measure to find a total. e.g. Mina has 3 pencils and George has 2, how many pencils are there altogether?	**Array** An ordered collection of counters, cubes or other items in rows and columns.
Augmentation Increasing a quantity or measure by another quantity. e.g. A plate has 5 cakes, 4 more are added. How many cakes does the plate have now?	**Commutative** Addition and multiplication are commutative, the equation can be carried out in any order.	**Complement** In addition, a number and its complement make a total. e.g 300 is the complement to 700 to make 1000.
Difference The numerical difference between two numbers is found by comparing the quantity in each group.	**Dividend** The number that is divided in a division equation. e.g. 24 ÷ 6 = 4 24 is the dividend.	**Divisor** In division, the number by which another is divided e.g. 24 ÷ 6 = 4 6 is the divisor.
Exchange Change a number or expression for another of equal value.	**Factor** A number that multiplies with another to make a product. e.g. 6 x 4 = 24 6 and 4 are factors of 24	**Minuend** A quantity or number from which another is subtracted. e.g. 20 – 9 = 11 20 is the minuend
Multiplicand In multiplication, a number to be multiplied by another number. e.g. e.g. 6 x 4 = 24 4 is the multiplicand	**Multiplier** In a multiplication calculation, the number you are multiplying by. e.g. e.g. 6 x 4 = 24 6 is the multiplier	**Partition** To split a number into its component parts.
Product The result of multiplying one number by another. e.g. e.g. 6 x 4 = 24 24 is the product	**Quotient** The result of a division. e.g. 24 ÷ 6 = 4 4 is the quotient	**Remainder** The amount left over after a division when the divisor is not a factor of the dividend. e.g e.g. 25 ÷ 6 = 4 r1 as 6 (the divisor) is not a factor of 25 (the dividend)

How can you support your child at home?

- KIRFS
- Regular times tables practise
- Homework
- Active Learn Games

KIRFs Progression Map

Bridgetown Primary School 2022-23

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 1	I know number bonds to 5.	I know number bonds to 10.	I can recognise numbers to 50.	I know the doubles and halves of numbers to 10.	I know addition and subtraction facts within 10.	I can tell the time to the nearest half an hour.
Year 2	I know number bonds to 20.	I know the doubles and halves of numbers to 20.	I know the 2 times table (x and ÷).	I know the 10 times table (x and ÷).	I know the 5 times table (x and ÷).	I can tell the time to the nearest 5 minutes.
Year 3	I know number bonds for each number up to 20.	I know the 3 times table (× and ÷).	I know the 4 times table (× and ÷).	I know the 8 times table (× and ÷).	I can recall facts about durations of time.	I can tell the time to the nearest minute.
Year 4	I know number bonds of 100.	I know the 6 & 9 times tables (x and ÷).	I know the 7 & 11 times tables (x an ÷).	I know times table facts to 12x12 (x and ÷).	I can multiply and divide a single digit by 10 & 100.	I can recognise simple equivalent fractions.
Year 5	I can find factor pairs of a number.	I can identify prime numbers up to 50	I can recognise equivalent fractions and decimals.	I know decimal number bonds to 1 and 10.	I can recall metric conversions.	I can recall square numbers up to 12^2 and their square roots.
Year 6	I can instantly recall ALL times table facts and related division facts to 12x12 and use these to derive facts including decimal numbers.	I can identify common factors of a pair of numbers.	I can convert between decimals, fractions and percentages.	I can find a fraction of an amount.	I can find a percentage of an amount.	I know the formulae for finding the area of different shapes.

KIRF: I know number bonds for each number up to 20

Number bonds show us how numbers join together. They are very important for addition and subtraction. This half term, the children will be learning number bonds for all numbers up to 20; they should be able to recall these independently.

The children should know the number bonds to all numbers up to 20

e.g. Number bonds to 15: 0 + 15 = 15,

1 + 14 = 15, 2 + 13 = 15, etc.

Number bonds to 16: 0 + 16 = 16,

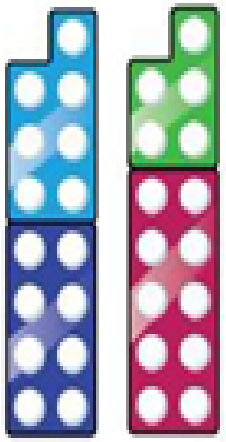
1 + 15 = 16, 2 + 14 = 16, etc.

The children should know all the number bonds that total 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19 and 20

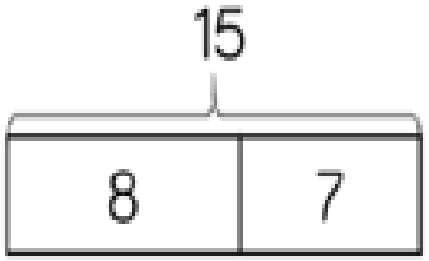
What can this look like?

Examples to 15

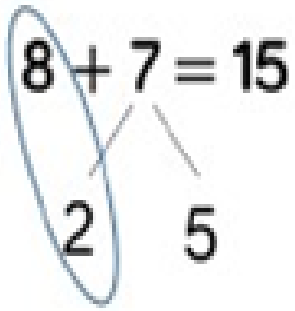
Concrete:



Pictorial:



Abstract:



Year Three – Autumn 1

Questions to ask at home

What do we need to add to 7 to make 20?

If I have 15, how many more do I need to get to 18?

What is the difference between 19 and 7?

Key vocabulary

2 **add** 11 **equals** 13

5 **plus** 12 is **the same as** 17

16 **take away** 7 equals 9

19 **subtract** 3 makes 16

18 **minus** 9 equals 9

Things to try

Everyday Objects- Gather together objects e.g pasta, pencils or straws and separate them in as many different ways as possible, write the calculation to match each one.

Make a poster – We use lots of concrete, pictorial and abstract methods in school. Your child could make a poster on any number 1-20 showing different methods to make the number bonds.

Ask your child to make part whole models for each number to 20. How many different models can they make for each number?

Take a pack of playing cards with picture cards removed. Think of a target number e.g 16, turn over a card. What number needs to be added to turned over card to make the target number? Alternatively turn over two playing cards and add the numbers together – who can find the total the quickest?

Active Learn

Seaside Scuffle https://www.activelearnprimary.co.uk/resource/1100338

Starfish Strike https://www.activelearnprimary.co.uk/resource/1100238

Cave Commotion https://www.activelearnprimary.co.uk/resource/1100341

Websites

https://www.topmarks.co.uk/maths-games/hit-the-button for number bonds to 20.

https://www.mathplayground.com/number_bonds_20.html for number bonds on different numbers.

If your child feels confident with their number bonds then these resources from nrich will help challenge and develop their thinking: https://nrich.maths.org/7819 https://nrich.maths.org/strike-it-out https://nrich.maths.org/6227 https://nrich.maths.org/10328 https://nrich.maths.org/1272

Maths Homework

Changes in red.

Year 1

School Jam activity allocated on Active Learn platform **(no longer app based).**

Year 2

School Jam activity allocated on Active Learn platform in Autumn Term

Written activity to practise skills from January onwards.

Years 3, 4, 5

Weekly written activity to practise key skills these will mainly be linked to KIRFS but may also relate to the content of daily maths lessons.

Year 6

1 weekly written task.

Additional tasks as appropriate in the build up to statutory assessments.

All pupils in Y1 – 6 have been allocated games on the Active Learn platform

Find out more about mastery

- https://www.ncetm.org.uk/teaching-for-mastery/mastery-explained/

- **Mastery and more able pupils**

- https://www.stem.org.uk/news-and-views/opinions/how-does-mastery-approach-help-progress-mathematics