

KS1 Maths Parent Workshop

20th October 2020 @ 4pm

Michael Grocock - DHT/Maths Lead

KS1 Maths Parent Workshop

Workshop protocol

Keep microphones muted

Ask questions in the chat and I will answer at the end.

Send through the name and class of your child by chat so we can register your attendance.

Thank you



Which is the odd one out and why?

5

10

12

Put your answers in the chat

Aims

- Explain what is taught how mathematics is taught in KS1 at Rushey Green
- Understand what is meant by 'Mastery' in mathematics.
- Identify fluency in maths mastery.
- Increase confidence and understanding in supporting your child at home.



Fixed and Growth Mindset - Carol Dweck

Professor of

Psychology at Stanford University

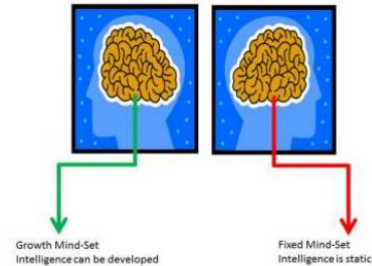
We believe that everyone can get better at maths...when they put in the effort and work at it.

- Do not praise children for being clever when they succeed at something, but instead should praise them *for working hard*.
- Children learn to associate *achievement with effort* (which is something they can influence themselves – by working hard!), not ‘cleverness’ (a trait perceived as absolute and that they cannot change).



If children hear 'I can't do maths' from parents, teachers, friends they begin to believe it isn't important

People become less embarrassed about maths skills as it is acceptable to be 'rubbish at maths'



KS1 Statutory Curriculum

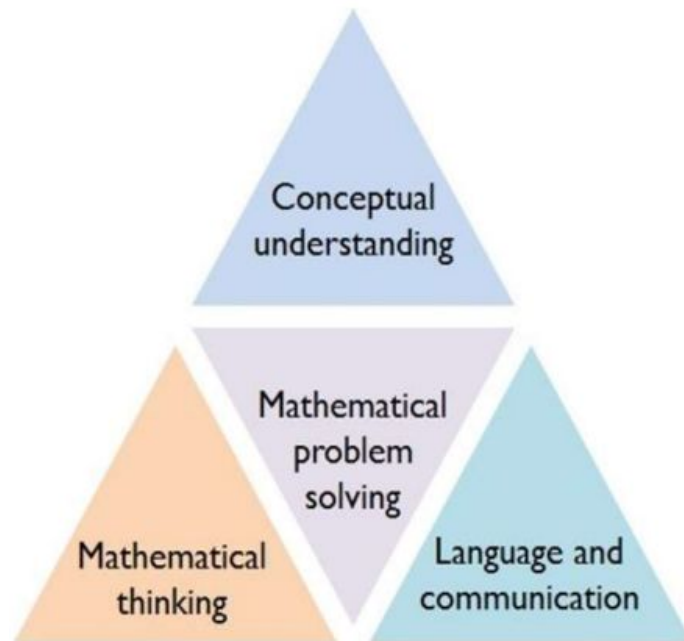
The curriculum is designed so that pupils explore mathematical ideas **in depth**.

- Number – number and place value
- Number – addition and subtraction
- Number – Multiplication and division
- Number – fractions
- Measurement
- Geometry: properties of shape
- Geometry – position and direction
- Statistics (Year 2 only)


- **Mastery** curriculum
- Reading and spelling of mathematical vocabulary

Maths Mastery

- Using spoken and written language with confidence and clarity to explain and justify mathematical reasoning.
- Having a deep conceptual understanding of mathematical concepts and skills.
- Developing mathematical thinking, including generalising, classifying and comparing, and modifying.



What does it mean to master something?

- I know how to do it
 - It becomes automatic and I don't need to think about it- for example driving a car
 - I'm really good at doing it – painting a room, or a picture
 - I can show someone else how to do it.
- 

Deeper Learning



What do we mean
by depth?

Learning is deeper NOT
higher!

Advantages:

Embedded learning:

Slower and richer pace.

Not lead by the clock.

Reasoning focus.

Mathematically makes more
sense!



- Children move together i.e. same objective from National curriculum.
- Differentiation through scaffolding/resources used.

Resources - rusheygreen.lewisham.sch.uk

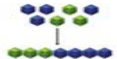



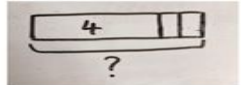


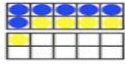

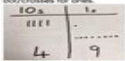


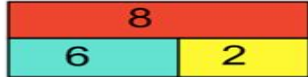
→ Calculation Policy

Maths

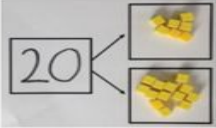
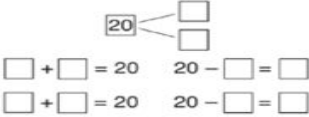

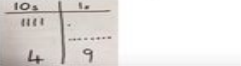
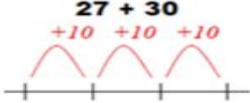

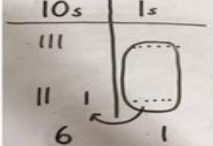
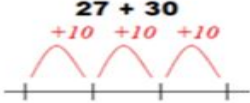
- [Third Space Maths Hub](#)
- [STEM Learning Activities](#)
- [SUMDOG - Maths and Spelling Resources](#)
- [Connect 4.](#)
- [Number Slider](#)
- [MyMaths](#)
- [Maths homework](#)
- [Mental maths](#)
- [Year 6 maths](#)



Calculation Policy Year 1 - Addition

Year 1 Addition	Concrete	Pictorial	Abstract
<p>National Curriculum objective</p> <p>add and subtract one digit and two-digit numbers to 20, including zero</p> <p>Represent and use number bonds and related subtraction facts within 20</p> <p>solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as $7 = \square - 9$.</p>	<p>Concrete</p> <p>Combining two parts to make a whole (Use other resources too e.g. eggs, shells, teddy bears, cars).</p> 	<p>Pictorial</p> <p>Children to represent the cubes using dots or crosses. They could put each part on a part whole model too.</p> 	<p>Abstract</p> <p>$4 + 3 = 7$ Four is a part, 3 is a part and the whole is seven.</p> 
	<p>Counting on using number lines using cubes or Numicon.</p> 	<p>A bar model which encourages the children to count on, rather than count all.</p> 	<p>The abstract number line: What is 2 more than 4? What is the sum of 2 and 4? What is the total of 4 and 2? $4 + 2$</p> 
	<p>Regrouping to make 10; using ten frames and counters/cubes or using Numicon.</p> <p>$6 + 5$</p> 	<p>Children to draw the ten frame and counters/cubes.</p> 	<p>Children to develop an understanding of equality e.g.</p> <p>$6 + \square = 11$ $6 + 5 = 5 + \square$ $6 + 5 = \square + 4$</p>
	<p>$10 + 0$ using base 10. Continue to develop understanding of partitioning and place value.</p> <p>$41 + 5$</p> 	<p>Children to represent the base 10 e.g. lines for tens and dots/crosses for ones.</p> 	
	 <p>$3 + 4 = 7$</p>	 <p>$7 + 3 = 10$</p>	

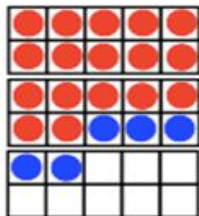
Calculation Policy Year 2 - Addition

Year 2 Addition (+refer to previous year group expectations)	Concrete	Pictorial	Abstract
National Curriculum objective recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100	 <p>Children explore ways of making numbers within 20</p>	 $\square + \square = 20 \quad 20 - \square = \square$ $\square + \square = 20 \quad 20 - \square = \square$	$\square + 1 = 16 \quad 16 - 1 = \square$ $1 + \square = 16 \quad 16 - \square = 1$
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 ♣ adding three one-digit numbers	 <p>$25 + 10 = 35$</p> <p>Explore that the ones digit does not change</p>	<p>Children to represent the base 10 e.g. lines for tens and dots/cubes for ones.</p> 	<p>$27 + 10 = 37$</p> <p>$27 + 20 = 47$</p> <p>$27 + \square = 57$</p> 
	 <p>Model using dienes, place value counters and numicon</p>	<p>Children to represent the base 10 in a place value chart.</p> 	 <p>$27 + 30 = 57$</p> <p>$20 + 5 = 25$</p> <p>$20 + 40 = 60$</p> <p>$5 + 7 = 12$</p> <p>$60 + 12 = 72$</p>

Calculation Policy Year 2 - Addition

show that addition of two numbers can be done in any order (commutative)

recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.



Children explore the pattern.

$$17 + 5 = 22$$

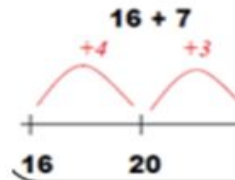
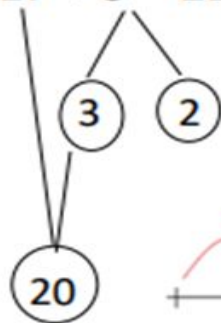
$$27 + 5 = 32$$

$$17 + 5 = 22$$

Use ten frame to make 'magic ten'

Use part part whole and number line to model.

$$17 + 5 = 22$$



$$17 + 5 = 22$$

Explore related facts

$$17 + 5 = 22$$

$$5 + 17 = 22$$

$$22 - 17 = 5$$

$$22 - 5 = 17$$

22	
17	5

Speaking and Listening

- Vocabulary
- Questioning
- Full sentences with sentence scaffolds
- Reasoning and explanation
- Problem solving

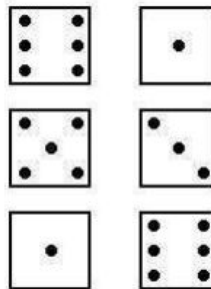
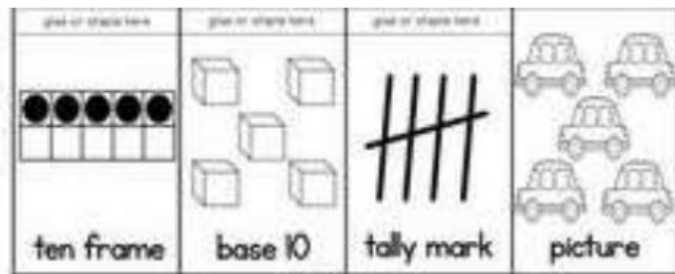


How do you know?
Can you show me?
Prove it to me...
Can you show me in a
different way?

I decided to ...
because ...

I think....because...

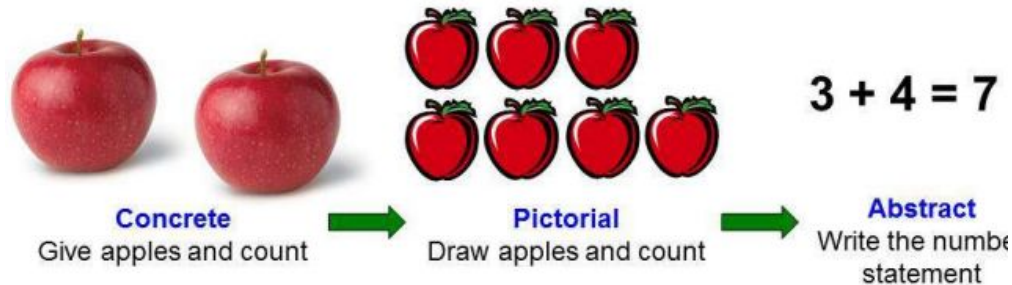
How would you record 0-10 pictorially?



CPA Approach	
Stage	Characteristics
Concrete	Refers to the use of manipulatives, measuring tools or objects that the student handles.
Pictorial	Refers to the use of drawings, diagrams, charts or graphs that the student draws
Abstract	Refers to abstract representations such as numbers and letters that the student writes

Example:

Tom had 3 apples. His mother gave him 4 more apples. How many apples did he have altogether?



How can you help at home?

- Fluency is key

- Number facts
 - Including subtraction facts as well.
 - Doubles and halves
- Skip counting
- Times tables

- Practise, practise, practise!

- Other activities can include:

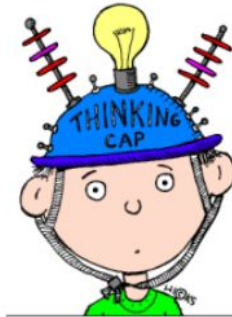
- Practise writing number formation
- Match words to numbers

- **Think and talk like a mathematician**

Fluency = how fast a person can retrieve correct maths facts to working memory from storage memory.

What are the implications for this?

Storing in Long term Memory needs lots of rehearsal, repetition and regular retrieval.



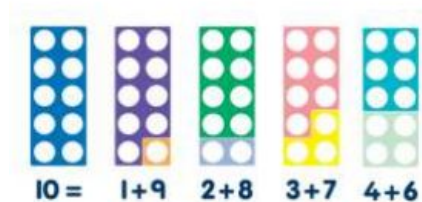
How do we do this?

Lots of practise!
Short and regular rather
than long and irregular.



What facts do the children need to recall?

- Number bonds
 - Addition and subtraction facts
- Doubles and halves
- Near doubles
- Skip counting
- Times tables



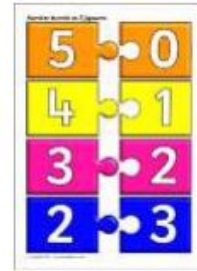
It is important that children recognise number bonds, different pairs of numbers with the same total.

$$7 + 3$$

$$6 + 2$$

$$5 + 3$$

$$1 + 4$$



$$6 + 1$$

$$3 + 4$$



$$6 + 3$$

$$5 + 4$$

$$3 + 3$$



Numicon
Resource



$$6 + 4$$



Times tables

- 2s
- 5s
- 10s
- 3s
- 4s (from the 2s)
- 6s (from the 3s)

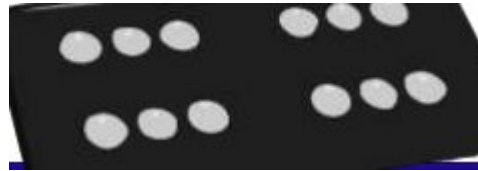


Home learning - Number Line ideas

Draw a line. Mark 0 and 10 (or any number range needed). Roll a dice. Decide where that number would go and write it in. Repeat. You can also start at any number and include whatever your child needs.

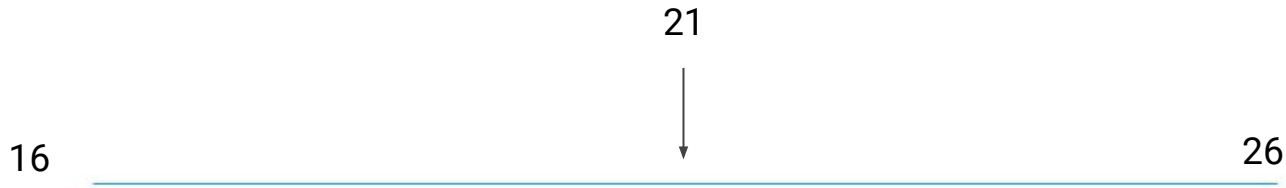


Videos of different games you can play are available on the website - just click on the Home Learning link.



Inbetweens

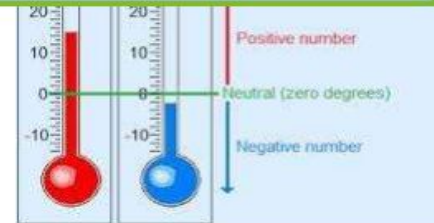
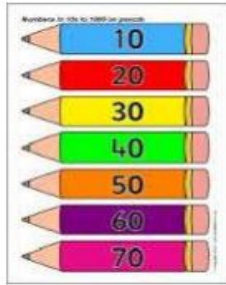
Start by asking for a 2 digit number. Place it at the start of the line. Now ask for a higher 2 digit number and place at the end of the line. Now keep asking for numbers in between.



Skip Counting

- Backwards and forwards in 1s, 2s, 5s, 10s, 100s.

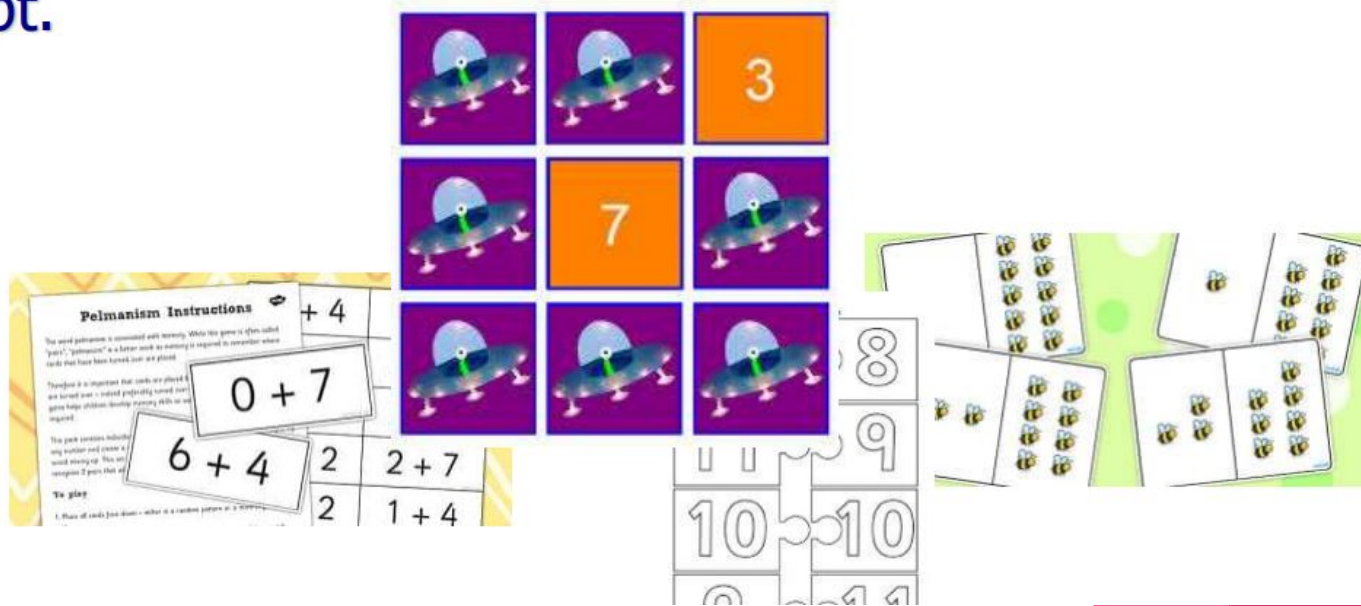
- Count with money.
- Pairs



Memory Games

Make own resources using pictorial or abstract.

Adapt.



Tug of war - NRich website

One player is called "PLUS"

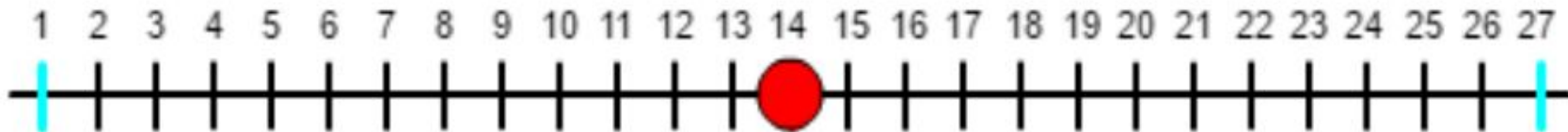
The other is called "MINUS" so decide who is who.

Plus moves from left to right and Minus moves from right to left. (The children may be encouraged to think about why that might be.)

Take it in turns to throw the two dice and add up the numbers on the two dice.

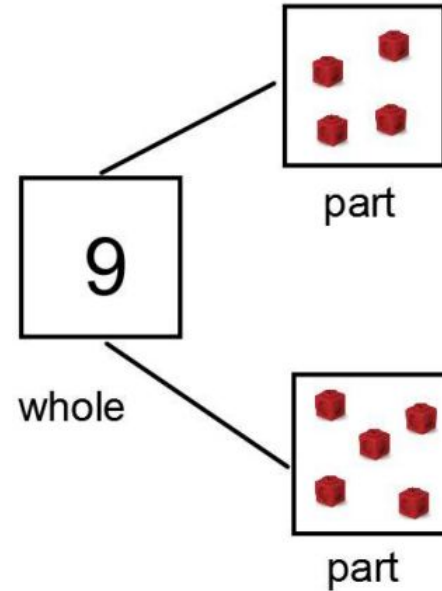
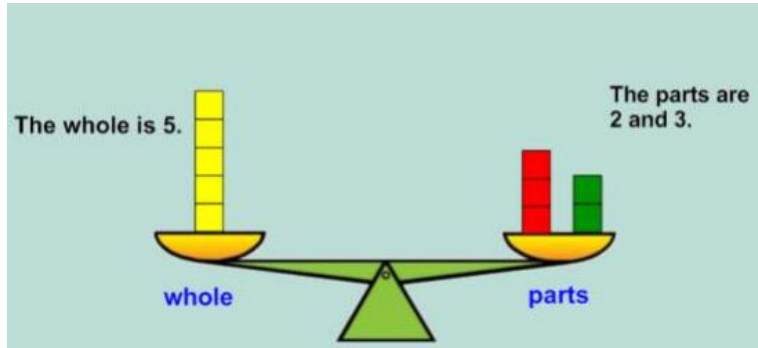
Move that number of places in your direction.

If the counter reaches 1, Minus has won and so, of course if the counter reaches 27, Plus has won.



Key models and images used in KS1

Part-part whole and number bonds



Importance of number bonds and concept of part-part whole continues...

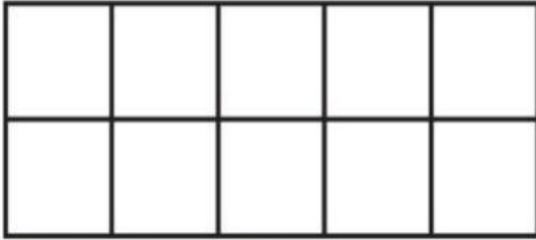


Ten frame

We are learning to count sets of objects within ten.

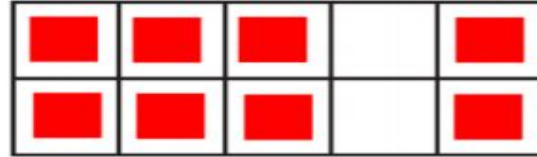


ten frame




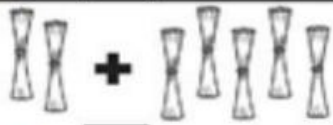


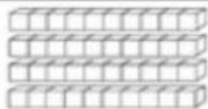

This is a picture of a ten frame that can be used alongside the ten frame and cubes on the carpet. Model placing the cubes on top of the images you are counting and moving them to the ten frame.

There are 8 cubes.
I see 6 and 2.



There are 8 cubes.
I see 4 and 4.



  $32 + 5 = \square$
  $13 + 6 = \square$
  $46 + 2 = \square$

Write an addition equation for each 20 frame.



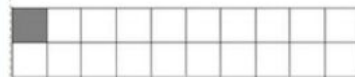
$$20 + 0 = 20$$



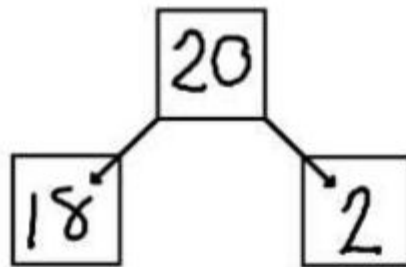
$$17 + 3 = 20$$



$$13 + 7 = 20$$



$$19 + 1 = 20$$

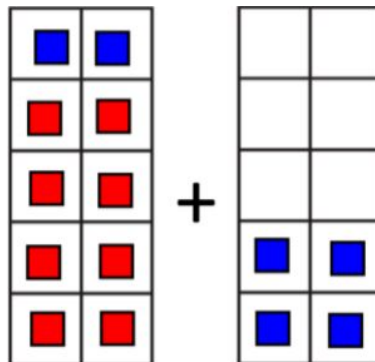
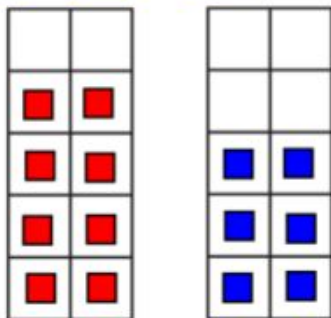


Make 10 Strategy

To add two single digits by making ten first

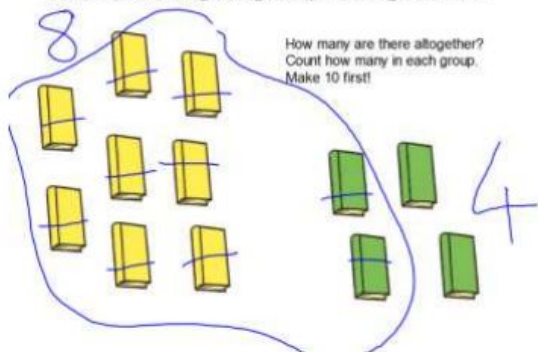
How many cubes need to be added to the group of eight to make ten?

$$\square = \square + \square$$



+

To add two single digits by making ten first



How many are there altogether?
Count how many in each group.
Make 10 first!

To add two single digits by making ten first

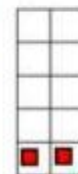
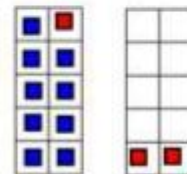
Independent task



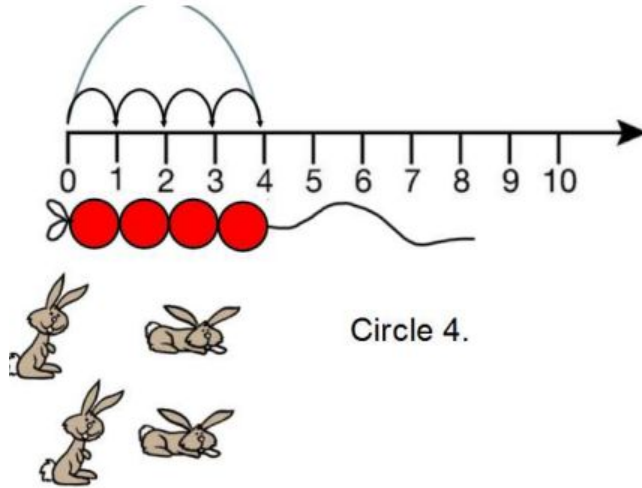
$$3 + 9 = 12$$

$$10 + 2 = 12$$

$$2 + 10 = 12$$



Number line and Bead strings



What is **one more** than 4?

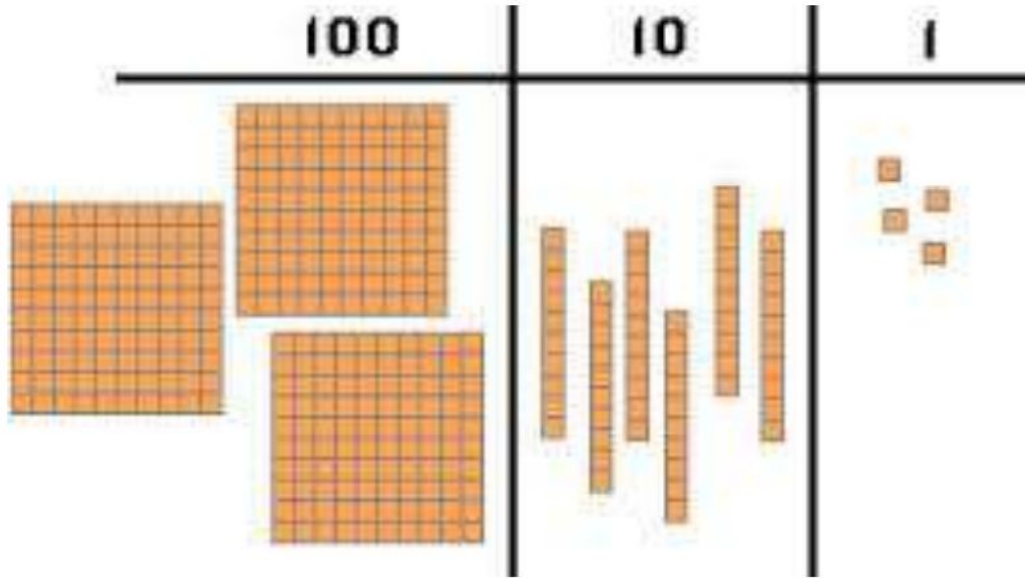
_____ is **one more** than 4.

Place Value

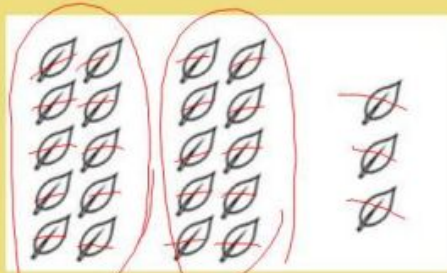
Place value is at the heart of the number system. All digits have a value and a secure understanding of this will enable children to use and understand different calculation methods.



Concrete resources for place value



Place value charts and pictorial and abstract representations...



23 = 2 tens and 3 ones.

Tens	Ones
2	3

What is the value of the digit 2 in this number?

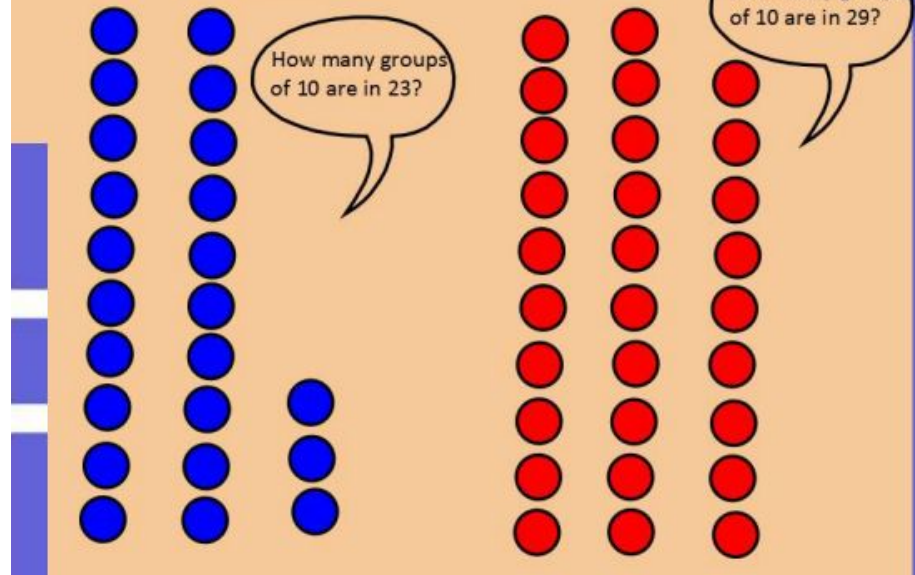
We are learning to compare numbers to 40.

Which group has **more** counters?

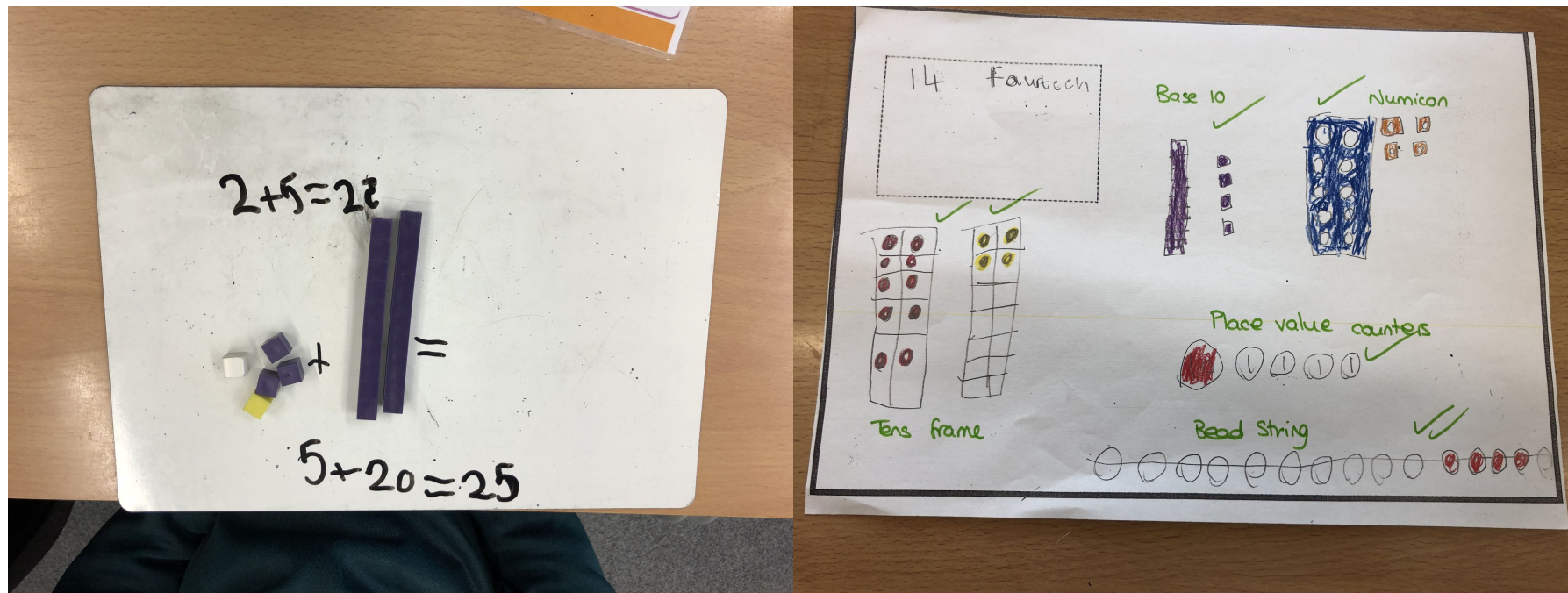
Which number is **greater**, 23 or 29?

How many groups of 10 are in 23?

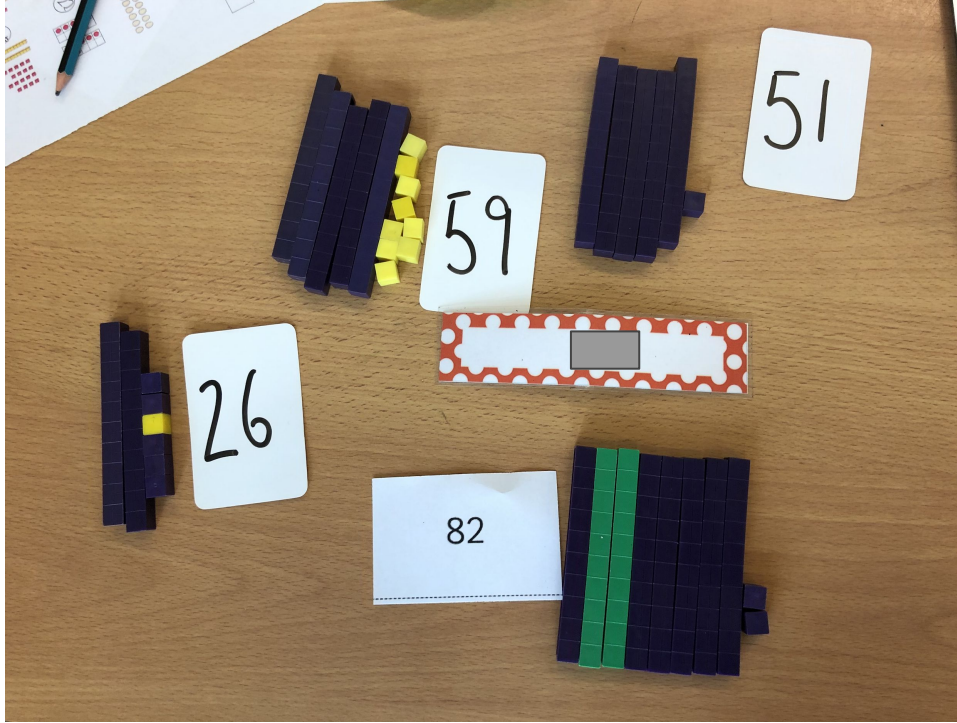
How many groups of 10 are in 29?



Examples of Year 2 using manipulatives



Examples of Year 2 using manipulatives



Questions

Thank you for listening

