



Have a go at these sums. Think about how your child might approach them.

$6+3$

$6-2$

$9+3$

$16-2$

$12+5$

$12-3$

$18+3$

$25-3$

$22+5$

$22-4$

$29+3$

$31-4$

Use the practical manipulatives on the table. Does that make you change how you might model it?



# Year 1 Maths Workshop



Ros Morgan

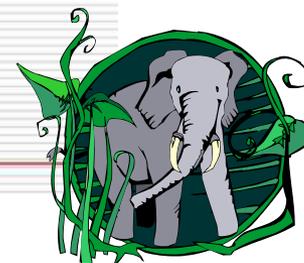
Assistant Head teacher



A Conversation between Patrick (aged 4) and Mark (professor in teaching of mathematics):

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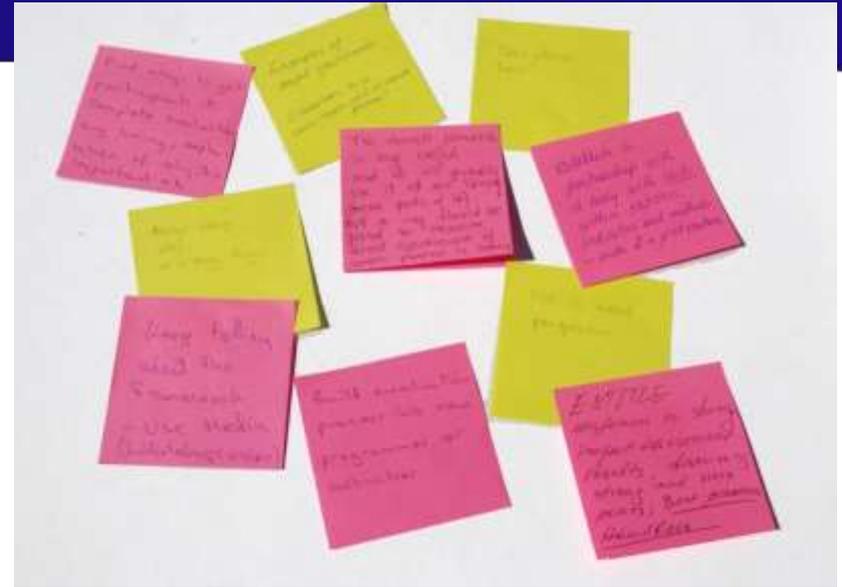
- Mark: What is four and one more?
  - Patrick: Six
  - Mark: What is four giraffes and one more?
  - Patrick: Five giraffes
  - Mark: What is four elephants and one more?
  - Patrick: Five elephants
  - Mark: What is four and one more?
  - Patrick (looks him in the eye): Six.
- 





# Objectives:

- Explain and demonstrate how mathematics is taught in Year 1 at Fox
- Increase confidence and understanding in supporting your child
- Teach strategies for helping your child at home
- New maths curriculum



Write down 3 positive and negative experiences of Maths.

Fox Primary School

# [www.nationalnumeracy.org.uk](http://www.nationalnumeracy.org.uk)

- 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'

# Fixed vs Growth mindset

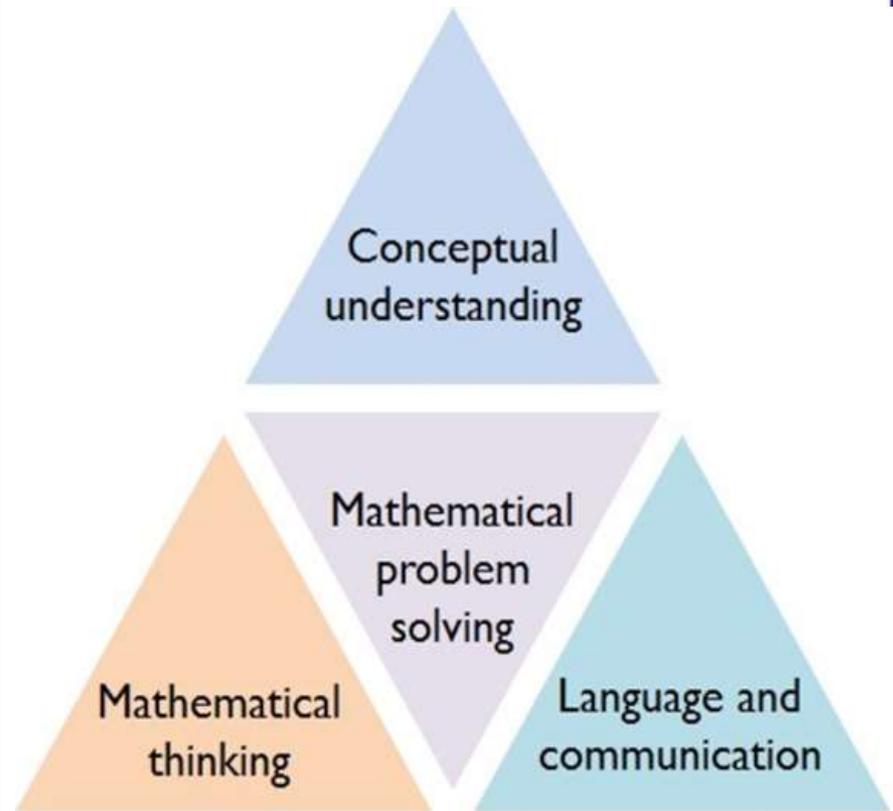
Carol Dweck

*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).

# Year 1 Curriculum

- 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 is mastery?

- ***“In mathematics, you know you’ve mastered something when you can apply it to a totally new problem in an unfamiliar situation.”***  
Dr. Helen Drury, Director of Mathematics Mastery
- “The intention of these approaches is to provide all children with full access to the curriculum, enabling them to achieve confidence and competence – ‘mastery’ – in mathematics, rather than many failing to develop the maths skills they need for the future.”



# Speaking and listening

- Vocabulary
- Questioning
- Full sentences
- 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?



# Year 1 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 movement
  
- Mastery curriculum
- Reading and spelling of mathematical vocabulary

- Calculation policy
- Progression in calculation
- Pitch and expectations

**Year 1 Addition and Subtraction**

- Read, write and interpret mathematical statements involving addition, subtraction and equals signs
- Represent and use number bonds and related subtraction facts within 20
- Add and subtract one digit and two digit numbers to 20, including 0
- Solve one step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as  $7 + \square = 9$
- Children understand the effect of adding and subtracting zero. This establishes the relationship between the two operations.
- Understand that addition can be done in any order but subtraction cannot.

**Mental Strategies**

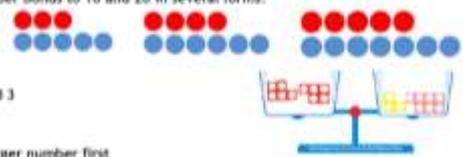
Teachers and/or pupils may demonstrate these strategies on a numbered number line supported by a variety of materials. Children know by heart and reason with number bonds to 10 and 20 in several forms.

$9 + 7 = 16$        $16 - 7 = 9$        $7 = 16 - 9$

$9 - 6 = \square - 4$

Same diff: 5-3 equals 6-4 equals 7-5  
Balancing: 5 add 5 equals 6 add 4 equals 7 add 3

**Addition**  
Reorder numbers when adding, e.g put the larger number first



The complex block contains several visual aids. At the top right, there are three pairs of number bonds. Each pair consists of a top row of red dots and a bottom row of blue dots. The first pair has 9 red and 7 blue dots. The second pair has 16 red and 7 blue dots. The third pair has 7 red and 16 blue dots. Below these is a balancing scale with two pans. The left pan contains 5 red blocks and 5 yellow blocks. The right pan contains 6 red blocks and 4 yellow blocks. The scale is balanced.

# Progression in calculation

## FOUNDATION

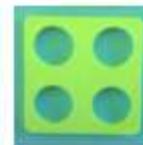
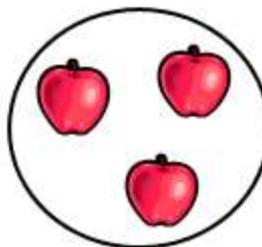
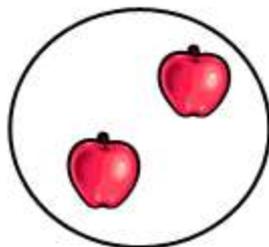
### Calculation Strategies

**Counting on from a number to find the total**  
 I have 5 pennies in my tin. I put in one, two, three pence more. How many pennies are in the tin now?

Use moveable objects when finding totals.  
 Touch and align each object as it is counted.



Count first group, start count from first group's total when counting second group



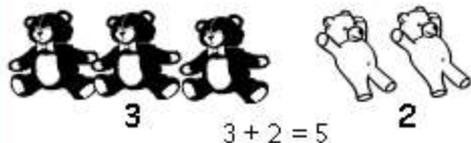
3

4



YEAR 1

### Calculation Strategies

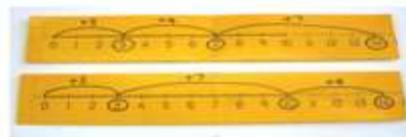


Jane had 3 bears. She was given 2 more. How many does she have now?

### Addition in any order

Use numberline and Numicon to show that addition can be done in any order

$$3 + 4 + 7 = 3 + 7 + 4$$



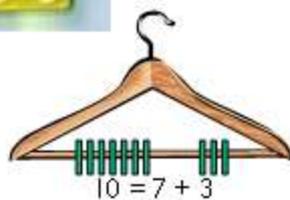
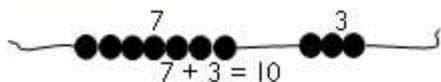
To support learning of number facts using a variety of visual resources:

### Bonds to 10

Flip flap



$$7 + 3 = 10$$



### Make 6



2 and ...



3 and ...



4 and ...



0 and ...



1 and ...



5 and ...

YEAR 2

**Calculation Strategies**

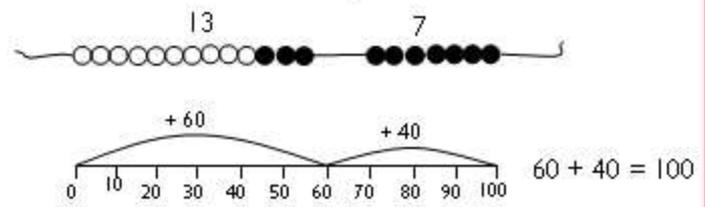
**Number Stories**

There are 50 people on the bus 16 more get on how many altogether?

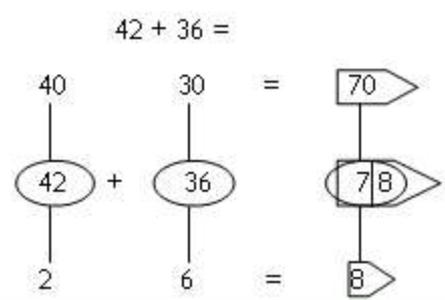


**Number bonds**

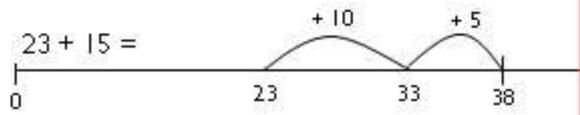
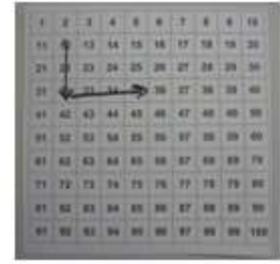
Use knowledge of number bonds to 10 to help with bonds to 20 and multiples of 10 to 100



**Addition as partitioning and recombining:**



$12 + 23 = 12 + 20 + 3$





# What does it look like in the classroom?

- 4/5 lessons per week and a daily mental maths session.

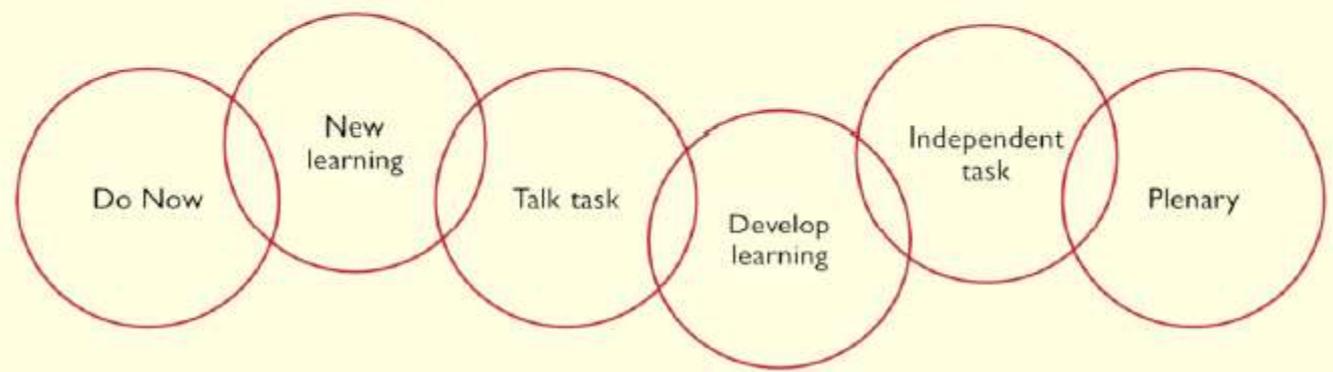
**Typical** lesson is made up of 6 parts:

1. Do now
2. Introduce Learning
3. Talk task
4. Develop learning
5. Independent and/or adult led activity
6. Plenary

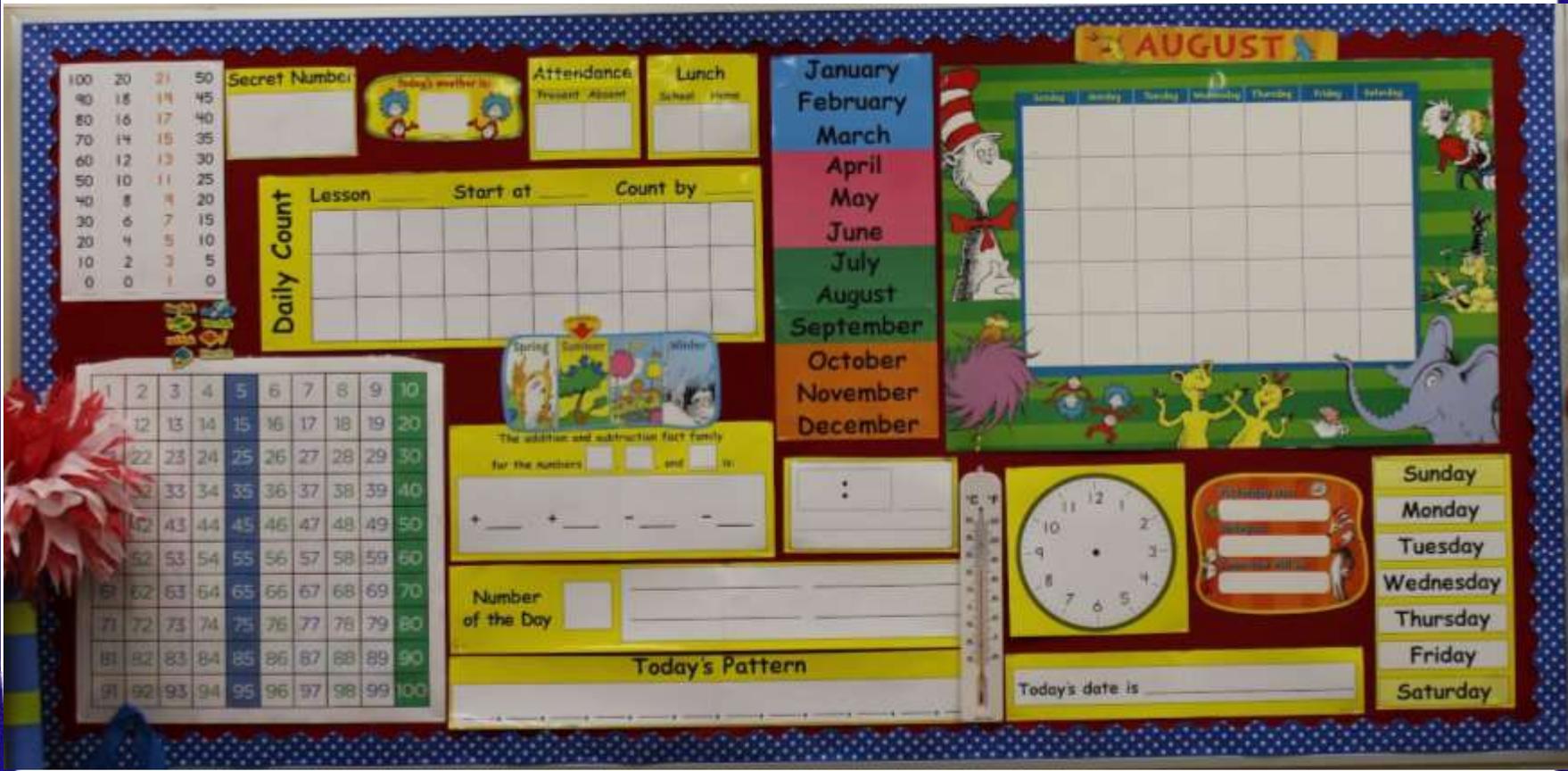
- Maths Meeting



# Multi-part Lessons



# Maths Meetings



**100 - 20 21 50**  
 90 18 19 45  
 80 16 17 40  
 70 14 15 35  
 60 12 13 30  
 50 10 11 25  
 40 8 9 20  
 30 6 7 15  
 20 4 5 10  
 10 2 3 5  
 0 0 1 0

**Secret Number**

**Attendance**  
 Present Absent

**Lunch**  
 School Home

**Today's weather is**

**Daily Count**  
 Lesson Start at Count by

**January**  
**February**  
**March**  
**April**  
**May**  
**June**  
**July**  
**August**  
**September**  
**October**  
**November**  
**December**

**AUGUST**

**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

**Spring Summer Winter**

The addition and subtraction fact family for the numbers and is:

**Number of the Day**

**Today's Pattern**

**Today's date is**

**Sunday**  
**Monday**  
**Tuesday**  
**Wednesday**  
**Thursday**  
**Friday**  
**Saturday**



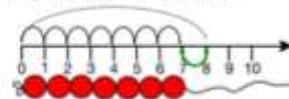
# Home learning

- Home Learning - 1 activity per week (often including a mental challenge).
- We always want this to be games based as much as possible so that you have fun with your child.
- Please add a comment so that we know how you/ your child found it.

➔ Create maths resource box for home.

## Numeracy Home Learning Friday 18<sup>th</sup> September 2015

This week in maths we have been finding one more and one less of a given number. We have been using unifix, bead strings and number lines to calculate the answer. The children have recorded their answers on a number line and have spoken in full sentences, "One less than 8 is 7."



### 1. Mental Maths Challenge

Ask your child 1 more / less questions. What is 1 more than 8? One more than 8 is 9. Extend to 2 more/less. To support your child's understanding they can show you one more and one less using objects, for example, counters and dried pasta.

### 2. Activity - The fast and slow race

Play this fun game with your child at home. Please read the instructions on the sheet.

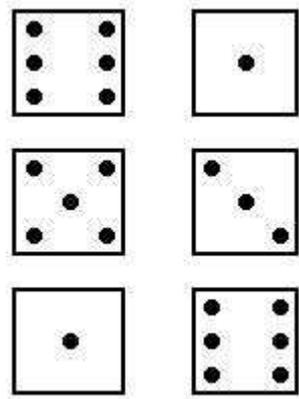
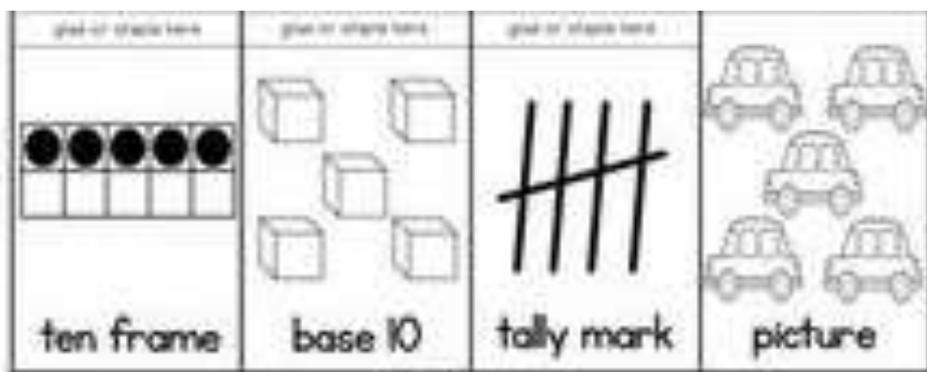
### 3. Practice

Show your answers on the number line.



One more than 7 is \_\_\_\_\_.

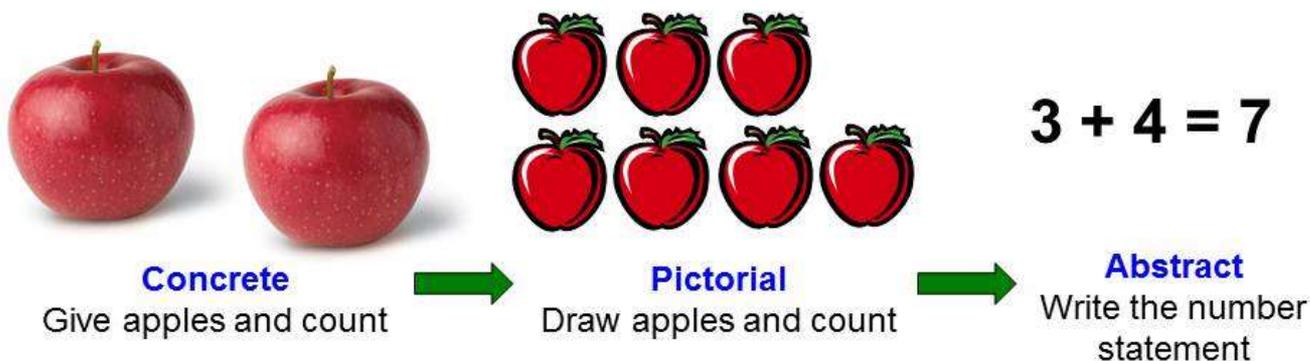
# How would you record 0-10 pictorally?



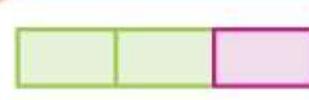
CPA Approach	
Stage	Characteristics
Concrete	Refers to the use of manipulatives, measuring tools or objects that the student handles.
Pictorial	Refers to the use of drawings, diagrams, charts or graphs that the student draws
Abstract	Refers to abstract representations such as numbers and letters that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

Example:

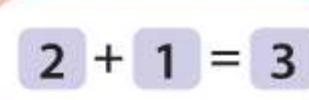
Tom had 3 apples. His mother gave him 4 more apples. How many apples did he have altogether?




**CONCRETE**



**PICTORIAL**

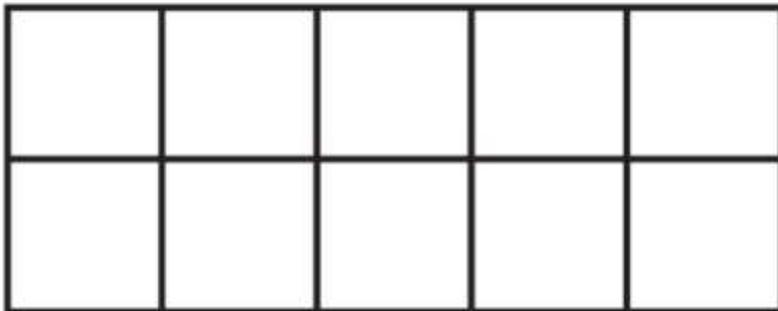


**ABSTRACT**

# Ten frame

We are learning to count sets of objects within ten.

ten frame



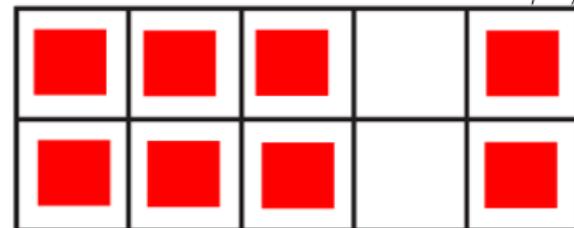
link cube



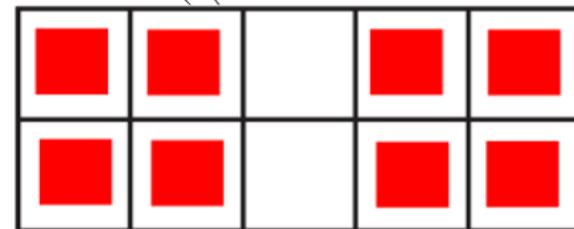
This is a picture of a ten frame that can be used alongside the ten frame and cubes on the carpet. Model placing the cubes on top of the images you are counting and moving them to the ten frame.

task 20

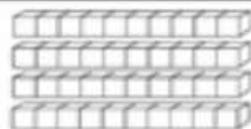
There are 8 cubes.  
I see 6 and 2.



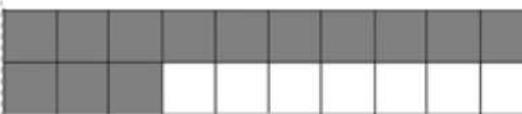
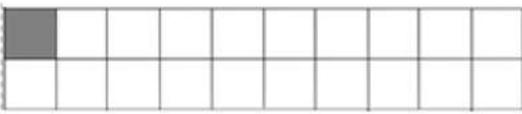
There are 8 cubes.  
I see 4 and 4.

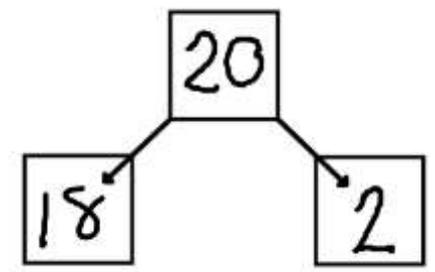




$24 + 3 = \square$	
	
$32 + 5 = \square$	
	
$13 + 6 = \square$	
	
$46 + 2 = \square$	

Write an addition equation for each 20 frame.

	$20 + 0 = 20$
	$17 + 3 = 20$
	$13 + 7 = 20$
	$19 + 1 = 20$

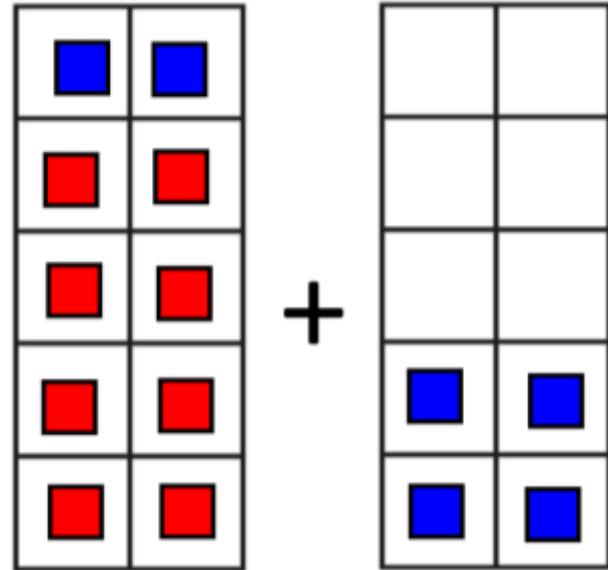
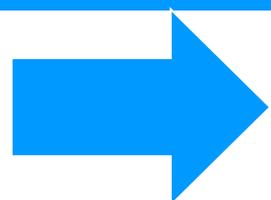
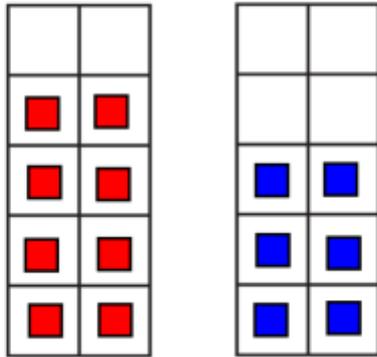


# Make 10 strategy

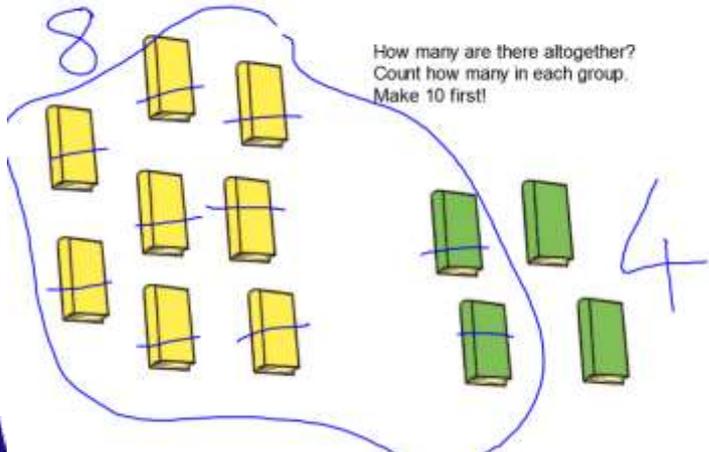
To add two single digits by making ten first

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

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

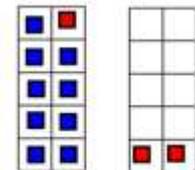


To add two single digits by making ten first



To add two single digits by making ten first

Independent task

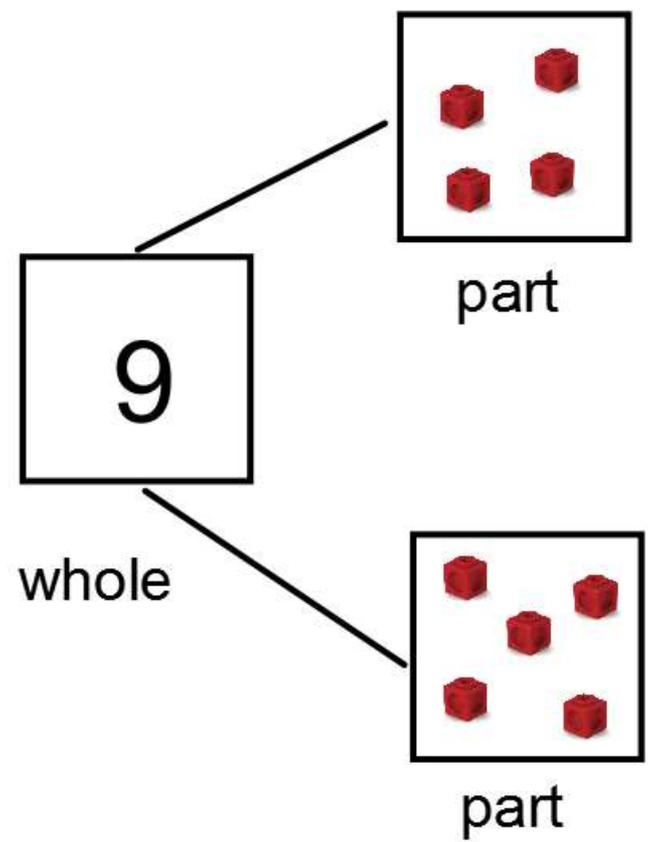
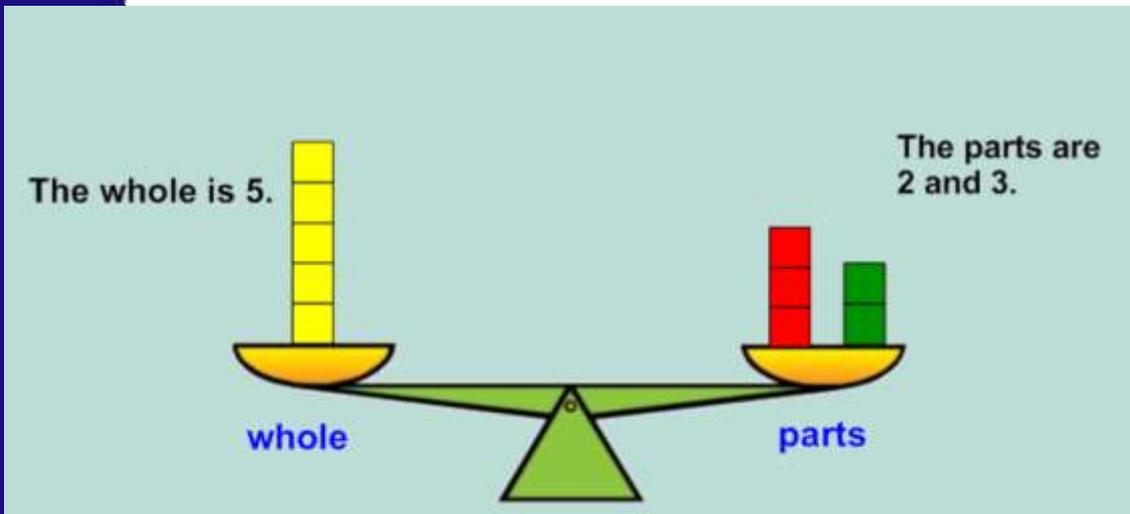


$$3 + 9 = 12$$

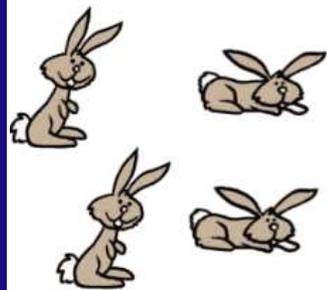
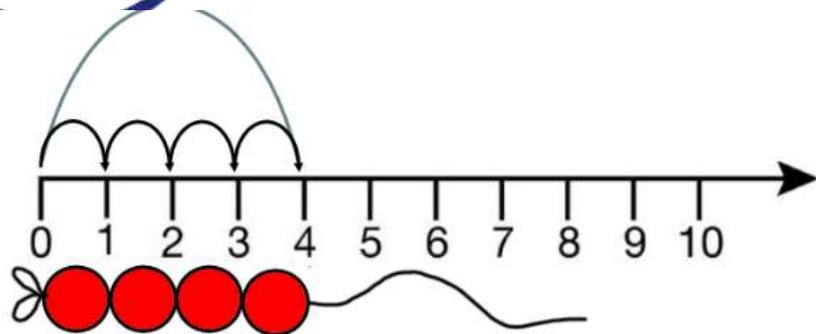
$$10 + 2 = 12$$

$$2 + 10 = 12$$

# Part-part whole and number bonds



# Number line and Bead string



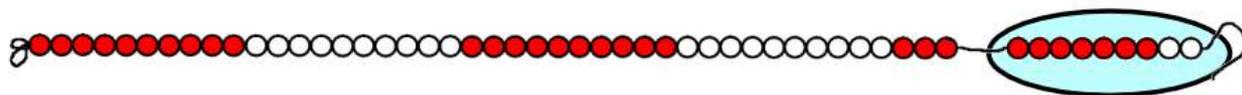
Circle 4.

What is **one more** than 4?

\_\_\_\_\_ is **one more** than 4.

Crossing the tens boundary with addition – using number facts already known.

$$43 + 9 = \square$$



$43 + 7 = 50$   
How many more must I add?

$$7 + \square = 9$$

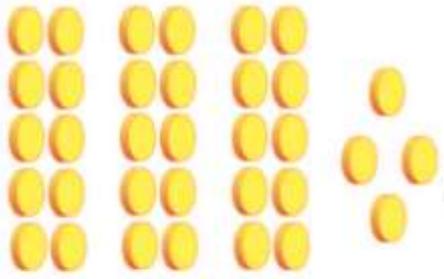


7 and 2 make 9.  
I must add 2 more.

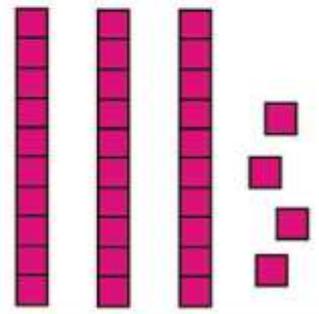
$$50 + 2 = \square$$

# Place value

## Tens and Ones



There are 3 tens and 4 loose ones.



14

22

34

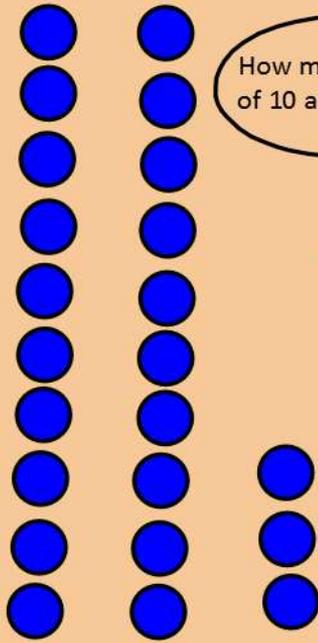


Where would 32 go?  
 Represent 32 on a bead string.  
 How many tens are there?  
 How many ones are there?

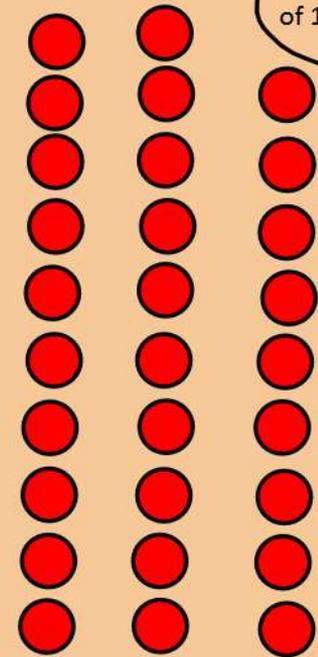
We are learning to compare numbers to 40.

Which group has **more** counters?

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



How many groups of 10 are in 23?



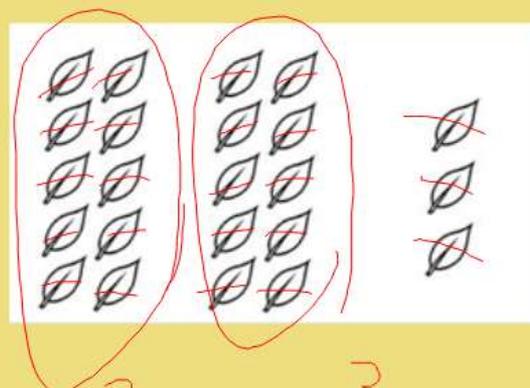
How many groups of 10 are in 29?

# Place value chart

Tens	Ones

is  tens

=  +



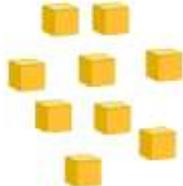
23 = 2 tens and 3 ones.

Tens	Ones
	•••
2	3

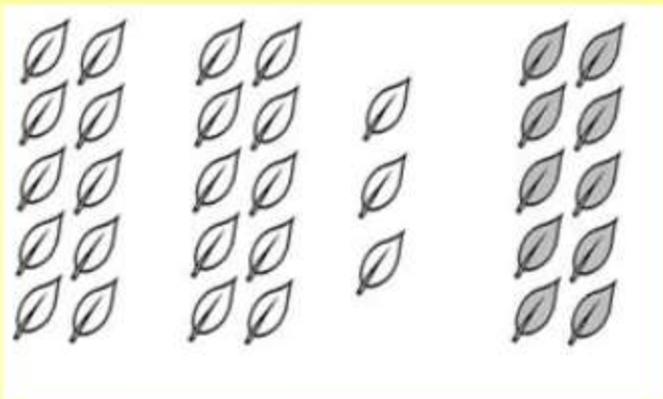
# Exchange or regrouping tens and ones

- What do you do if you need to do this?

How many ones will there be if I add one more?

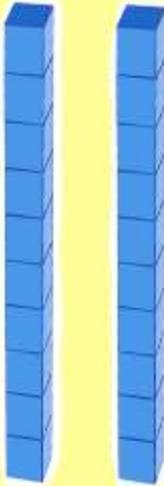
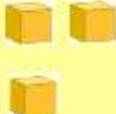
Tens	Ones
	

# Adding tens

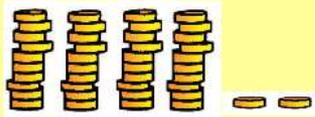


10 more than 23 is \_\_\_\_.



Tens	Ones
	

# Columnar addition



$$42 + 7 = 49$$

*Start with the ones...*

tens	ones
	■
	■
	■ ■ ■ ■
	■ ■ ■ ■

tens	ones
4	2
	7
4	9



Rumpelstiltskin made 53 gold bars in the morning and another 6 in the afternoon. How many gold bars did he make altogether?

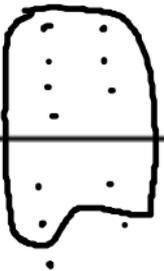
$$53 + 6 = 59$$



tens	ones
	: ·
	· · ·
	· · · ·

# Columnar addition crossing the tens boundary

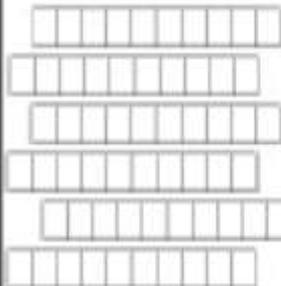
$$77 + 5 =$$

tens	ones
	
	• •

tens	ones
7	7
+	5
<hr/>	
<hr/>	

App – Number pieces  
- free

# Columnar subtraction

tens	ones
	
	

$$\begin{array}{r} 69 \\ - 3 \\ \hline 66 \end{array}$$

# Multiplication



There are  groups of 3.

There are  altogether.

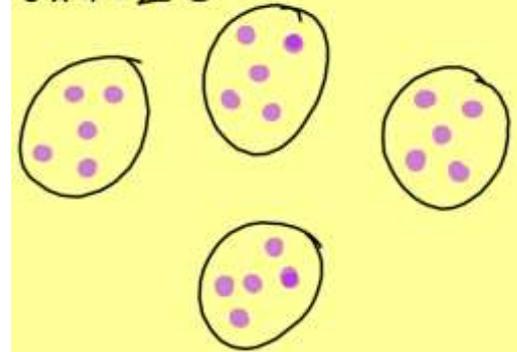
plus  plus  plus  is equal to

$$\boxed{3} + \boxed{3} + \boxed{3} + \boxed{3} = \boxed{12}$$

groups of  are equal to

I have 5 dots, 4 times

$$5 \times 4 = 20$$



multiplied by  
groups of

'x' can mean 'groups of'.



$$2 \times 5 = 10$$



$$5 \times 3 = 15$$



$$3 \times 4 = 12$$

# Division

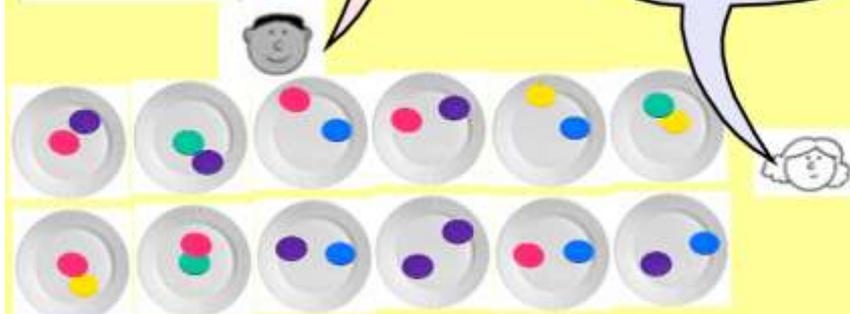
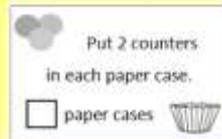


There are **10** candles.  
They are shared equally between **5** cakes.  
There are **2** candles on each cake.

## Talk task

There are 24 counters. Put 2 counters in each case. How many cases do you need?

I grouped 24 counters. I put 2 counters in each case. I needed 12 cases.



# Progression to Year 2

$\square + 11 = 16$        $16 - 11 = \square$   
 $11 + \square = 16$        $16 - \square = 11$

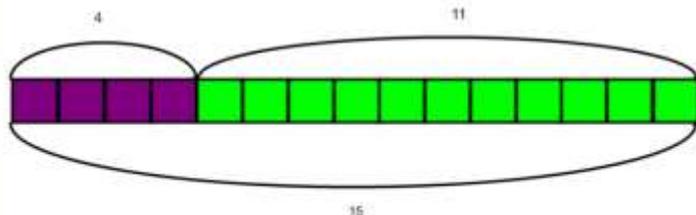
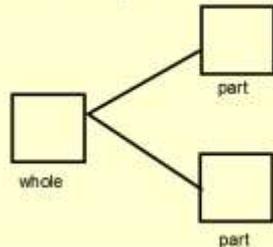
11
?

16

To know what is ten more and ten less than a given number. Today, we used a bead string to help us work out ten more or ten less of a given number. We then looked at this on a number line.

✓ Well done Julia, check the highlighted one.

There are  ducks on the grass.  
 There are  ducks in the pond.  
 There are  ducks altogether.



\_\_ is the whole. \_\_ and \_\_ are the parts.

We are learning to find a fraction of a quantity.

## Talk task

What is one quarter of 8?

A quarter is one of \_\_\_ equal parts.

One quarter of 8 is \_\_\_.

A quarter is one of 4 equal parts.  
One quarter of 8 is 2.



What is one half of 6?

A half is one of \_\_\_ equal parts.

One half of 6 is \_\_\_.

A half is one of 2 equal parts.  
One half of 6 is 3.

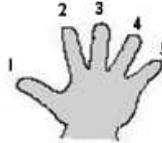


How would you use these manipulatives and focus on encouraging your child to use the correct vocabulary to explain their thinking?

### Resources we use in school

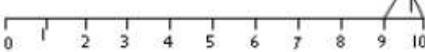


Using fingers to represent 1's, 2's etc.





$10 - 1 = 9$



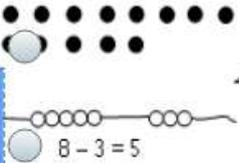
1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Matching groups of Numicon to a given plate.









$8 - 3 = 5$

The **difference** between 8 and 5 is 3.







Let's have a go...

$6+3$

$6-2$

$9+3$

$16-2$

$12+5$

$12-3$

$18+3$

$25-3$

$22+5$

$22-4$

$29+3$

$31-4$



# Chinese Bamboo



When you plant it, nothing happens in the first year, nor in the second year or the third or the fourth years. You don't even see a single green shoot.

And yet, in the fifth year, in a space of just six weeks, the bamboo will grow nine feet high.

The question is, did it grow nine feet in six weeks or in five years?



# Questions...



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- The principal focus of mathematics teaching in key stage 1 is to ensure that pupils develop **confidence** and **mental fluency** with whole numbers, counting and place value. This should involve working with numerals, words and the four operations, including with **practical resources** [for example, concrete objects and measuring tools].
- At this stage, pupils should develop their ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary. Teaching should also involve using a range of measures to describe and compare different quantities such as length, mass, capacity/volume, time and money.
- By the end of year 2, pupils should know the number bonds to 20 and be precise in using and understanding place value. An emphasis on practice at this early stage will aid fluency.
- Pupils should **read and spell mathematical vocabulary**, at a level consistent with their increasing word reading and spelling knowledge at key stage 1.