Making sense of maths
Parent Café

30TH JANUARY 2024

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Maths all around us
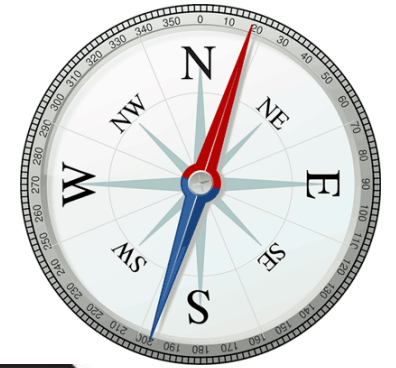
In this workshop, you will:

- ▶ Find out about some of the practical objects that we use in the classroom … and at home!

- ▶ Find out more about our working walls

- ▶ Find out how we make maths fun and challenging

- ▶ Find out about problem solving and reasoning

- ▶ Find out about Fluency Bee

- ▶ Find out about end of KS1 assessments

How do objects help children to make sense of numbers?

Children need to handle, pick up and move practical objects when counting and calculating. This helps them to:

- see a number or problem in different ways

- make links between their learning in different areas in maths

Just as children can learn the word order of a nursery rhyme or poem, learning the order of numbers as words **one, two, three, four** is often just a memory game. Can they count out that amount of objects? Can they draw it? Can they talk about what the number means?

Objects are used by all children of all abilities at all stages of primary education.
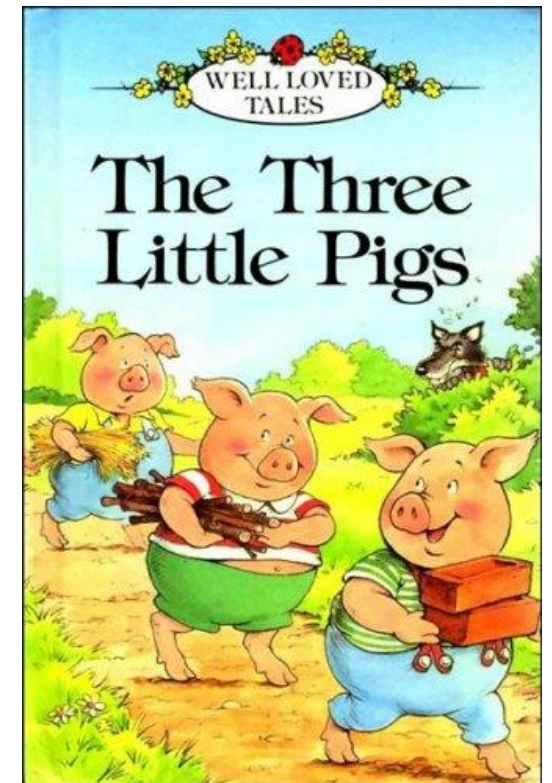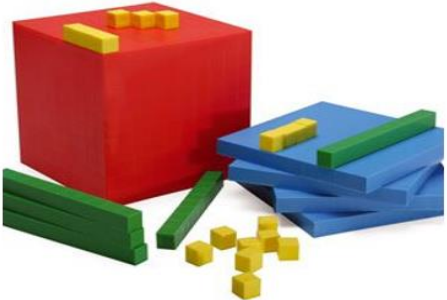
What is a number?

3

three
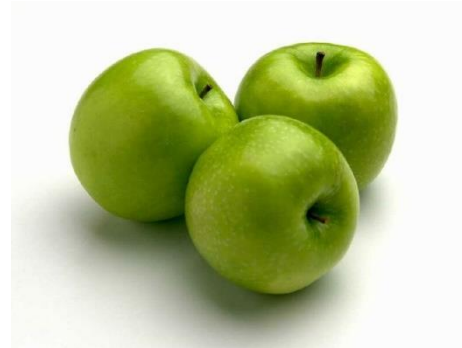
"1, 2, 3, 4"

As well as being able to say number names in the right order, read and write numbers, we want children to really understand what the number means. How many is 3? Do children see 3 objects 'in their head' when they hear the word three?

Practical objects in the classroom

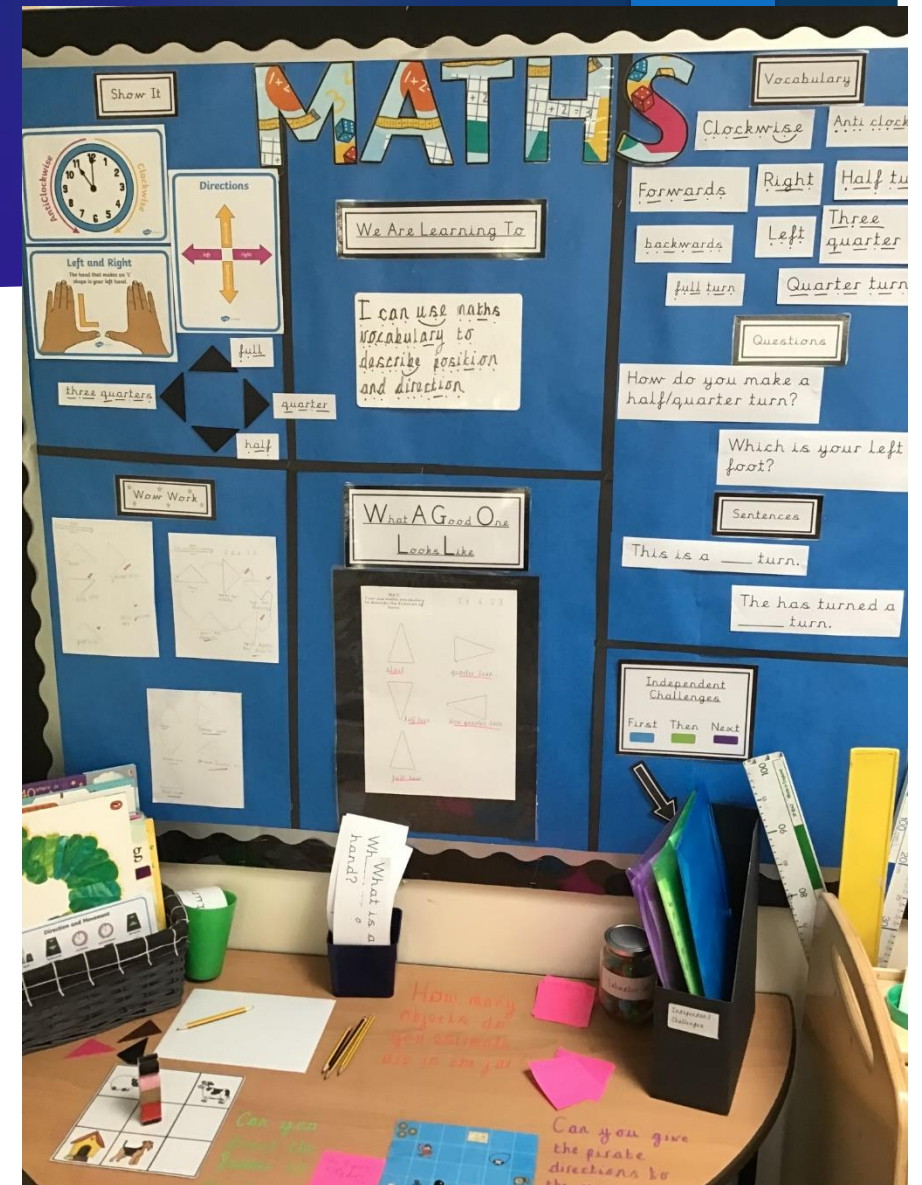|		
Beadstring 20 and 100	Dienes (Also known as Base Ten)	Numicon Tiles or plates Pegs
Cubes Multilink Unifix	Counters	Chain links

Practical objects that you could use at home

Working walls

- Show it
- Vocabulary
- Questions
- Stem sentence
- WAGOLL (What a good one looked like)
- Wow work

Counting and Place Value

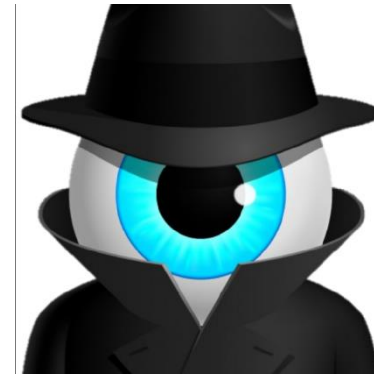- Place value means that children understand the worth of each digit in a number

JARGON BUSTER!

Digit 0, 1, 2, 3, 4, 5, 6, 7, 8, 9

Number (numeral) 0, 1, 2, 3, 46, 54, 105, 275689...

Number (word) zero, one, two, three, four etc.

Do children realise that the digit 3 in 13 is worth three ones? Or that the digit 3 in 31 is worth 3 tens?

Counting and Place Value

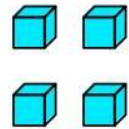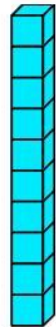▶ Can you build the number 14 using dienes?

▶ Can you draw it?

▶ Can you say it?

▶ Can you write it?

= 1   =10

Can you find one more and one less? Can you find ten more and ten less?

Prove it!

"I have one ten and four ones."

14

fourteen

Counting and Place Value

13 Look at these numbers.

| 0 | 14 | 50 | 61 |

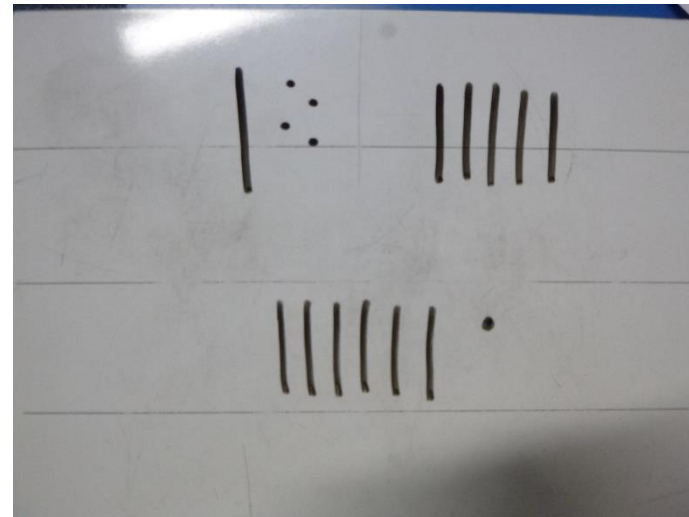Write each number **once** to make these correct.

☐ > ☐

☐ > ☐

▶ Is there more than one way?

▶ How could you draw the dienes to help you?
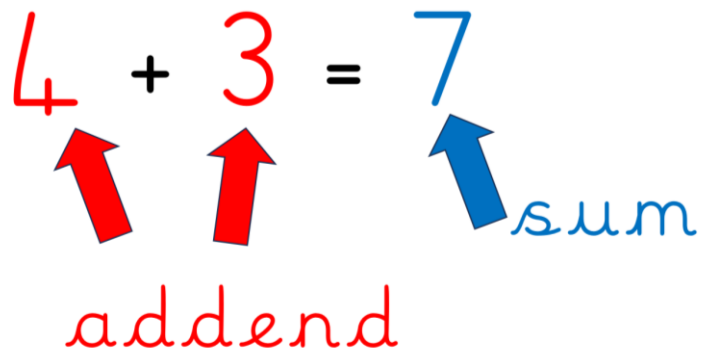
50 > 14

61 > 0

61 > 50

14 > 0

Vocabulary - addition

$4 + 3 = 7$

sum

addend

addend: the number being added, or added to, in an addition calculation

sum: how many altogether after adding.

Subtraction

$$14 - 10 = 4$$

minuend — subtrahend — difference

minuend: the whole, the number being subtracted from.

subtrahend: the number being subtracted from the minuend (or whole)

difference: the amount or quantity by which one thing is different to another

Multiplication

- Factor: the number being multiplied and the number you are multiplying by

- Product: the answer when two numbers are multiplied together

factor   factor

$$4 \times 5 = 20$$

product
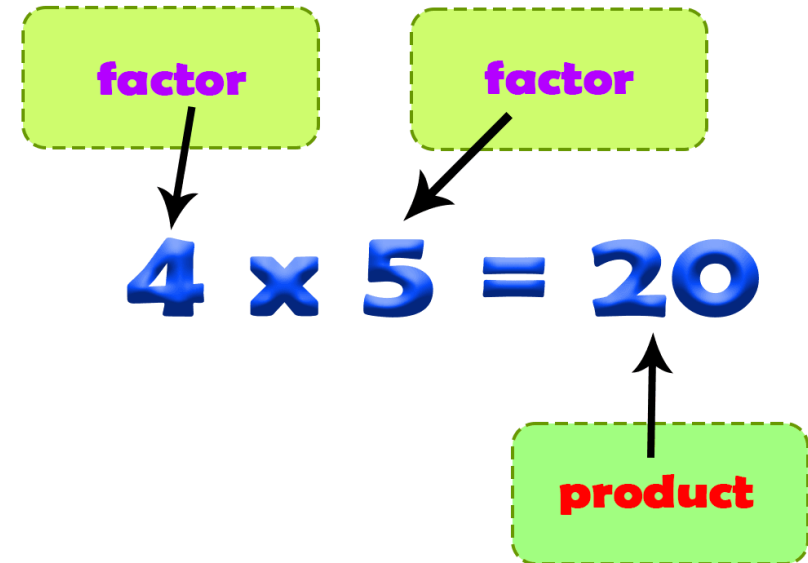
Division

▶ Dividend: The whole before it is divided

▶ Divisor: The number that you divide by

▶ Quotient: When a number is divided by another number, the quotient is the answer.

Dividend   Quotient

$$32 \div 4 = 8$$

Divisor

Key Mathematical vocabulary

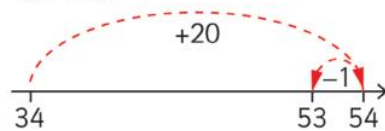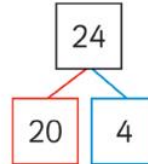## Terms to describe strategies for mental or written calculations

compensation: a mental calculation strategy in which a number is rounded to the nearest 10 to make the calculation easier, and the amount rounded up or down is compensated for at the end, for example 34 + 19, (34 + 20) − 1

+20

34   53 54
−1

partition: split a number into 2 or more parts (often into 10s and 1s)

24
20   4

subitise: know how many without counting

That's 4 — I don't need to count. I just know there are 4 spots

reorder: put numbers in a different order to help with calculating

This looks quite hard.

32 + 56

56 + 32

It's much easier to re-order and start from the largest number.

Other useful mathematical vocabulary terms

Year 1 definition:

commutative: addition is commutative. It does not matter which order the addends are added in, the sum will always be the same

7 + 3 = 10
3 + 7 = 10

Year 2 definition:

commutative: law for addition and multiplication that means the numbers can be swapped around without changing the answer

5 + 3 = 8 is the same as 3 + 5 = 8

bar model: a diagram to show how wholes are partitioned into parts

9
4   5
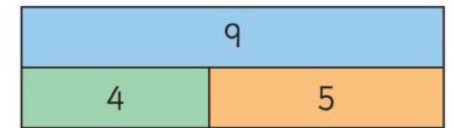
inverse: The operation which reverses another operation. Addition is the inverse of subtraction, doubling is the inverse of halving.

12 − 4 = 8   8 + 4 = 12

Addition and Subtraction

▶ Can you draw it?

▶ Can you say it?

▶ Can you write it?

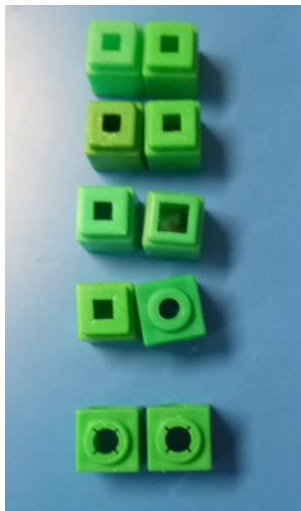**23** Write the missing number to make this number sentence correct.
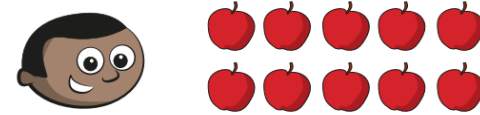
$$9 + 7 - \boxed{} = 12$$

Multiplication

- Using cubes, show 2 + 2
- Keep making groups of 2 cubes
- How else could you arrange them?
- What if you turn this around?

Division

- How can you share 10 cubes into groups of 2?
- How many groups do you have?
- What could you draw to show this?
- What could you say?
- What could you write?

Mo has 10 apples.

How many apples will there be in each bag if Mo shares them equally?

He shares the apples between 10 bags.

He shares the apples between 5 bags.

He shares the apples between 2 bags.

He puts all the apples into 1 bag.

What do you notice?

1

2

5

10

Fractions – seeing equal parts within a whole

½ of a quantity – two equal parts. Share out objects.

¼ of a quantity – four equal parts. Share out objects.

- ▶ 4 cubes into two equal parts (green) Show me ½ of 4.
- ▶ 4 cubes into four equal parts (yellow) Show me ¼ of 4.

Tom, Sam and Ben each show a piece of ribbon.

Tom shows $\frac{1}{2}$ of his whole ribbon.

Sam shows $\frac{1}{4}$ of her whole ribbon.

Ben shows $\frac{1}{3}$ of his whole ribbon.

Whose whole piece of ribbon is the longest?
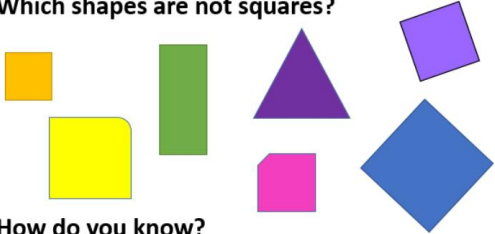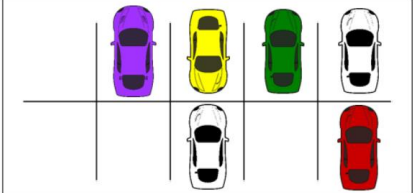
Whose is the shortest?

Explain your answers.

Sam's

Tom's

4 a day

▶ 4 quick problems everyday to recap and practice skills

Four a Day — Day 1

1) How many cupcakes altogether?

2) Which shapes are not squares?

How do you know?

3) Compare the numbers using <, > or = .

24 ◯ 42

4) How many more cars can park in this car park?

Four a Day — Day 1

1)

33 ÷ 3 = ☐

☐ = 3 ÷ 3

2) What is the missing digit?

☐ + 4 + 12 = 20

3) What number comes next?

1, 3, 5, 7, ☐

0, 2, 4, 6, ☐

4) Which clock shows the latest time?

Fluency Bee

Key resources and representations
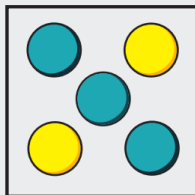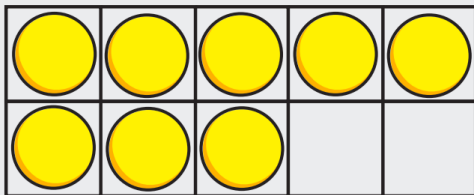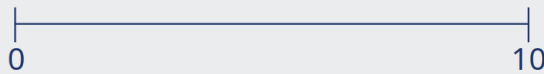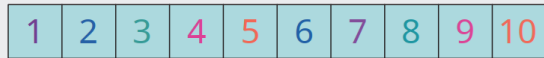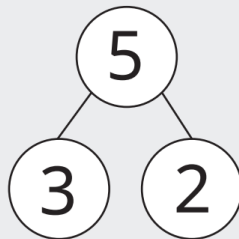
How many more acorns does Ron have than Jo?

Jo

Ron

Ron has ☐ more pine cones than Ron.

Problem solving and reasoning

▶ Allows children to apply and explain their skills to different situations and scenarios

Write <, > or = to complete the number sentences.

double 6 ◯ 6 + 7

double 9 ◯ 9 + 8

9 + 8 ◯ double 8

Weekly Maths Challenge

Priya bought a cupcake for 60p using only silver coins.

How many different ways could she have paid for the cupcake?

50p   20p   10p   5p

KS1 assessments

- Government are providing optional KS1 tests
- These will be used to inform teacher judgements at the end of Year 2 along side many other assessment techniques.
- We no longer have to report our results.

Problem solving Challenge

Weekly Maths Challenge

Kelly's chickens have laid some eggs.

Each chicken has laid an odd number of eggs.

Kelly has collected 19 eggs altogether.

How many eggs could each chicken have laid?

Can you find all of the possibilities?

Solution

Weekly Maths Challenge

Solution

These are the possible odd numbers of eggs laid.

1 + 1 + 17

1 + 3 + 15

1 + 5 + 13

1 + 7 + 11

1 + 9 + 9

3 + 3 + 13

3 + 5 + 11

3 + 7 + 9

5 + 5 + 9

5 + 7 + 7

Cambs Maths Team

Cambridgeshire County Council

Here you will find ten possible solutions.

What do you notice?
What patterns do you see?
What is the same and what is different?

What solutions would there be if you recorded the numbers of eggs laid by each individual chicken?
E.g. 1 + 1 + 17, 1 + 17 + 1 and 17+ 1 + 1 ?

Can you provide a solution for your own chicken and egg challenge, if you made one?

Cambs Maths Team

Thank you for coming!

- National Numeracy Parent Toolkit has a wealth of tips and advice for parents.
  http://www.nnparenttoolkit.org.uk/

- Oxford Owl includes a range of activities, top tips and eBooks to help your child with their maths at home.
  http://www.oxfordowl.co.uk/maths-owl/maths

- Maths 4 Mums and Dads explains some of the milestones children make between the ages of 3-and-11-years-old.
  http://www.maths4mumsanddads.co.uk/index.php

- Nrich. A range of maths games, problems and articles on all areas of maths. Parents of Key Stage 1 children should select 'stage 1' and parents of Key Stage 2 children should select 'stage 2'.
  http://nrich.maths.org/frontpage

Thank you for coming!

List of Maths Websites for Children

http://amathsdictionaryforkids.com/

http://www.bbc.co.uk/bitesize/ks1/maths/

http://www.bbc.co.uk/bitesize/ks2/maths/

http://www.ictgames.com/resources.html

http://www.ilovemathsgames.com/

http://www.mathsisfun.com/index.htm

http://www.mathszone.co.uk/

http://www.multiplication.com/

http://www.primarygames.co.uk/

http://resources.woodlands-junior.kent.sch.uk/maths

http://www.topmarks.co.uk/