

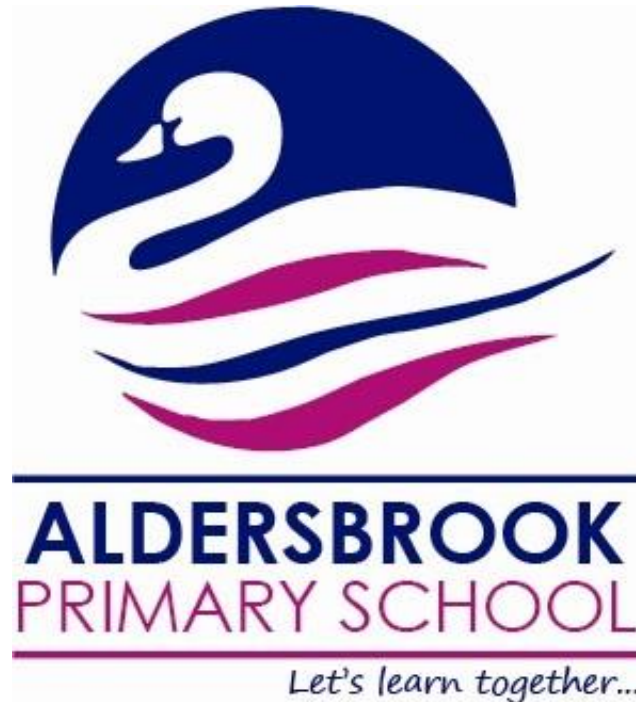
Which number is the odd one out and why?

6

12

15

18



Aims:

- To find out about the KS1 mathematics curriculum
- To understand about development of number
- To increase confidence in how to support children at home

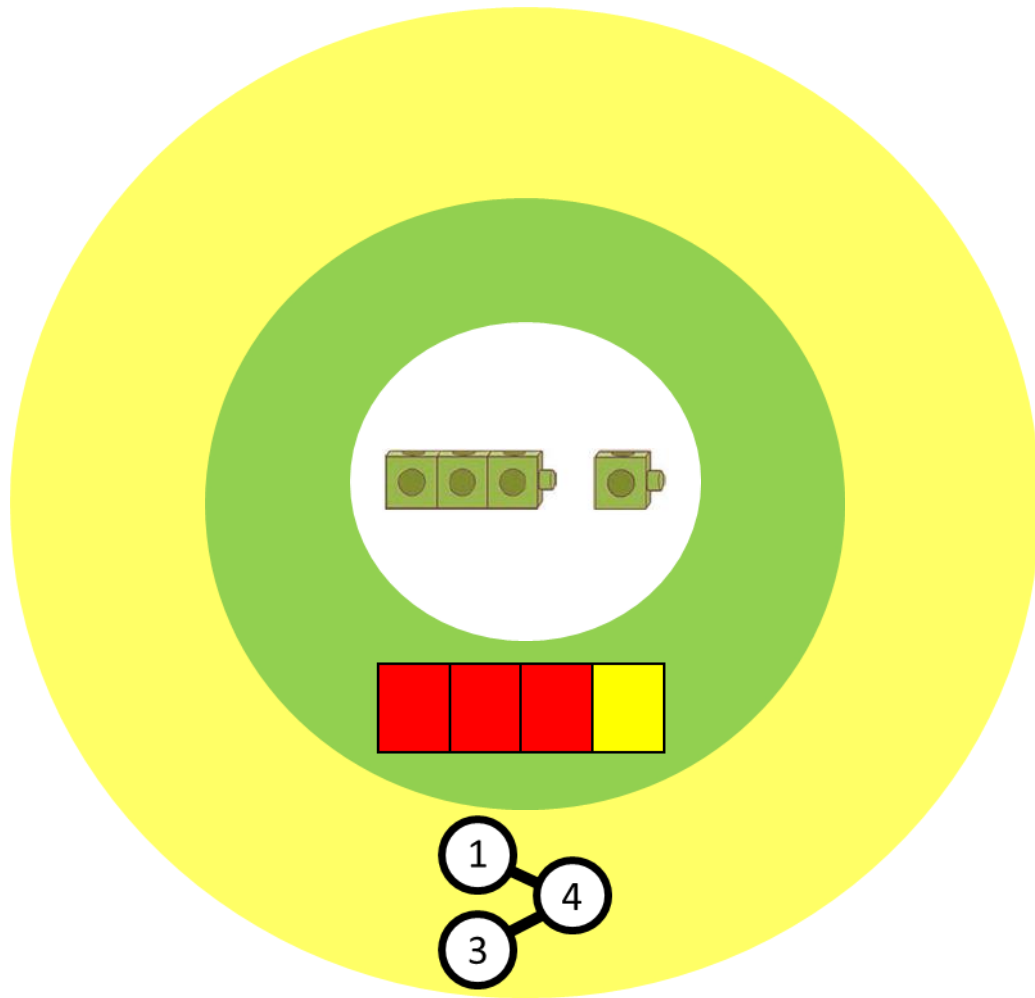
National Curriculum

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)

The national curriculum for mathematics aims to ensure that all pupils:

- become **fluent** in the fundamentals of mathematics, including through varied and frequent **practice** with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
- **reason** mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, **justification** or proof using mathematical language.
- can **solve problems** by **applying** their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.



Concrete:

resources such as cubes,
counters and shapes

Pictorial:

pictures, drawings

Abstract:

numbers and symbols

As an example...

Order these numbers:

二 八

九 万

十

四

六

三

七

一

Can you order the numbers now?

二



八



九



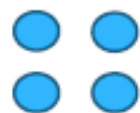
万



十



四



六



三



七



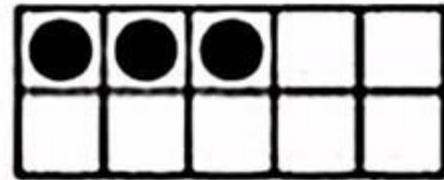
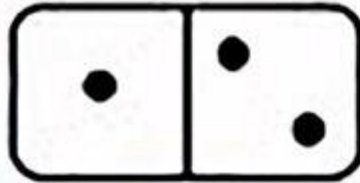
一



Number Sense



$$1 + 2 = 3$$

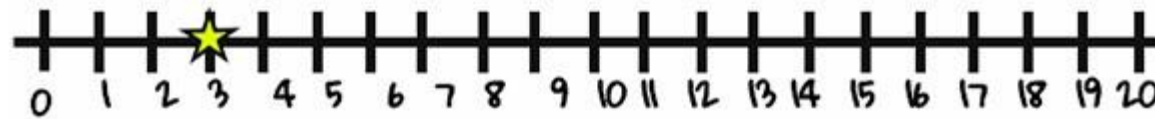
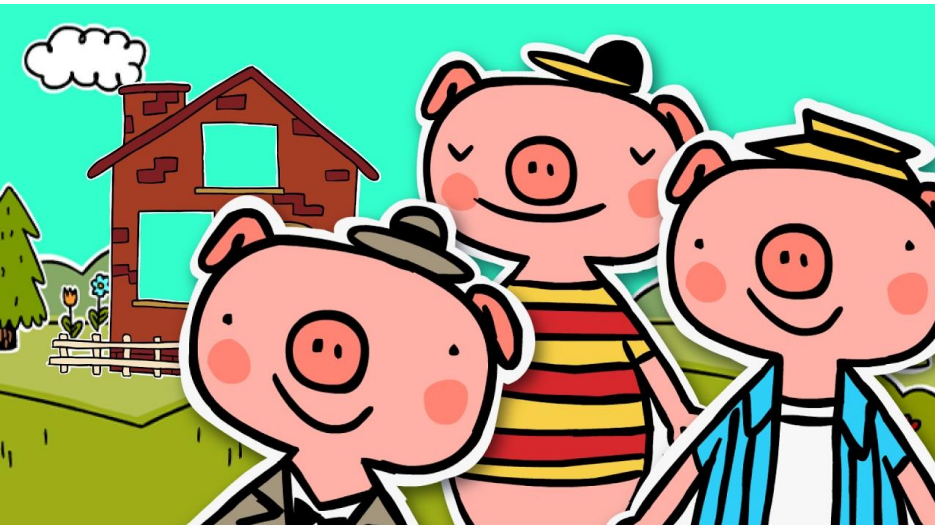


3



three

$$6 - 3 = 3$$

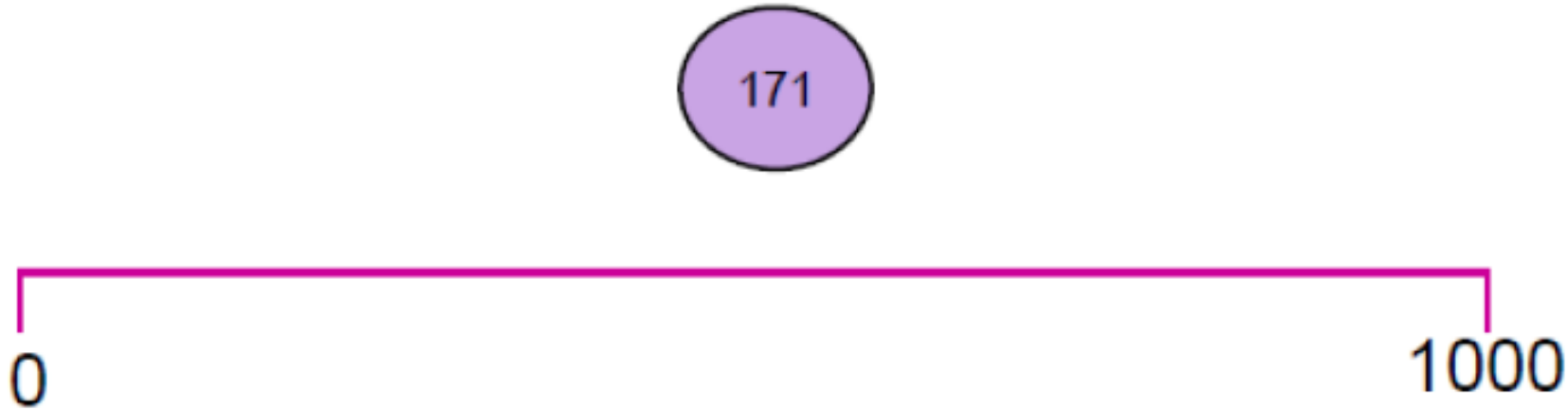


$$1 + 1 + 1 = 3$$



Number Magnitude

It is important to develop linear estimation.



Where would you place the
number 171?



It is important to develop linear estimation.



Activities like this help to develop strategies for estimating and children's sense of the relative size of numbers.

It is essential that children explain their reasoning.

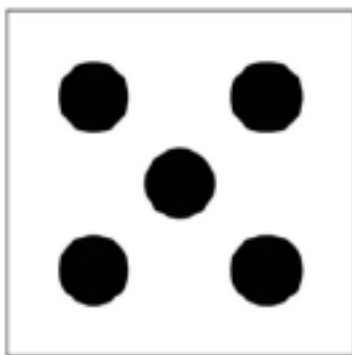
Estimation activity



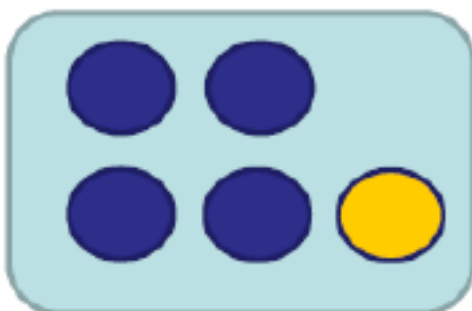
Subitising

The process of immediately knowing how many objects are in a small group without needing to count them.

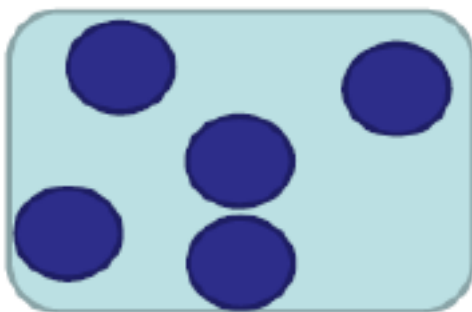




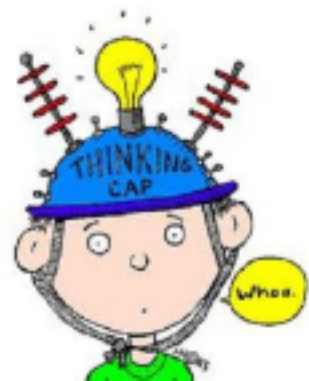
Familiar and structured dot patterns



structured dot patterns



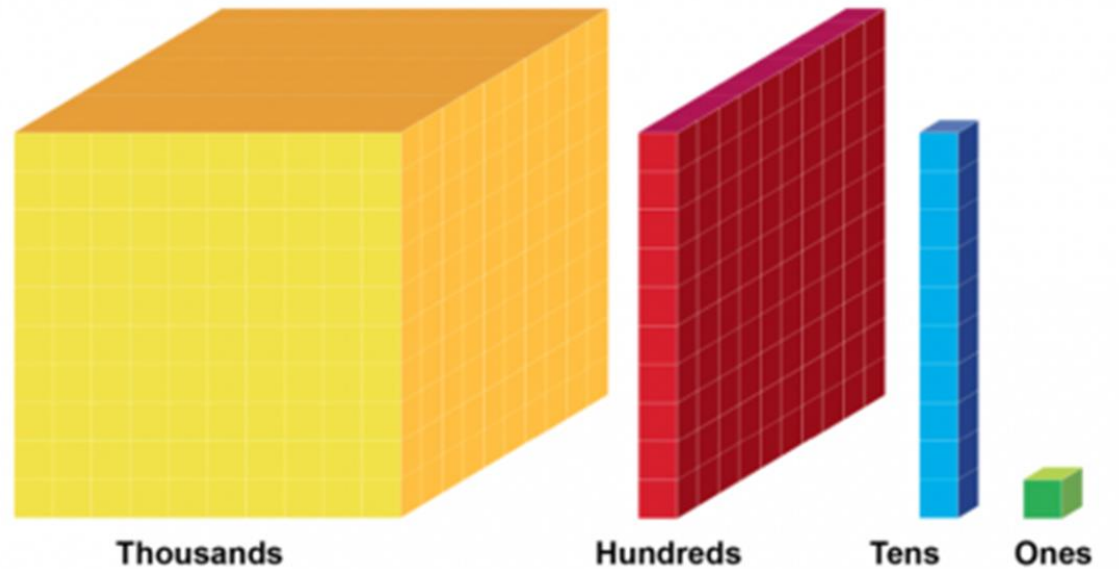
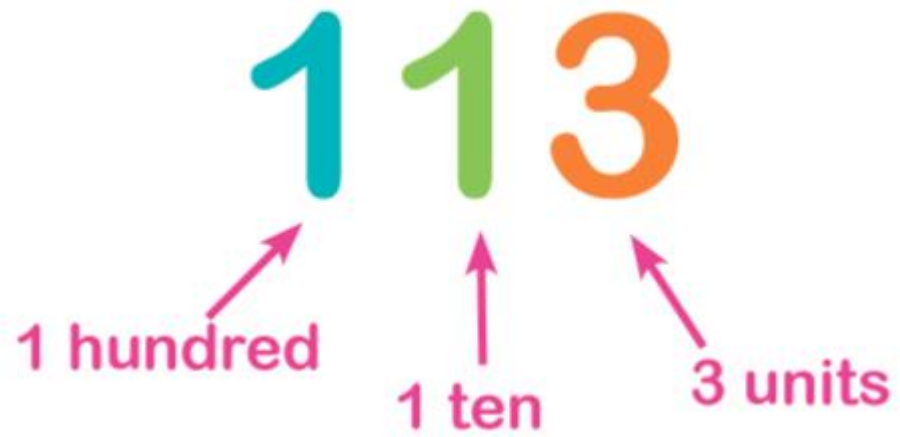
unstructured dot patterns



Dotzi



Place Value



Whole												Decimal Point	Part					
Trillions			Billions			Millions			Ones			.						
hundred trillions	ten trillions	trillions	hundred billions	ten billions	billions	hundred millions	ten millions	millions	hundreds	tens	ones		tenths	hundredths	thousandths	ten thousandths	hundred thousandths	millionths

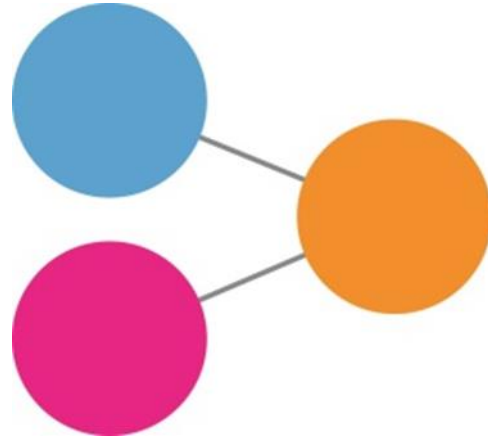
Place Value Activity



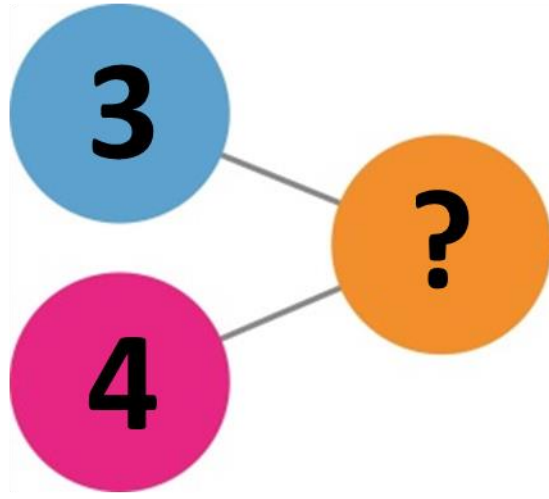
Calculations



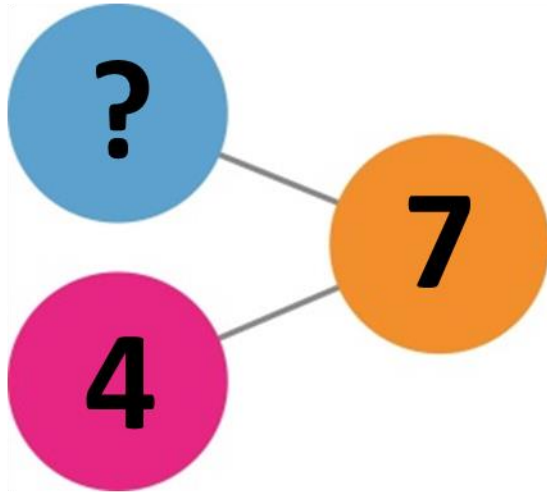
The part – whole model



It works on the principle that if you know two values out of three in a calculation, you can calculate the missing value using addition or subtraction.



The two parts (3 and 4) combine to make the whole (7).



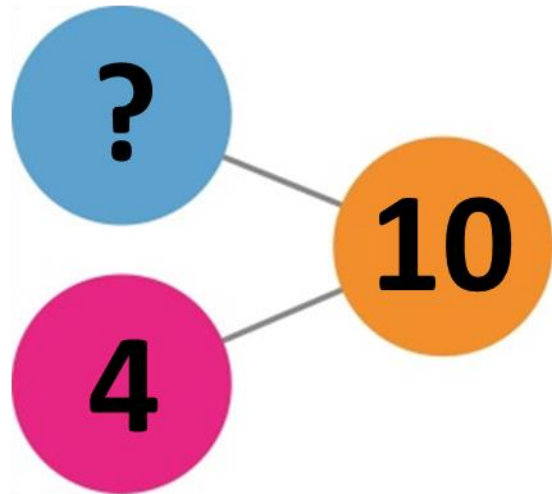
We can now use the model to find the missing 'part'.

An unknown number and 4 makes 10.

This leads to a missing box calculation:

$$\square + 4 = 10$$

In other words, algebra.



The National Curriculum requires that children know their number families for all the operations, for example:

$$6 + 4 = 10$$

$$3 \times 7 = 21$$

$$4 + 6 = 10$$

$$7 \times 3 = 21$$

$$10 - 6 = 4$$

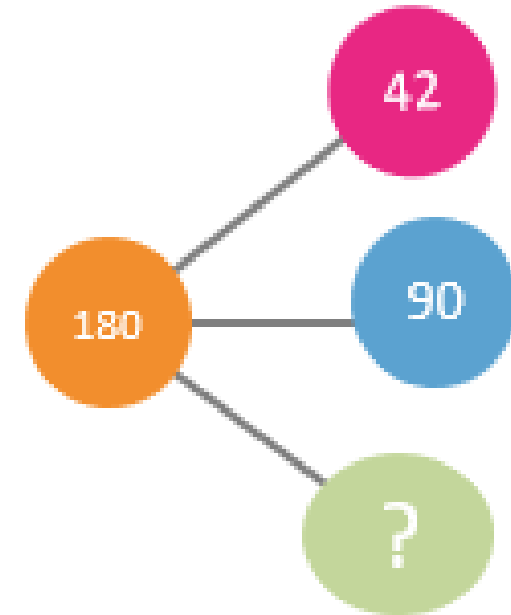
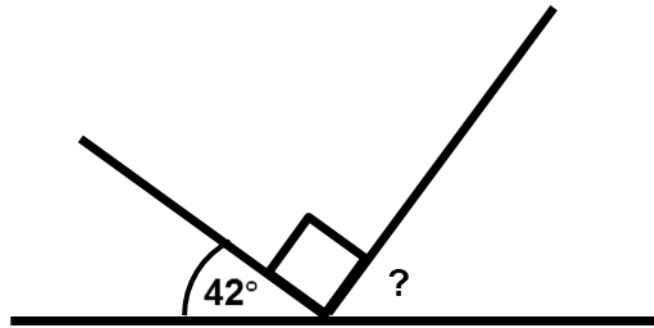
$$21 \div 7 = 3$$

$$10 - 4 = 6$$

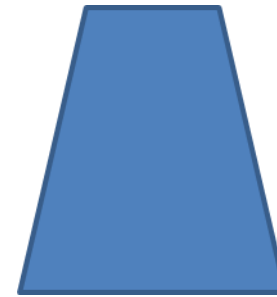
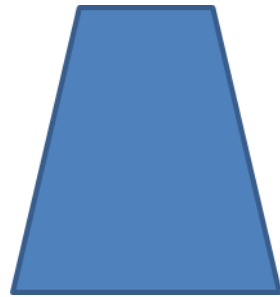
$$21 \div 3 = 7$$

The part-whole model can involve more than two parts.

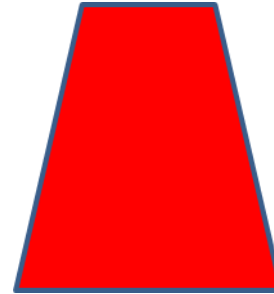
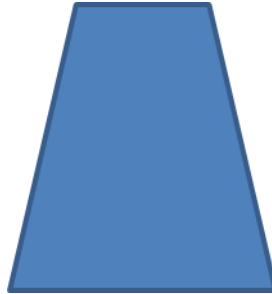
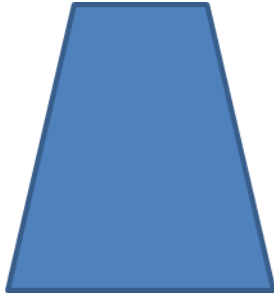
Here is an example from a possible Year 6 lesson:



Cup activity



I have 3 cups and 10 cubes. I've hidden the same number of cubes under both blue cups and a different number under the red cup. You can only lift one cup. Can you work out what is hiding under the other 2 cups without lifting them?



Addition

Children will learn to:

- Use objects/combine two groups (count all, count on from first number, count on from largest number)
- Use number lines/use practical resources to record number sentences
- partition and recombine numbers
- Attempt formal written methods-use an empty number line

Subtraction

Children will learn to:

- relate subtraction as 'taking away'
- use resources and pictures to record calculations
- use number lines to count back/find the difference
- partition numbers
- use formal written methods-use an empty number line

Multiplication

Children will learn to:

- count in repeated groups
- count in 2's, 5's and 10's
- solve practical problems involving 2's, 5's and 10's
- understand multiplication as repeated addition
- draw arrays
- begin to count in steps of 3 and 4
- use an empty number line

Division

Children will learn to:

- share objects into equal groups
- practical problems/drawing pictures sharing into 2's, 5's and 10's
- relate grouping to arrays
- understand division as repeated subtraction
- use an empty number line

All about me Activity



All about me Activity

Number of children

$$9 \div 3 =$$

Age

$$35 + 16 =$$

Day born on

$$20 - 8 =$$

Number of pets

$$7 \times 0 =$$



Number of siblings

$$4 \div 4 =$$

Shoe size

$$15 - 10 =$$

Year of birth

$$60 + 12 =$$

Door number

$$5 \times 6 =$$



All about me Activity

Number of children

$$9 \div 3 = 3$$

Age

$$35 + 16 = 51$$

Day born on

$$20 - 8 = 12$$

Number of pets

$$7 \times 0 = 0$$



Number of siblings

$$4 \div 4 = 1$$

Shoe size

$$15 - 10 = 5$$

Year of birth

$$60 + 12 = 72$$

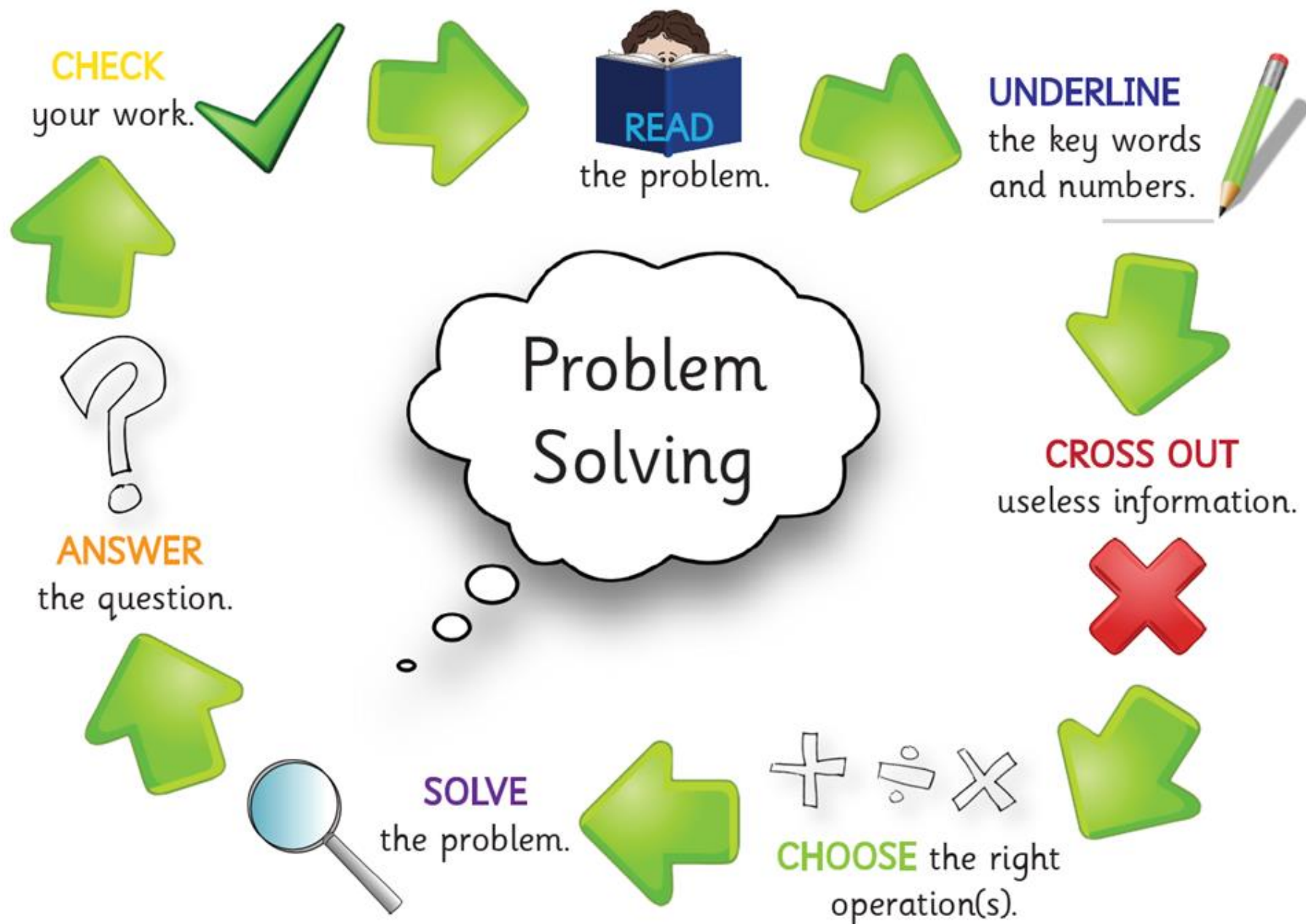
Door number

$$5 \times 6 = 30$$



Problem Solving







How can you help at home?



- Involve your child in everyday maths.
- Help to develop your child's sense of number magnitude by talking about the size of numbers. Have a go at estimating.
- Play lots of games, including the ones we've provided and ordinary board games.
- Discuss and celebrate your child's strategies for calculating.
- Celebrate mistakes!
- Don't say you can't do maths. Learn together.
- Don't expect children to understand first time.
- Encourage reasoning and problem solving.