

Calculation Meeting

Year 1

+ - × ÷

How do we solve problems?

Addition

- add
- more
- plus
- make
- sum
- total
- altogether



Multiplication

- lots of
- times
- multiply
- groups of
- product
- multiplied by
- multiple of
- repeated addition
- array



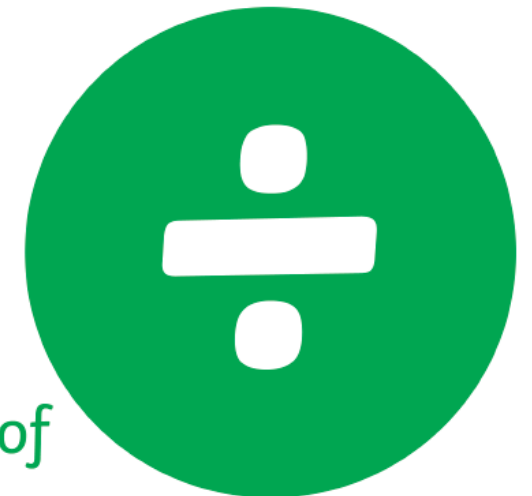
Subtraction

- subtract
- minus
- leave
- less
- take away
- difference between



Division

- divide
- divided by
- divided into
- share
- share equally
- equal groups of



Year 1 maths curriculum

The national curriculum is broken down into the following areas of maths:

- Number and place value
- Addition and subtraction
- Multiplication and division
- Fractions
- Measurement
- Shape
- Position and direction

The road to problem solving

Each year we want to build on the children's ability to solve mathematical problems and reason mathematically. In order to do this, these 4 areas are hugely important.

Number sense

Place value

Problem Solving



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graph TD;
  A[Number sense] --> C[Problem Solving];
  B[Place value] --> C;
  D[Methods] --> C;
  E[Understanding] --> C;
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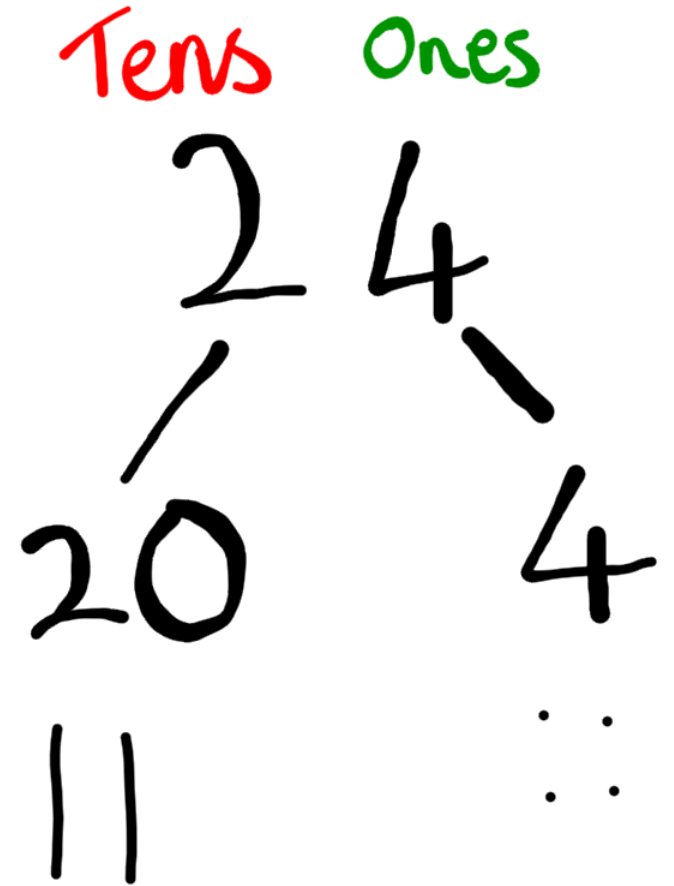
Methods

Understanding

Place Value

Understanding that each number represents an amount. Especially important when using double and triple digit numbers.

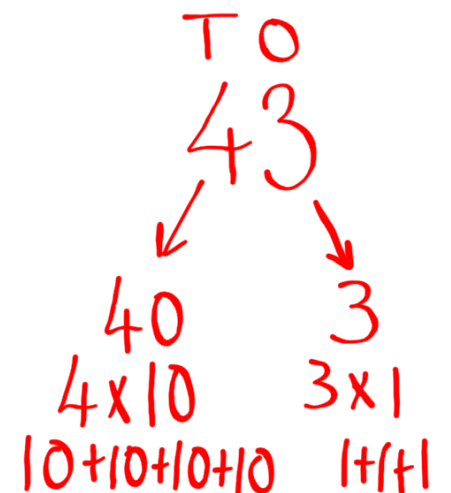
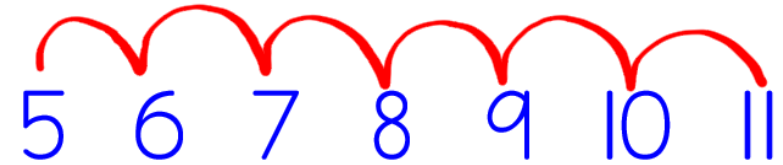
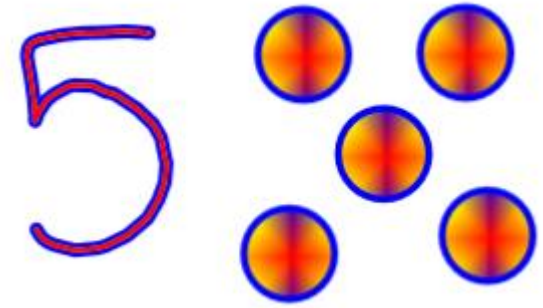
- Understanding how many ones, tens or hundreds are in a number.
- Good place value knowledge will allow children to break down equations and problems into manageable chunks.
- Important skill to understand column method



Barriers to learning

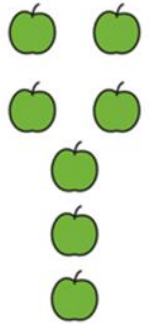
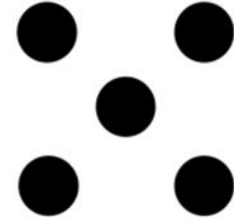
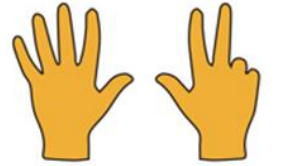
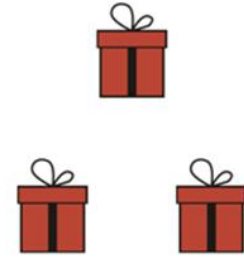
What might be getting in the way?

- Understanding what a number is representing
- Counting on/back from a given number
- Knowing 1 more and 1 less
- Knowing 10 more 10 less
- Understanding place value – 100s, 10s and 1s

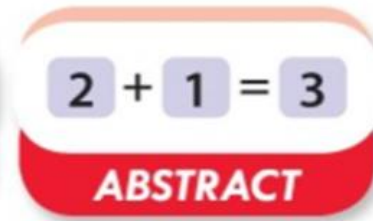
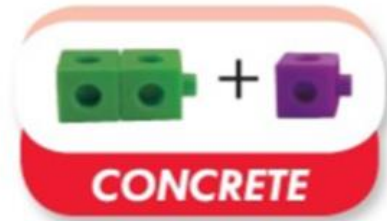


Some things to practise

- Counting to and from given numbers
- Simple number facts
- Asking how do you know?
- Subitising – knowing without counting



Concrete, pictorial and abstract



Objects/things to handle

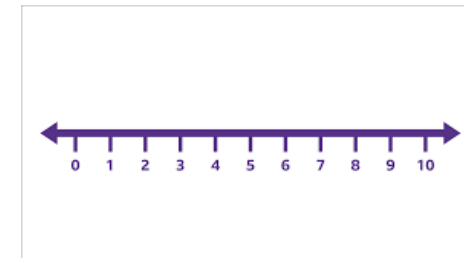
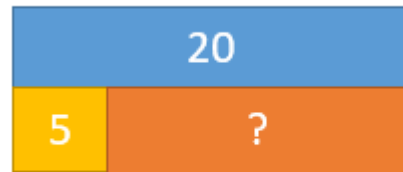
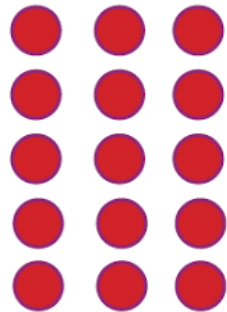
- Cubes
- Pencils
- IOs and Is

A visual representation

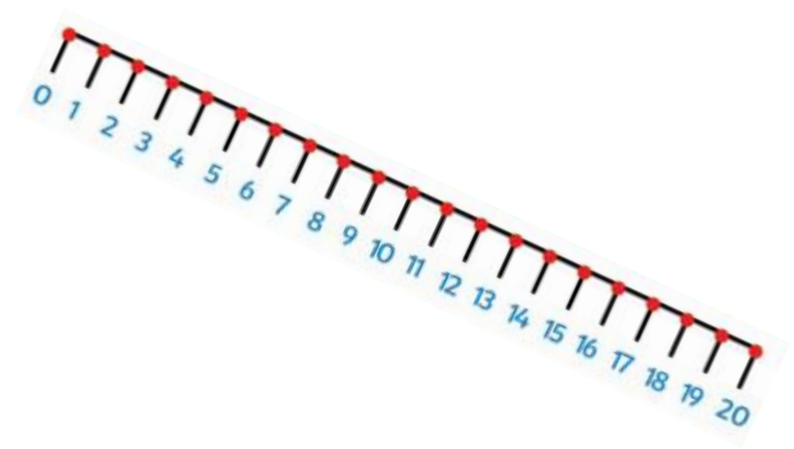
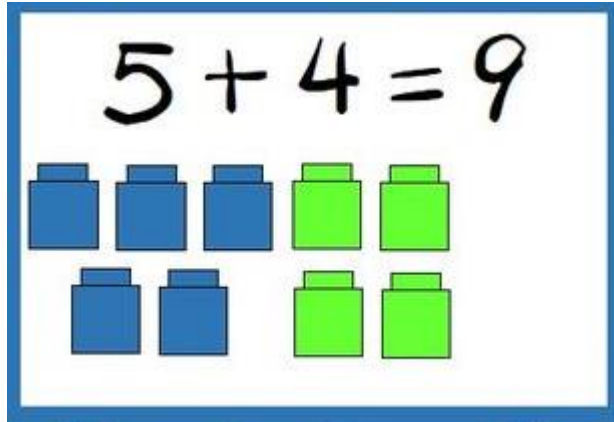
- Drawings
- Bar models
- Arrays

Numbers and symbols

- Equations
- Operations e.g. + -

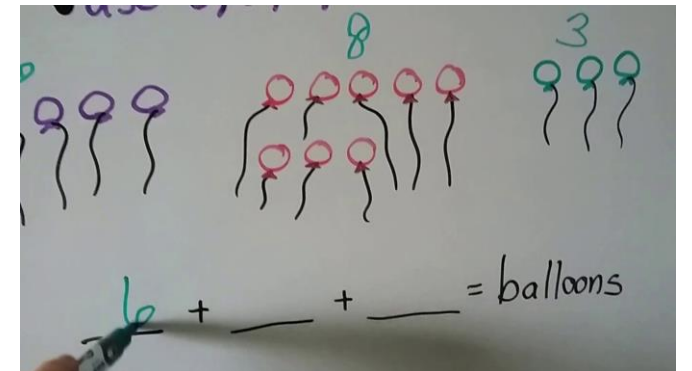
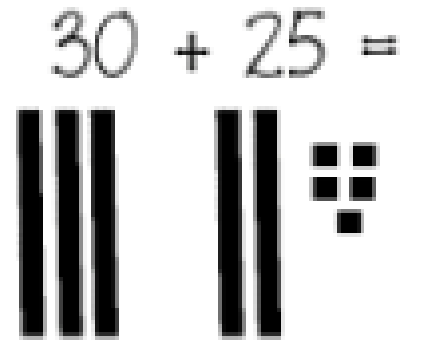
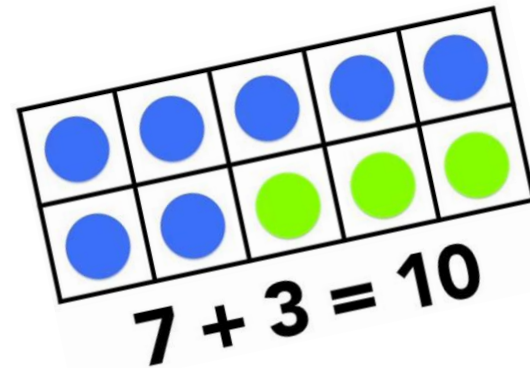


Addition



Methods we teach:

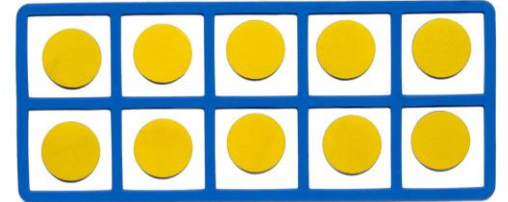
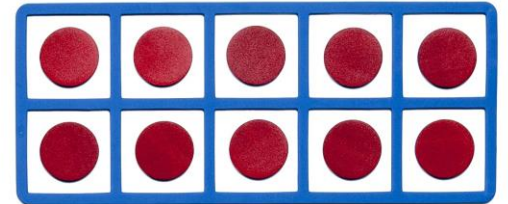
- Concretes – Cubes, numicon, bead strings, rekenreks, IOs and Is
- First, then, now
- Number lines
- Drawings
- Lines and dots
- IO frames
- Partitioning – Breaking down
- Counting on





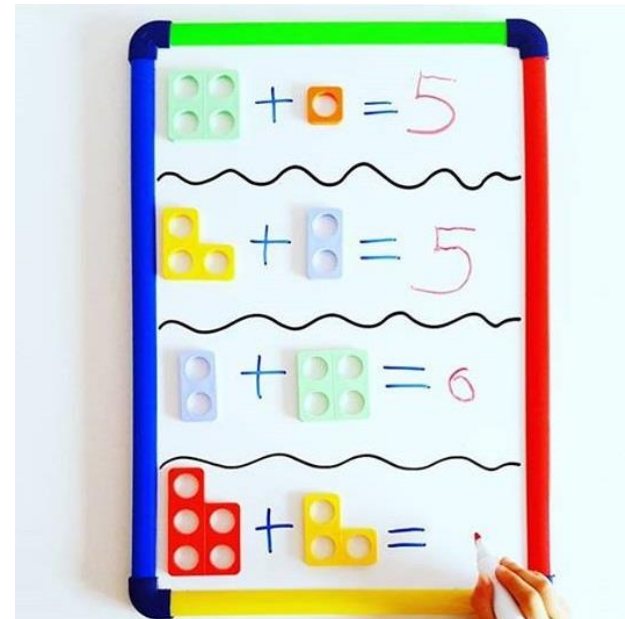
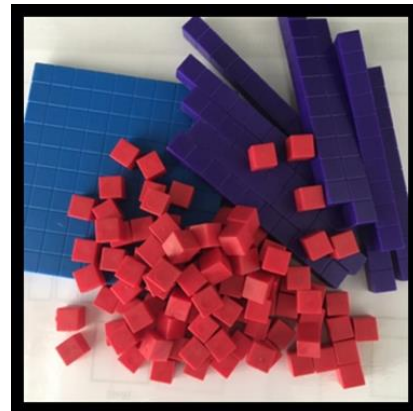
Methods of addition using concrete objects/manipulatives

- Cubes, tens and ones, 10 frames, numicon, bead strings, rekenreks, IOs and Is
- All of these give clear visual representations of numbers

1. Make the greater amount (doesn't have to happen)
2. Add on the second amount
3. Count to find the total

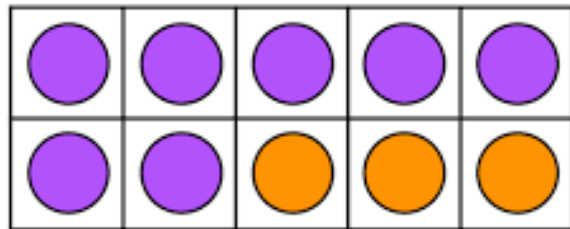


| First, Then, Now Activity Mat | | |
|---|---|-----|
| First | Then | Now |
|  |  | |

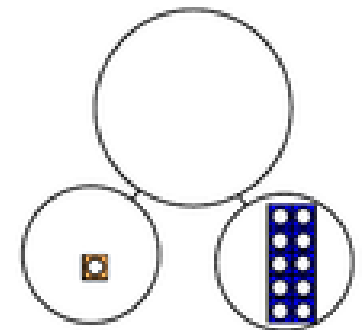
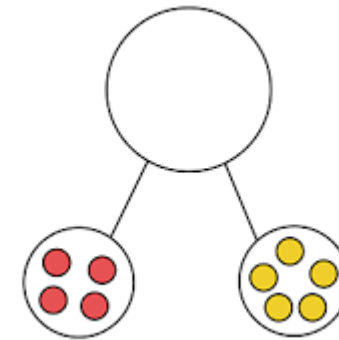
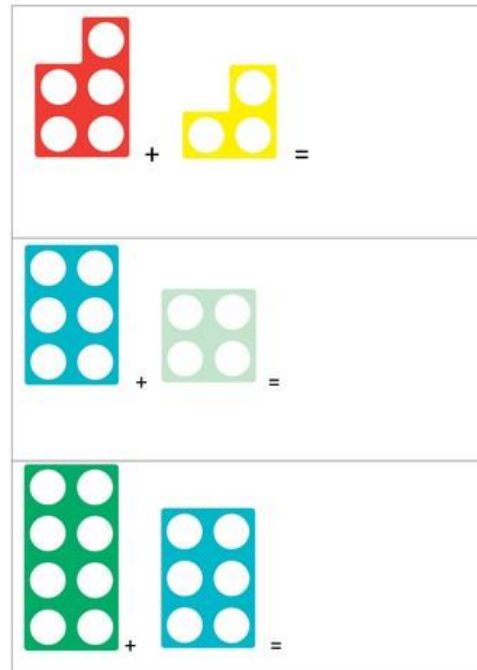


Methods of addition using pictures and drawings

- Pictures of manipulatives or drawings
- Whole, part, part and bar models show how two amounts can create a total



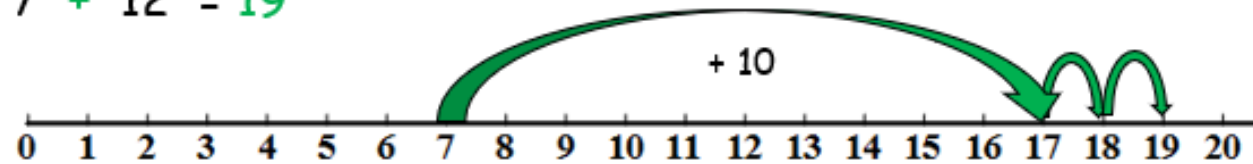
$$6 + 4 = 10$$



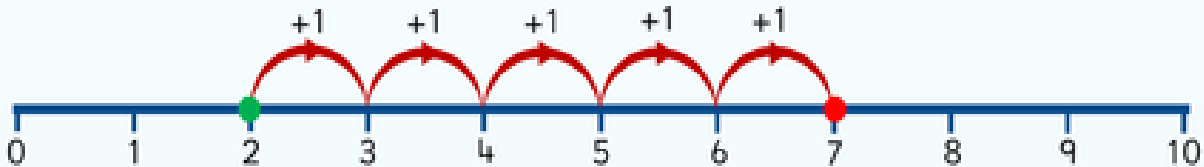
Addition – Number lines

- Start with the greater number (this doesn't need to happen)
- Work out how many jumps you need to do
- Answer is the number you land on
- Extend to jumps of 10 then 1

$$7 + 12 = 19$$



$$2 + 5 = 7$$



Addition using place value and lines and dots

- Break the number down into 10s and 1s and draw them as lines and dots
- Make the equation easier.
- Common misconception is to count the 10s as a 1 or vice versa.

$23 + 12 =$

A visual representation of the addition $23 + 12 = 35$ using lines and dots. The number 23 is shown as two vertical lines and three dots. The number 12 is shown as one vertical line and two dots. The result 35 is shown as three vertical lines and five dots. A plus sign and an equals sign are placed between the numbers.

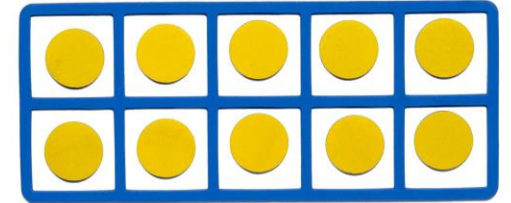
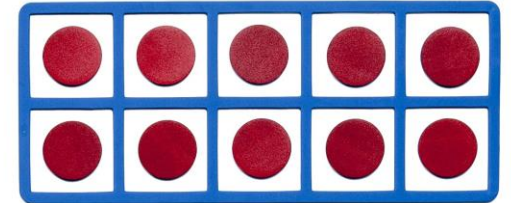
Subtraction



- Similar to addition but backwards.
- Children are taught that subtraction will decrease the value of our amount.
- We have to start with the greatest number or amount
- Key language – subtract, minus, take away, less than, fewer

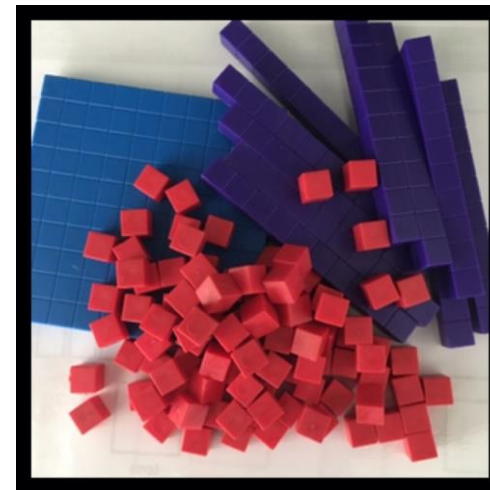
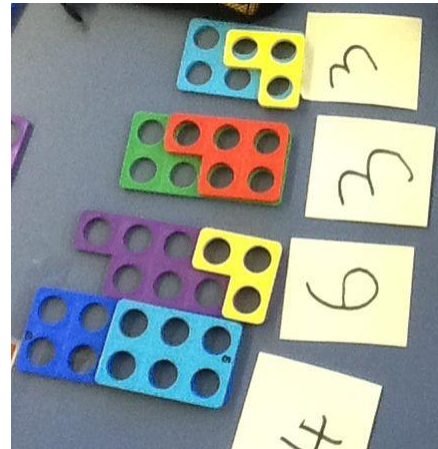
Methods of subtraction using concrete objects/manipulatives

- Cubes, tens and ones, 10 frames, numicon, bead strings, rekenreks

1. Make the greater amount
2. Physically take away the other amount
3. Count to find the total

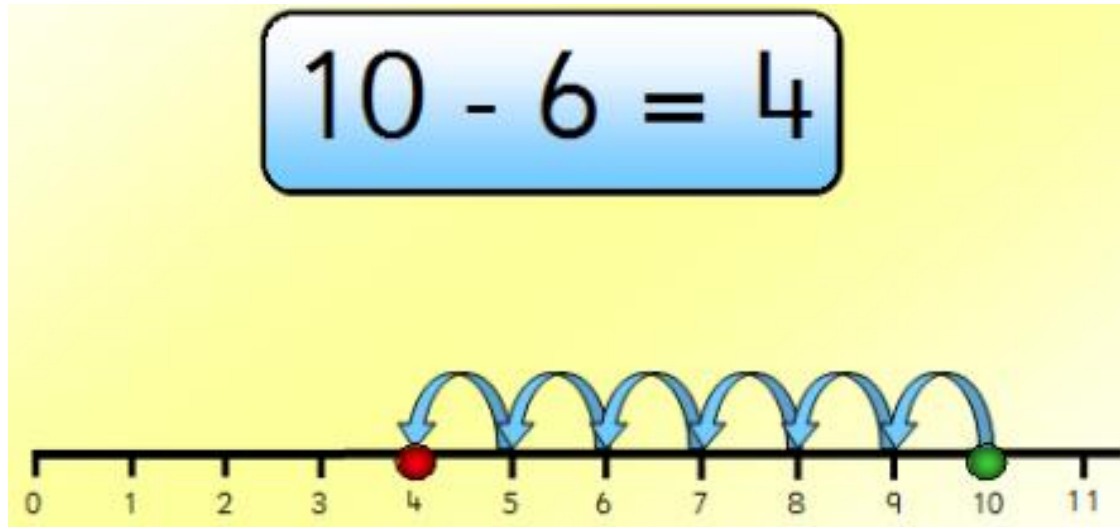


| First, Then, Now Activity Mat | | |
|---|---|-----|
| First | Then | Now |
|  |  | |

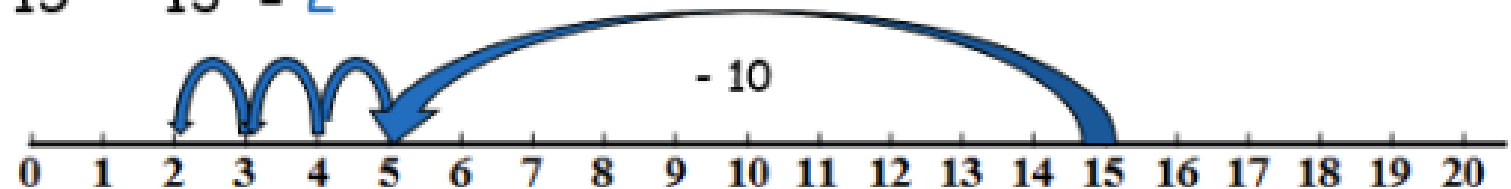


Subtraction with number lines

- Start from greatest number
- Work out how many jumps backwards you will be doing
- Do your jumps
- The answer is the number you land on.



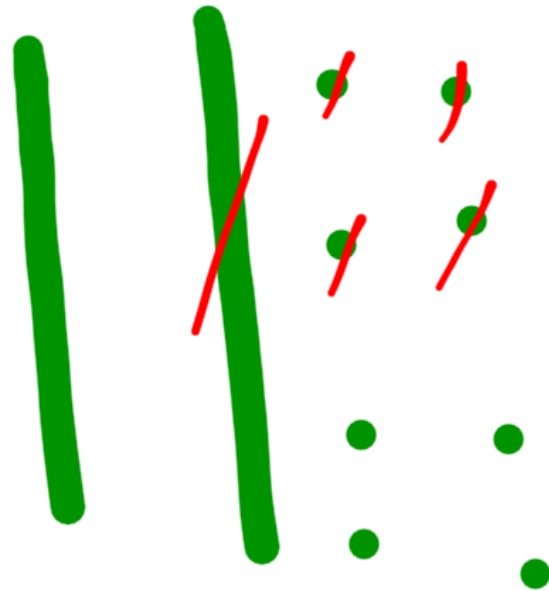
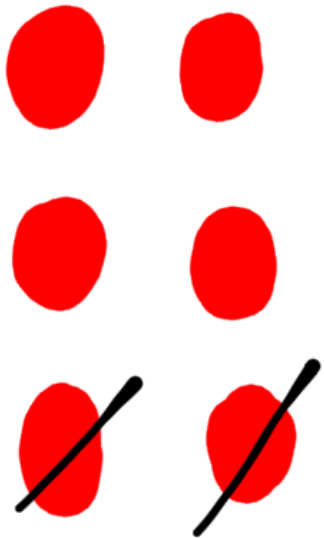
$$15 - 13 = 2$$



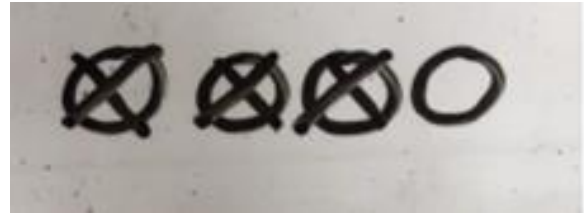
Subtraction using drawings and lines and dots

- Draw the total
- Cross out how many are being taken away
- Count what is left

$$6 - 2 = 4$$



$$28 - 14 = 14$$



$$4 - 3 = 1$$

Subtraction using place value

- Use place value to break down the equation and make it easier.
- Take away ones first then 10s – Or the other way around depending on which they find best.
- Draw 10s and 1s and cross them out.

$$26 - 12 =$$

$$26 - 2 = 24$$

$$24 - 10 = 14$$



Addition and Subtraction with exchanging/ converting

Please note addition and subtraction equations like the following will only be taught when pupils are ready. They are the most challenging equations to solve.

16+17= Lines and dots

$$16 + 17 = 33$$

24+9= Break it down

$$1\begin{array}{c} \cdot \\ \cdot \\ \cdot \end{array} + 1\begin{array}{c} \cdot \\ \cdot \\ \cdot \\ \cdot \end{array} = 11\begin{array}{c} \cdot \\ \cdot \end{array}$$

14-5= Objects/number line/Counting back

24-18=

$$24 - 18 =$$

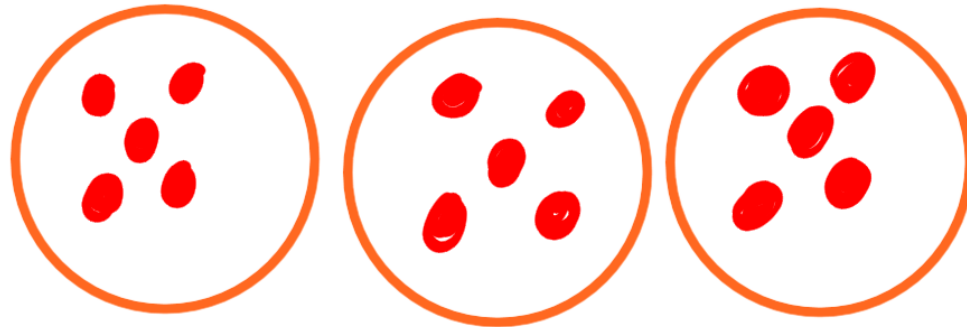
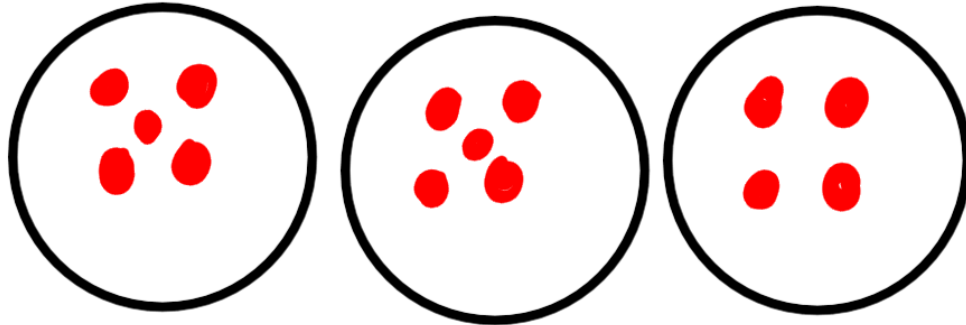


- Adding/subtracting the 1s first
- Drawings lines and dots and converting a 10 into 10 1s

We do not teach column method in Year 1 unless the teacher is 100% sure it wont confuse the child.

Multiplication and Division

- Creating equal groups
- Identifying equal and non-equal groups

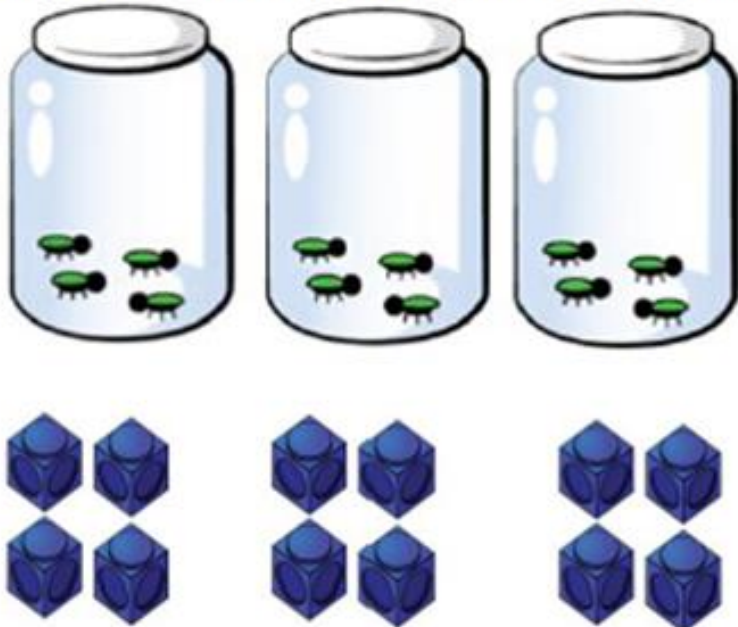


$$3 \times 5$$

Multiplication

- Groups of or lots of the same number using objects or pictures
- Can be represented as an array, repeated addition or by drawing groups using dots and circles

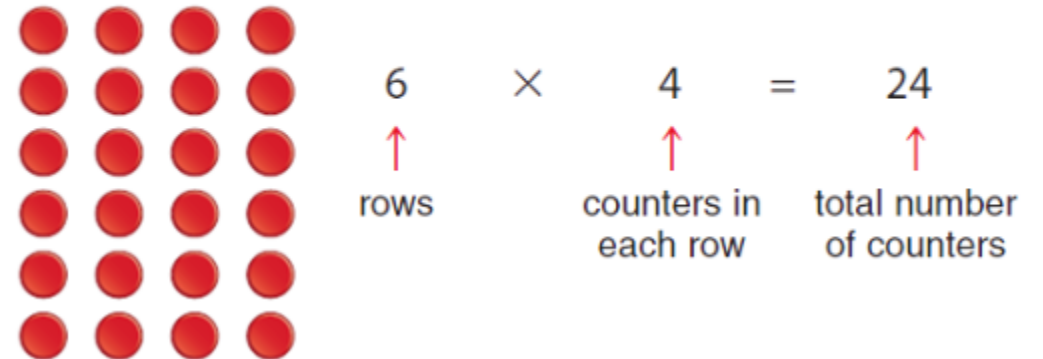
There are 3 equal groups, with 4 in each group.



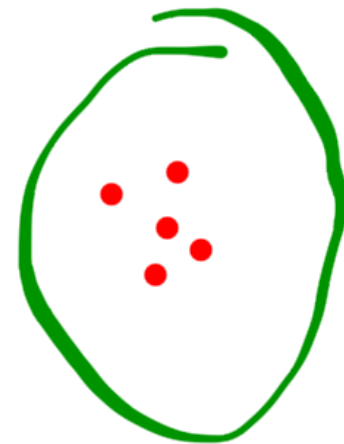
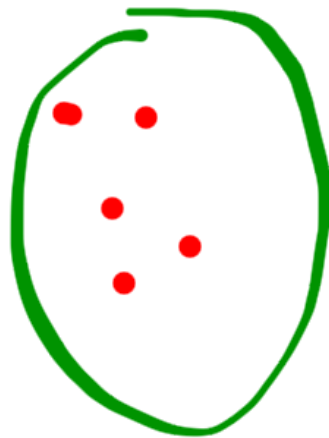
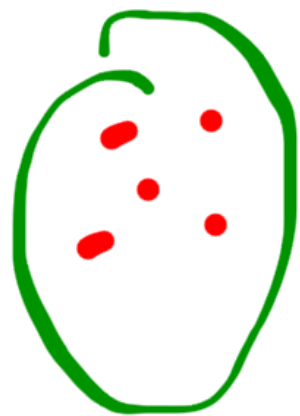
Repeated addition $4+4+4+4+4+4=24$

You can use an array to multiply.

To find 6×4 , make an array of 6 rows of 4.



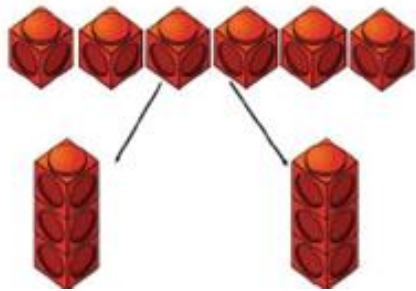
$$3 \times 5 =$$



Division

- Breaking an amount into equal groups
- **Sharing** objects
- Circles and dots

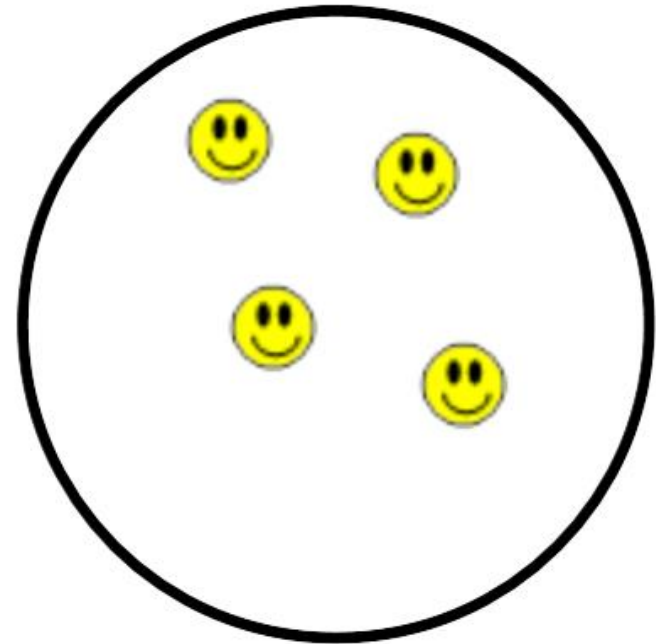
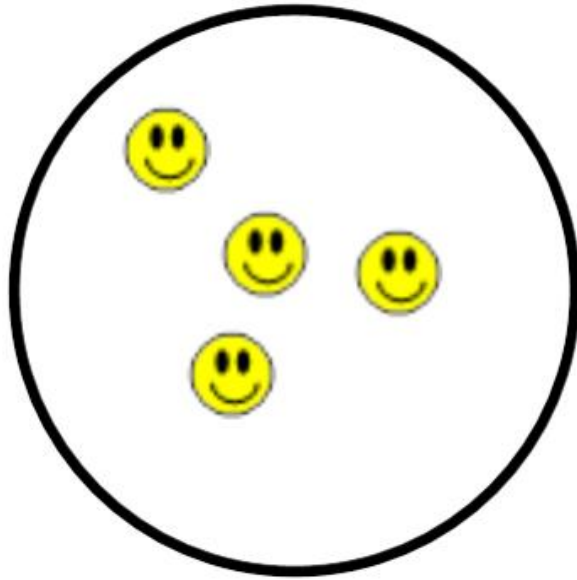
- We share the greater amount between the smaller



$$6 \div 2 = 3$$

Circles and dots

$$8 \div 2 =$$



White Rose – Stories for Maths



- This term, we are introducing White Rose's 'Stories for Maths' into our lessons.
- These beautifully written picture books link directly to our maths curriculum and help children explore key mathematical concepts through engaging characters and real-life situations.
- By weaving maths into storytelling, children deepen their understanding of number, shape, and pattern in a meaningful and memorable way.
- It also supports their speaking, listening, and reasoning skills, helping them to explain their thinking confidently while enjoying the magic of a good story!

<https://whiteroseeducation.com/parent-pupil-resources/maths/free-downloads>



Home Learning

- KIRF home learning
- Mathletics
- Purple Mash
- Maths challenges – On the website

<https://toytheater.com/category/teacher-tools/virtual-manipulatives/>

<https://www.didax.com/math/virtual-manipulatives.html>