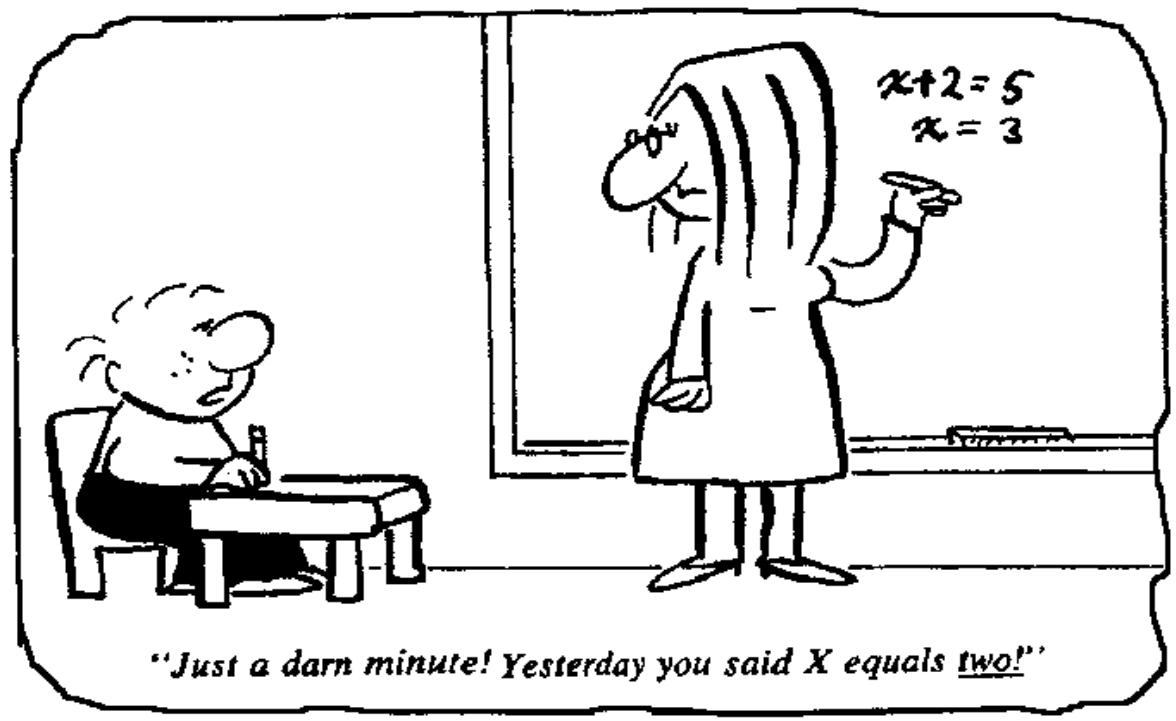
St Alphege CEI School
Maths Workshop for Parents



Aims of the workshop

Over the course of the workshop, we will be thinking about:

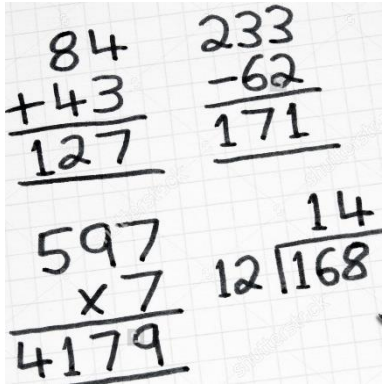
- our own experiences of maths
- considering the difficulties children might encounter when learning maths
- the key features of maths teaching in EYFS and Key Stage 1
- ideas you can use at home to support children's maths development.

What do we think about maths?

Activity One

- What do you think of when you hear the word ‘maths’?
- Think back to your own experiences of learning maths. Spend a couple of minutes talking to the person next to you about your experiences.

How things have changed



- In the 1960s and 70s, a lot of time was given to practising methods.
- Research showed that children found certain methods difficult, forgot them quickly and made persistent errors.
- The days of maths lessons being pages of endless sums done in silence, are for the most part gone.

How did we used to do it…..?

- Think back to how you tackled long multiplication
- Have a go at the following using the method you were taught in school:

25x17=

When you have an answer, can you explain to the person next to you **how** you did it/**why** it works

What do we learn from this?

- There’s always more than one way to work something out!
- Different methods suit different learning styles
- **Today’s teaching methods are not just about getting the right answer, but more about understanding how the method you used works** and trying to **develop** children’s **number sense.**

Select Route **Directions**

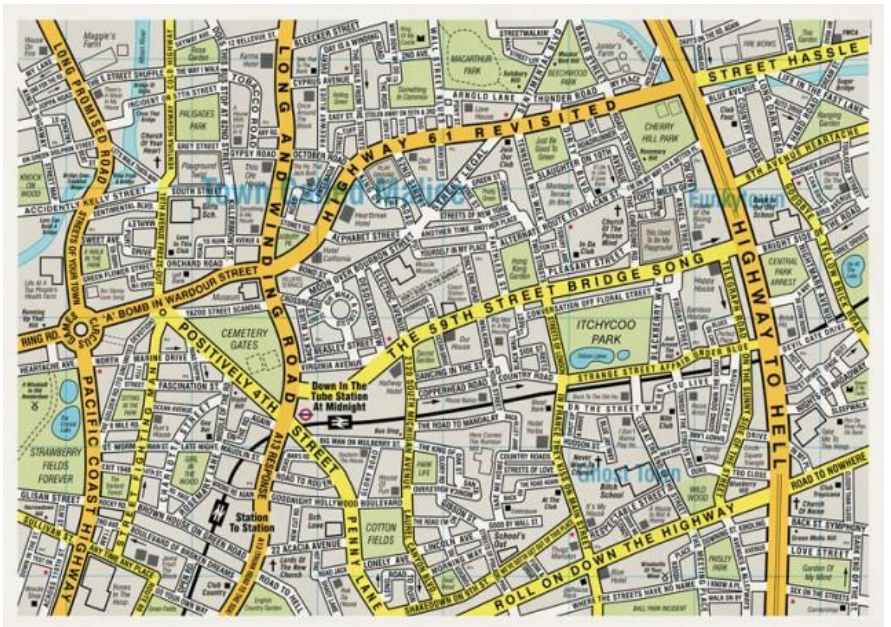
14:05 **Dalston Kingsland**
Take the Overground towards Richmond
14:09

14:14 **Highbury & Islington**
Take the Victoria line towards Brixton
14:31

14:40 **Vauxhall**
Take **South West Trains** towards Hampton Court
15:12

Hampton Court
Walk to Hampton Court Palace
About 5 mins (80 m)

15:17 **Hampton Court Palace**
Total journey time: 1 hour 12 min



Good practice in Maths today

The new 2014 National Curriculum for maths aims to ensure that all pupils:

- Become **fluent** in the **fundamentals of mathematics**
- **Reason mathematically** by following a line of enquiry... and developing an argument, justification or proof using mathematical language
- Can **solve problems** by **applying** their maths to a variety of problems.

Good practice in Maths today

- Teaching methods have changed – children now learn **how** and **why** a method works, rather than simply the method itself.
- Today's lessons are far more concerned with **investigation** and **collaboration** – lessons are busy and active.
- There is more emphasis on **mental calculation**
- Development of **number sense** is key.
- **Problem solve** in a **real life context and apply maths to do so.**

So what makes maths so tricky….?

On the 3rd of April, I took the number 3 bus to Tesco and bought 3 Easter eggs.

Learning to count

- As adults we take our system of counting for granted.
- Very few of us can remember what learning to count was like, so in order to give you an idea, I'd like you to try the following activity:

ALPHABET LAND

Alphabet Land

- I’d like you to imagine that we are in a new place called Alphabet land.
- In this land, you need to forget what you know about our number system.
- The new number names are a, b, c, d all the way to z, followed by aa, ab, ac, ad etc

Alphabet Land

- So now let’s try…..
- Counting together
- Count forwards from L to T
- Backwards from G to A
- Count in Bs
- What number comes before H? After K?
- And now for some calculating…
- E + B =
- Double J =
- K – B =

Learning to Count

Learning to count is a complex business. When you start breaking it down, you realise there are many skills to master:

- Children have to learn to say the words, and then that the words must be said in the same order.
- They have to learn that when counting an amount, they have to point to the objects at the very same time as they say the word.
- They have to remember not to skip an object or a word and make sure they don’t count the same object twice.

Learning to Count

PLACE VALUE

The value a digit has according to it's position within a number.

25

Language for Counting

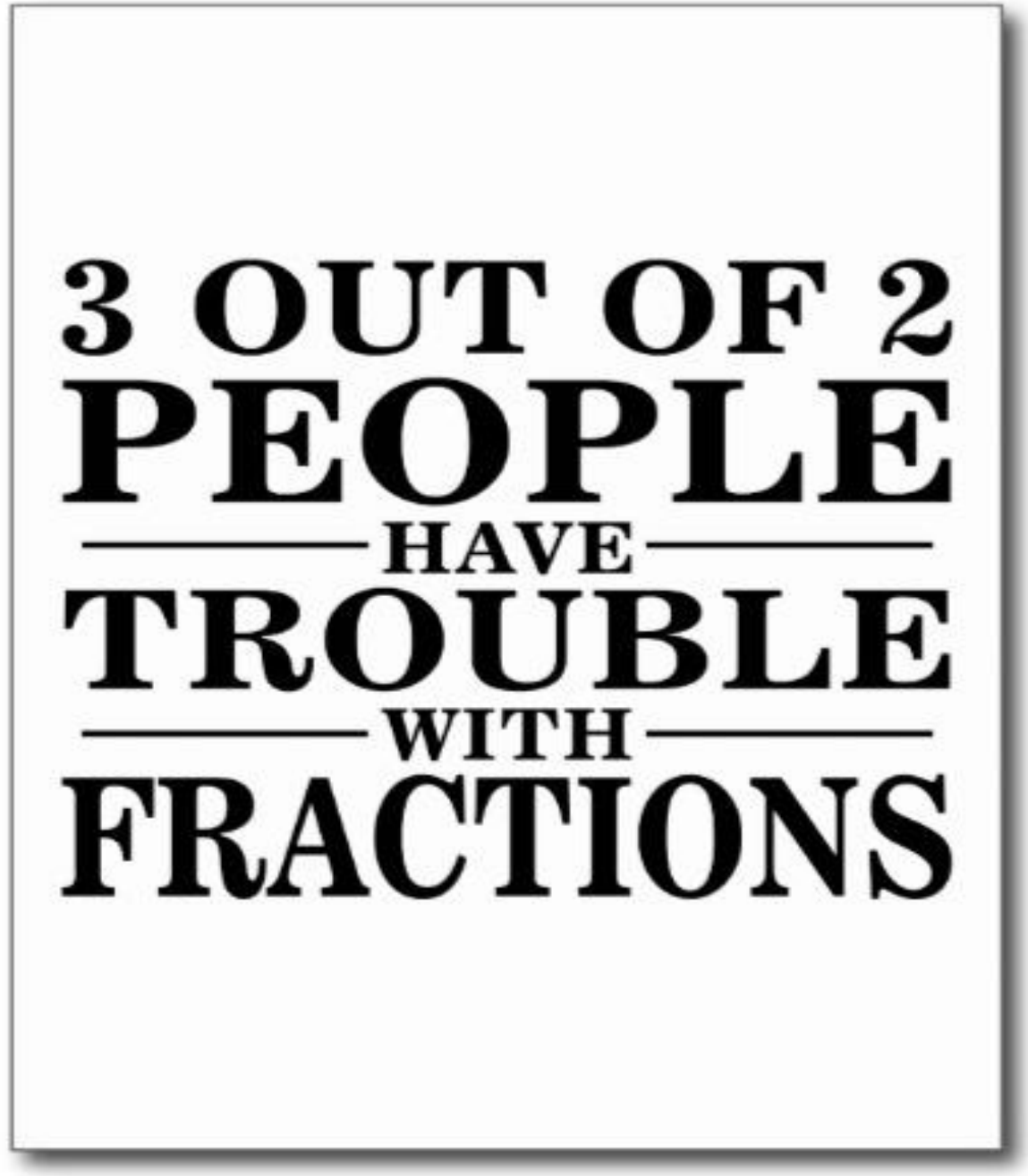
16 17

11 12

65 78

23 36

And what about when we write them down.....?


3 OUT OF 2
PEOPLE
HAVE
TROUBLE
WITH
FRACTIONS

Current expectations

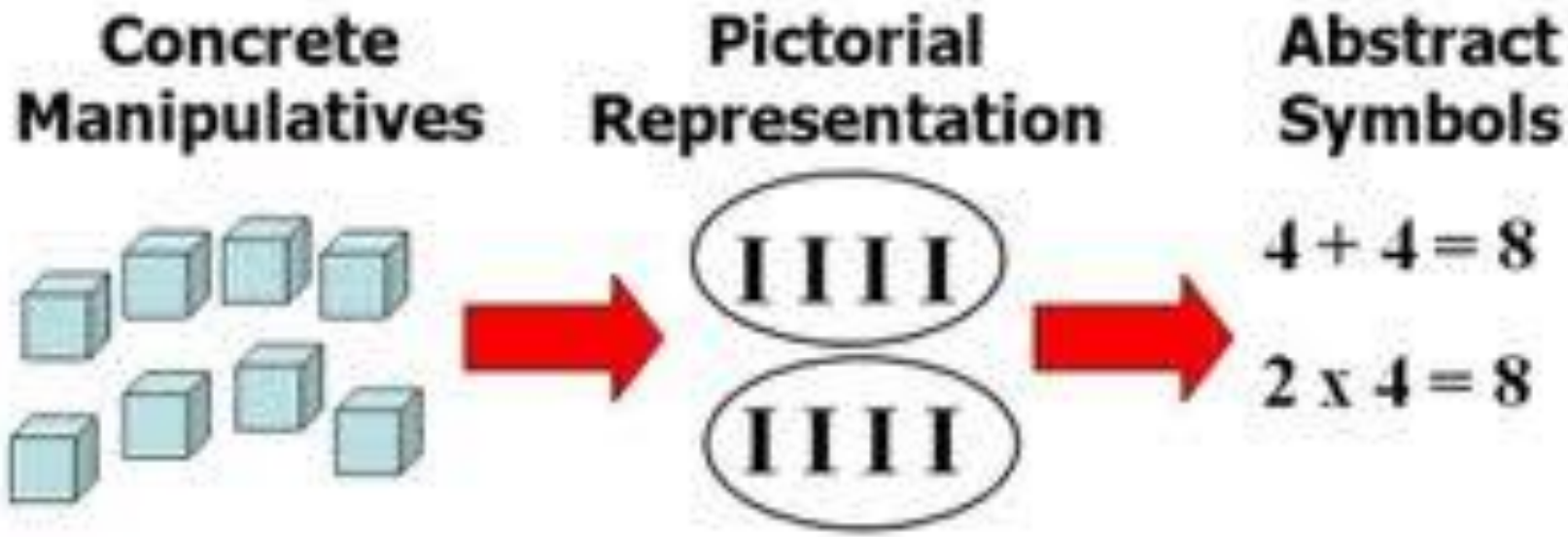
- **Content** has generally become **more challenging** and **expectations** have been **raised**.
- **Fewer things** in **more depth** – '**mastery**'
- Firmer foundations with **less acceleration**
- **Earlier** and more **challenging requirements** for **multiplication tables**
- More emphasis on **problem solving** and **reasoning, using mathematical vocabulary to communicate, justify or prove**

So, what does that mean for Year1…?

- count to 100
- count in multiples of 2,5 and 10 instead of just 2
- multiplication and division problems including using arrays
- fractions including quarters
- volume
- draw hands on a clock face (to show time to the hour/half past)

And in Year 2...?

- Use < and > signs
- Higher mental mathematics expectations
- count forward or backward (in steps of 2, 3, 5, 10)
- use number facts (to 20) to derive and use facts up to 100
- use multiplication/division facts (x2/x5/x10), including recognising odd/even numbers
- compare and sequence intervals of time
- Commutative rule
- Inverse operations used to check calculations
- Greater range of fractions
- Use standard measures and read a thermometer


Concrete Manipulatives
Pictorial Representation
Abstract Symbols
IIII
IIII
4 + 4 = 8
2 x 4 = 8

Addition

- In YR, the focus is on the **practical** addition of real objects relating to ‘real life’ contexts

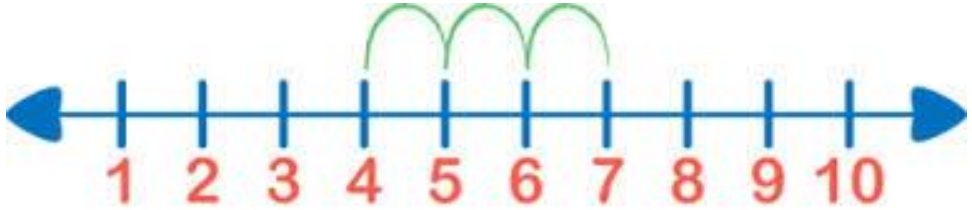
- More / less (particularly 1 more/ 1 less)
- Counting
- Number names, reading & writing numbers to 10
- Vocabulary of addition and +

Addition

- When beginning to learn to add 2 numbers or amounts, most children use a strategy called '**counting all**'
- In Y1 children are taught to relate addition to '**counting on**' and they begin to use a number line alongside practical resources to support addition

Counting on using a number line

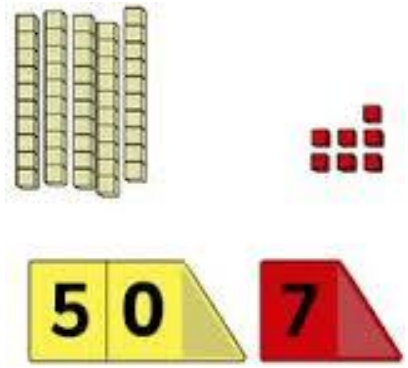
4 + 3 =

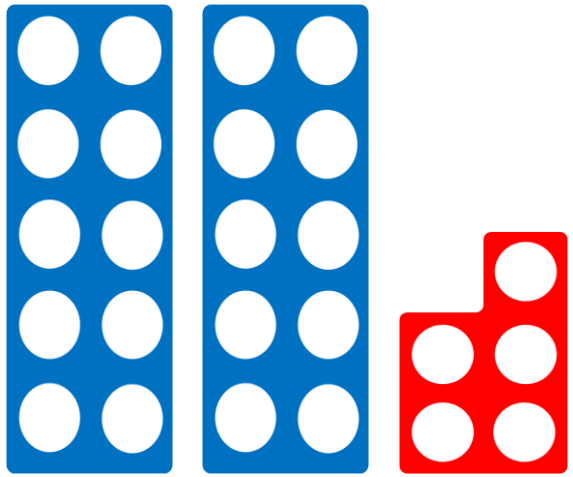


Partitioning

- Splitting a number into its tens and ones (or units as we used to call them) and understanding the worth of each digit.
- In school we use a variety of equipment (known as manipulatives) that illustrates this.

Partitioning





Addition on the 100 square using partitioning

- Once children start to work with 2 digit numbers, partitioning becomes crucial.
- Their previous method of counting in 1s quickly becomes problematic and cumbersome
- Take the number sentence 32+25 Working this out in 1s on your fingers would take ages

Addition on the 100 square using partitioning

- But using partitioning and the 100 square it becomes a manageable and efficient method and a stepping stone towards calculating mentally and recording formally.
- In order to do this children need lots of opportunities to use the 100 square, moving forwards and backwards, working out what happens when you get to the end of the line, counting in tens, up or back and then in 1s.

Addition on the 100 square using partitioning

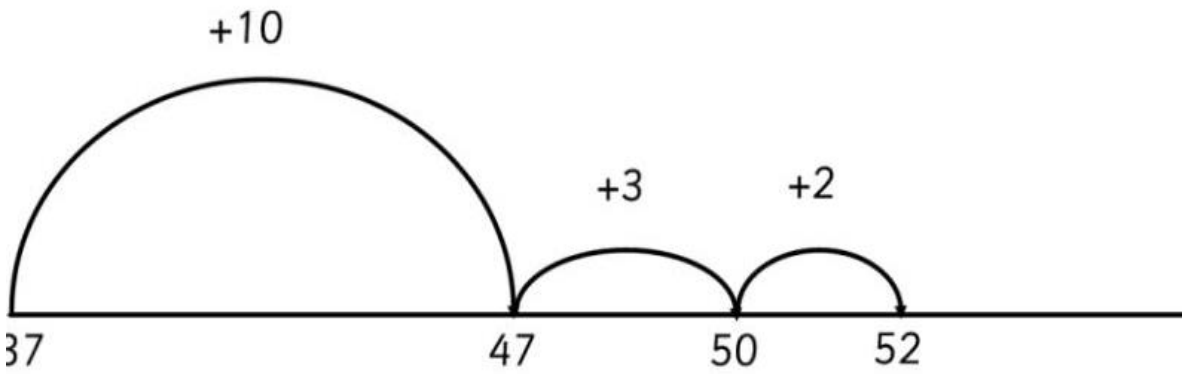
32 + 25 =

Now make one up of your own and have a go using this method of partitioning.

Addition

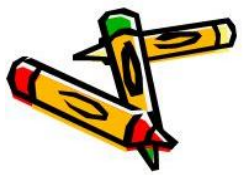
- Printed number lines and 100 squares work for smaller numbers, but as children progress they need a more flexible strategy.
- Meet **‘the empty number line’**

37 + 15 =



Jottings

34 + 24 =



Number bonds

- During Year 1, your child will start to learn their number bonds to 10 and then in Year 2 number bonds to 20.

- Really useful facts for your child to learn and remember
- Lots of different manipulatives to help them practise and recall these

Subtraction

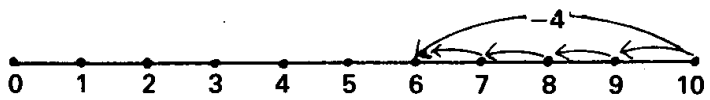
- More complex than addition
- Children are generally more familiar with the concept of more than they are with less.
- Children need to understand the connection between addition and subtraction.
- Subtraction is the **inverse** of addition

Subtraction

- In Year R children relate subtraction to the idea of ‘ taking away’ using ‘real life’ contexts.
- Practical activities and discussion
- Basic vocabulary **take away** **subtract** **less**
- **Symbol for subtraction and number sentence 5 – 3 =**

Subtraction

- Learning about subtraction in a broader sense.
- Still working with manipulatives
- Using a number line to subtract



Use the number line to subtract 4.

- The number line (and later the 100 square), helps children to use counting back as a means of calculating

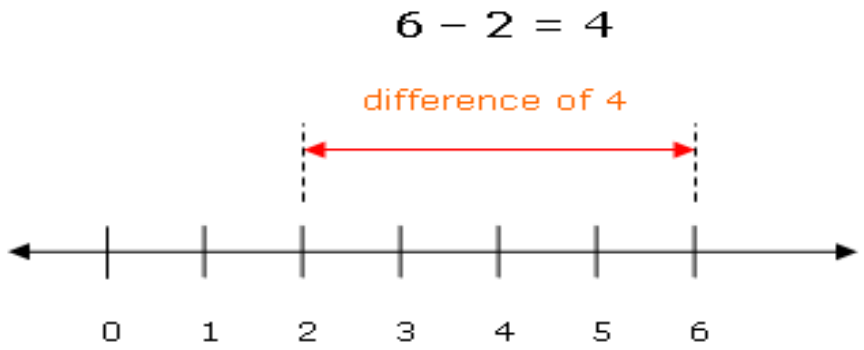
Subtraction

- To enable them to work out subtraction number sentences involving larger numbers, children use ***partitioning***, as they do with addition.
- This can be done on either the 100 square, or an empty number line.
- 45 – 22 =

Subtraction as difference

- Early experience of subtraction involves the idea of ‘taking away’.

- But subtraction as difference doesn’t involve anything being ‘taken away’

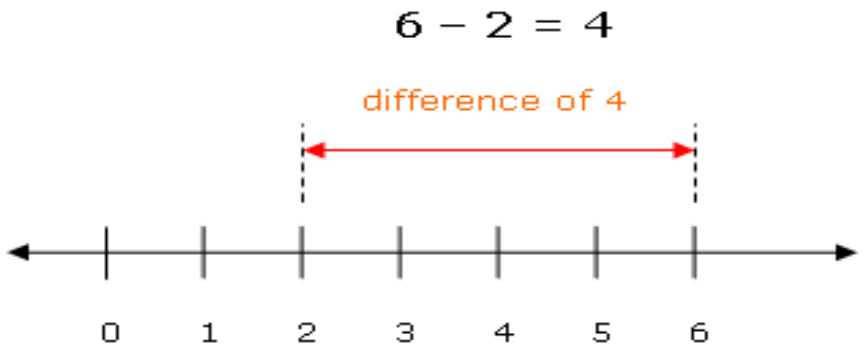


Subtraction as difference

- Consider these examples:

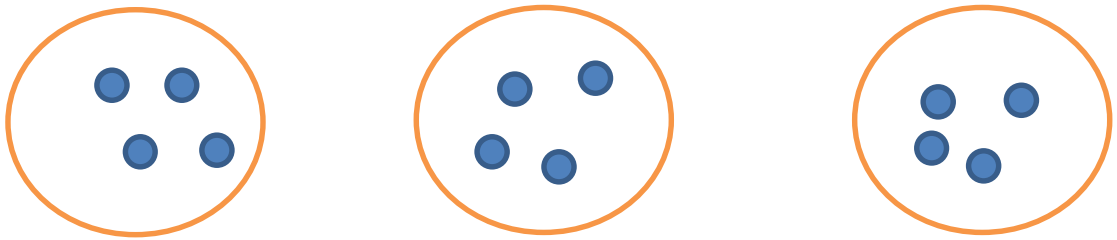
- ‘ I have 15 stickers and my friend has 20. How many more stickers does my friend have than me?’
- ‘A teddy costs £5 and a doll costs £2. What is the difference in these prices?’

Subtraction as difference



Early Multiplication

- Multiplication as repeated addition

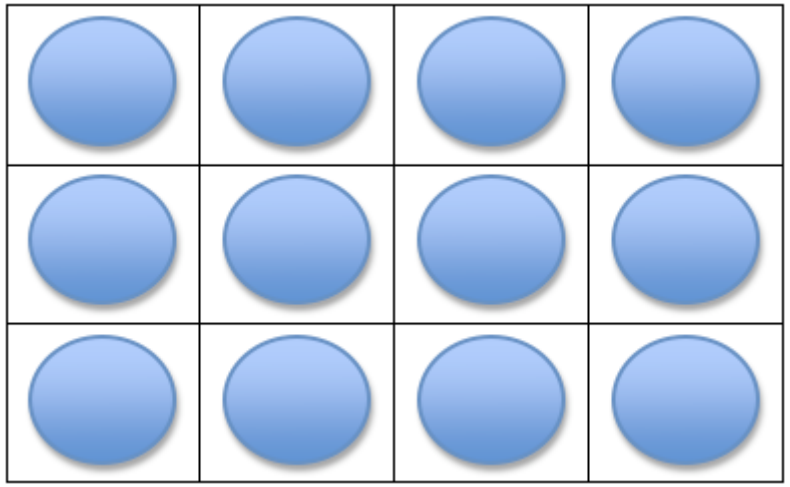


4 + 4 + 4 = 12

3 groups of 4 OR 3 x 4 = 12

Early Multiplication

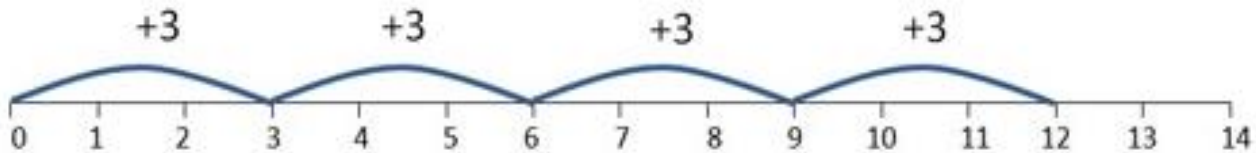
- **Arrays** are useful models for **multiplication**



- An **array** is formed by arranging a set of objects into rows and columns.

4 x 3 is the same as 3 + 3 + 3 +3

or



or

Early Division

- Division is initially done practically using real objects and then manipulatives, and then represented pictorially.

- It can be done by ***sharing*** *eg:*

- I have 6 sweets shared *equally* between 2 people. How many sweets will each person get?

6 ÷ 2 =

Early Division

…. Or by ***grouping :***

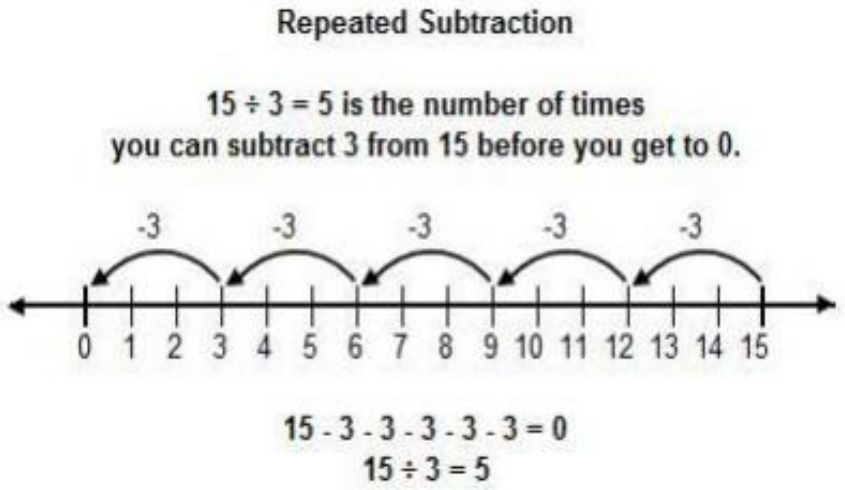
I have 12 sweets. I want to put 3 sweets in each party bag. How many bags will I need?

How many groups of 3 can I make from a set of 12?

Grouping and sharing are two different mathematical structures.

Early Division

Division can also be shown as repeated subtraction on a number line:



What can we do at home?

- Counting
- Games
- Shopping
- Cooking
- Using the internet

(See hand out for details)

HAVE FUN! ☺