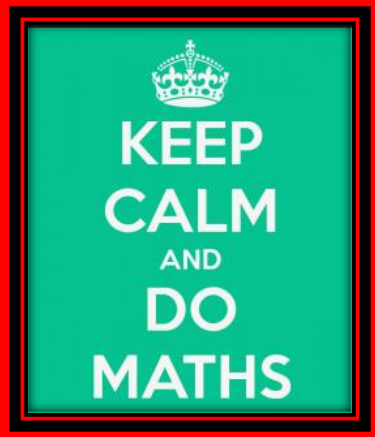
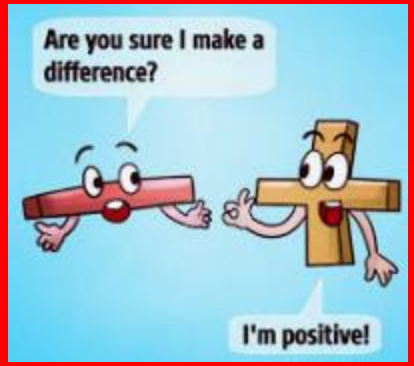
‘Clever Calculating’

‘Back to School’
at Park Hall Academy

everyone can



Children and adults find maths difficult because it is abstract. The CPA approach helps children learn new ideas and build on their existing knowledge by introducing abstract concepts in a more familiar way.



- Concrete
- Pictorial
- Abstract

Concrete, Pictorial, Abstract

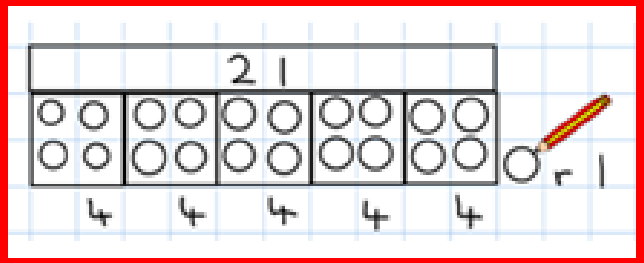
- **Concrete-** this is the 'doing' stage, using concrete objects to model problems.
- e.g. if a problem is about adding up four baskets of fruit, the children might first handle actual fruit before progressing to handling counters or cubes which are used to represent the fruit.

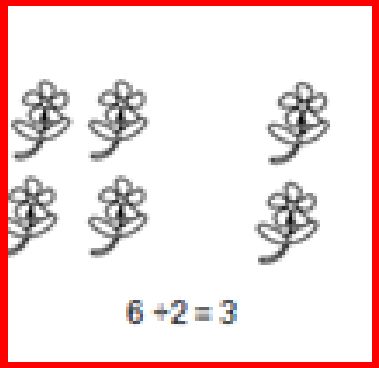


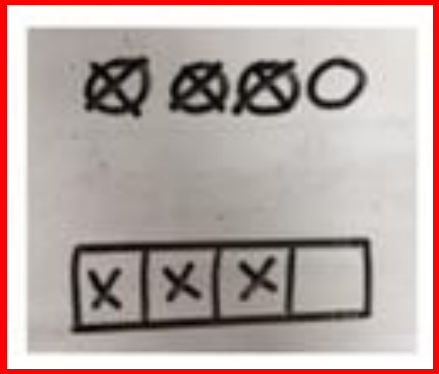


Concrete, **Pictorial**, Abstract

- Pictorial- this is the 'seeing' stage, using representations of the objects to model problems.
- e.g. building or drawing a model makes it easier to grasp concepts they traditionally find more difficult as it help them to visualise the problem.

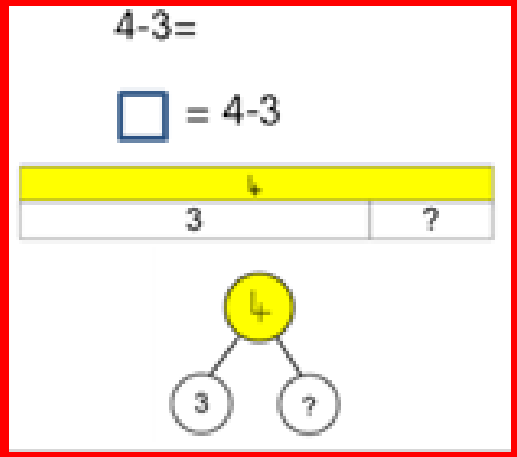


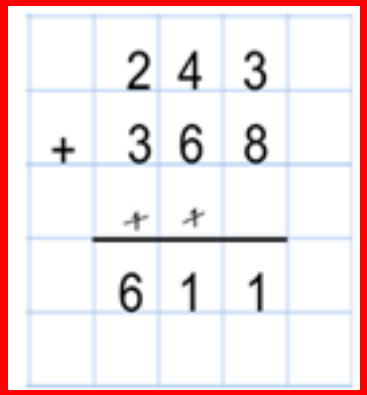




Concrete, Pictorial, Abstract

- A**bstract-** this is the 'symbolic' stage, where children are able to use abstract symbols to model problems.





Your turn!

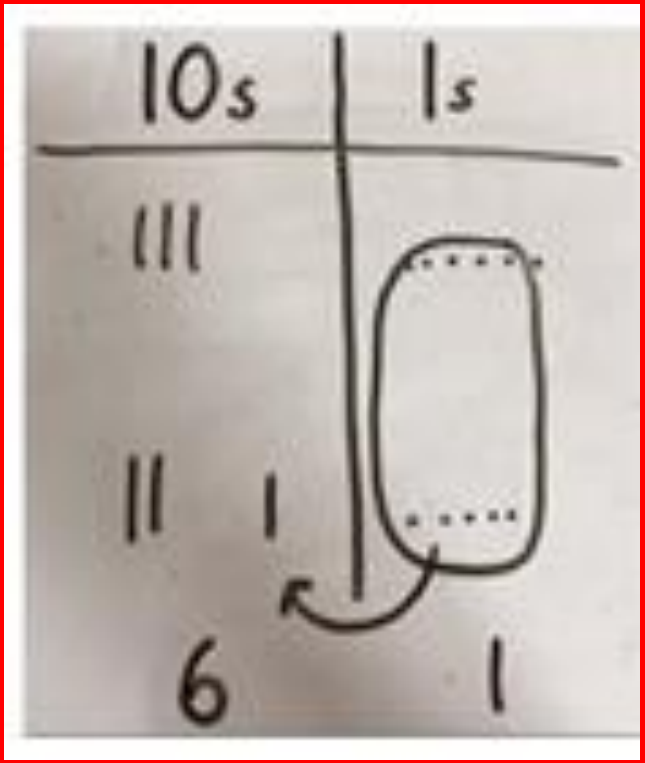
32 + 14 =

123 + 64 =

Challenge – 329 + 531 =

Pictorial

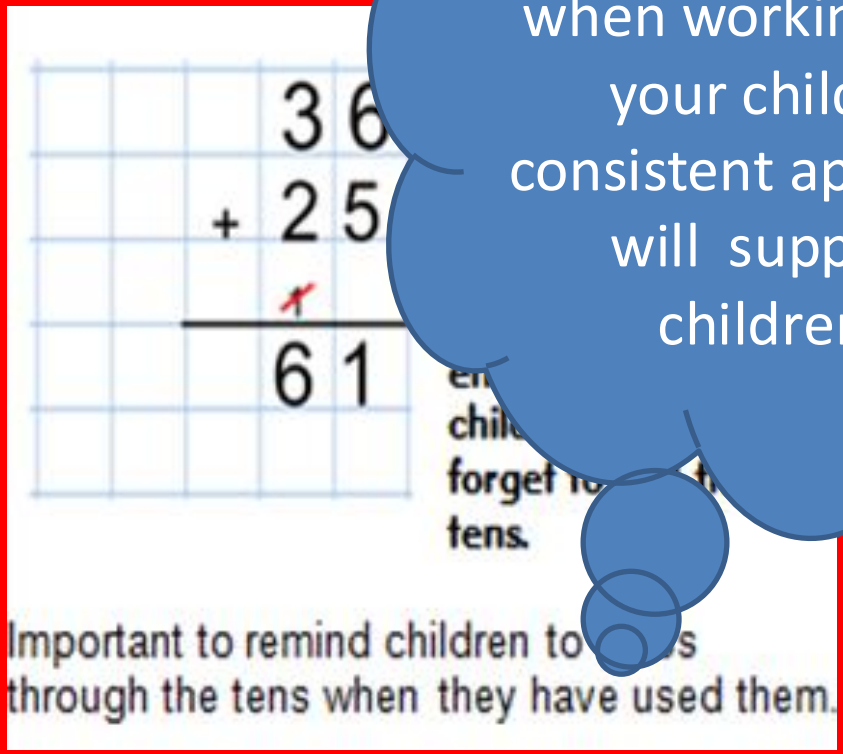
This is how the children will first begin to record their calculations before moving on to the abstract.



Key Vocabulary: regrouping, exchanging, tens, ones

Abstract

32 + 14



Please ensure that you follow this same approach when working with your child. A consistent approach will support children.

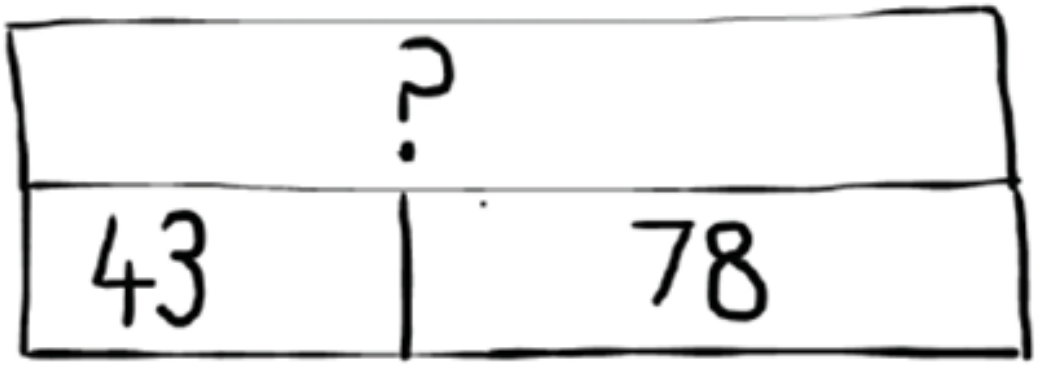
Bar modelling

- Bar modelling is a strategy to help pupils to reason a problem before solving it.

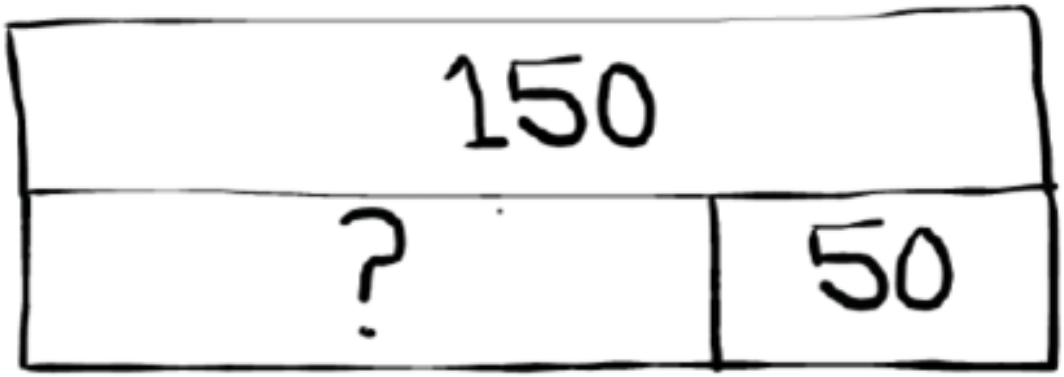
- A bar model will not give you the answer but it helps you to visualise and reason a problem.

Here are some typical representations of bar models with the four operations:

Bar model representing the addition equation '43 + 78 = ?'

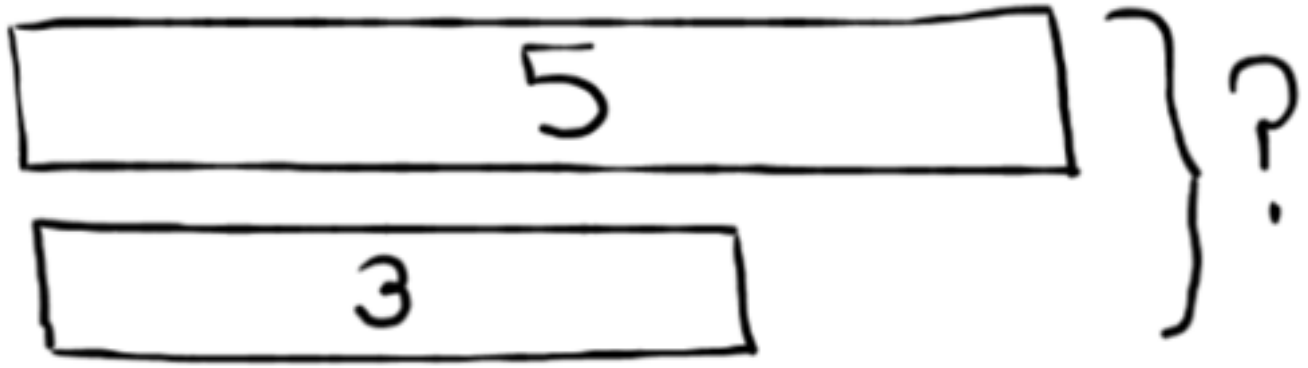


Bar model representing the subtraction equation '150 – 50 = ?'

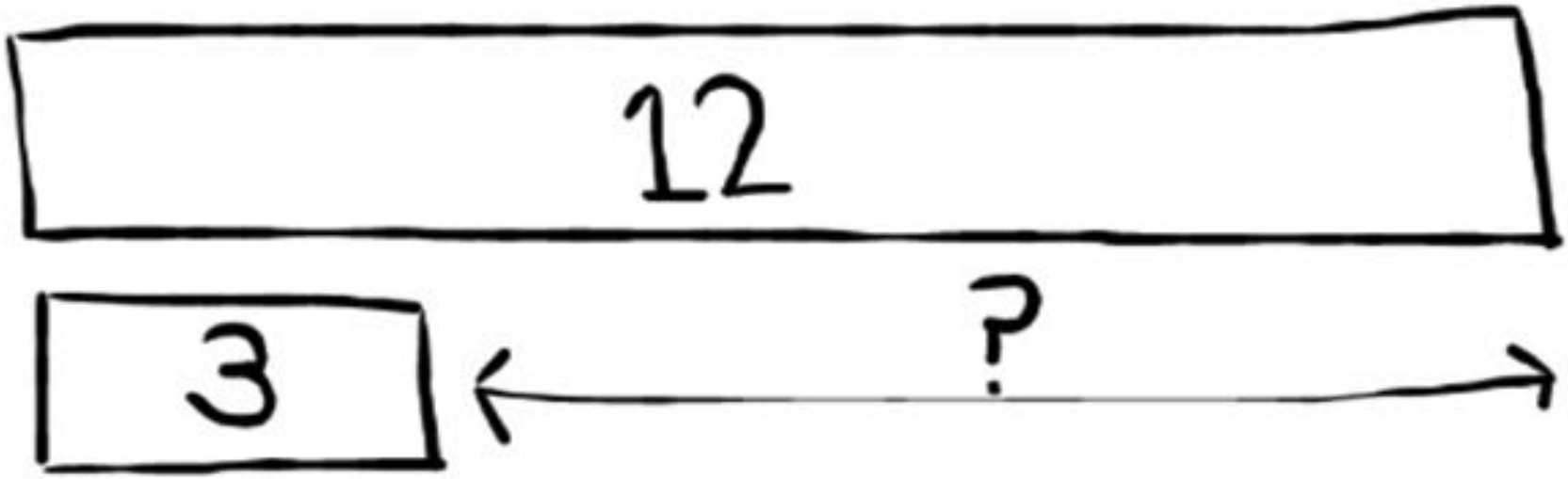


Comparison bar models

- In a **comparison bar model** two or more vertically aligned bars are drawn to help children to compare two (or more) amounts.
- With this type of bar model, brackets are often used to indicate the whole amount:



Sandi has 12 football cards and Umar has 3. How many more cards does Sandi have than Umar



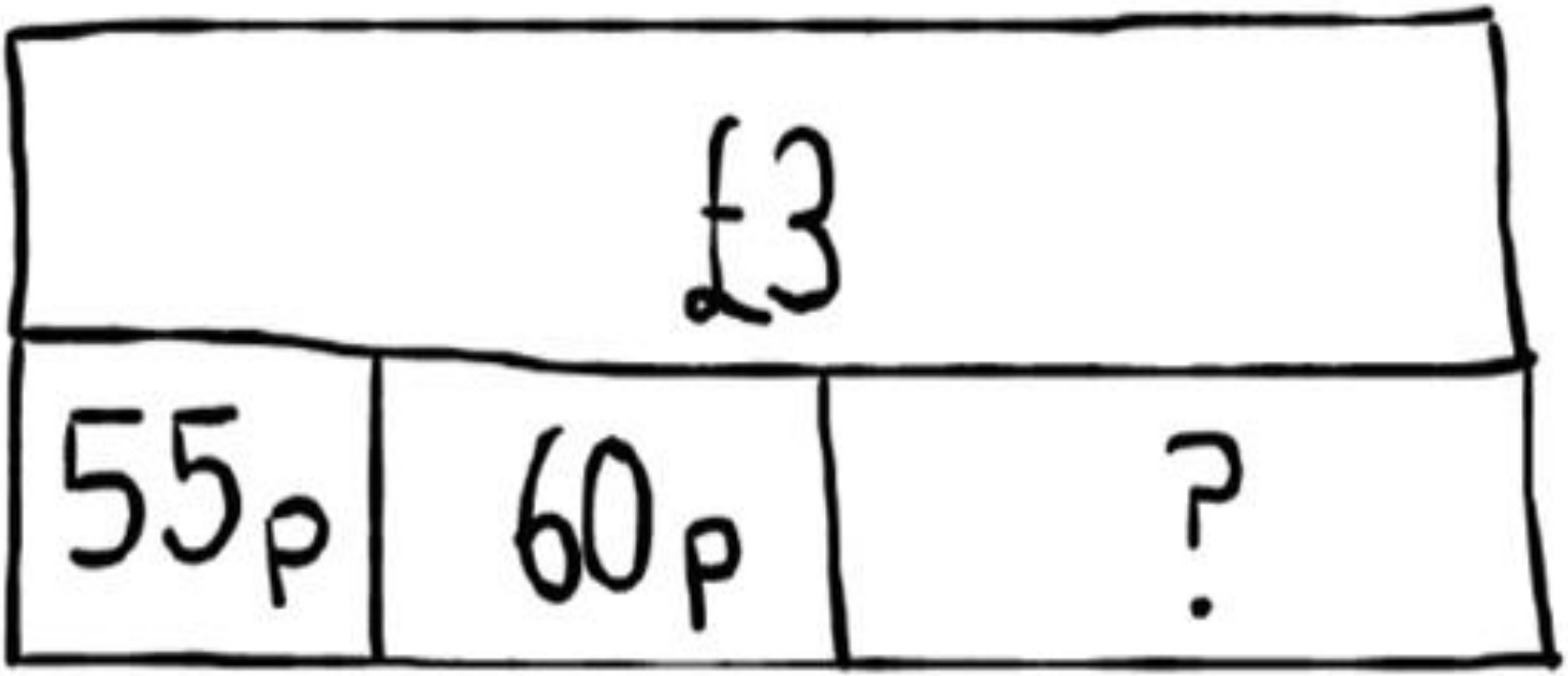
Money problems

- Bar modelling can help children to visualise the Maths in money problems.

A boy has £3. He buys some crisps for 55p and a chocolate bar for 60p.

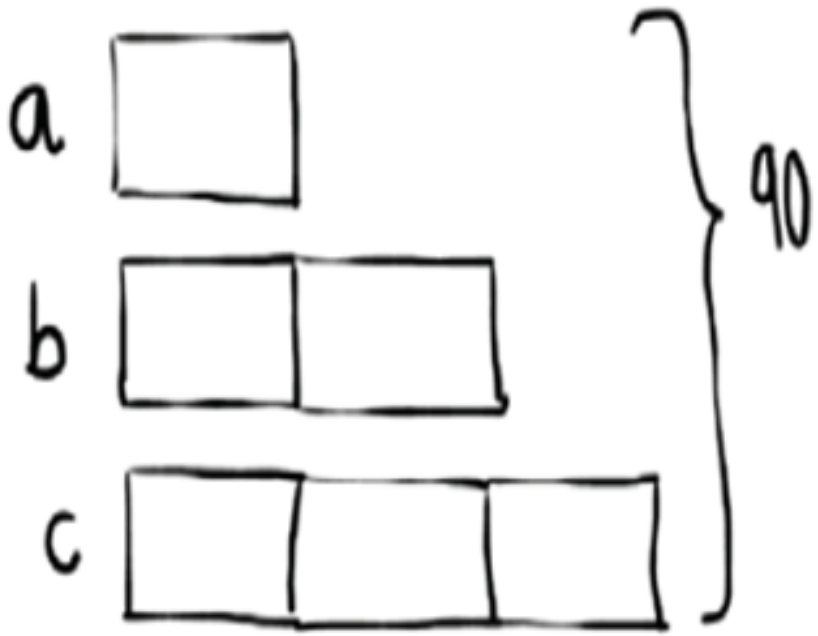
How much change does he get?

Have a go at drawing this problem in a bar model!


£3
55p
60p
?

90 sweets are shared between bowls a, b and c. Bowl b contains twice the amount that bowl a contains. Bowl c contains three times the amount that bowl a contains. How many more sweets does bowl b have than bowl a?

These are the types of problems that children are expected to solve in NCT's. Bar modelling provides a strategy to use.



90 sweets are shared between bowls a, b and c. Bowl b contains twice the amount that bowl a contains. Bowl c contains three times the amount that bowl a contains. How many more sweets does bowl b have than bowl a?

6 equal parts make the whole (90) an
needed.

We can see that there are 6 parts – 90 ÷ 6 = 15

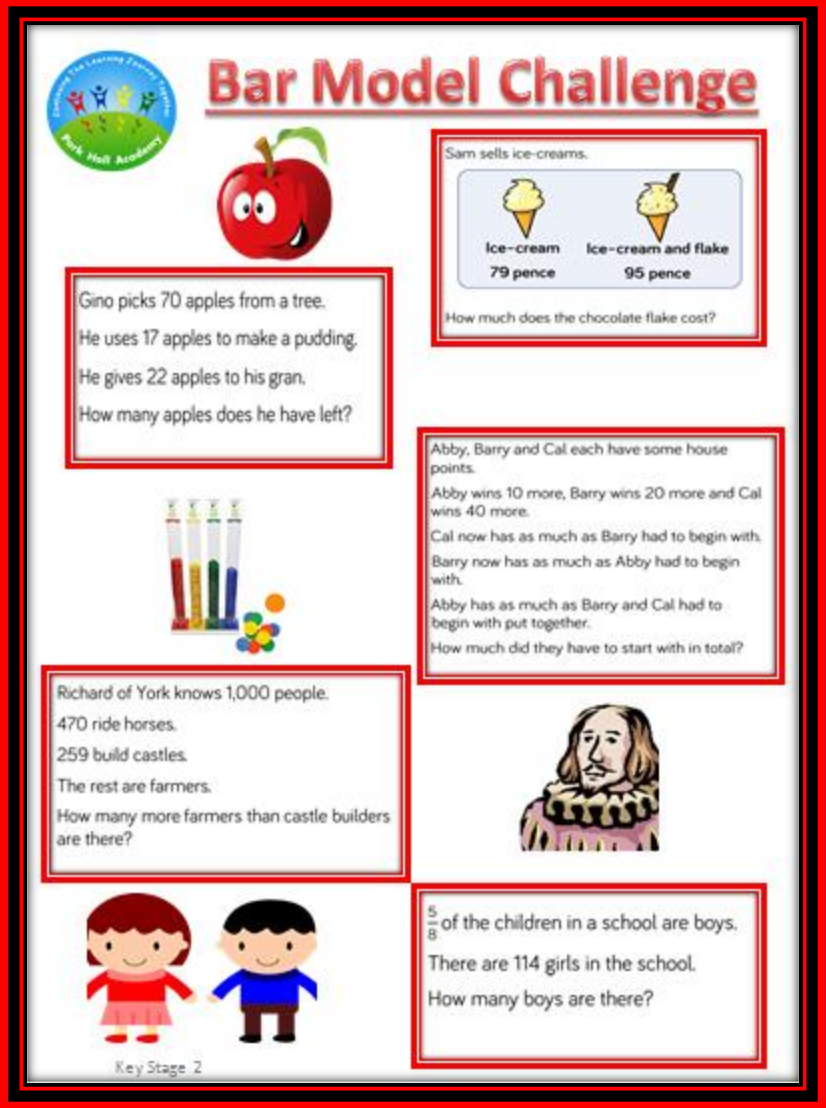
Each part equals 15, 30-15 =15

Clever Calculating

Your turn !

Please continue your learning together at home together! Remember to use all of the concrete, pictorial and abstract methods that you have seen today to solve the problems. You may go in to the pit, but remember marvellous mistakes are how we learn!

Please tweet us (@AcademyParkHall) photos of you continuing your learning journey at home.



Look out for our ‘Clever Calculation’ tweets and ‘Bar-vember’ bar models.

Please tweet us @AcademyParkHall pictures of you and your family enjoying the home learning activity.

All tweets will be entered in to a prize draw – you must be in it to win it!