Developing a whole school approach: subtraction

Bosley St Mary's Primary School

Rebecca Holland
Independent Education Consultant

Aims

- To consider the development of skills and processes associated with subtraction
- To consider teaching approaches and practical resources to support these and to address misconceptions either whole class or through interventions
- To reflect on your own practice and to identify personal next steps to investigate within your own class teaching

Card trick

Chico's cards are all different.

There is a number from 1 to 8 on each card.

Chico has chosen four cards that add up to 20.

What are they?

There are seven possibilities.

Try to find them all.

Since we last met

- Have you tried anything new within your teaching of mathematics?
- Have you used any new practical resources in connection with counting, place value and addition?
- Have you used any new published resources in connection with counting, place value and addition?
- Have you identified any further difficulties or misconceptions that individual children have with their understanding of number or calculation?

Subtraction at Bosley St Mary's

- How do children record subtraction at Bosley St Mary's?
- What resources do you use?
- What language do you use?

Early Learning Goals 2012

Mathematics involves providing children with opportunities to:

- count reliably with numbers from 1 to 20
- place numbers in order
- say which number is one more or one less than a given number
- use quantities and objects
- add and subtract two single-digit numbers and count on or back to find the answer
- solve problems, including doubling, halving and sharing
- use everyday language to talk about size, weight, capacity, position, distance, time and money to compare quantities and objects and to solve problems
- recognise, create and describe patterns
- explore characteristics of everyday objects and shapes and use mathematical language to describe them

National Curriculum 1999: KS1

During Key Stage 1 pupils:

- develop their knowledge and understanding of mathematics through practical activity, exploration and discussion
- learn to count, read, write and order numbers to 100 and beyond
- develop a range of mental calculation skills and use these confidently in different settings
- learn about shape and space through practical activity which builds on their understanding of their immediate environment
- begin to grasp mathematical language, using it to talk about their methods and explain their reasoning when solving problems

National Curriculum 1999: KS2

During Key Stage 2 pupils:

- use the number system more confidently
- they move from counting reliably to calculating fluently with all four number operations
- they always try to tackle a problem with mental methods before using any other approach
- pupils explore features of shape and space and develop their measuring skills in a range of contexts
- they discuss and present their methods and reasoning using a wider range of mathematical language, diagrams and charts

Subtraction

4.7 - 3.5

74 - 27

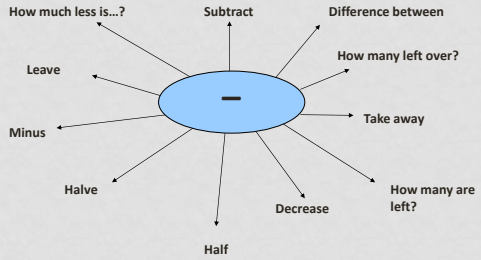
23 - 9

276 - 153

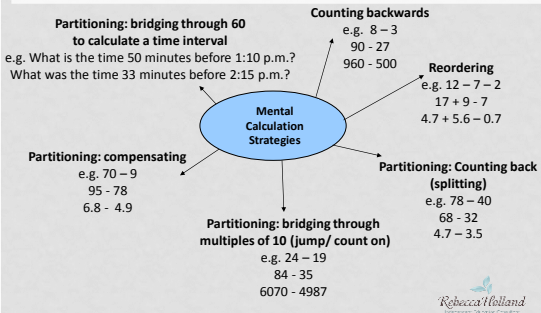
12 - 7 - 2

405 - 399

Subtraction



Range of mental calculation strategies



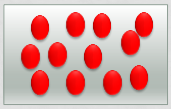
Subtraction

Take away (partitioning structure)

The partitioning structure refers to a situation in which a quantity is partitioned off or split and subtraction is required to calculate how many or how much remains

There are 12 counters in the box, 5 are removed how many are left?

how many left?
how many do not?
take away

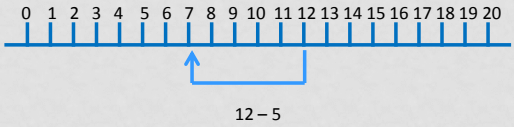


12 – 5

Count back (reduction strategy)

The reduction structure is similar to 'take away' but it is associated with different language.

If the price of a jumper costing £12.00 is reduced by £5.00, what is the new price?



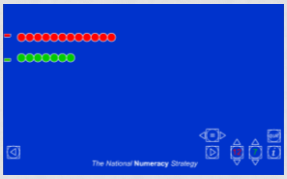
Start at and reduce by, *count back by,* *go down by*

Difference (comparison structure)

The comparison structure is used to make a comparison between two quantities.

How many more red beads are there than green beads?

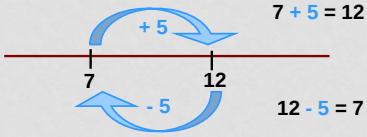
12 – 7



What is the difference?
How many more / less / fewer?
How much greater / smaller?

Inverse (inverse-of-addition structure)

The inverse-of-addition structure refers to situations where we have to determine what must be added to a given quantity in order to reach some target.



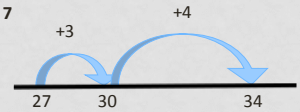
What must be added? *How many (much) more is needed?*

Difference (comparison)

There are 34 children in the room, 27 go into the hall.

How many are left behind?

34 – 27 = 7

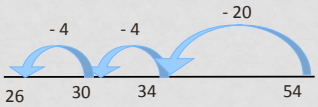


Modelling a count back strategy

The baker makes 54 loaves and sells 28.

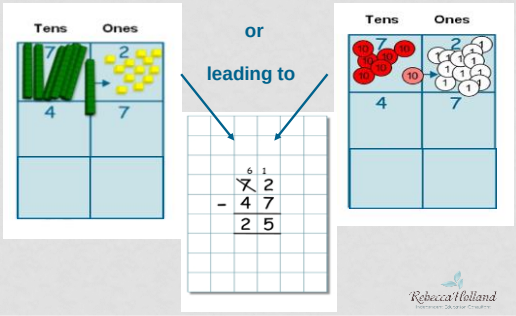
How many remain?

54 - 28



26 loaves are left

Moving to a written method



Expanded subtraction calculations

563 - 241

500 and 60 and 3
- 200 and 40 and 1
300 and 20 and 2

563
-241
322

50 13
500 and ~~60~~ and ~~3~~
-200 and 40 and 8
300 and 10 and 5

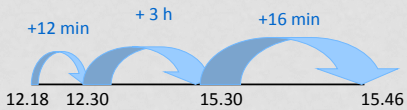
5 1
563
-248
315

Calculating time

The train leaves at 12.18 and arrives at 15.46.

How long is the journey?

The journey takes 3h 28min



Next steps

- For you:
  - What approaches, resources or models and images will you build into your lessons?
  - .
- For your school:
  - Do you need to make any changes to your documented approach?
  - .
- For 5th March:
  - Bring examples of approaches to multiplication to share at the meeting

Copyright