# Methods Guidance - Subtraction

## Concrete

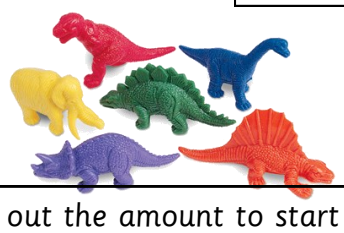
**Aims:**
To be used alongside the calculation policy and support the progression you are working on.

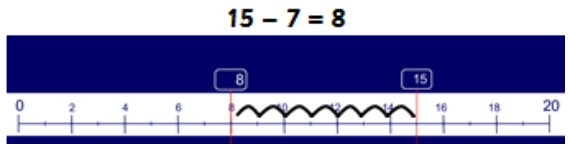
We teach the subtraction skill using the manipulatives indicated here to develop conceptual and procedural understanding.

Talk is embedded at every stage.

### Numicon

Create the start quantity (often the biggest value) in front of you. If possible, place the amount to be taken away over the existing number. If not, cover up the existing pieces with Numicon 1s to the amount being subtracted. Alternatively, cover over with squares of card cut to size.






| H | T | 1s |
|---|---|---|
| | | |

Count out the amount to start with (often the biggest value), then physically remove the amount that is being taken away and place separately.

Recount the amount left over after an amount is subtracted. This is the answer.

Children could also be encouraged to count backwards are they remove each individual object.

This can be transferred to a number line/100square.

The first number in the subtraction problem is created on the place value mat. We then physically remove the amount that is being subtracted. Children will clearly see when this is possible and highlights when it is appropriate to exchange within the calculation. This exchange needs to be shown on the calculation mat before the working out can continue.


## Contextual application

We continue to use the manipulatives in context or move onto making sense of the problem by drawing a mathematical story.


**Looking for patterns**

A shop sells magazines and comics. Last week Arthur bought a magazine and a comic. He can't remember exactly what he paid, but he thinks he paid £1·76. Yesterday he bought a magazine and four comics. He paid £4·30.

Do you think he is remembering correctly when he says that he paid £1·76 last week?

Two numbers have a difference of 2·38. What could the numbers be if:
- the two numbers add up to 6?
- one of the numbers is three times as big as the other number?

Show children a price list with items costing up to 20p.
I have 20p to spend. If I spend 20p exactly, which two items could I buy? And another two, and another two.

If I bought one of the items how much change would I have? And another one, and another one.

**Exploring relationships**

What's the same and what's different about the three sets of calculations?

| | | |
|---|---|---|
| 10 – 9 = | 20 – 19 = | 100 – 90 = |
| 10 – 8 = | 20 – 18 = | 100 – 80 = |
| 10 – 7 = | 20 – 17 = | 100 – 70 = |
| 10 – 6 = | 20 – 16 = | 100 – 60 = |
| 10 – 5 = | 20 – 15 = | 100 – 50 = |
| 10 – 4 = | 20 – 14 = | 100 – 40 = |
| 10 – 3 = | 20 – 13 = | 100 – 30 = |
| 10 – 2 = | 20 – 12 = | 100 – 20 = |

Make connections within Additive reasoning by linking subtraction skills and other objectives together. Subtracting money, time, measures are all good examples. Here we give the maths meaning in everyday life.

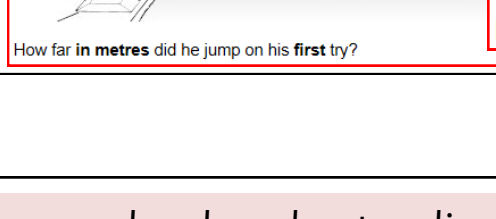
**Conjecturing**

Captain Conjecture says, 'If you keep subtracting 3 from 397 you will eventually reach 0.'

Do you agree?
Explain your reasoning.

Max jumped **2.25 metres** on his **second** try at the long jump.

This was **75 centimetres** longer than on his **first** try.



How far **in metres** did he jump on his **first** try?

Dev and Joe each buy a book.

Dev pays with a £5 note and gets £1.05 change.

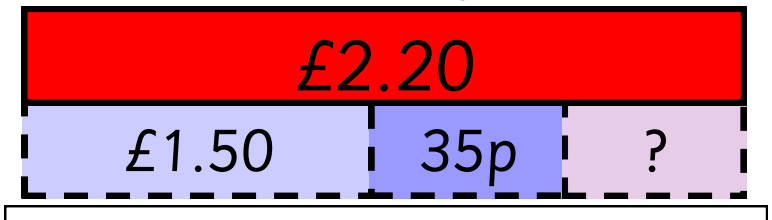
Joe's book costs £7

How much **more** does Joe's book cost than Dev's book?

## Abstract

Children have a good conceptual and procedural understanding of subtraction. They can now apply this understanding in an abstract form.

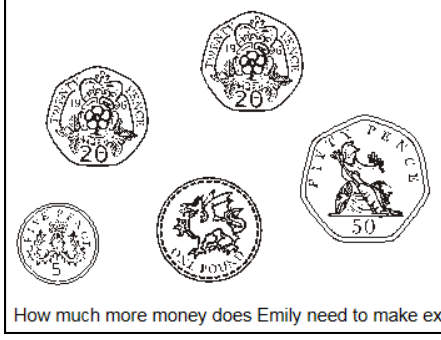
**Jon is given £2.20 for his pocket money. He buys a magazine for £1.50 and a chocolate bar for 35p. How much does he have left?**




The 'Bar Model' is a great way for children to organise their thinking and is a way of recording the problem but is not a method to solve a problem. Mental skills or the current progression need to be used alongside.

Abstract application may also be simply using the correct formal written method and/or progression from the calculation policy.

Emily has these coins.



How much more money does Emily need to make exactly £5?

Mina and Ben play a game.

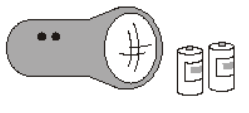
Mina scores 70 points.

Ben scores 42 points.

How many **more** points does Mina score than Ben?

A torch costs £7.65

Kate buys a torch and **two** batteries.



She pays £8.75 altogether.

How much does **one** battery cost?