

# SCPS Calculation Guide

## Year 1

This guide shows illustrations and examples of the methods used to teach addition, subtraction, multiplication and division



# Year 1

## Addition

### Adding 1-digit Numbers within 10

$4 + 3 = 7$

When adding numbers to 10, children can explore both aggregation and augmentation.

The part-whole model, discrete and continuous bar model, number shapes and ten frame support aggregation.

The combination bar model, ten frame, bead string and number track all support augmentation.

## Models and Representations

Part-whole model  
Bar model  
Number shapes

Ten frames (within 10)  
Bead strings (10)  
Number tracks

# Year 1

## Addition

### Adding 1 and 2-digit Numbers to 20

$8 + 7 = 15$

When adding one-digit numbers that cross 10, it is important to highlight the importance of ten ones equalling one ten.

Different manipulatives can be used to represent this exchange. Use concrete resources alongside number lines to support children in understanding how to partition their jumps.

## Models and Representations

- Part-whole model
- Bar model
- Number shapes
- Ten frames (within 20)
- Bead strings (20)
- Number tracks
- Number lines (labelled)
- Straws

# Year 1

## Subtraction

### Subtract 2 1-digit numbers to 10

The image displays several models for subtraction:

- Part-whole model:** A circle containing '7' is divided into two smaller circles, one containing '?' and the other containing '3'.
- Bar model:** A horizontal bar divided into seven equal segments. The first three segments are shaded with diagonal lines, and the remaining four are white. A bracket above the bar is labeled '7', and a bracket below the shaded part is labeled '3'. A question mark '?' is placed below the white part.
- Ten frame:** A 2x5 grid. The top row has four red dots and one yellow dot. The bottom row has two yellow dots and three empty spaces.
- Number track:** A horizontal line with ten numbered boxes from 1 to 10. The boxes for 4 and 7 are circled in red. Blue arrows point from 7 to 6, 6 to 5, and 5 to 4.
- Physical models:** A stack of seven green cubes, a stack of three yellow cubes, a stack of three blue cubes, and a string of seven beads (four red, three yellow).
- Equation:** A box containing the equation  $7 - 3 = 4$ .
- Process models:** A sequence of three ten frames labeled 'First', 'Then', and 'Now'. 'First' shows 7 red dots. 'Then' shows 4 red dots and 3 yellow dots. 'Now' shows 4 red dots. Below 'Then' are three loose red dots.
- Other models:** A bar model with a bracket above labeled '7' and a bracket below labeled '3' and '3', with a question mark '?' below the first part. A bar model with a bracket above labeled '7' and a bracket below labeled '3' and '3', with a question mark '?' below the first part.

Part-whole models, bar models, ten frames and number shapes support partitioning.

Ten frames, number tracks, single bar models and bead strings support reduction.

Cubes and bar models with two bars can support finding the difference.

## Models and Representations

Part-whole model  
Bar model  
Number shapes

Ten frames (within 10)  
Bead strings (10)  
Number tracks

# Year 1

## Subtraction

### Subtract 1 and 2-digit Numbers to 20

$14 - 6 = 8$

When subtracting one-digit numbers that cross 10, it is important to highlight the importance of ten ones equalling one ten.

Children should be encouraged to find the number bond to 10 when partitioning the subtracted number. Ten frames, number shapes and number lines are particularly useful for this.

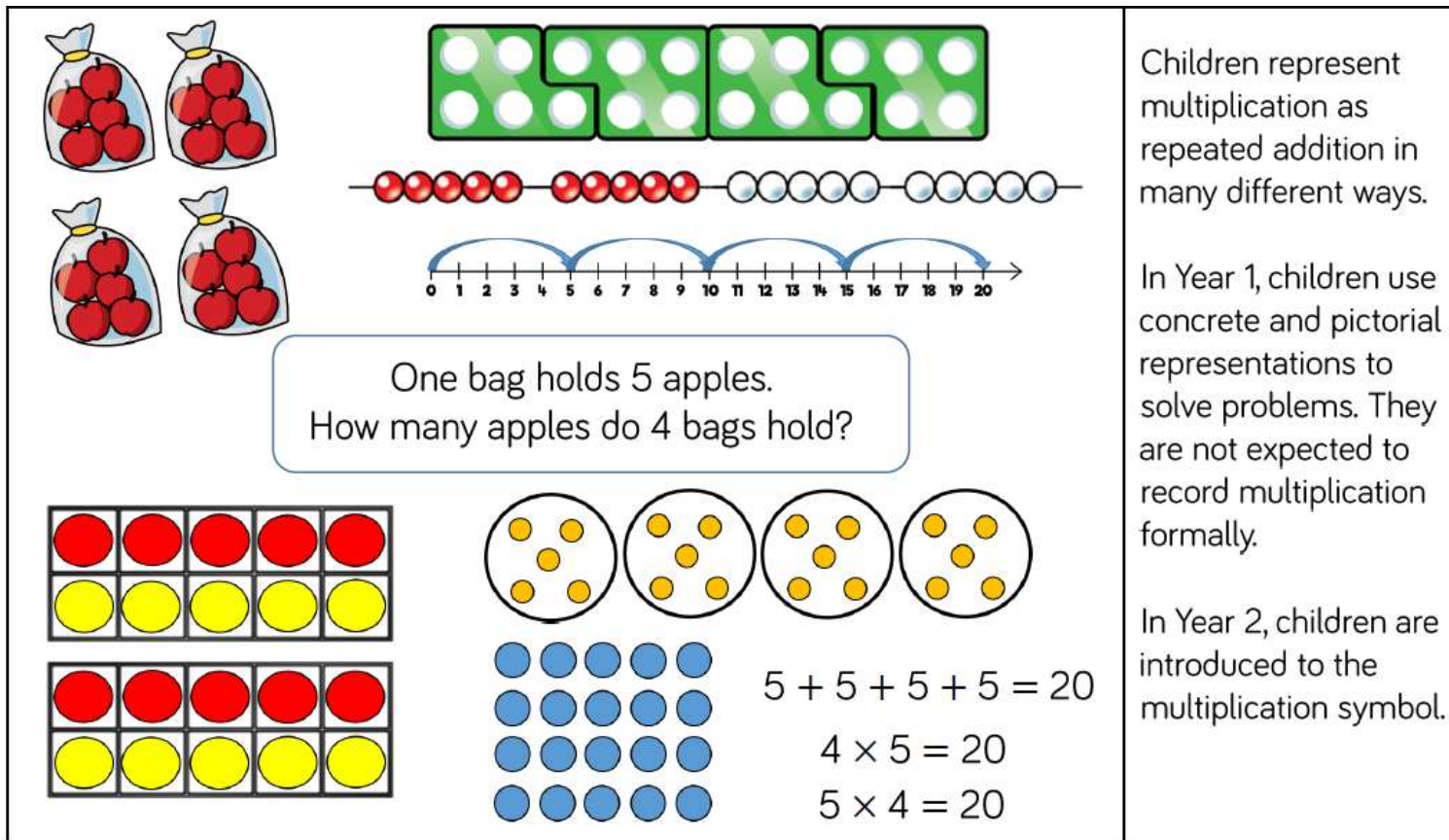
### Models and Representations

- Part-whole model
- Bar model
- Number shapes
- Ten frames (within 20)
- Bead strings (20)
- Number tracks
- Number lines (labelled)
- Straws

# Year 1

## Multiplication

Solve 1-step problems with multiplication



One bag holds 5 apples.  
How many apples do 4 bags hold?

$$5 + 5 + 5 + 5 = 20$$
$$4 \times 5 = 20$$
$$5 \times 4 = 20$$

Children represent multiplication as repeated addition in many different ways.

In Year 1, children use concrete and pictorial representations to solve problems. They are not expected to record multiplication formally.

In Year 2, children are introduced to the multiplication symbol.

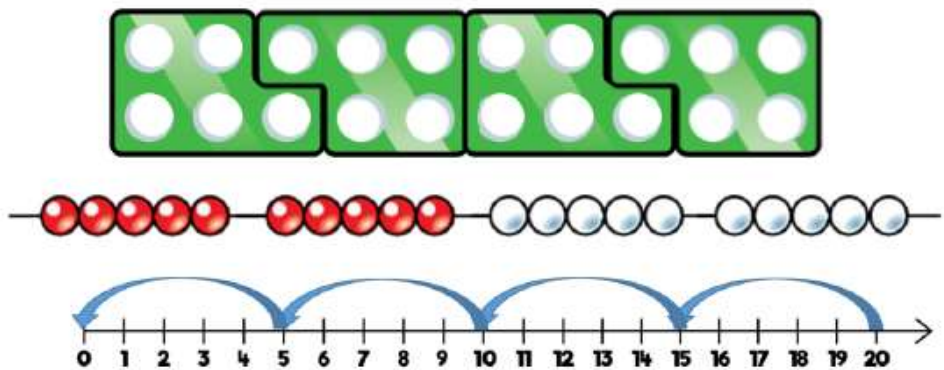
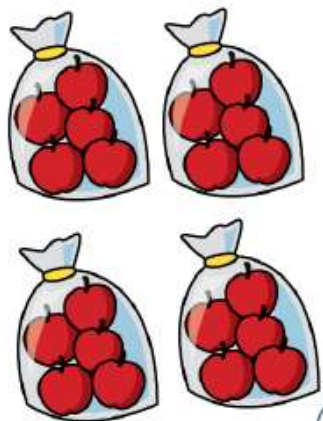
### Models and Representations

Bar model  
Number shapes  
Counters

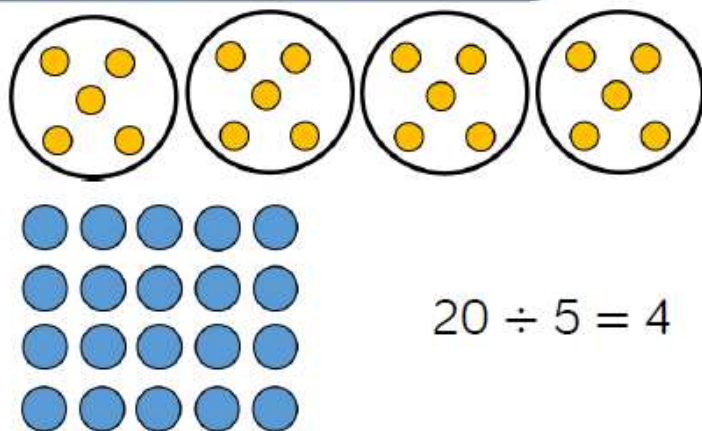
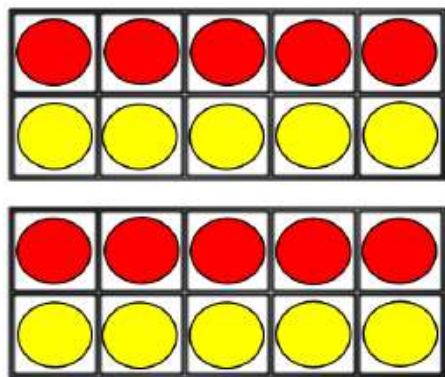
Ten frames  
Bead strings  
Number lines

## Year 1 Division

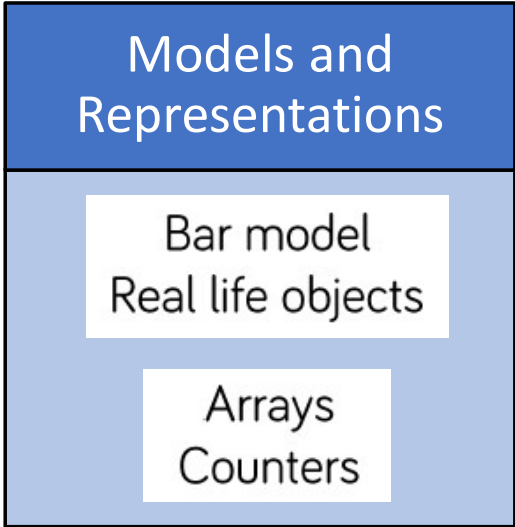
Solve 1-step problems with division (grouping)



There are 20 apples altogether.  
They are put in bags of 5.  
How many bags are there?



$$20 \div 5 = 4$$



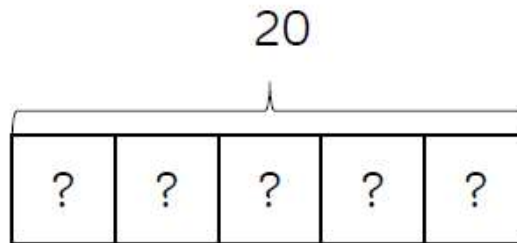
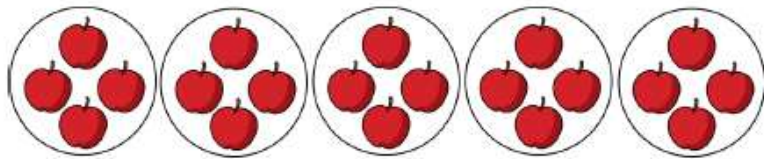
Children solve problems by grouping and counting the number of groups.

Grouping encourages children to count in multiples and links to repeated subtraction on a number line.

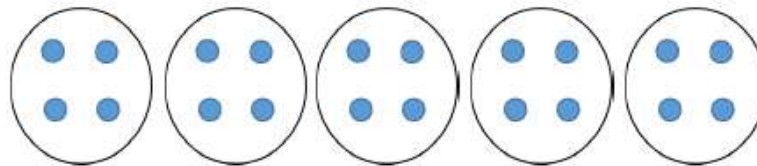
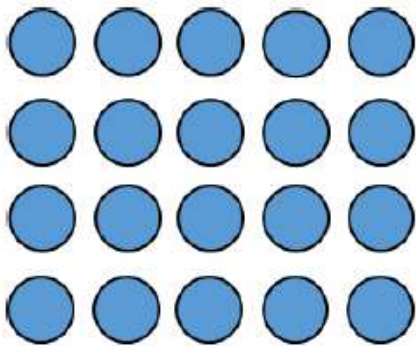
They can use concrete representations in fixed groups such as number shapes which helps to show the link between multiplication and division.

## Year 1 Division

Solve 1-step problems using multiplication (sharing)



There are 20 apples altogether.  
They are shared equally between 5 bags.  
How many apples are in each bag?



$$20 \div 5 = 4$$

### Models and Representations

Part-whole model  
Bar model

Arrays  
Counters

Children solve problems by sharing amounts into equal groups.

In Year 1, children use concrete and pictorial representations to solve problems.

They are not expected to record division formally.

In Year 2, children are introduced to the division symbol.