

# SUBTRACTION STRATEGIES

Adequate numeracy provides lifelong opportunities to the fulfilment and social and workplace participation. Despite ever increasing technologies a growing number of students fail to acquire essential mathematical skills and a positive disposition towards mathematics.

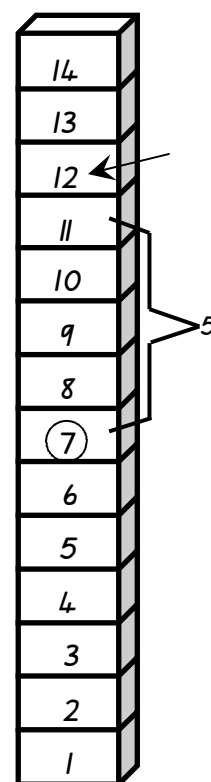
Mathematical problem solving is a cognitive activity requiring a reasonable level of automaticity in recalling and applying fundamental number skills.

This workbook provides handy strategies to teach skills that students need to perform subtractions. Students are encouraged to master basic subtraction facts by learning simple computations techniques. The application of correct strategies will give the students confidence and encouragement to apply this knowledge and skills to solve simple problems and to develop a positive attitude towards mathematics.

Many children get confused when to count forward to add and when to count back to subtract.

It is better to *count forward* from left to right  
and *count back* from right to left  
or better still, to *count up* to add  
and *count down* to subtract.

Counting down is for some students much easier than counting back from right to left.



## Use number lines to subtract.

### Vertical number line.

$$12 - 5 = 7$$

Touch the numbers as you count from top down saying 12 and then count 11, 10, 9, 8, 7.

### Horizontal number line.

$$16 - 4 = 12$$

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17

Touch the numbers as you count back from the right, saying 16 and then count 15, 14, 13, 12.



Using dot patterns to subtract.

Each number has a dot pattern the students use to count back.

1    2    3    4    5    6    7    8    9

$$7 - \begin{array}{c} \dot{2} \\ \cdot \\ \dot{5} \end{array} = 5$$

$$8 - \begin{array}{c} \dot{3} \\ \cdot \\ \dot{5} \end{array} = 5$$

$$6 - \begin{array}{c} \dot{4} \\ \cdot \\ \dot{3} \end{array} = 2$$

$$9 - \begin{array}{c} \dot{5} \\ \cdot \\ \dot{5} \end{array} = 4$$

At first the students make the dots as they count, then when they get comfortable with the patterns, they pretend to make the dots as they count until the dots are no longer needed and the recall of number facts becomes automatic.

The dot strategy can be applied to single digit horizontal subtraction as well as to vertical subtraction of multiple digit numbers.

Two digit application, no regrouping:

$$\begin{array}{r} 46 \\ - \dot{2} \dot{3} \\ \hline 23 \end{array}$$

Three digit application, no regrouping:

$$\begin{array}{r} 695 \\ - \dot{2} \dot{4} \dot{3} \\ \hline 452 \end{array}$$



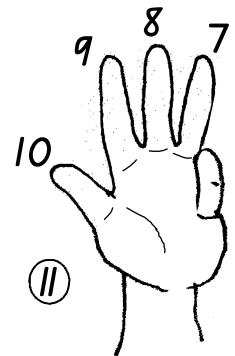
## Using Fingers as a number line.

Somehow we have developed a negative attitude to the use of fingers. If we use the fingers as a ready made number line, the recall of number facts becomes easier and after a while the children will use the method only occasionally, when stuck.

### Count Back

$$11 - 4 =$$

Open up 4 fingers, touch the number eleven and then go on touching each finger as you count back 10, 9, 8, 7.  
The answer is **7**.

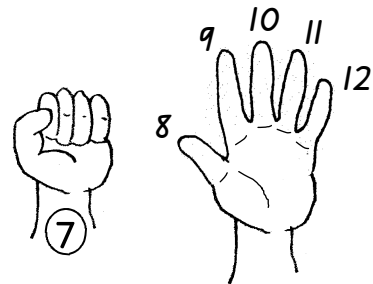


### Count On

$$15 - 8 =$$

Put the fingers in a fist. touch the fist saying 7 and then count on saying 8, 9, 10, 11, 12, opening one finger after another (starting with the thumb) until the word 12, then count the open fingers to find the answer **5**.

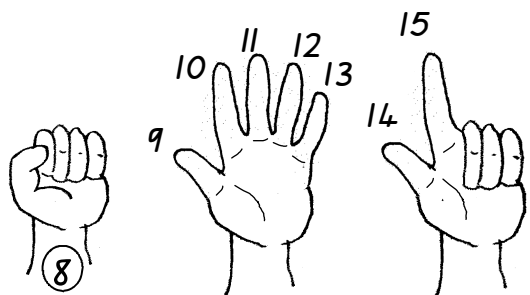
$$7 + \boxed{5} = 12 \text{ therefore } 12 - 7 = \boxed{5}$$



5 fingers are open, the answer is **5**.

$$15 - 8 =$$

$$8 + \boxed{7} = 15 \text{ therefore } 15 - 8 = \boxed{7}$$



7 fingers are open, the answer is **7**.

# miniLUK Self Checking System

Students who are slow to recall the numbers to write are doing well using the LUK system, just working out the answer and placing the tile on the correct number.

The advantage of the LUK system is that the students can work independently, check their answers and correct their mistakes.

The students like to work with the tiles, searching for the numbers and looking forward to be rewarded by a pattern. They think of LUK as a game.

## How to use the miniLUK System.

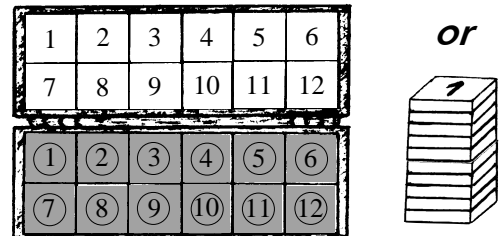
The lid of the mini LUK tray (box) is divided into 12 blank squares, the base is divided into 12 numbered squares. There are 12 numbered tiles to work with.

Step 1.

Place the 12 tiles in sequence from 1 to 12 on the blank squares on the lid of the miniLUK box.

or

Place the 12 tiles in sequence from 1 to 12 on the table ready to be used.

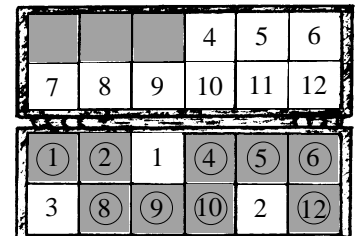


Step 2.

Choose your worksheet (page).

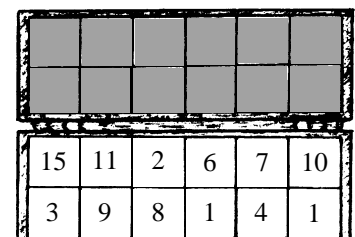
Step 3.

Pick up tile number **1** and place it under or next to the number 1 subtraction sentence. Work out the problem and write the answer (number). Find this number on the base of the miniLUK box. Place the tile number **1** onto that number. Continue in the same way until all 12 problems are solved and the 12 tiles are transferred from the lid to the bottom of the miniLUK box.



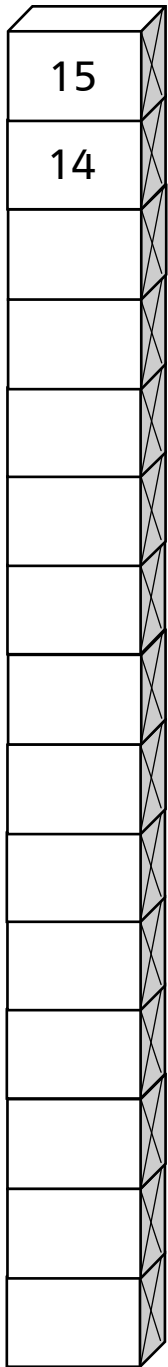
Step 4.

When finished and all tiles are placed on the correct squares, the task is completed. Close the lid of the box and turn the Mini LUK over sideways. Open the lid and a geometrical pattern will be formed by the back of the tiles.



Step 5.

Match the pattern in the box with the pattern on the bottom of the page and colour match the pattern.



1	$6 - 4 =$
2	$7 - 4 =$
3	$8 - 3 =$
4	$5 - 4 =$
5	$15 - 3 =$
6	$6 - 2 =$
7	$10 - 2 =$
8	$14 - 4 =$
9	$9 - 3 =$
10	$10 - 3 =$
11	$13 - 2 =$
12	$12 - 3 =$

