

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 disposition towards mathematics.

Combination of hand on strategies and techniques makes learning number facts easier and less frustrating. Using fingers as a substitute for a number line is such a strategy. We do not have a number line in our pocket, but we have 10 fingers ready to be used whenever the need arises. Just as we use the number line to understand and learn the basic mathematical calculations, the fingers help us to learn, memorise and recall accurately all the useful number facts.

To make subtraction for young students easier, use either

- A. Counting Back Strategy
- or
- B. Counting On Strategy

Counting Back Strategy

$$13 - 4 = 9$$

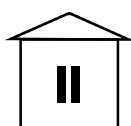
To subtract 1, 2, 3, 4, 5 is best to apply count back strategy using either fingers or a dot pattern as a tool.

For example:

$13 - 4 =$ Say thirteen and then count back four 9 10 11 12 13 ;
the answer is 9 .

Counting On Strategy

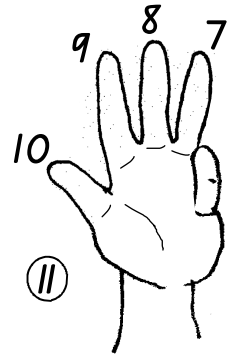
To subtract 5, 6, 7, 8, 9 is best to count on using fingers or dot patterns.



Using Fingers to 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**.



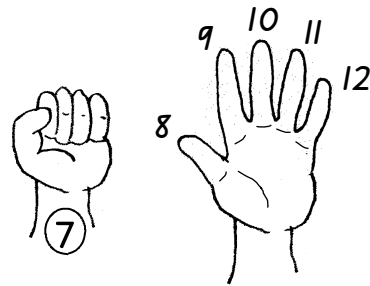
Using Fingers to Count On

$$12 - 7 =$$

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**.

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

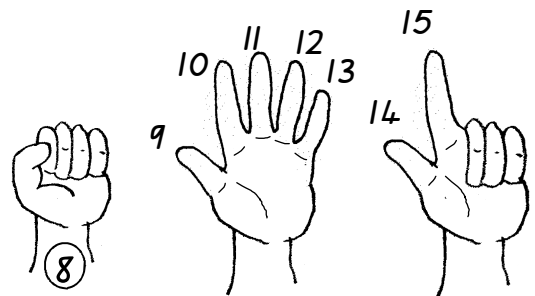
5 fingers are open, the answer is 5.



$$15 - 8 =$$

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

7 fingers are open, the answer is 7.



I have used these two strategies for many years. As the children lose their fear of recalling the correct number fact, their computation strategy becomes more meaningful, and the recall becomes automatic, the students actually became competent learners.



Using Dot Patterns Strategy

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

1 2 3 4 5 6 7 8 9

$$7 - \overset{6}{\underset{5}{\dot{2}}} = 5$$

$$8 - \overset{7}{\underset{5}{\dot{3}}} = 5$$

$$6 - \overset{5}{\underset{3}{\dot{4}}} = 2$$

$$9 - \overset{8}{\underset{5}{\dot{5}}} = 4$$

At first the students make the dots as they count, then they touch the numerals as if to make the dots to count.

Later they recall the patterns and the matching number facts.



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:

$$\begin{array}{r} 46 \\ - \overset{6}{\underset{3}{\dot{2}}}\overset{3}{\dot{3}} \\ \hline 23 \end{array}$$

Three digit application, no regrouping:

$$\begin{array}{r} 695 \\ - \overset{5}{\dot{2}}\overset{4}{\dot{4}}\overset{3}{\dot{3}} \\ \hline 452 \end{array}$$

Two digit application, with regrouping:

$$\begin{array}{r} \overset{6}{7} \overset{13}{3} \\ - \overset{3}{\dot{3}}\overset{6}{\dot{6}} \\ \hline \hline 37 \end{array}$$

The miniLUK Self Checking System

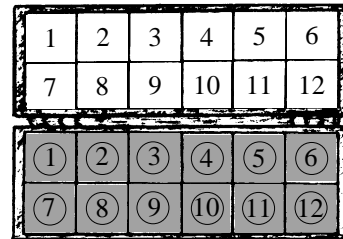
The lid of the mini LUK tray (box) is divided into 12 blank squares, the base is divided into 12 numbered squares. There are 12 numbered tiles to work with.

Step 1.

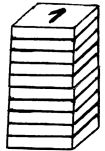
Place the 12 tiles in sequence from 1 to 12 on the blank squares on the lid of the miniLUK box.

or

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



or



Step 2.

Choose your worksheet (page).

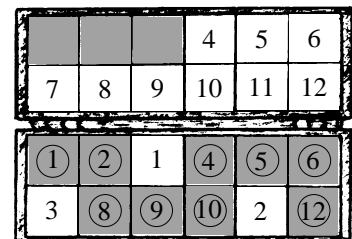
Step 3 A.

Pick up tile number **1** and place it under or next to the number 1 problem. Work out the difference, and look for the answer at the bottom of the page. The number under the answer is the code number to look for in the grid of the LUK box. Place the tile on that number. Take the tile number **2**, look for the answer and the LUK code number and place the tile on that number in the box. Work out all the problems, find the code numbers and place the tiles on the correct squares.

Answers	43	415	12	42	71	41
LUK code	9	3	5	12	7	1

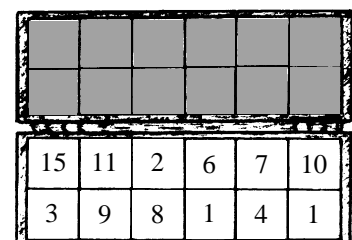
Step 3 B.

Some of the worksheets have only the answers at the bottom, not the code numbers. Pick up tile number **1** and place it under or next to the number 1 problem. Work out the difference and write the answer. Find this number on the base of the miniLUK box. Place the tile number **1** on 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.





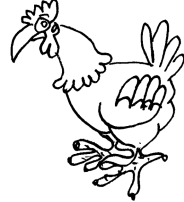
When finished and all tiles are placed on the correct squares, the task is completed. Close the lid of the box and turn the Mini LUK over sideways. Open the lid and a geometrical pattern will be formed by the back of the tiles.



Step 5.

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

Cross off the answers or use the LUK.

1	$\begin{array}{r} 53 \\ - 30 \\ \hline \\ \hline \end{array}$ 	7	$\begin{array}{r} 53 \\ - 40 \\ \hline \\ \hline \end{array}$
2	$\begin{array}{r} 89 \\ - 70 \\ \hline \\ \hline \end{array}$	8	$\begin{array}{r} 85 \\ - 20 \\ \hline \\ \hline \end{array}$
3	$\begin{array}{r} 68 \\ - 10 \\ \hline \\ \hline \end{array}$ 	9	$\begin{array}{r} 97 \\ - 40 \\ \hline \\ \hline \end{array}$ 
4	$\begin{array}{r} 78 \\ - 30 \\ \hline \\ \hline \end{array}$	10	$\begin{array}{r} 88 \\ - 60 \\ \hline \\ \hline \end{array}$
5	$\begin{array}{r} 87 \\ - 60 \\ \hline \\ \hline \end{array}$ 	11	$\begin{array}{r} 66 \\ - 30 \\ \hline \\ \hline \end{array}$
6	$\begin{array}{r} 85 \\ - 40 \\ \hline \\ \hline \end{array}$	12	 $\begin{array}{r} 98 \\ - 60 \\ \hline \\ \hline \end{array}$

Answers	13	28	36	65	23	38	19	57	58	45	48	27
LUK code	1	2	6	9	8	10	3	12	11	4	7	5

No regrouping yet.

Regroup and Subtract

