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Count the tenths and hundredths and record the decimal fraction and then cross off the correct answer. If there is not a matching answer, look at the grid again.

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Linking decimals and fractions.

Record the decimal fraction as the common fraction with the denominator of 10 or 100.

In the number 0.45 the place value of the digit 4 is 4 tenths, it is recorded as $\frac{4}{10}$ and the place value of the 5 is 5 hundredths, recorded, as $\frac{5}{100}$. The notation of 0.45 is equivalent to $\frac{45}{100}$.

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Decimals, fractions and percentage.

A percentage is also expressed as a part of 100, so

$$0.17 = \frac{17}{100} = 17\% \qquad 0.05 = \frac{5}{100} = 5\%$$

A percentage is a fraction with a denominator of one hundred.

Note (record) the decimal number as a common fraction and then copy the numerator (the top number) as a percentage.

$$0.45 = \frac{45}{100} = 45\% \quad \text{or} \quad 0.06 = \frac{6}{100} = 6\%$$

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Multiplying decimal numbers.

$$\begin{array}{r} 6.4 \\ \times\, 0.5 \\ \hline 3.20 \end{array}$$

Multiply the 2 numbers (factors) ignoring the decimal points. Count the number of decimal places in each number (factor). 6.4 has 1 digit after the decimal point, 0.5 has also one decimal point, there are 2 decimal places altogether. Look at the answer and count 2 digits back and position the decimal point there.

Example:

$$\begin{array}{r} 43 \\ \times\ 0.2 \\ \hline 12.6 \end{array}$$

A whole number is multiplied by a one digit decimal number.

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$$\begin{array}{r} 0.6 \\ \times\ 0.5 \\ \hline 0.30 \end{array}$$

Both fractions are decimal numbers. When we count the decimal places (the number of digits after the decimal point) we know that the product will have 2 digits after the decimal point, so the point will be in front of **.**30. As the number is **.**30, we put a 0 in front of the decimal point. The answer is 0.30.

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$$\begin{array}{r} 8.25 \\ \times\ 2 \\ \hline 16.50 \end{array}$$

The first factor is a decimal, the second factor is a whole number, the point will be 2 digits from the back.

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$$\begin{array}{r} 52 \\ \times\ 0.03 \\ \hline 1.56 \end{array}$$

The first factor is a whole number. The second factor is a decimal with 2 decimal places. The answer will have 2 decimal places.

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$$\begin{array}{r} 42.5 \\ \times\ 0.03 \\ \hline 1.278 \end{array}$$

Both factors are decimals, the first factor has 1 decimal place, the second factor has 2 decimal places, the product will have decimal point 3 digits from the back.

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Multiplication set out horizontally.

Multiply the first factor by the second factor 0.2 x 3 = 0.6
There is one decimal point in the product.

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Multiply the first factor by the second factor as if you would if the multiplication would be set out vertically.

30 x 0.2 = multiply the ones and then the tens. = 6.0 The answer is
6 as the 0 is dropped from the answer.

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Example: 65 x 0.2 = 13.0 = 13   56 x 0.2 = 11.2

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The number of decimal places equal to 2.

0.7 x 0.2 = *0*.14 place 0 in front of the decimal point.

III

Mini LUK Self Checking System

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.

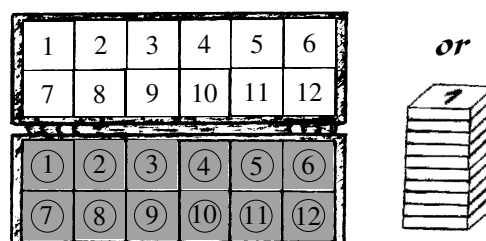## How to use the mini LUK System.

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 into 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 $\boxed{1}$ and place it under or next to the number 1 problem. Work out the problem and look for the answer. Next to the answer is a LUK code number. Find this number on the base of the mini LUK box. Place the tile number $\boxed{1}$ onto that number. Proceed to answer the rest of the questions in the same way. Work out the problem, find the answer and the code number and put the tile in the LUK box.
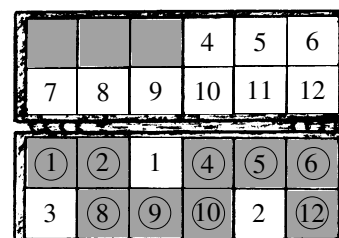
Step 4.
When finished and all tiles are placed on the correct squares, the task is completed. Close the lid of the box and turn the Mini LUK over sideways. Open the lid and a geometrical pattern will be formed by the back of the tiles.
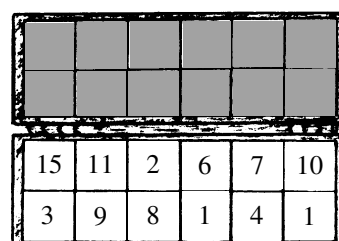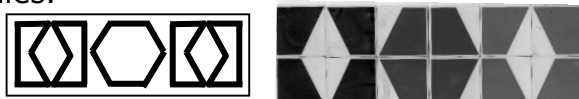
Step 5.
Match the pattern in the box with the pattern on the bottom of the page. If the patterns match, <u>well done</u>! You have not made a single mistake! If the pattern is not quite correct, but is recognisable, you have still done a good job.

1	2	3

_____   _____   _____

4	5	6

_____   _____   _____

7	8	9

_____   _____   _____

10	11	12

_____   _____   _____
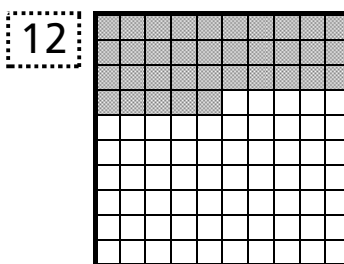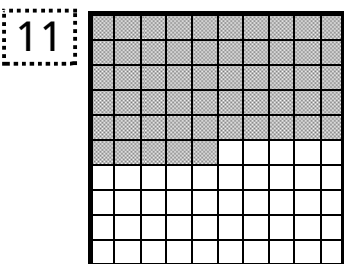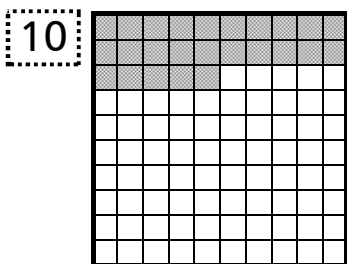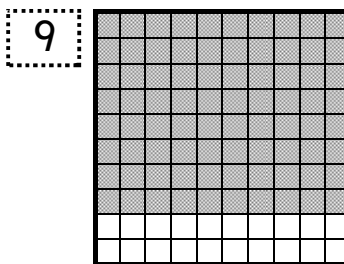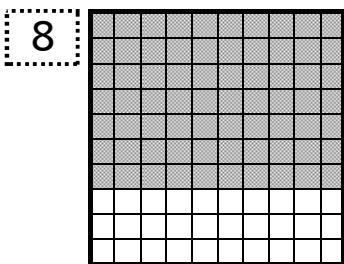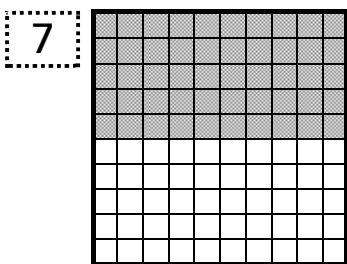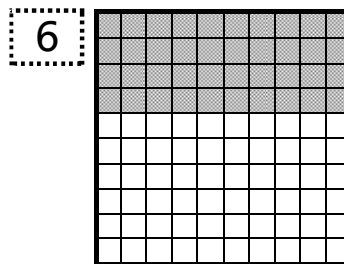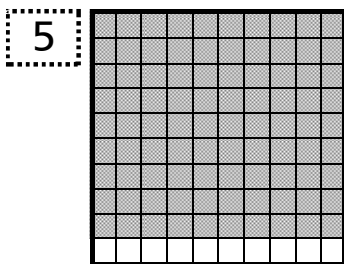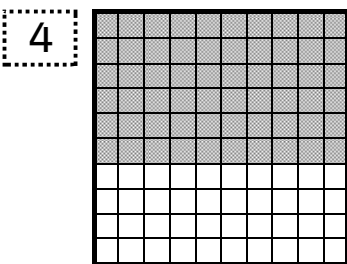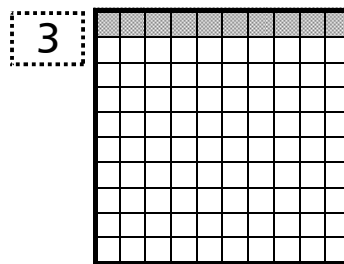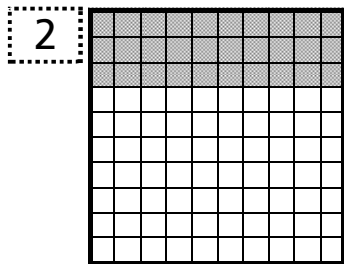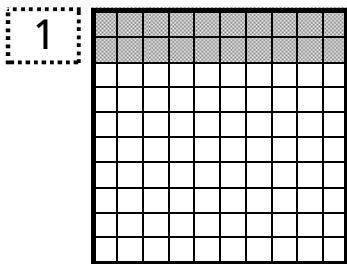
Answer	LUK code
0.55	9
0.10	3
0.20	1
0.40	6
0.70	12
0.30	5
0.25	8
0.50	7
0.35	11
0.80	4
0.90	10
0.60	2

Decimal Fractions