



## The 10p challenge – Louise

### Objectives

The relevant framework objectives are:

- use all four operations to solve simple word problems involving numbers and quantities,(key objective);
- explain methods and reasoning (key objective).
- understand area measured in square centimetres (cm<sup>2</sup>). Understand and use the formula in words 'length x breadth' for the area of a rectangle (key objective).

### Activity description

The pupils attempted 'the 10p challenge' to estimate how many 10p coins would fit on the top of a table. They then attempted an extension to this challenge.

### Commentary

Louise has developed her own mathematical strategies and has applied them in a practical context. She has presented her results in a clear and organised way. This is typical of performance at level 4 in Ma1.

Louise's work shows that she knows how to calculate the area of a rectangle. However, she has not been given the opportunity here to show that she is able to use the formula in a range of contexts, including finding the width of a rectangle given its length and area. Consequently we cannot be sure that she is working at level 5 in this aspect of Ma3.

She has used a range of calculations, including multiplying two–digit numbers together by standard methods. Again, this indicates that she is working securely within level 4 in this aspect of Ma2. To demonstrate level 5, she would need to do long multiplication and division calculations involving a three–digit number by a two–digit number.



### Items of work

Louise's work showing her estimate of the number of 10p coins needed to cover a table

Louise. The 10p challenge.

We will estimate how many 10p's will cover our table.



Width of the table is: 17 ten p's (using a 1 and a half cm finger!)  
Length of the table: 34 ten p's. (using a 1 and a half cm finger!)

$$\begin{array}{r}
 34 \\
 \times 17 \\
 \hline
 238 \\
 340 \\
 \hline
 578
 \end{array}$$

578 ten p's cover our table.

We did this by counting up the width and length and then timesed them together.

Now pretend the table is covered with 578 ten p's. On top of them is a pencil case, reading book and a maths book. Count how many ten p's you can see now.

Number of ten p's under maths book: Width: 6 ten p's | length: 8 ten p's.

Number of ten p's under reading book: ↓

Number of ten p's under pencil case: ↓

$$6 \times 8 = 48$$

Width: 5 ten p's | length: 7 ten p's.

$$5 \times 7 = 35$$

Width: 2 ten p's | length: 7 ten p's.

$$2 \times 7 = 14$$

$$\begin{array}{r}
 48 \\
 35 \\
 + 14 \\
 \hline
 97
 \end{array}$$

$$\begin{array}{r}
 578 \\
 - 97 \\
 \hline
 481
 \end{array}$$

We can see 481 ten p's with the objects on it.



## About this entry

Subject: mathematics

Year: 5

Key stage: 2

NC programme of study: Ma2p1a, Ma2p1b, Ma2p1f, Ma2p3j, Ma3p4e

Attainment target: Ma1, Ma2, Ma3

Evidence for: level 4

Framework for teaching mathematics – objectives:

- Use all four operations to solve simple word problems involving numbers and quantities (including time).
- Explain methods and reasoning.
- Understand area measured in square centimetres ( $\text{cm}^2$ ). Understand and use the formula in words 'length x breadth' for the area of a rectangle.