



# Multiplication and division – Tom and Salma

## Objectives

The relevant framework objectives are:

- multiply and divide any positive integer up to 10,000 by 10 or 100 and understand the effect (key objective)
- extend written methods to: short multiplication of a three–digit by a single–digit number; long multiplication of a two–digit by a two–digit number; short division of a three–digit by a single–digit number (key objective)
- explain methods and reasoning (key objective).

## Activity description

The teacher asked the pupils to show how they solved multiplication and division calculations.

## Commentary

Tom's work shows that he understands the effect that multiplication and division by 10 or 100 will have on the relative place values of whole numbers and recognises that this sometimes results in decimal numbers.

Tom and Salma have both used partitioning to find solutions to more complex multiplications. They have demonstrated that they are able to use a range of numbers together with effective written and mental methods for computation. This is typical of performance at level 4 in this aspect of Ma2.

To develop his understanding Tom needs to use his understanding of place value to multiply and divide whole numbers and decimals by 10, 100 and 1,000. Both he and Salma are ready to be taught an appropriate non–calculator method to multiply any three–digit number by any two–digit number.



## Items of work

Tom's calculations, multiplying by 10 and 100

Handwritten calculations on a piece of paper:

$63$   
 $\times 10 = 630$   
 $\times 100 = \underline{6300}$

$400 \times 80$   
 $= 4000 \times 8$   
 $= \underline{32000}$

$49 \times 80$   
 $= 40 \times 80$   
 $+ 9 \times 80$   
 $= 400 \times 8$   
 $= 3200$   
 $+ 720$   
 $= \underline{3920}$



Tom explains the effect of dividing by 100

I have found out that if I divide a number by 100 every value in my number moves 2 places

|    |        |         |        |
|----|--------|---------|--------|
| So | 1202   | becomes | 12.02  |
|    | 15564  | becomes | 155.64 |
|    | 100000 | becomes | 1000   |



Salma's jottings of an informal method of multiplication

$$42 \times 12$$

$$42 \times (3 \times 4)$$
$$42 \times 4 = 168 = 168 \times 3 = 504$$
$$42 \times 4 \times 3 = 504$$



## About this entry

Subject: mathematics

Year: 5

Key stage: 2

NC programme of study: Ma2p1f, Ma2p1g, Ma2p2c, Ma2p3h, Ma2p3j

Attainment target: Ma2

Evidence for: level 4

Framework for teaching mathematics – objectives:

- Multiply and divide any positive integer up to 10,000 by 10 or 100 and understand the effect.
- Extend written methods to: short multiplication of HTU by U; long multiplication of TU by TU; short division of HTU by U.
- Explain methods and reasoning.