Long multiplication and division – Jennie

Objectives

The relevant framework objective is:

- extend written methods to: short multiplication of numbers involving decimals; long multiplication of a three–digit by a two–digit integer; short division of numbers involving decimals (key objective).

Activity description

The teacher asked the pupils to carry out calculations such as 492 multiplied by 87 or 612 divided by 27 without using a calculator. They were asked to show their method of calculation and means of checking.

Commentary

In this example Jennie has shown a range of non–calculator methods for use with multiplication and division, characteristic of performance at level 5 in Ma2.

Jennie has estimated the value of the answer to 492 x 87 by calculating 500 x 90 = 45 000, which is typical for this level.

Items of work

Jennie's recording of her calculations

492×87

$$\begin{array}{r} 492 \\ 87 \\ \hline 39360 \\ 3444 \\ \hline 42804 \end{array}$$

$$\begin{array}{rl} 43500 & 500 \times 87 \\ 870 & -(10 \times 87) \\ \hline 42630 & \\ 174 & +(2 \times 87) \\ \hline 42804 & \end{array}$$

estimate
500×90
$= 45000$

$108 \div 21$

$$\dfrac{105}{3} \ (5 \times 21)$$

$5\frac{3}{21} = 5\frac{1}{7} = 5.14$

(108×21)

$108 \times 2 \times 10$
$2160 + 108$
$\underline{2268}$

$$\begin{array}{r} 22.692 \\ 26\overline{)590} \\ 52 \\ \hline 70 \\ 52 \\ \hline 180 \\ 156 \\ \hline 240 \\ 234 \\ \hline 60 \\ 52 \\ \hline 8 \end{array}$$

22.69

$612 \div 27$

$$\begin{array}{r} 270 \\ 342 \\ 270 \\ \hline 72 \\ 54 \\ \hline 18 \end{array}$$

$(10 \times 27 = 270)$
$(10 \times 27 = 270)$
$(2 \times 27 = 54)$

$10 + 10 + 2 = 22 \qquad \dfrac{18}{27} = \dfrac{2}{3}$

$= 22\frac{18}{27}$ or 22.67

About this entry

Subject: mathematics

Year: 6

Key stage: 2

NC programme of study: Ma2p3i, Ma2p3j

Attainment target: Ma2

Evidence for: level 5

Framework for teaching mathematics – objectives:

- Extend written methods to: short multiplication of numbers involving decimals; long multiplication of a three–digit by a two–digit integer; short division of numbers involving decimals.