Proportional changes – Miranda

Objectives

The relevant framework objectives are:

- use proportional reasoning to solve a problem, choosing the correct numbers to take as 100%, or as a whole (key objective)
- interpret and use ratio in a range of contexts, including solving word problems
- recognise when fractions or percentages are needed to compare proportions; solve problems involving percentage changes
- understand and use proportionality and calculate the result of any proportional change using multiplicative methods; understand the implications of enlargement for area and volume; compare two ratios (extension objective).

Activity description

The pupils had been working on a unit on ratio and proportion. The teacher asked them to solve problems involving proportional change.

Commentary

Miranda has correctly multiplied by 0.9 to work out the new price with 10% discount. She has then used the multiplier 1.175 to calculate the total price including VAT.

Her work therefore clearly demonstrates her ability to calculate proportional change efficiently using multiplicative methods. This is typical of performance at level 7 in this aspect of Ma2.

Items of work

Miranda's calculations of proportional change, explaining which multiplier she uses
at each stage of her working

This is a table of discount prices and 17.5%
VAT prices, having been given the original price.

Old price	New price with 10% discount	total including VAT (17.5%)	
£30	£27	31.725	£31.73
£75	£67.50	79.3125	£79.31
£78.50	£70.65	83.01375	£83.01
£100	£90	105.75	£105.75

To work out the New price with 10% discount
I multiplied the old price by $\frac{90}{100}$ or 0.9.
this sum I worked out in
my head.

To work out the total price including VAT
I multiplied the discount price by 1.175.
I used a calculator to work those sums.

About this entry

Subject: mathematics

Year: 9

Key stage: 3

NC programme of study: Ma2p2f, Ma2p2g, Ma2p3e, Ma2p4d

Attainment target: Ma2

Evidence for: level 7

Framework for teaching mathematics – objectives:

- Use proportional reasoning to solve a problem, choosing the correct numbers to take as 100%, or as a whole.