

# 'Fault Finding and Fixing'

## Percentages Tasks - Set #1 (solutions)

**Malcolm Swan**  
Mathematics Education  
University of Nottingham  
Malcolm.Swan@nottingham.ac.uk

**Jim Ridgway**  
School of Education  
University of Durham  
Jim.Ridgway@durham.ac.uk

Percentages are a common source of error as these genuine mistakes will show.

The aim of this assessment is to provide the opportunity for you to:

- explain clearly the source of each error.
- rectify errors and produce correct statements or answers

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### 1. Shirts

The other day I was in a department store, when I saw a shirt that I liked in a sale. It was marked "20% off". I decided to buy two. The person behind the till did some mental calculations. He said, "20% off each shirt, that will be 40% off the total price." (Incident in local supermarket)



Explain clearly and fully what you would say to the shop assistant to convince him that an error has been made. Also explain how the error should be put right.

#### **Solution:**

Clearly, the shop assistant has added percentages inappropriately. He should deduct 20% off the total price. We might expect students to provide a numerical example.

### 2. TV Sports program

Few programmes can boast a 100 percent increase in their viewing audience since first going on air, but Match of the Day which celebrates its 30th birthday this week proudly makes that claim. The first programme attracted just 50,000 viewers. Tonight it is estimated that the audience will be in excess of five million. (Radio times, August 1994)



Explain clearly how you know that an error has been made.

Show how the error should be put right.

**Solution:**

A one hundred percent increase would give a viewing figure of 100,000, so clearly an error has been made. As the error is probably in the percentage rather than in the viewing figures, the reporter should have calculated:  $\text{change in viewing figure} \div \text{original viewing figure}$  and converted this to a percentage. This gives a percentage change of 9,900%. In fact the source of the error was to treat the percentage as if it were just a numerical multiplier.

**3. So Near...**

Andy Green drove his Thrust SSC car on the fastest officially timed run in land speed racing history, but missed breaking the sound barrier by a frustrating 0.003 per cent of the speed of sound. Timing officials gave the run a provisional Mach 0.997. (The Times, 14 October 1997)



Explain how you know an error has been made.

Show how you would put the error right.

**Solution:**

Again the percentage has been ignored. Assuming the timing officials are correct, we need to calculate the difference of 0.003 as a percentage of 1. The correct percentage should therefore be 0.3%.

#### 4. A Saving

Free 33% extra. 2 litres for the price of 1.34 litres. (Safeway advertisement in Bulawayo Chronicle, 3 December 1997)



Explain how you know an error has been made.

Show how you would put the error right.

#### **Solution:**

2 liters for the price of 1.34 liters means that 0.66 liters are free. The mistake has been to calculate this as a percentage of 2 liters instead of 1.34 liters. In fact the advertisement is being too modest. It should say that there is 50% extra, free.

#### 5. Cows

If you can produce 20 per cent more milk per cow, you can decrease your herd by 20% to produce the same amount of milk. (Observer Magazine, 10 July 1988)



Explain how you know an error has been made.

Show how you would put the error right.

#### **Solution:**

It is easier to see this mistake using an example. Suppose the farmer has 100 cows. If he decreases the herd by 20% he will have 80 cows. Each cow will now need to produce  $\frac{100}{80} = 1.25$  times as much milk if overall production is to remain stable. Thus each cow will need to increase its production by 25% not 20%.