Correspondence

DEAR EDITOR,

The recent historical 'gleanings' (March 2004 edition) were very quaint, but perhaps a little ambiguous. A case in point is no 5 – for could not the French couplet be just as well (and just as loosely) translated something like this?

My soul's in Hell for Maths – I scream,
But Classic prose is sweet ice cream.

Yours sincerely,

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DEAR EDITOR,

Thank you for giving publicity in *The Mathematical Gazette* to the GCSE question which I sent to you. It has certainly provoked some discussion and I was interested to see the comments of your readers.

I wonder if I might just add some further thoughts? I realise that some may think me rather pedantic, but this is not the case as I have always advocated a flexible approach. On the contrary, it was the Principal Examiner who was being dogmatic by insisting that his answer (5531) was the 'correct answer only' and indeed, had he allowed a range of answers I would never have written in the first place!

I noted that none of your readers questioned the inequality $5531.82 < n < 6663.97$ with its least integer solution of 5532. If all of the material of the large sphere is used to make small spheres, the inequality follows and the answer 5532 cannot be challenged; there are no values of R and r within the permitted limits which could make any number less than 5532.

All those who advocate an answer of 5531 must of necessity be ignoring some of the material and clearly the key issue is whether the question can be interpreted in this way.

When asked to justify an answer of 5531, I have found that most people say something such as 'you make as many small spheres of radius 1.75 as you can, and then there is a bit left over which is not enough to make another sphere so we ignore it'. When I point out that the question asked them to make as few as possible, whereas they were making as many as possible, they usually reconsider. I think most people, whether consciously or not, treat the question as a maximising problem and approach the limit from below, but the wording is absolutely clear that we have a minimising problem and that we must descend to the limit from above. As a consequence, if we accept that we have a minimising problem and we are prepared to ignore material, we could then ignore lots of material and end up with the absurd answer of zero. In other words the answer must either be zero or 5532.

Some of your readers advanced possible analogous problems but to my

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