

Correspondence

A prize problem

DEAR MR QUADLING,

I am writing to invite readers of the *Mathematical Gazette* to solve the following problem:

It is required to find five positive integers such that the sum of any pair is a perfect square.

It is known that this is possible. A prize of £25 is offered for the best solution received within three months of the publication of this letter. Entries should be sent to me at the address below.

Yours sincerely,

A. R. THATCHER

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Editorial note. We are pleased to communicate Mr Thatcher's offer to readers, but must point out that this is a private offer for which the *Gazette* can accept no responsibility.

D.A.Q.

Why are mechanics results so bad?

DEAR SIR,

May I, through your columns, enquire whether other readers are concerned about the standard of A level Mechanics?

Work and discussion with post-A level students over a number of years has led me to conclude that

- (a) Mechanics in single-subject Mathematics is probably more difficult than both Pure Mathematics and Statistics,
- (b) failure in Mechanics is believed by many students to account for their poor grades.

These expressions of opinion find support from some local teachers, from some university mathematicians, and in some GCE examiners' reports.

If these opinions do reflect a general attitude towards mechanics courses and examinations, this might account for the shortage of candidates for mathematics courses at tertiary level.

In an attempt to obtain data, on the basis of which more objective statements could be made, two investigations have been conducted.

The first examined a 10% sample of raw scores gained by candidates in A level examinations set by one of the bigger examining boards during the years 1972–4. Comparison was made of the grades awarded to candidates, taking Pure Mathematics-with-Mechanics or Pure Mathematics-with-Statistics, whose Pure Mathematics marks indicated they were of the same calibre. In the writer's opinion, candidates who combined Mechanics with Pure Mathematics did significantly less well.

The second investigation attempted, on a small scale, to identify the nature of candidates' difficulties in solving typical examination questions. Findings indicate that the most common sources are

- (i) failure to recognise the relevance of *all* information,
- (ii) failure to interpret the given information correctly in mathematical terms,