

CORRESPONDENCE.

STARRED QUESTIONS.

To the Editor of the *Mathematical Gazette*.

SIR,—To follow up Mr. C. V. Durell's suggestion in the *Gazette*, May 1942, p. 96, here are the two best questions that I can remember from scholarship papers of recent years.

(i) If the a 's, b 's, c 's are positive and such that

$$a_1 > b_1 + c_1, \quad b_2 > c_2 + a_2, \quad c_3 > a_3 + b_3,$$

prove that the determinant $\begin{vmatrix} a_1 & b_1 & c_1 \\ a_2 & b_2 & c_2 \\ a_3 & b_3 & c_3 \end{vmatrix}$ is not zero.

(ii) If a, b, c, d are positive integers and $bc - ad = 1$, prove that there is no fraction x/y between a/b and c/d such that y is less than $b + d$.

The quadrangle question quoted by Mr. Durell was very good; perhaps it would have been better still if it had been the only question in a three-hour paper with an invitation to the candidates to supply two or more solutions.

Yours, etc.,

A. ROBSON.

A TRIPOS QUESTION.

To the Editor of the *Mathematical Gazette*.

SIR,—Those who intend taking the Mathematical Tripos may be comforted in a small measure by the following problem, which is a complete question from the paper of May 1894, and is easily the simplest I have come across in such examinations. The examinee is limited to the methods of pure geometry.

“A straight line drawn through the vertex of a triangle ABC meets the lines DE, DF , which join the middle point D of the base to the midpoints E, F of the sides, in X, Y ; show that BY is parallel to CX .”

Proof. (I omit a figure, which readers can readily supply). Produce ED to meet BY in T . Since D, E, F bisect the respective sides of the triangle, ET is parallel to AB . Thus since $AF = FB$, then $XD = DT$. Hence in the triangles CXD, DTB , we have $CD = DB$ (given), $XD = DT$ (proved) and the vertically opposite angles XDC, BDT are equal. Thus the two triangles are equal in all respects and $\angle XCD = \angle DBT$; that is, CX is parallel to BT .

This must surely hold the record for simplicity, being hardly up to matriculation standard. Can any of your readers suggest what the examiners expected the candidates to produce?

Yours, etc.,

RONALD F. NEWLING.

SPELLING.

To the Editor of the *Mathematical Gazette*.

SIR,—I have just finished marking the scripts of about 300 candidates aged $13\frac{1}{2}$ years—*i.e.* near the normal age for leaving school. The subject was Geometry, but I was so impressed with the amount of bad spelling of mathematical terms that I venture to draw the attention of teachers to the state of affairs. Some of the words are admittedly awkward, but the boys had presumably been using them for months at least. Efforts like “*strait*” or “*circumpherence*” pale before “*pizaygarus therom*”; but to emphasise my

point I give you the complete list for the word "*isosceles*". Figures in brackets denote frequency.

isocetes (12); *isocelles* (4); *issoles* (4); *iscoseles* (3); *iscosceles* (3); *issocles* (2); *issosceles* (2); *isoscoles* (2); *isqscles*; *isoscales*; *isceles*; *isosiles*; *icosales*; *issocetes*; *isosocetes*; *isoscelles*; *isosclese*; *iccoseles*; *isocolles*; *isoscoles*; *isocolce*; *isocalces*; *icosseles*; *iscoseles*; *iscoscoles*; *iscoscilles*; *icossiles*; *isoseceles*; *isosolies*; *isococles*; *isosomeuses*.

So unfamiliar had it become that *isosceles* got into my original list.

Yours, etc.,

E. A. MAXWELL.

ENTRANCE SCHOLARSHIP EXAMINATIONS.

THE Mathematical Association has been asked, both in 1941 and in 1942, by the mathematical examiners in one of the groups of colleges to comment on the suitability of the papers set for entrance scholarships.

As meetings of our committees are not being held, it has been impossible to discuss the details as fully as we would have wished to do under normal conditions. Nevertheless certain members of the Sixth Form sub-committee of the Teaching Committee have sent their comments to the Chairman of the committee, who has thus been able to respond to the invitation, explaining at the same time to the examiners the limitations under which the replies were drawn up. And our suggestions have been welcomed.

It is probable that other members of the Association would like to discuss in the Branches, in the *Gazette*, or otherwise, the matters that have been raised in the sub-committee, such as :

- (i) Is the present usual arrangement of four papers on Algebra-Trigonometry-Calculus, Geometry, Statics-Dynamics, and General Paper satisfactory? Is there a proper balance between the various subjects? Is the General Paper, half pure and half applied, satisfactory?
- (ii) Are the questions of a sort not only to test ability but also to encourage the teaching of the right topics in schools?
- (iii) In Geometry, how should the questions be distributed over the various parts of the subject? Should indications be given more frequently about the kind of method expected? Is there enough, or too much, homography?
- (iv) Are any changes of a general nature called for in the Mechanics? Should candidates be given the chance occasionally to show knowledge of physical subjects, *e.g.* in the General Paper?
- (v) How should calculus be examined? Is it agreed that the fundamental elementary ideas about limits and convergence ought to be taught in schools?
- (vi) Is there any suggestion that can be made for improving the liaison between school and universities in the matter of the scholarship examinations?

A. R.

1411. SUPER-ARITHMETIC.—*Wife* : "The price of the alarm clock was \$1.50, but I got a discount, so it only cost me 98c."

Husband : "Yes, but you know very well you could have got the same thing at Brown's for 75c."

Wife : "That may be, but then Brown's wouldn't have taken anything off."—*Good Hardware*. Quoted in *Literary Digest*. (Per Mr. T. R. Dawson.)