

Substituting in (2) for OA and OB .

$$\underline{n \cot A - m \cot B = (m + n) \cot \theta}$$

By drawing a line through B parallel to OA to meet OC produced in D , we obtain:

$$\underline{m \cot \alpha - n \cot \beta = (m + n) \cot \theta}$$

by analogy with the result just proved.

Huddersfield College of Technology

(Miss) D. M. Wood

89. On collinear sets of points

If $\mathbf{p}, \mathbf{q}, \mathbf{r}, \mathbf{s}, \mathbf{t}$ are the vectors from O to P, Q, R, S, T , then PRT are collinear if

$$\mathbf{p} \times \mathbf{r} + \mathbf{r} \times \mathbf{t} + \mathbf{t} \times \mathbf{p} = 0 \quad (\text{i})$$

and QRS are collinear if

$$\mathbf{q} \times \mathbf{r} + \mathbf{r} \times \mathbf{s} + \mathbf{s} \times \mathbf{q} = 0 \quad (\text{ii})$$

when these conditions are satisfied P, Q, R, S, T must of course be coplanar.

The middle points of OR, PQ, ST are collinear if

$$\frac{1}{2}\mathbf{r} \times \frac{1}{2}(\mathbf{p} + \mathbf{q}) + \frac{1}{2}(\mathbf{p} + \mathbf{q}) \times \frac{1}{2}(\mathbf{s} + \mathbf{t}) + \frac{1}{2}(\mathbf{s} + \mathbf{t}) \times \frac{1}{2}\mathbf{r} = 0$$

If (i) and (ii) are satisfied this reduces to

$$\mathbf{p} \times \mathbf{s} + \mathbf{q} \times \mathbf{t} = 0$$

This condition is satisfied if (a) O is coplanar with the other points (b) either the areas of the triangles OPS and OQT are equal in magnitude, but opposite in sign or both these areas are zero.

The last case is when $OPQRST$ form a complete quadrilateral and then the result is the well known one of the collinearity of the mid points of the diagonals.

H. V LOWRY

CORRESPONDENCE

To the Editor of the *Mathematical Gazette*

DEAR SIR,

Visitors to the recent exhibition of Russian school mathematics may have been surprised by the Moscow school that claimed to be teaching 4 periods a week on approximate calculation and 2 periods a week on practice with small machines with 15 year olds. By the time they are 17

they are said to be doing 9 periods a week programming and 7 periods on practice with large machines. The rest of their timetable is, incidentally, broader than our specialized courses. Meanwhile the June issue of the Computer Bulletin reports (p. 26) a conference on the selection and training of computer personnel. In a discussion of the problem of training school leavers it was stated that teachers in grammar and secondary modern schools are not interested in programming. I doubt whether this is so but the fact that it is said is significant.

There are signs that applied mathematics is coming to mean more than Newtonian mechanics in the school syllabus. Some schools already give courses in statistics and at least one grammar school is proposing to offer the A.E.B. alternative A level paper in computation in 1963. This school is now equipped with hand calculators thanks to the generosity of the makers. It would be of interest to know if there are others who are gaining experience in the use of machines as an integral part of a school course and it is obviously time that those interested combined their views in some way. If any such would care to write to me I could at least put them into touch with each other.

Yours etc., D. G. TAHTA

*Dept. of Education,
Exeter University*

To the Editor of the *Mathematical Gazette*

DEAR SIR,

When I read Mr. Mager's letter in the October Gazette, I left out a $d\psi$.

Yours etc., E. J. F PRIMROSE

*University Road,
Leicester*

To the Editor of the *Mathematical Gazette*

DEAR SIR,

Mr. W F Bushell's article on Calendar Reform in your issue of May 1961 prompts me to point out that the World Calendar does not in fact equalize either months or quarters in any useful way. Though this calendar gives each month the same number of weekdays, the advent of the $5\frac{1}{2}$ and five day weeks destroy the advantage. The equality of the quarters is upset by public holidays—and any purpose that makes no distinction between public holidays and other days will have to include Year End World Holiday as an extra day in the fourth quarter. What the World Calendar equalizes is the number of working days in each year.

Incidentally, the greatest outcry following the introduction of the World Calendar can be expected from housewives, who would discover that Christmas Eve fell every year on a Sunday, a day most inconvenient from the point of view of catering.

Yours etc., C. M. DAVIS

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