AN ROINN OIDEACHAIS
(Department of Education).

BRAINNSE AN MHEADHON-OIDEACHAIS
(Secondary Education Branch).

INTERMEDIATE CERTIFICATE EXAMINATION, 1935.

ELEMENTARY MATHEMATICS (Geometry).
FOR GIRLS ONLY.

FRIDAY, 14th JUNE.—MORNING, 10 A.M. TO 12.30 P.M.

Six questions may be answered.

All questions carry equal marks.

Mathematical Tables may be obtained from the Superintendent.

1. The three sides of a triangle are equal respectively to the three sides of another triangle. Prove that the triangles are equal in all respects.

2. Construct a triangle equal in area to a given quadrilateral. Give proof.

3. Make a scale-drawing of a triangle whose sides are 57 ins., 72 ins., 84 ins. long respectively. Draw and measure the perpendicular from the vertex to the base and hence calculate the area of the triangle.

4. Illustrate by means of a diagram the identity

$$a^2 - b^2 = (a+b)\ (a-b). \qquad [a > b].$$

5. Two points A and B are 3 inches apart. Draw diagrams to show the locus of a point P which is
   - (i) two inches from A and less than two inches from B;
   - (ii) less than two inches from A and more than two inches from B;
   - (iii) less than two inches from both A and B.

6. Prove that the straight lines joining the middle points of the sides of a triangle form another triangle which is equiangular with and equal to a quarter of the area of, the given triangle.

7. Prove that the angles at the circumference of a circle standing on the same arc are equal.

If the base and vertical angle of a triangle are given, what is the locus of the vertex ?

8. P is any point on a chord AB of a circle. The perpendicular through P meets the circumference at Q. Prove that PQ is greatest when it passes through the centre of the circle.

9. ABCD is a quadrilateral. The bisectors of the angles ABC, BCD meet at P. Prove that $\angle BPC = \frac{1}{2} (\angle A + \angle D)$.