AN ROINN OIDEACHAIS
(Department of Education).

INTERMEDIATE CERTIFICATE EXAMINATION, 1953.

ELEMENTARY MATHEMATICS (Geometry).
FOR GIRLS ONLY.

THURSDAY, 11*th JUNE*.—MORNING, 10 TO 12.

All questions carry equal marks.

All questions to be answered.

1. Draw a straight line AB, 3 inches long. Using ruler and compass only, construct a straight line which shall bisect AB at right angles. Prove your construction.

2. Prove (*a*) that the three angles of any triangle are together equal to two right angles, (*b*) that the four angles of any quadrilateral are together equal to four right angles.

3. Prove that in a right-angled triangle the square on the hypotenuse is equal to the sum of the squares on the other two sides.

4. P is a point outside a circle, centre O. Show, with proof, how to draw two tangents PA and PB to the circle.
   Prove that the tangents are equal and that OP bisects the chord AB.

5. Prove that angles in the same segment of a circle are equal.
   ABC is a triangle in which AB is equal to AC and the angle ABC is equal to twice the angle BAC. The bisector of the angle ABC meets the circumference of the circumcircle in P. Prove that PCB is an isosceles triangle.

6. Show, with proof, how to construct on a given straight line (*a*) a segment of a circle containing an angle equal to a given acute angle, (*b*) a segment of a circle containing an angle equal to the supplement of the given angle.