AN ROINN OIDEACHAIS

(Department of Education).

INTERMEDIATE CERTIFICATE EXAMINATION, 1957.

ELEMENTARY MATHEMATICS (Geometry).
FOR GIRLS ONLY.

THURSDAY, 6th *JUNE*.—Morning, 10 to 12.

All questions to be answered

All questions carry equal marks.

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1. Show, with proof, how to draw a perpendicular to a given straight line from a given point outside the line.

2. (a) Prove that the angle in a semicircle is a right angle.

   (b) Using ruler and compass only, construct a quadrilateral ABCD such that DB=$2\frac{1}{2}$ inches, AB=BC=2 inches, the angle DAB=the angle BCD=90°.

3. In a triangle ABC, the square on BC is equal to the sum of the squares on AB and AC. Prove that the angle BAC is a right angle.

4. Prove that the straight line joining the centre of a circle to the middle point of a chord is perpendicular to the chord.

   The centre, O, of a circle is joined to the middle point, E, of a chord AB. AO is produced to meet the circumference at C. Prove that OE is parallel to CB.

5. Prove that triangles on the same base and between the same parallels are equal in area.

   In a triangle ABC, D is the middle point of BC and P is any point on DC. AP is joined and through D a straight line is drawn parallel to AP and meeting AB at R. Prove that the area of the triangle BRP is half the area of the triangle ABC.

6. What is the locus of points which are equidistant from two intersecting straight lines ?

   AB and CD are two parallel straight lines and a third straight line meets them at E, F. Show, with proof, how to construct a circle which shall touch AB, CD, EF.