

AN ROINN OIDEACHAIS

(Department of Education).

BRAINNSE AN MHEADHON-OIDEACHAIS

(Secondary Education Branch).

INTERMEDIATE CERTIFICATE EXAMINATION, 1937.

ELEMENTARY MATHEMATICS (Geometry). FOR GIRLS ONLY.

THURSDAY, 17th 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. Construct, as accurately as you can without using a protractor, an equilateral triangle with its altitude equal to 3 inches.

2. If the side AB of a triangle ABC is produced to D, prove that the angle CBD is greater than the angle CAB.

3. Show how to construct a triangle equal in area to (i) a quadrilateral, (ii) a pentagon. No proof is required.

4. Prove that equal chords in a circle are equidistant from the centre.

What is the locus of the middle points of equal chords in a circle?

5. Draw two straight lines 2 inches and 3 inches long respectively and use them to construct (i) a straight line $\sqrt{2^2+3^2}$ inches long, (ii) a straight line $\sqrt{6}$ inches long.

6. AB, CD are two chords of a circle intersecting at O. Prove that $AO \cdot OB = CO \cdot OD$.

7. Illustrate by means of a diagram or diagrams the identity

$$(a+b)^2 = (a-b)^2 + 4ab. \quad [a > b.]$$

8. ABCD is a quadrilateral in which $AB=3$ inches, $BC=2$ inches, $CD=3\frac{1}{2}$ inches and the diagonals are at right angles. Find the length of AD.

9. Show how to inscribe in a circle a triangle equiangular to a given triangle.

7. Draw two circles and in one of them inscribe any quadrilateral. Then inscribe in the other circle a quadrilateral equiangular to the one you have drawn.