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(Department of Education).

BRAINNSE AN MHEADHON-OIDEACHAIS
(Secondary Education Branch).

INTERMEDIATE CERTIFICATE EXAMINATION, 1936.

ELEMENTARY MATHEMATICS (Geometry).
FOR GIRLS ONLY.

THURSDAY, 18th 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. Prove that the sum of the angles of a triangle is equal to two right angles.

Deduce that the sum of the angles of a quadrilateral is equal to four right angles.

2. Draw a triangle ABC, given $\angle B=30^\circ$, $\angle C=80^\circ$ and $BC=3\frac{1}{2}$ ins. Find two points equidistant from AB, BC and $2\frac{1}{2}$ ins. from C.

Find also the point equidistant from AB, BC which is nearest to C.

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

$$(x-y)^2 = x^2 - 2xy + y^2. \quad [x > y].$$

State the identity in the form of a geometrical theorem.

4. State and prove Pythagoras' Theorem.

Or

Show how to construct a square equal to (i) the sum of two given squares, (ii) the difference of two given squares.

5. Draw any triangle ABC and then construct (i) a right-angled triangle, (ii) a rectangle, (iii) a square each equal in area to ABC.

[No proof is required but the construction should be clear.]

6. Prove that the bisectors of the angles of a triangle are concurrent.

7. On the equal sides AB , AC of an isosceles triangle ABC equilateral triangles ABK , ACL are described externally. Prove that $CK=BL$ and that KL is parallel to BC .

8. Make a scale drawing of a quadrilateral $ABCD$ in which $AB=15.6$ miles and the angles DAB , CAB , DBA , CBA are 103° , 52° , 38° , 100° respectively. Use your drawing to find, as accurately as possible, the length of CD in miles.

9. Prove that the angle which a tangent to a circle makes with a chord drawn from the point of contact is equal to the angle in the alternate segment. [One case will be sufficient.]

From a point T on a circle chords TA , TB are drawn making equal angles with the tangent at T . Prove that AB is parallel to the tangent.