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(Department of Education).

BRAINNSE AN MHEADHON-OIDEACHAIS
(Secondary Education Branch).

INTERMEDIATE CERTIFICATE EXAMINATION, 1938.

ELEMENTARY MATHEMATICS (Geometry).
FOR GIRLS ONLY.

FRIDAY, 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. Draw any straight line and by a geometrical construction divide it into three equal parts.

[No proof is required.]

2. Prove that the straight line drawn from the middle point of one side of a triangle parallel to the base bisects the third side.

3. Construct an isosceles triangle with its base angles each equal to 50° and its height equal to 2 inches. Construct the inscribed circle and measure its radius.

4. Prove that the angle at the centre of a circle is double the angle at the circumference standing on the same arc.

Hence prove that in the case of an obtuse-angled triangle the centre of the circumcircle must lie outside the triangle.

5. Draw a circle, radius 4 cms. Draw the tangent at any point A on the circumference. Take a point P on the tangent so that $AP=3$ cms.

Prove that the distance of P from the centre of the circle is always the same no matter where A is taken on the circumference. Hence draw the locus of a point from which tangents to the circle are each 3 cms. long.

6. To what algebraic identity does the following theorem correspond? :—

“ If a straight line is divided equally and unequally, the sum of the squares on the two unequal parts is equal to twice the sum of the squares on half the line and on the part between the points of section.”

Prove the theorem *or* prove the identity.

7. Prove that in a quadrilateral with its four sides equal the diagonals are at right angles. What is the figure called?

8. If the square on one side of a triangle is equal to the sum of the squares on the other two sides, prove that the angle contained by these two sides is a right angle.

9. In a triangle ABC the straight line drawn from A to the middle point of BC is equal to half BC ; prove that the angle BAC is a right angle.