

**AN ROINN OIDEACHAIS.**

(Department of Education.)

**BRAINNSE AN MHEADHON-OIDEACHAIS**

(Secondary Education Branch).

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INTERMEDIATE CERTIFICATE EXAMINATION, 1941.

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**ELEMENTARY MATHEMATICS (Geometry),  
FOR GIRLS ONLY.**

MONDAY, 16th JUNE.—MORNING, 10 A.M. to 11.30 A.M.

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Six questions may be answered.

All questions carry equal marks.

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1. ABC is a triangle in which the side AB is greater than the side BC: prove that the angle BCA is greater than the angle CAB.

2. P is a point outside a straight line XY: show how to find a point Q on XY such that PQ may be perpendicular to XY.

Give proof.

3. Prove that the sum of the opposite angles of a cyclic quadrilateral is equal to two right angles.

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

Calculate the distance of a chord 4 inches long from the centre of a circle 3 inches in radius.

5. Construct a triangle  $ABC$  having  $BC=4$  ins.,  $CA=3.4$  ins.,  $AB=5.6$  ins. On  $BC$  as base construct an isosceles triangle equal in area to  $ABC$ .

[Proof need not be given but the method of construction should be stated.]

6. Prove that the line joining the mid-points of two sides of a triangle is parallel to the third side.

7. Through  $M$ , the mid-point of a straight line  $AB$ , a straight line  $XMY$  is drawn perpendicular to  $AB$ . Prove

(i) that if any point  $P$  lies on  $XMY$  then  $PA=PB$  ;

(ii) that if a point  $Q$  lies not on  $XMY$  but on the same side of it as  $B$ , then  $QA$  is greater than  $QB$ .

8. Construct an equilateral triangle on a straight line 4 ins. long. Construct geometrically a rectangle equal in area to the triangle.

[Proof not required but all construction lines should be clearly shown.]

9. Using squared-paper and protractor draw an accurate diagram, to a scale of 1 inch=10 yards, to solve the following question :  $Q$  is the top and  $P$  the bottom of a pole which stands vertically on level ground. A footpath runs straight out from  $P$ . At a point  $A$  on the path the angle  $PAQ=35^\circ$ . At another point  $B$  on the path, 25 yards nearer to  $P$ , the angle  $PBQ=50^\circ$ . Find the length of  $AP$  and the height of  $Q$  above  $P$ .