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(Department of Education.)

INTERMEDIATE CERTIFICATE EXAMINATION, 1945.

ELEMENTARY MATHEMATICS (Geometry).
FOR GIRLS ONLY.

WEDNESDAY, 13th JUNE.—AFTERNOON, 3 TO 4.30.

Six questions may be answered.

All questions carry equal marks.

Mathematical Tables may be obtained from the Superintendent.

1. Prove that if two triangles have three sides of one equal to the three sides of the other, each to each, the triangles are equal to one another in all respects.

2. Prove that the sum of the angles of a triangle is equal to two right angles.

What is the sum of the angles of a six-sided figure ?

3. What is a parallelogram ? Prove that every quadrilateral which has four equal sides is a parallelogram.

4. (a) OP is the bisector of any angle XOY . Prove that any point Q , on OP is the same distance from OX and OY .

(b) $ABCD$ is a rectangle. Show how you would find a point which would be equidistant from the three sides AB , BC and CD . (No proof needed.)

5. Construct accurately a triangle ABC so that $AB=1.4''$, $BC=1.6''$, $CA=2.5''$. Draw a circle which will pass through A , B , C and measure the length of its radius.

[Every step in the construction must be clearly shown. Proof need not be given.]

6. What is the locus of a point which moves at a fixed distance from a given line ?

ABC is a given triangle. Show (without proof) how you would find a point 1 inch from AB , and at the same time 2 inches from AC .

7. Prove that triangles of the same height and standing on the same base are of equal area.

How would you construct an isosceles triangle whose area would be equal to that of a given triangle which has three unequal sides?

8. Prove that the angle in a semicircle is a right angle. In a triangle ABC , $AB=AC$. A circle is drawn having AB as its diameter. Prove that the circle passes through the mid-point of BC .

9. $ABCD$ is a parallelogram. The perpendiculars from B and D meet the diagonal AC at P and Q respectively. Show

(i) that $BP=DQ$,

(ii) that $BQDP$ is a parallelogram.