AN ROINN OIDEACHAIS
(Department of Education).

BRAINNSE AN MHEAN-OIDEACHAIS
(Secondary Education Branch).

INTERMEDIATE CERTIFICATE EXAMINATION, 1934.

ELEMENTARY MATHEMATICS (Geometry).
FOR GIRLS ONLY.

THURSDAY, 14th 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. If a penny were used to draw a circle, show how the centre could be found. Give proof.

2. Prove that in a triangle the side opposite the greater angle is greater than the side opposite the less.
   ABC is a triangle in which AB=AC. P is any point in the side BC. Prove that AB is greater than AP.

3. Prove that the diagonals of a parallelogram bisect each other.
   Construct accurately a parallelogram having one side 1·6 inches, and the diagonals 2·3 and 3·8 inches long respectively.

4. Draw diagrams to illustrate the identities

   (a) $x(a+b)=xa+xb$.
   (b) $(x+y)(a+b)=xa+xb+ya+yb$.
   (c) $a(x-y)=ax-ay$, when $x>y$.
   (d) $a^2=ab+a(a-b)$, when $a>b$.

5. Construct a triangle with sides 2, 3, 4 inches long. Draw a circle of radius $1\frac{1}{2}$ inches and inscribe in it a triangle equiangular to the triangle you have constructed.
   (No proof is required, but all the construction lines should be shown).

6. Construct a regular hexagon of side $1\frac{1}{2}$ inches, and inscribe a circle in it. No proof required.

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7. Draw a straight line AB and take a point C in it. Find 4 points which are 6 cms. from C, and 3 cms. from the line AB. Find other points which are twice as far from C as from the line AB, and draw the locus of all such points.

8. Prove that the square on the hypotenuse of a right-angled triangle is equal to the sum of the squares on the other two sides.

9. Prove that the sum of any two sides of a triangle is greater than the third side.

Deduce that the sum of the sides of a quadrilateral is greater than the sum of the diagonals.