

INTERMEDIATE CERTIFICATE EXAMINATION, 1968

ELEMENTARY MATHEMATICS (GEOMETRY)
FOR GIRLS ONLY

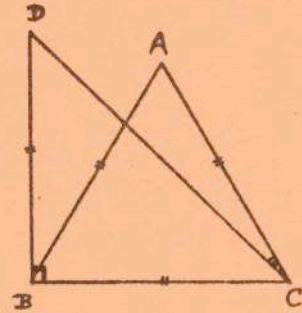
MONDAY, 17th JUNE - Morning, 10 to 12

All questions to answered.

All questions carry equal marks

1. If two sides of a triangle are equal, prove that the angles opposite those sides are also equal.

ABC is an equilateral triangle and DBC is an isosceles triangle in which $DB = BC$ and $\angle DBC$ is a right-angle (see diagram). Find, without measurement, how many degrees there are in $\angle DCA$.

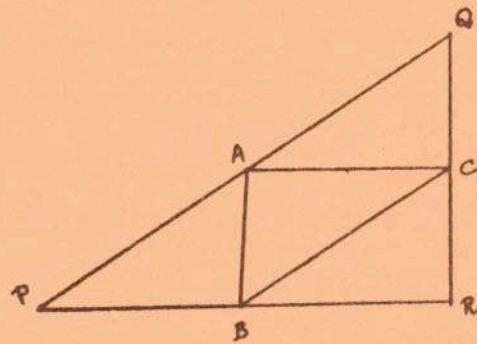


2. Prove that the opposite sides and angles of a parallelogram are equal to one another and that a diagonal bisects the parallelogram.

ABC is a triangle. Through A, B, C lines are drawn which are parallel, respectively, to BC, CA, AB and meeting in P, Q, R as in diagram.

Prove

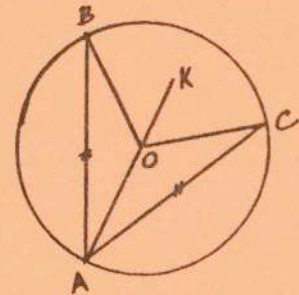
- (i) $PR = 2AC$
- (ii) $\triangle PQR = 4\triangle PAB$.



3. Show how to inscribe a circle in a given triangle and give proof.

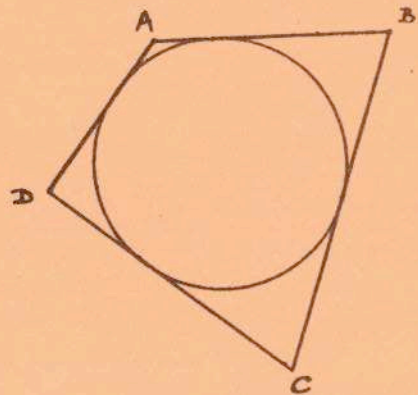
4. Prove that an angle at the centre of a circle is double an angle at the circumference standing on the same arc.

AB and AC are two equal chords of a circle of centre O (see diagram). AO is produced to K. Prove that OK bisects $\angle BOC$.



5. Prove that the two tangents drawn to a circle from an external point are equal in length.

A quadrilateral ABCD is circumscribed about a given circle (see diagram). Prove that $AB + DC = AD + BC$.



6. What is the locus of points which are equidistant from two fixed points?

A and B are two fixed points and XY is a given line (see diagram). Show how to find the point P in XY so that $\angle PAB = \angle PBA$.

