Six questions may be answered.

All questions carry equal marks.

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1. In a triangle ABC, the side AC is greater than the side AB ; prove that the angle ABC is greater than the angle ACB.

2. Using ruler and compass only, construct a quadrilateral ABCD such that AC=2·5″, BC=2·5″, the angle BAC=60°, the angle CDA=90° and CD=1″.

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

Or,

2. Using ruler and compass only, construct an equilateral triangle on a straight line 2″ long and inscribe a circle in it. Prove your construction and measure the radius of the inscribed circle.

3. Triangles of equal area are constructed on the same fixed base. What is the locus of their vertices ?
On a straight line 3 inches long construct a triangle such that its area may be 3 square inches and one of its sides 2½ inches long. Give proof.

4. In a circle, prove that equal chords are equidistant from the centre.
Two parallel chords in a circle are each 3 inches in length and the radius of the circle is 2¼ inches. Find the distance between the chords,

5. Prove that the angle in a semicircle is a right angle.

AB and CD are any two diameters of a circle; prove that the figure ACBD is a rectangle.

6. Through a point on the circumference of a circle a tangent and a chord are drawn; prove that the angles between the chord and the tangent are equal, respectively, to the angles in the alternate segments of the circle.