PRACTICE PAPER

ICSE CLASS 10 – MATHEMATICS

Chapter 16 : Loci

(Geometry : Locus and its Constructions)

Maximum Marks: 40 Time allowed: One and a half hours

1. *Answers to this Paper must be written on the paper provided separately.*
2. *You will not be allowed to write during the first 10 minutes. This time is to be spent in reading the question paper.*
3. ***The time given at the head of this Paper is the time allowed for writing the answers.***
4. *Attempt **all** questions from **Section A** and **any two** questions from **Section B**.*
5. ***All working, including rough work, must be clearly shown, and must be done on the same sheet as the rest of the answer.***
6. ***Omission of essential working will result in loss of marks.***
7. *The intended marks for questions or parts of questions are given in brackets [ ].*
8. *Constructions are to be done with ruler and compasses only; all construction lines and arcs must be shown. Figures given in the questions are rough sketches and are not drawn to scale.*

Question 1

Choose the correct answers to the questions from the given options. [8]

(Do not copy the question, write the correct answers only.)

(i) The locus of a point which is equidistant from two fixed points A and B is:

(a) the perpendicular bisector of AB
(b) a circle with AB as diameter
(c) a line parallel to AB
(d) the bisector of the angle at A

(ii) The locus of a point in a plane which is always 4 cm from a given line l is:

(a) a circle of radius 4 cm
(b) a single line parallel to l, 4 cm from it
(c) a pair of lines parallel to l, one on each side of it, each 4 cm from it
(d) the perpendicular bisector of l

(iii) The locus of a point equidistant from two intersecting lines is:

(a) a circle
(b) a pair of parallel lines
(c) a pair of perpendicular lines, the bisectors of the angles between the given lines
(d) a single line

(iv) Two parallel lines are 10 cm apart. The locus of a point equidistant from both lines is:

(a) a circle of diameter 10 cm
(b) a line parallel to both lines, 5 cm from each
(c) two lines parallel to both, each 10 cm from them
(d) a line perpendicular to both lines

(v) A and B are two fixed points. The locus of a point P such that $\angle APB = 90°$ is:

(a) the line AB
(b) the perpendicular bisector of AB
(c) a circle with AB as diameter
(d) a circle with centre A and radius AB

(vi) The point equidistant from the three sides of a triangle is the point of intersection of:

(a) the medians
(b) the perpendicular bisectors of the sides
(c) the altitudes
(d) the bisectors of the angles

(vii) **Assertion (A):** The locus of points equidistant from A and B, where AB = 6 cm, passes through the mid-point of AB.

Reason (R): The locus of a point equidistant from two fixed points is the perpendicular bisector of the line segment joining them.

(a) (A) is true and (R) is false.
(b) (A) is false and (R) is true.
(c) Both (A) and (R) are true, and (R) is the correct explanation for (A).
(d) Both (A) and (R) are true, but (R) is not the correct explanation for (A).

(viii) **Assertion (A):** The locus of a point which is 3 cm from a given line is a single line parallel to the given line.

Reason (R): The locus of a point which is 3 cm from a fixed point is a circle with that point as centre.

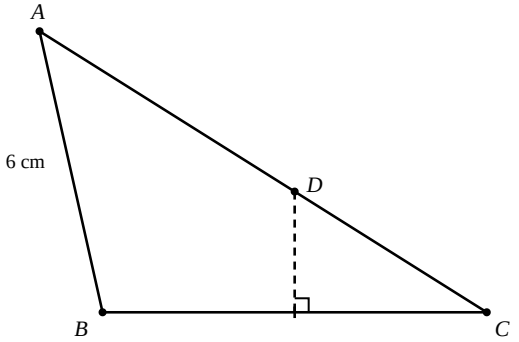
(a) (A) is true and (R) is false.
(b) (A) is false and (R) is true.
(c) Both (A) and (R) are true, and (R) is the correct explanation for (A).
(d) Both (A) and (R) are true, but (R) is not the correct explanation for (A).

Question 2

(i) Describe the locus of: (a) the tip of the minute hand of a clock; (b) a point which is 2 cm from a given straight line AB; (c) the mid-points of all chords of a circle which are parallel to a given chord; (d) the centres of all circles passing through two given points P and Q. [4]

(ii) A and B are two fixed points 8 cm apart. (a) Describe the locus of a point equidistant from A and B. (b) Describe the locus of a point which is 4 cm from A. (c) How many points satisfy both conditions? Name the point. [4]

(iii) In the figure, the perpendicular bisector of BC meets AC at D. AB = 6 cm and AC = 11 cm. Prove that DB = DC and hence find the perimeter of ΔABD. [4]

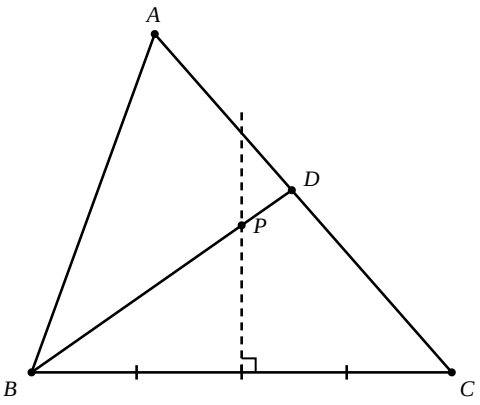


SECTION B (20 Marks)

*(Attempt **any two** questions from this Section.)*

Question 3

In the figure, BD bisects ∠ABC of ΔABC. The perpendicular bisector of BC meets BD at P.



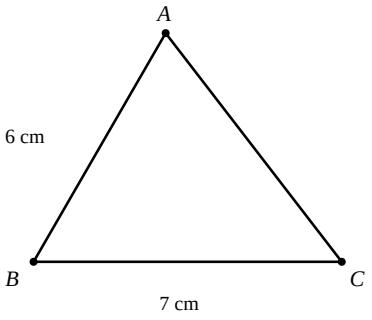
(i) Prove that P is equidistant from B and C. [3]

(ii) Prove that P is equidistant from AB and BC. [3]

(iii) If ∠ABC = 70°, find ∠PBC, ∠PCB and ∠BPC. [4]

Question 4

Using ruler and compasses only, construct ΔABC in which AB = 6 cm, BC = 7 cm and ∠ABC = 60° (a rough sketch is shown).



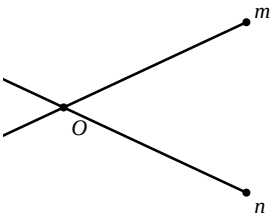
(i) Construct the locus of points inside the triangle which are equidistant from AB and BC. [3]

(ii) Construct the locus of points inside the triangle which are equidistant from B and C. [3]

(iii) Mark the point P which satisfies both conditions. Measure and record the length of PB, and state why P is also equidistant from C. [4]

Question 5

In the figure, the lines m and n intersect at O. Find, by construction, the points which are equidistant from m and n and also 2.5 cm from O.



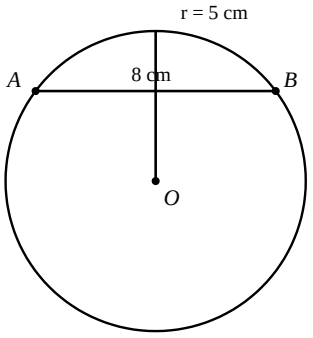
(i) Describe the locus of points equidistant from m and n. [3]

(ii) Describe the locus of points which are 2.5 cm from O. [3]

(iii) How many points satisfy both conditions? Name the figure formed by joining them in order and find its area. [4]

Question 6

In the figure, AB is a chord of a circle with centre O. The radius of the circle is 5 cm and AB = 8 cm.



(i) Describe the locus of the points inside the circle which are equidistant from A and B. [3]

(ii) Describe the locus of the mid-points of all chords of the circle which are parallel to AB. [3]

(iii) Describe the locus of the mid-points of all chords of length 8 cm, giving its radius. Also find the radius of the locus of the mid-points of all chords of length 6 cm. [4]

— End of Question Paper —