Unit No. 11

Loci And Construction

Review Exercise No. 11

Question No. 1

Four options are given against each statement. Encircle the correct option.

(i) A triangle can be constructed if the sum of the measure of any two sides is _____ the measure of the third side.

(a) less than

(b) greater than

(c) equal to

(d) greater than and equal to

(ii) An equilateral triangle _____.

(a) can be isosceles

(b) can be right angled

(c) can be obtuse angled

(d) has each angle equal to 50∘.

(iii) If the sum of the measures of two angles is less than 90∘, then the triangle is _____.

(a) equilateral

(b) acute angled

(c) obtuse angled

(d) right angled

(iv) The line segment joining the midpoint of a side to its opposite vertex in a triangle is called _____.

(a) median

(b) perpendicular bisector

(c) angle bisector

(d) circle

(v) The angle bisectors of a triangle intersect at _____.

(a) one point

(b) two points

(c) three points

(d) four points

(vi) Locus of all points equidistant from a fixed point is _____.

(a) circle

(b) perpendicular bisector

(c) angle bisector

(d) parallel lines

(vii) Locus of points equidistant from two fixed points is _____.

(a) circle

(b) perpendicular bisector

(c) angle bisector

(d) parallel lines

(viii) Locus of points equidistant from a fixed line is/are _____.

(a) circle

(b) perpendicular bisector

(c) angle bisector

(d) parallel lines

(ix) Locus of points equidistant from two intersecting lines is _____.

(a) circle

(b) perpendicular bisector

(c) angle bisector

(d) parallel lines

(x) The set of all points which is farther than 2 km from a fixed point B is a region outside a circle of radius _____ and centre at B.

(a) 1 km

(b) 1.9 km

(c) 2 km

(d) 2.1 km

Question No. 2:

Construct a right angled triangle with measures of sides 6 cm, 8 cm and 10 cm.

Let
AB =6 cm
BC =8 cm
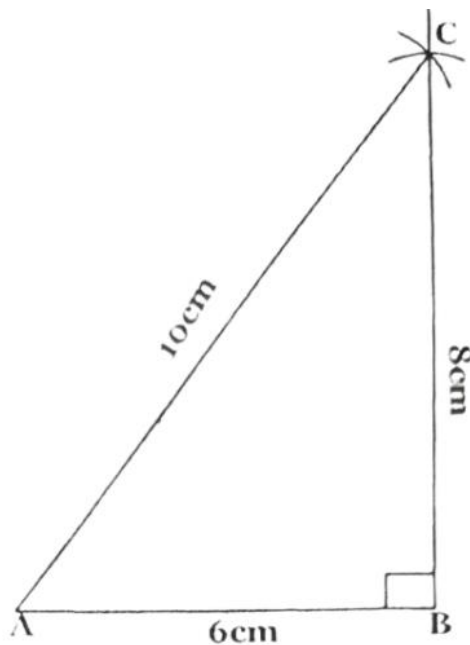**CA =10 cm**

Construction Steps:

1. Draw a line segment AB =6 cm
2. Take point B as centre, draw an arc of radius 8 cm
3. Take point A as centre, draw an arc of radius 10 cm, which cuts the first arc to produce point C
4. Join B and A to point C

So right-angled triangle ABC is formed.

Figure:

Question No. 3:

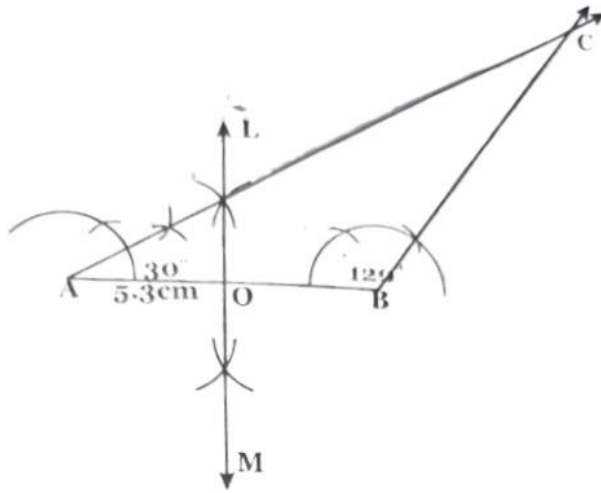**Construct a triangle ABC with m AB = 5.3 cm, m ∠A = 30° and m ∠B = 120°. Draw the locus of all points which are equidistant from A and B.**

Construction Steps:

(i) Draw a line segment AB =5.3 cm

(ii) With the help of a pair of compasses, construct ∠A=30° and ∠B=120°

(iii) Both angle arms intersect each other to produce point C.

So △ABC (obtuse) is formed.

(iv) Draw the perpendicular bisector **of side AB to find the** locus of all points **which are equidistant from A and B.**
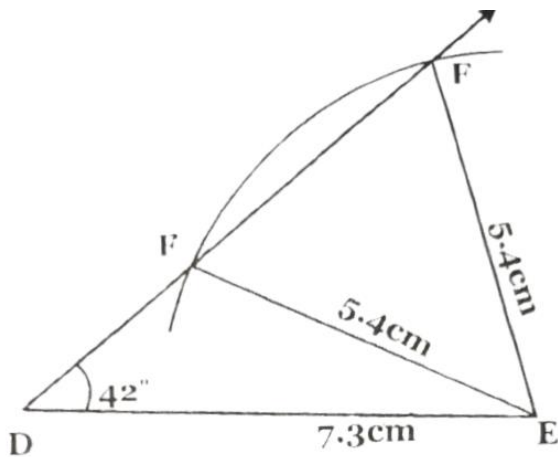
Figure:

Question No. 4:

Construct a triangle CDE with m DE = 7.3 cm, m ∠D = 42° and m EF = 5.4 cm.

Construction Steps:

(i) Draw a line segment m DE = 7.3cm

(ii) With the help of protractor draw an angle of 42° at point D.

(iii) Take point E as centre, draw an arc of radius 5.4cm which cuts angle arm at two distinct points F' and F.

(iv) Join E to F' and F.

So, two triangles are obtained.

Figure:

Question No. 5:

Construct a triangle XYZ with m YX = 8 cm, m YZ = 7 cm and m XZ = 6.5 cm. Draw the locus of all points which are equidistant from XY and XZ.

Construction Steps:

(i) Draw a line segment YX = 8cm

(ii) Take point Y as centre, mark an arc of radius 7cm.

(iii) Take point X as centre mark another arc which intersects first arc to produce point Z.

(iv) Join Y and X to Z to complete the triangle XYZ.

(v) Construct angle bisectors of ∠X and ∠Z. The point of intersection of these angle bisectors give the locus of all points which are equidistant from

XY and XZ.

Figure:
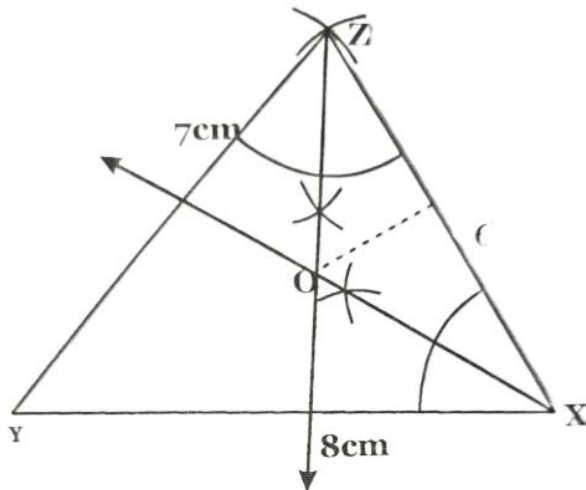
Question No. 6:

Construct a triangle FGH such that m FG = m GH = 6.4 cm, m ∠G = 122°. Draw the locus of all points which are:

(a) equidistant from F and G.

(b) equidistant from FG and GH.

(c) Mark the point where the two loci intersect.

Construction Steps:

(i) With given measurements, construct triangle.

(ii) Find perpendicular bisector LM of side FG . So, locus of all points equidistant from points F and G lies on perpendicular bisector.

(b) Find angle bisector of 122°. So, locus of all points which are equidistant from FG and GH

  lies on angle bisector.

(c) Two loci intersect each other at point O.

Figure:
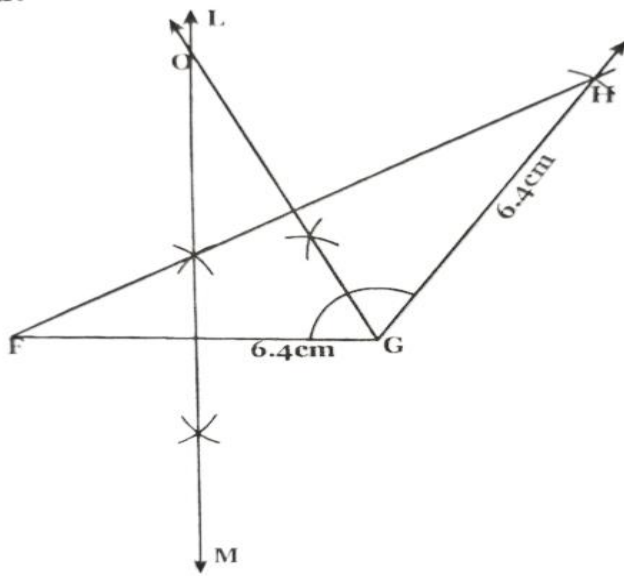
Question No. 7:

Two houses Q and R are 73 metres apart. Using a scale of 1 cm to represent 10 m, construct the locus of a point P which moves such that it is:

(i) at a distance of 32 metres from Q.

**(ii) at a distance of 48 metres from the line joining Q and R.**

Construction Steps:

Here Q and R represent two houses. Distance between them is 73 m (7.3 cm)

(i) In first diagram, Mark an arc of radius 3.2 cm (32 m) such that QP = 3.2 cm (32 m)

(ii) In second diagram,

Take point Q as centre, mark an arc of radius 4.8 cm (48 m).

(iii) Take R as centre, mark an arc of same radius, which cuts first arc to produce point P.

Join Q to P & R to P.

Figure:
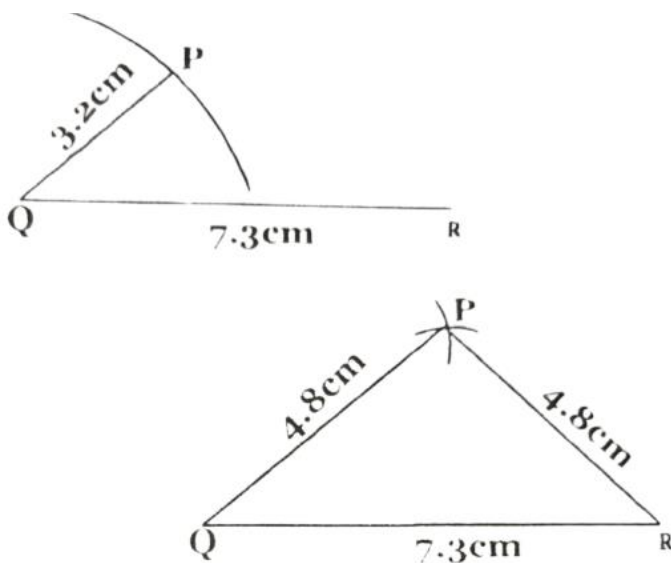
Question No. 8:

The field is in the form of a rectangle ABCD with m AB = 70 m and m BC = 60 m. Construct the rectangle ABCD using a scale of 1 cm to represent 10 m. Show the region inside the field which is less than 30 m from C and farther than 25 m from AB.

Construction Steps:

(i) Draw rectangle according to measurements.

(ii) Construct perpendicular bisector of AB.

(iii) Draw a parallel line LM at a distance of 2.5cm from AB.

(iv) Find angle bisector of ∠C.

(v) Shade the region in the field which is less than 30 m (3 cm) from C and farther than 25 m (2.5 cm) from AB.

Figure: