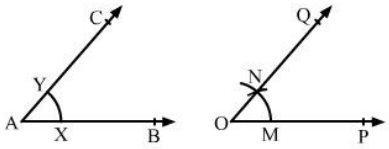
Geometrical Constructions Ex 19.5 Q1

Answer :

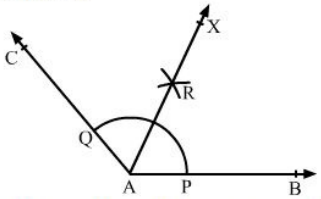
Draw an angle ∠BAC also draw a ray OP.
With a suitable radius and A as centre, draw an arc intersecting AB and AC at X and Y, respectively.
With the same radius and O as centre, draw an arc to intersect the arc OP at M.
Measure XY using the compass.
With M as centre and radius equal to XY, draw an arc to intersect the arc drawn from O at N.
Join O and N and extend it to Q.
∠POQ is the required angle.



Geometrical Constructions Ex 19.5 Q2

Answer :

Obtuse angles are those angles which are greater than 90° but less than 180°.
Draw an obtuse angle ∠BAC.
With an appropriate radius and centre at A, draw an arc such that it intersects AB and AC at P and Q, respectively



With centre P and radius more than half of PQ, draw an arc.
With the same radius and centre at Q, draw another arc intersecting the previous arc at R.
Join A and R and extend it to X.
The ray AX is the required bisector of ∠BAC.
If we measure ∠BAR and ∠CAR, we have
∠BAR = ∠CAR = 65°

Note: Bisected Angle so obtained may be different When your obtuse angle is different from this obtuse angle.

Geometrical Constructions Ex 19.5 Q3

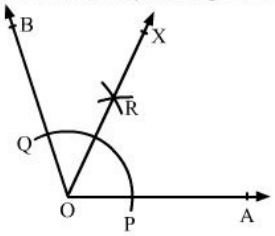
Answer :

Draw a ray OA.
With the help of a protractor, construct an angle ∠AOB of 108°.

∵108°2=54°

∴ 54° is half of 108°.

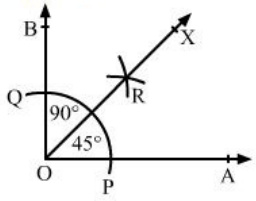
To get the angle of 54°, we need to bisect the angle of 108°.
With centre at O and a convenient radius, draw an arc cutting sides OA and OB at P and Q, respectively.
With centre at P and radius more than half of PQ, draw an arc.
With the sane radius and centre at Q, draw another arc intersecting the previous arc at R.
Join O and R and extend it to X.
∠AOX is the required angle of 54°.



Geometrical Constructions Ex 19.5 Q4

Answer :

We know that a right angle is of 90°.
Draw a ray OA.
With the help of a protractor, draw an ∠AOB of 90°.
With centre at O and a convenient radius, draw an arc cutting sides OA and OB at P and Q, respectively.
With centre at P and radius more than half of PQ, draw an arc.
With the same radius and centre at Q, draw another arc intersecting the previous arc at R.
Join O and R and extend it to X.
∠AOX is the required angle of 45°.
∠AOB = 90°
∠AOX = 45°



Geometrical Constructions Ex 19.5 Q5

Answer :

Two angles, which are adjacent and supplementary, are called linear pair of angles.
Draw a line AB and mark a point O on it.
When we draw any angle ∠AOC, we also get another angle ∠BOC.
Bisect ∠AOC by a compass and a ruler and get the ray OX.
Similarly, bisect ∠BOC and get the ray OY.

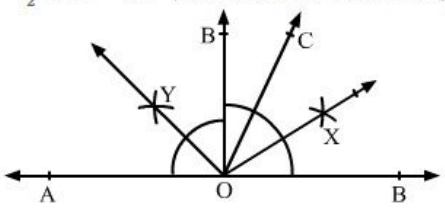
Now

$\angle XOY = \angle XOC + \angle COY$

$= \frac{1}{2}\angle AOC + \frac{1}{2}\angle BOC$

$= \frac{1}{2}(\angle AOC + \angle BOC)$

$= \frac{1}{2} \times 180° = 90^\circ$ (As ∠AOC and ∠BOC are supplementary angles)



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