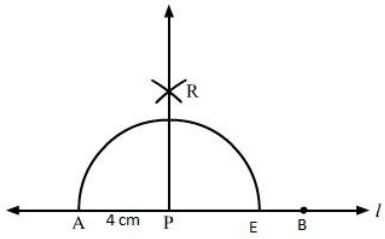
Geometrical Constructions Ex 19.2 Q5

Answer :

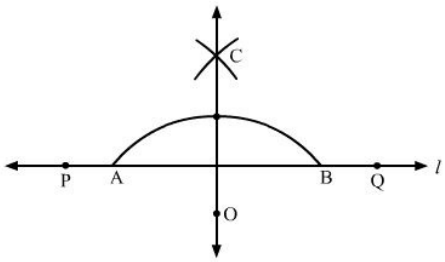
We draw line *l* and take a point A on it.
Using a ruler and a compass, we mark a point B, 10 cm from A, on the line *l*.
AB is the required line segment of 10 cm.
Again, we mark a point P, which is 4 cm from A, in the direction of B.
With P as centre, take a radius of 4 cm and construct an arc intersecting the line *l* at two points A and E.
With A and E as centres, take a radius of 6 cm and construct two arcs intersecting each other at R.
We join PR and extend it.
PR is the required line, which is perpendicular to AB.



Geometrical Constructions Ex 19.2 Q6

Answer :

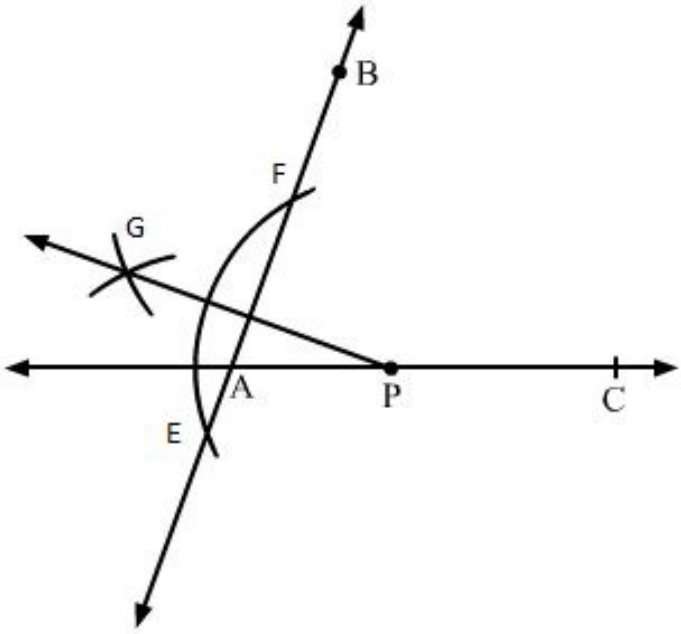
Draw a line *l* and take a point P on it.
Using a ruler and a compass, mark a point Q on the line *l*, where PQ = 12 cm
Mark a point O outside PQ.
Now, with O as centre, draw an arc of appropriate radius such that the arc cuts the line at points A and B.
Taking A and B as centres, construct two arcs such that they intersect each other at C.
Join OC.
OC is the required line, which is perpendicular to PQ.



Geometrical Constructions Ex 19.2 Q7

Answer :

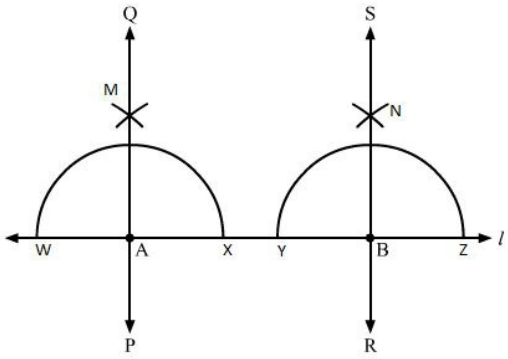
Draw a line segment AC on a line *l*.
(i) Take a protractor and place it on the segment AC such that segment AC coincides with the line of diameter of protractor and middle of this line coincides with point A.
(ii) Counting from the right side, mark the point as B at the point of 70° of the protractor and draw AB.
(iii) Now, measuring 2 cm from A on AC, mark a point P.
(iv) With P as centre, draw an arc intersecting line *l* at points E and F.
(v) Using the same radius and E and F as centres, construct two arcs that intersect at point G on the other side.
(vi) Join PG.



Geometrical Constructions Ex 19.2 Q8

Answer :

Draw a line l and take a line segment AB of length 8 cm



Steps:

(i) Take a convenient radius with A as centre and draw an arc intersecting the line at points W and X.
(ii) With W and X as centres and radius greater than AW, construct two arcs intersecting each other at M.
(iii) Join AM and extend it in both directions to P and Q.
(iv) Take a convenient radius with B as centre and draw an arc intersecting the line at points Y and Z.
(v) With Y and Z as centres and a radius greater than YB, construct two arcs intersecting each other at N.
(vi) Join BN and extend it in both directions to S and R.

Let the lines perpendicular at A and B be PQ and RS, respectively.
$\because \angle QAB = 90°$ and $\angle ABR = 90°$
$\therefore \angle QAB = \angle ABR$

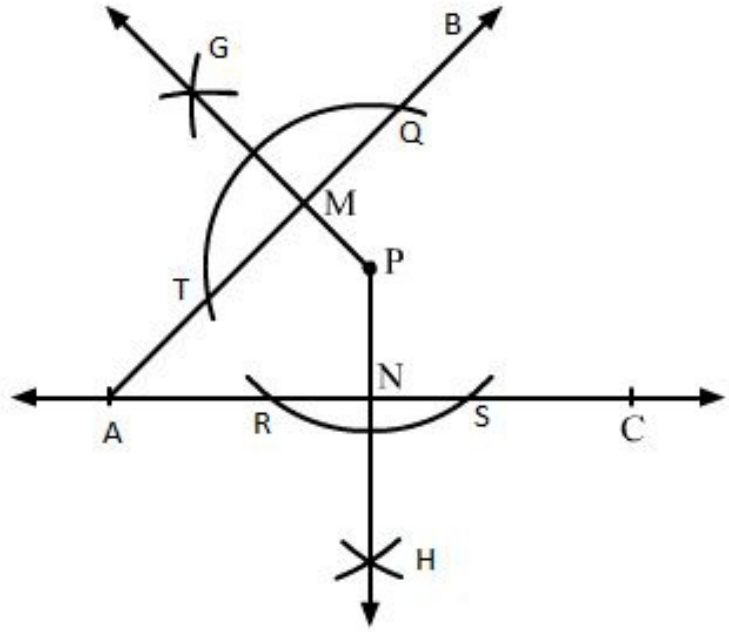
When two parallel lines are intersected by a third line, the two alternate interior angles are equal.
$\because \angle QAB = \angle ABR$
$\therefore$ PQ and RS are parallel.

Geometrical Constructions Ex 19.2 Q9

Answer :

(i) Draw a line segment A on the line *l*.
(ii) Take a protractor and place it on the segment AC such that AC coincides with the line of the diameter of the protractor and the middle point of the line coincides with point A.
(iii) Counting from the right side, mark a point as B at the point of 45° of protractor and draw a line segment AB.
(iv) Take a convenient radius with P as centre, construct an arc intersecting the line segments AB at T and Q and AC at R and S.
(v) Using the same radius and with T and Q as centres, construct two arcs intersecting at G on the other side.
(vi) Using the same radius and with R and S as centres, construct two arcs intersecting at H on the other side.
(vii) Join PG and PH which intersects AB and AC at M and N, respectively.

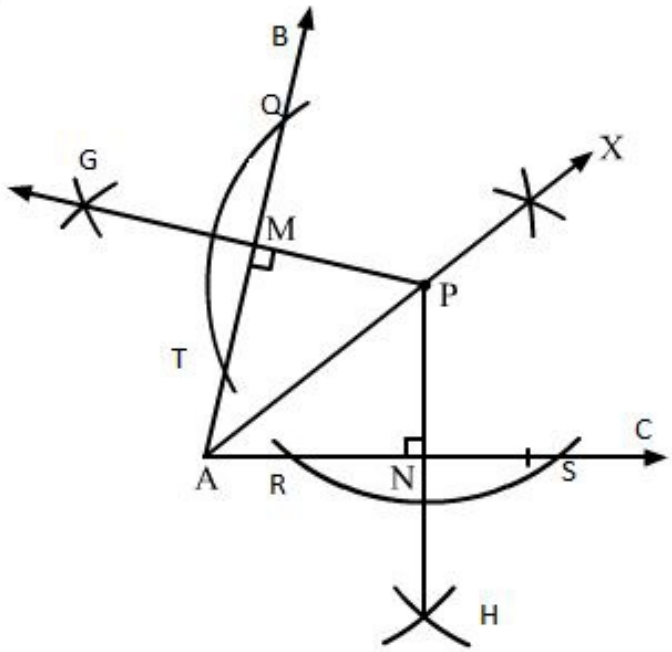
On measuring ∠MPN using a protractor, we get it equal to 135°.



Geometrical Constructions Ex 19.2 Q10

Answer :

(i) Draw ∠BAC on the line segment AC. With a convenient radius and A as centre, draw an arc from AB and AC.
(ii) The points where arc cuts AB and AC, take both points as centres and draw two small arcs intersecting at X. Now, draw AX.
(iii) Take a point P on the ray AX.
(iv) Take a convenient radius with P as centre and construct an arc intersecting the line segments AB at T and Q and AC at R and S, respectively.
(v) Using the same radius and with T and Q as centres, construct two arcs intersecting at G on the other side.
(vi) Using the same radius and with R and S as centres, construct two arcs intersecting at H on the other side.
(vii) Join PG and PH, which intersects AB and AC at M and N, respectively.
On measuring PM and PN using a ruler, we find that both are equal.



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