RS Aggarwal Solutions for Class 6 Maths Chapter 14 – Constructions (Using Ruler and a Pair of Compasses)

Exercise 14A

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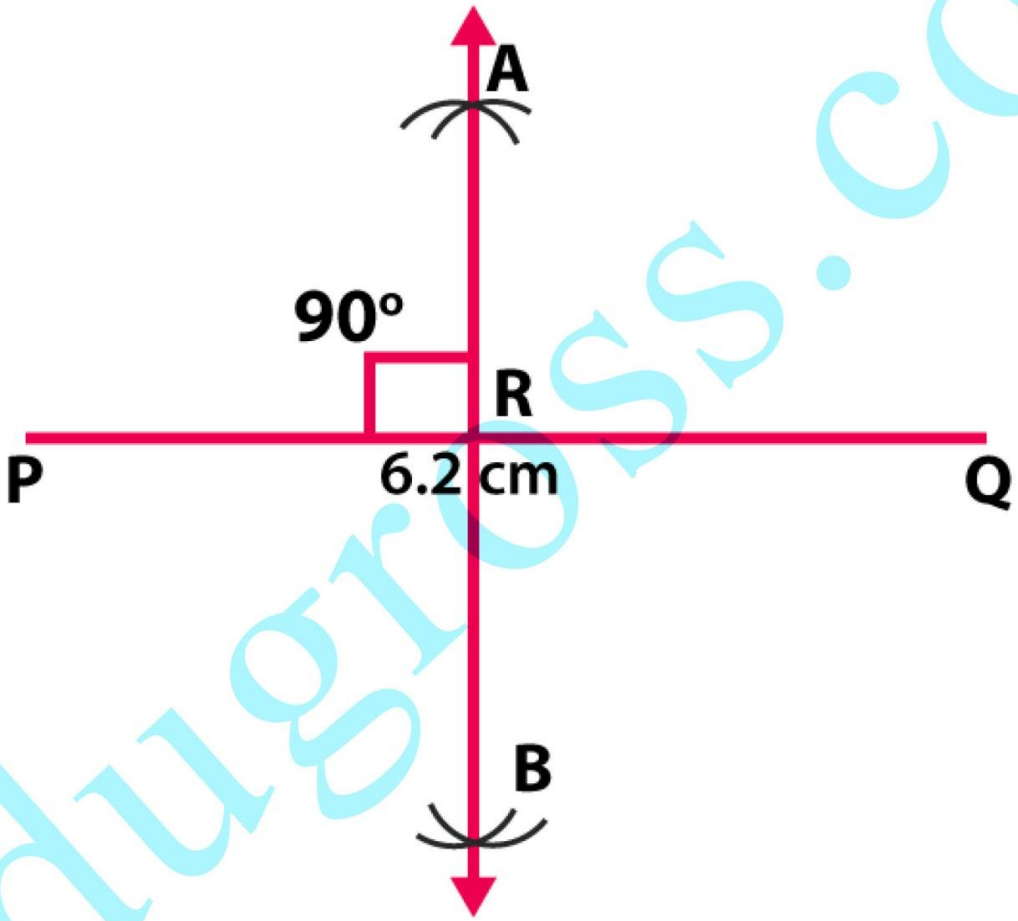
1.

Solution



Steps of construction

1. Draw a line segment PQ = 6.2 cm

2. With P as center and radius more than half of PQ, draw arcs one on each side of PQ

3. With Q as centre and the same radius as before, draw arcs, cutting the previously drawn arcs at A and B respectively.

4. Join AB, meeting PQ at R

2.

Solution

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Steps of construction

1. Draw a line segment AB = 5.6 cm

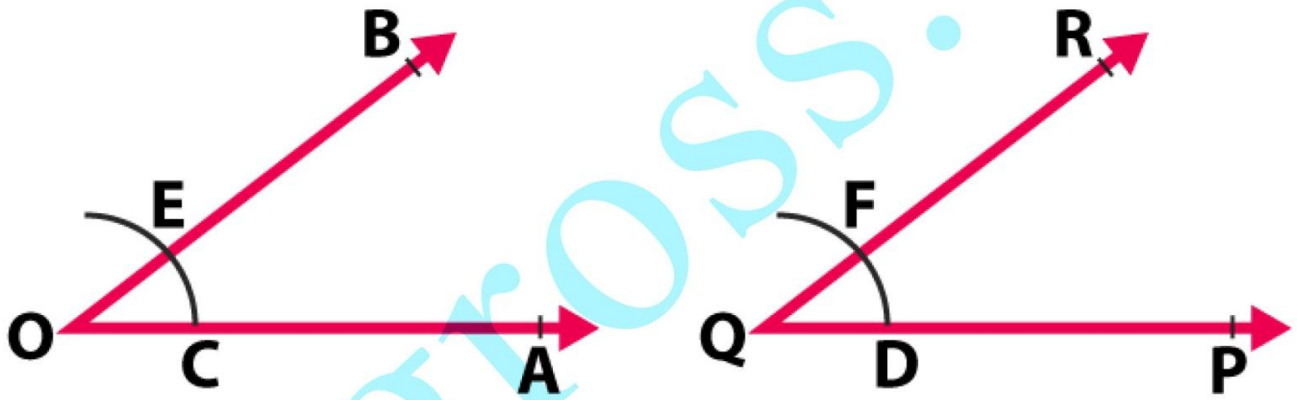
2. With A as centre and radius more than half of AB, draw arcs, one on each side of AB.

3. With B as the centre and the same radius as before, draw arcs, cutting the previously drawn arcs at P and Q respectively.

4. Draw PQ, meeting AB at R

3.

Solution



Given ∠AOB

Steps of construction

1. Draw a ray QP

2. With O as centre and any radius, draw an arc cutting OA and OB at C and E respectively.

3. With Q as centre and the same radius, draw an arc cutting QP at D.

4. With D as centre and radius as CE, cut the arc through D at F.

5. Draw QF and produce it to any point R

Hence, ∠PQR = ∠AOB

4.

Solution

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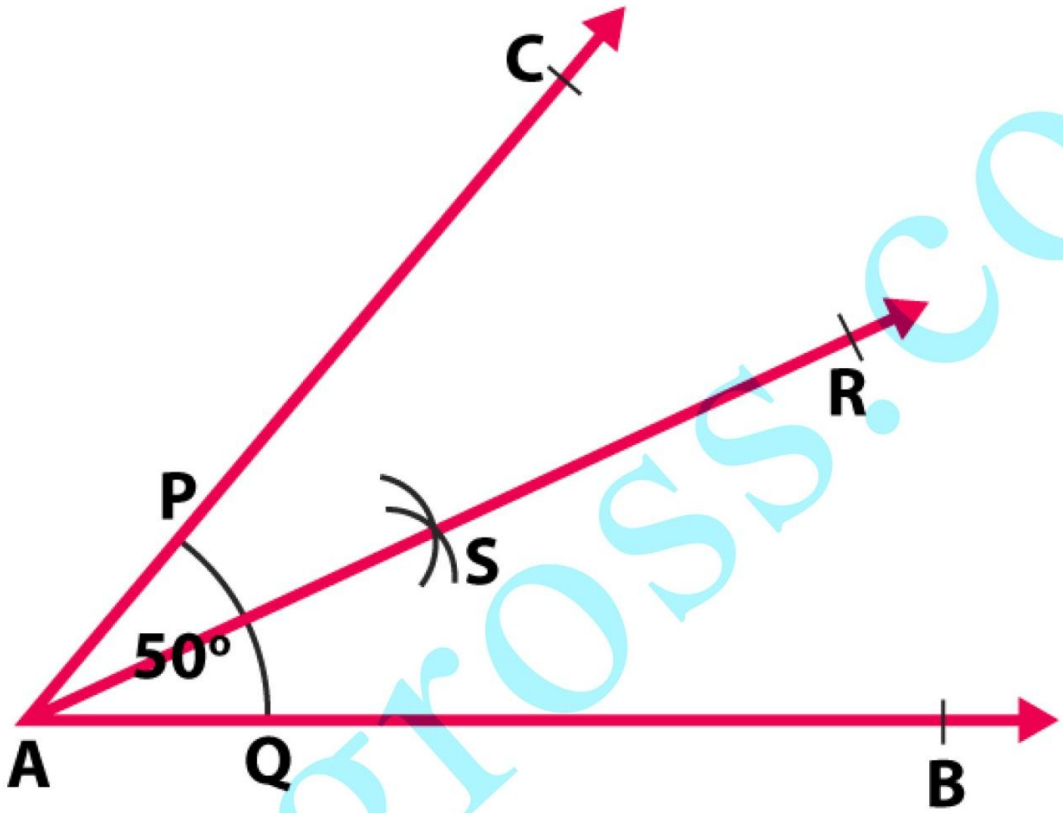


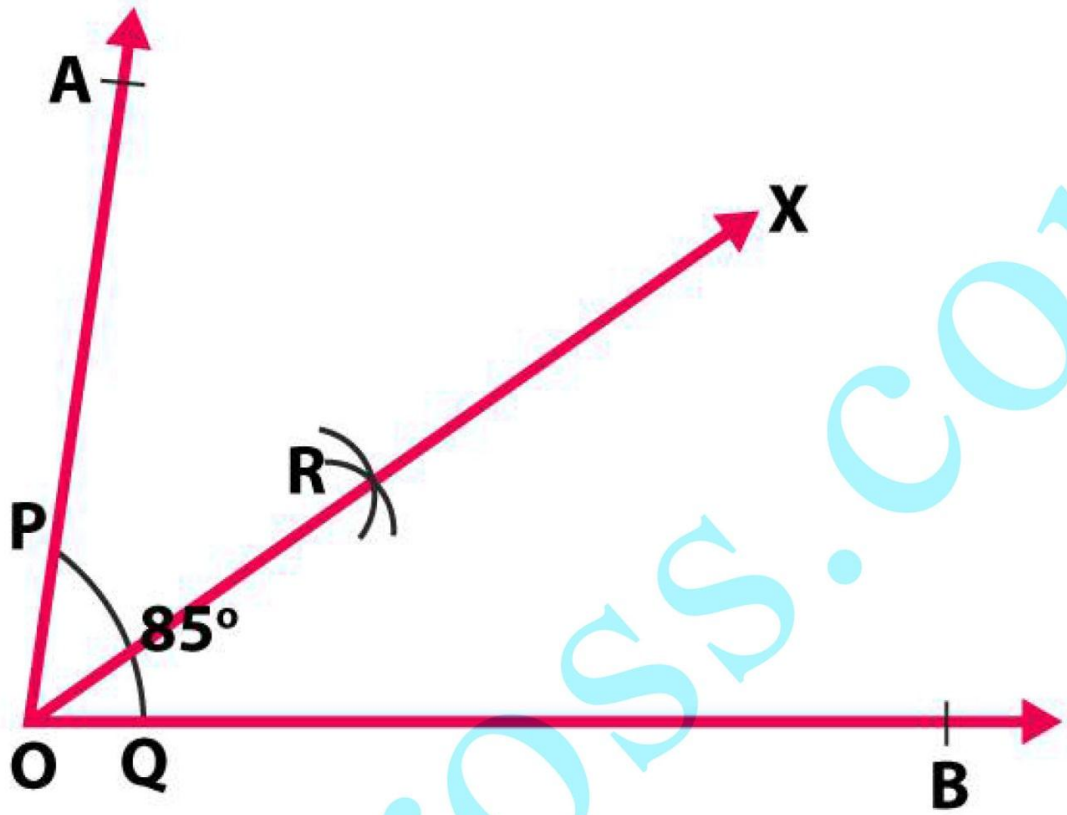
Steps of construction

1. With the help of a protractor draw ∠BAC = 50°
2. With A as centre and any convenient radius, draw an arc cutting AB and AC at Q and P respectively.
3. With centre P and radius more than half of PQ, draw an arc.
4. With centre Q and the same radius as before, draw another arc, cutting the previously drawn arc at a point S
5. Draw SA and produce it to any point R.

Then ray AR bisects angle ∠BAC.

5.

Solution



Steps of construction

1. With the help of a protractor draw ∠AOB = 85°

2. With O as centre and any convenient radius, draw an arc, cutting OA and OB at P and Q respectively.

3. With centre P and radius more than half of PQ, draw an arc.

4. With centre Q and the same radius as before, draw another arc, cutting the previously drawn arc at a point R.

5. Join OR and produce it to any point X

Then, ray OX bisects ∠AOB

6.

Solution

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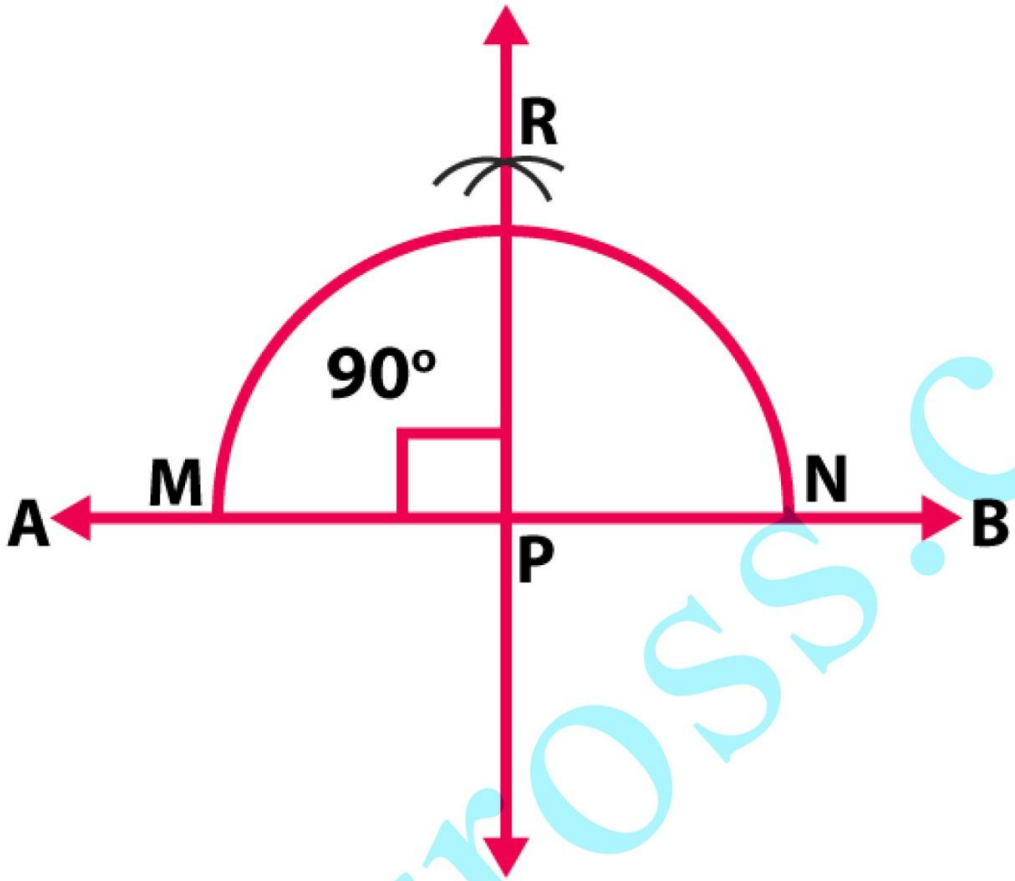

Steps of construction

1. Draw a line AB
2. Let P be a point on AB
3. With centre P and any radius, draw a semicircle to intersect AB at M and N respectively.
4. With centre M and any radius more than MN, draw an arc.
5. With centre N and the same radius, draw another arc, cutting the previously drawn arc at R
6. Join PR

Then, PR is perpendicular to AB

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Exercise 14B

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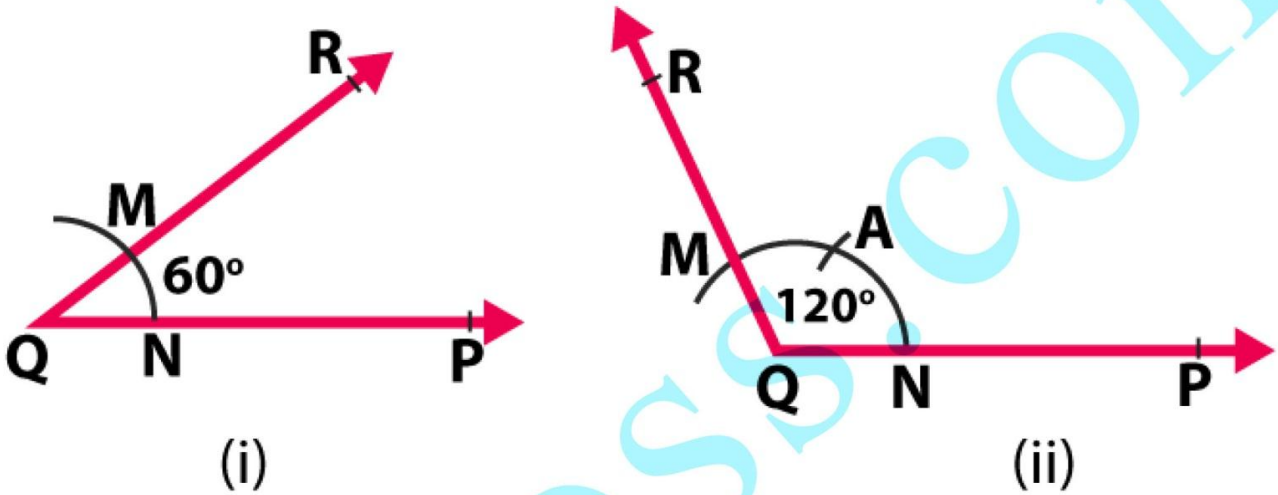
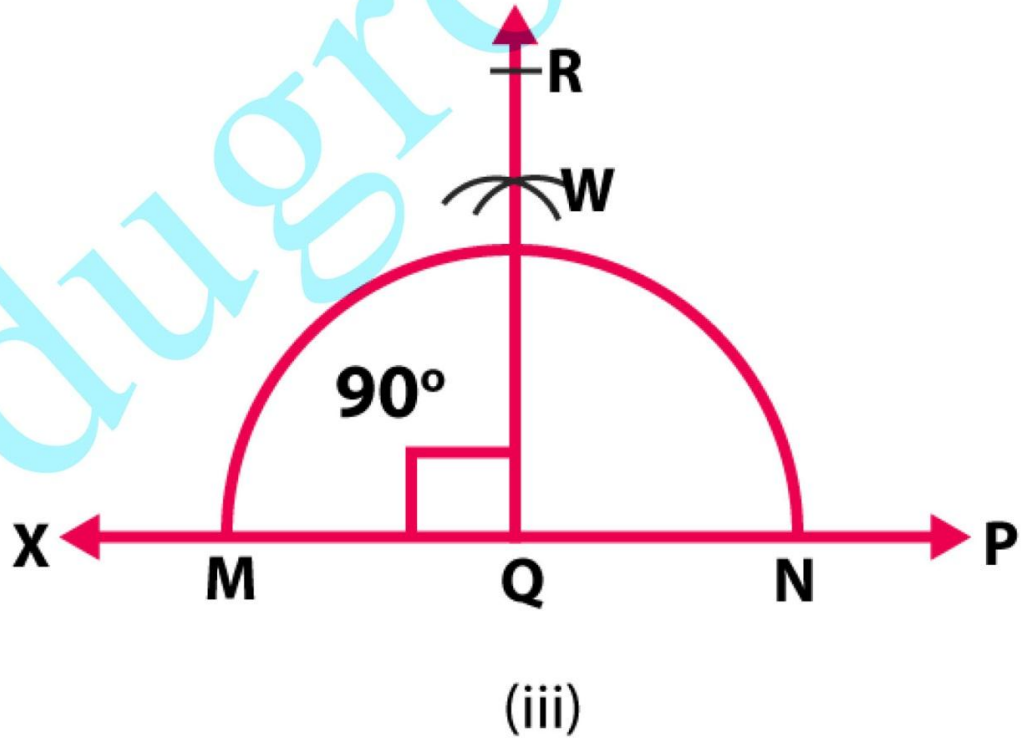
1.

Solution





Steps of construction for 60°

(i) Draw a ray QP

(ii) With Q as centre and any suitable radius, draw an arc cutting QP at a point N

(iii) With N as centre and the same radius as before, draw another arc to cut the previous arc at M.

(iv) Draw QM and produce it to R

Hence, $\angle PQR = 60^0$

Steps of construction for 120^0

(i) Draw a ray QP

(ii) With Q as centre and any suitable radius, draw an arc cutting QP at N

(iii) With N as centre and the same radius, cut the arc at A. Again with A as centre and the same radius, cut the arc at M

(iv) Join QM and produce it to R

Then $\angle PQR = 120^0$

Steps of construction for 90^0

(i) Draw a line PX

(ii) Let Q be a point on XP. With Centre Q and any radius, draw an arc cutting XP at M and N respectively

(iii) With centre N and radius more than half of MN, draw an arc.

(iv) With centre M and the same radius as before, draw another arc to cut the previous arc at point W

(v) Join QW and produce it to R

2.

Solution

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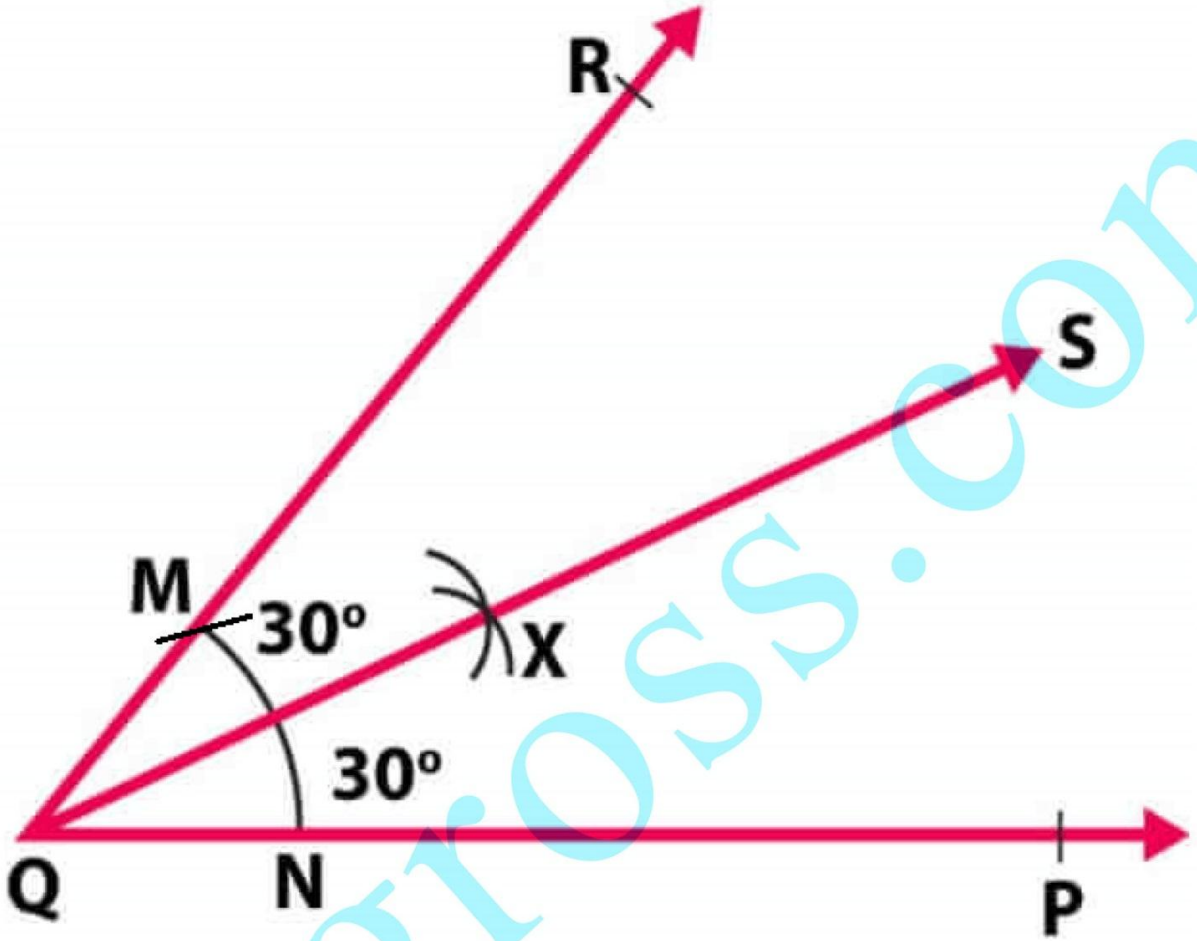

Steps of construction

1. Draw a ray QP

2. With centre Q and any suitable radius, draw an arc cutting QP at N

3. With centre N and the same radius as before, draw another arc to cut the previous arc at M

4. Join QM and produce it to R

Since ∠PQR = 60°

5. With M taking as centre and radius more than half of MN, draw an arc

6. With N as centre and the same radius as in step (5), draw another arc, draw another arc cutting the previously drawn arc at point X

7. Join QX and produce it to point S

Now ray QS is the bisector of ∠PQR

3.

Solution

1. Draw a line PR

2. Let Q be the point on PR. With Q as centre and any suitable radius, draw an arc cutting PR at points M and N

3. With N as centre and radius more than half of MN, draw an arc

4. With M as centre and the same radius as before, draw another arc to cut the previous arc at X

5. Join QX, meeting the arc at Z and produce it to W

6. With Z as centre and radius more than half of ZN, draw an arc

7. With N as centre and the same radius as in step in (6), draw another arc, cutting the previously drawn arc at a point Y

8. Join QY and produce it to point S

$\angle PQS$ is the required angle whose measure is 45^0