

Access NCERT Solutions for Class 6 Chapter 14: **Practical Geometry Exercise 14.6**

1. Draw $\angle POQ$ of measure 75° and find its line of symmetry.

Solutions:

Following steps are followed to construct an angle of 75° and its line of symmetry

(i) Draw a line l and mark two points O and Q on it. Draw an arc of convenient radius, while taking centre as O . Let this intersect line l at R

(ii) Taking R as centre and with same radius as before, draw an arc such that it is intersecting the previously drawn arc at S

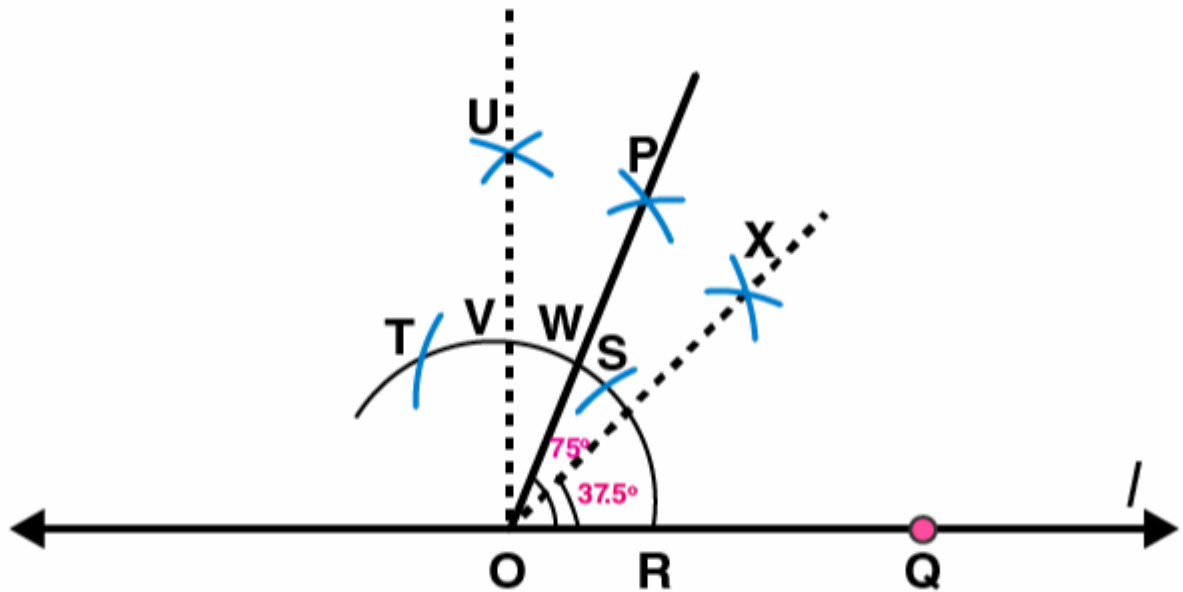
(iii) By taking same radius as before and S as centre, draw an arc intersecting the arc at point T as shown in figure

(iv) Take S and T as centre, draw an arc of same radius such that they intersect each other at U

(v) Join OU . Let it intersect the arc at V . Now, take S and V as centres draw arcs with radius more than $1/2 SV$. Let these intersect each other at P . Join OP . Now OP is the ray making 75° with the line l .

(vi) Let this ray intersect our major arc at point W . By taking R and W as centres, draw arcs with radius more than $1/2 RW$ in the interior angle of 75° . Let these intersect each other at point X . Join OX

OX is the line of symmetry for the $\angle POQ = 75^\circ$



2. Draw an angle of measure 147° and construct its bisector.

Solutions:

Following steps are followed to construct an angle of measure 147° and its bisector

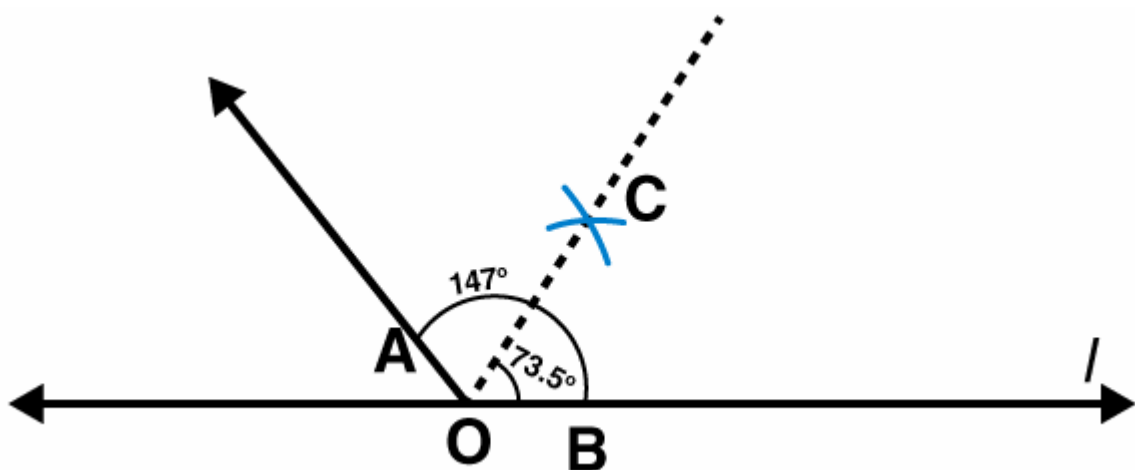
(i) Draw a line l and mark point O on it. Place the centre of protractor at point O and the zero edge along line l

(ii) Mark a point A at an angle of measure 147° . Join OA . Now OA is the required ray making 147° with line l

(iii) By taking point O as centre, draw an arc of convenient radius. Let this intersect both rays of angle 147° at points A and B .

(iv) By taking A and B as centres draw arcs of radius more than $1/2 AB$ in the interior angle of 147° . Let these intersect each other at point C . Join OC .

OC is the required bisector of 147° angle



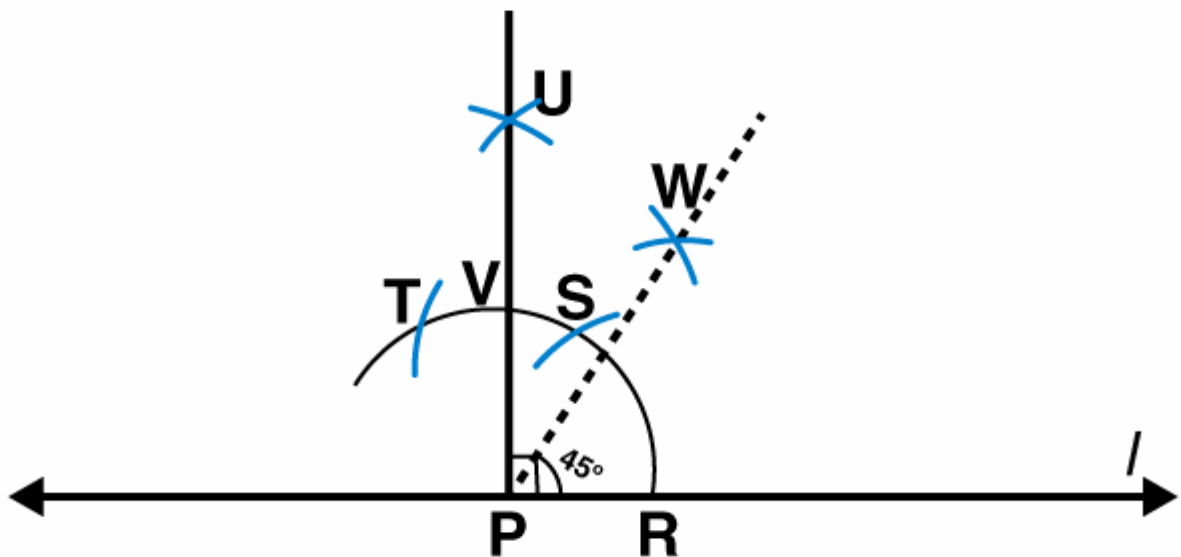
3. Draw a right angle and construct its bisector.

Solutions:

Following steps are followed to construct a right angle and its bisector.

- (i) Draw a line l and mark a point P on it. Draw an arc of convenient radius by taking point P as centre. Let this intersect line l at R
- (ii) Draw an arc by taking R as centre and with the same radius as before such that it is intersecting the previously drawn arc at S
- (iii) Take S as centre and with the same radius as before, draw an arc intersecting the arc at T as shown in figure
- (iv) By taking S and T as centres draw arcs of same radius such that they are intersecting each other at U .
- (v) Join PU . PU is the required ray making a right angle with the line l . Let this intersect major arc at point V .
- (vi) Now take R and V as centres, draw arcs with radius more than $1/2 RV$ to intersect each other at point W . Join PW .

PW is the required bisector of this right angle.

**4. Draw an angle of measure 153° and divide it into four equal parts.****Solutions:**

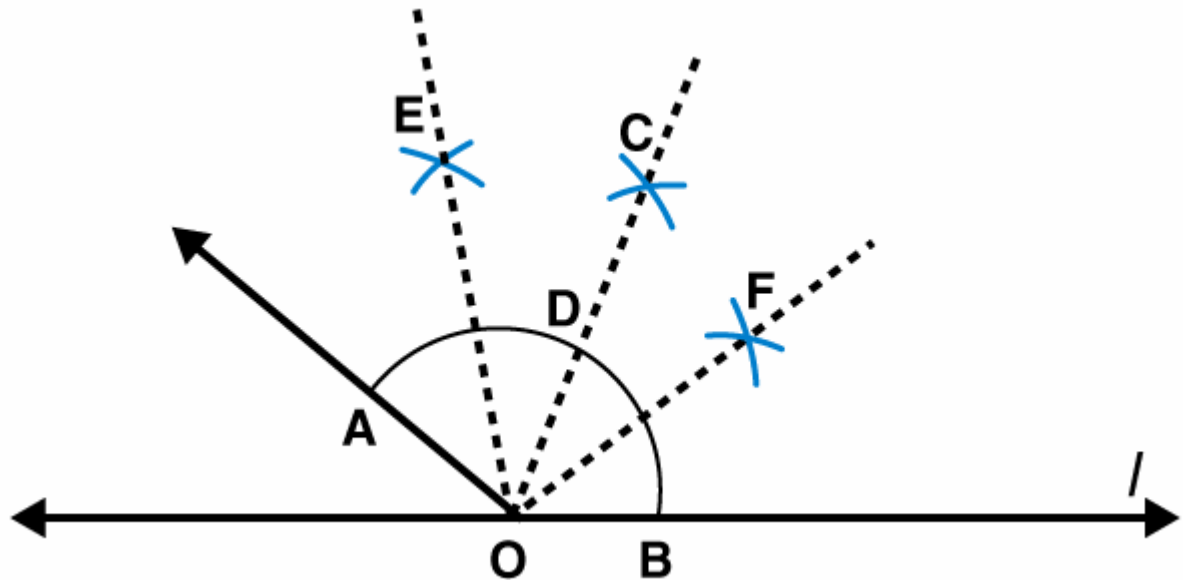
Following steps are followed to construct an angle of measure 153° and its bisector

- (i) Draw a line l and mark a point O on it. Place the centre of protractor at point O and the zero edge along line l
- (ii) Mark a point A at the measure of angle 153° . Join OA . Now OA is the required ray making 153° with line l
- (iii) Draw an arc of convenient radius by taking point O as centre. Let this intersects both rays of angle 153° at points A and B .

(iv) Take A and B as centres and draw arcs of radius more than $\frac{1}{2} AB$ in the interior of angle of 153° . Let these intersect each other at C. Join OC

(v) Let OC intersect major arc at point D. Draw arcs of radius more than $\frac{1}{2} AD$ with A and D as centres and also D and B as centres. Let these intersect each other at points E and F respectively. Now join OE and OF

OF, OC, OE are the rays dividing 153° angle into four equal parts.



5. Construct with ruler and compasses, angles of following measures:

(a) 60°

(b) 30°

(c) 90°

(d) 120°

(e) 45°

(f) 135°

Solutions:

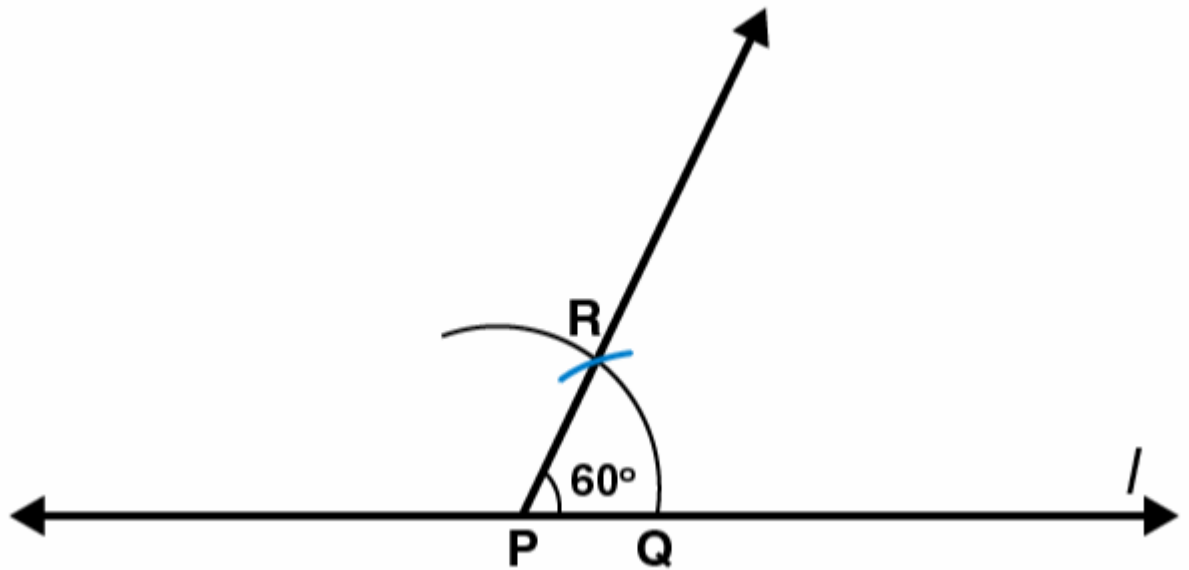
(a) 60°

Following steps are followed to construct an angle of 60°

(i) Draw a line l and mark a point P on it. Take P as centre and with convenient radius, draw an arc of a circle such that it intersects the line l at Q.

(ii) Take Q as centre and with the same radius as before, draw an arc intersecting the previously drawn arc at point R.

(iii) Join PR. PR is the required ray making 60° with the line l.



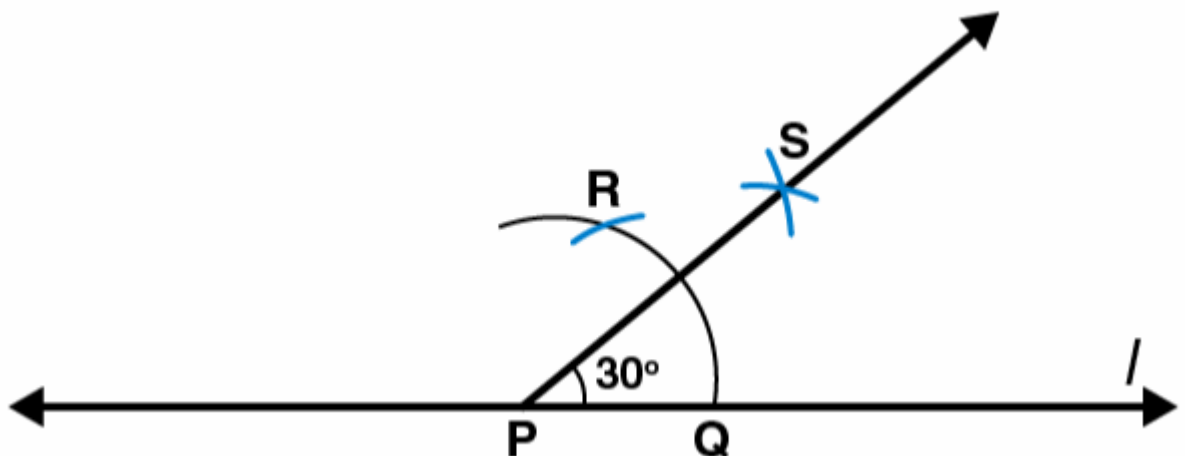
(b) 30°

Following steps are followed to construct an angle of 30°

(i) Draw a line l and mark a point P on it. By taking P as centre and with convenient radius, draw an arc of a circle such that it is intersecting the line l at Q .

(ii) Take Q as centre and with the same radius as before, draw an arc intersecting the previously drawn arc at point R .

(iii) By taking Q and R as centres and with radius more than $1/2 RQ$ draw arcs such that they are intersecting each other at S . Join PS which is the required ray making 30° with the line l .

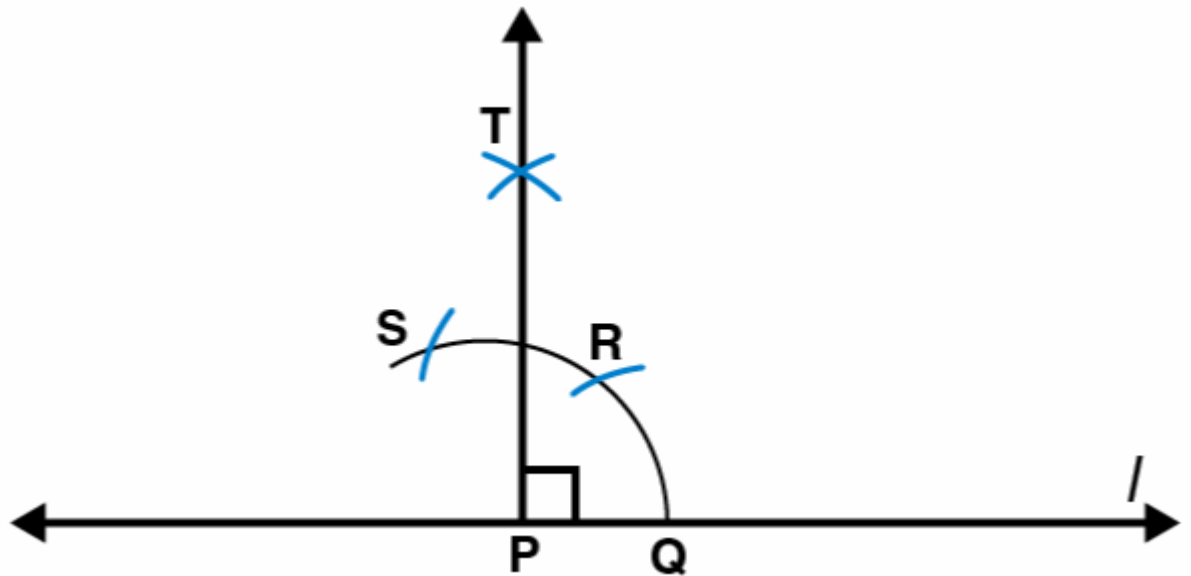


(c) 90°

Following steps are followed to construct an angle of measure 90°

(i) Draw a line l and mark a point P on it. Take P as centre and with convenient radius, draw an arc of a circle such that it is intersecting the line l at Q .

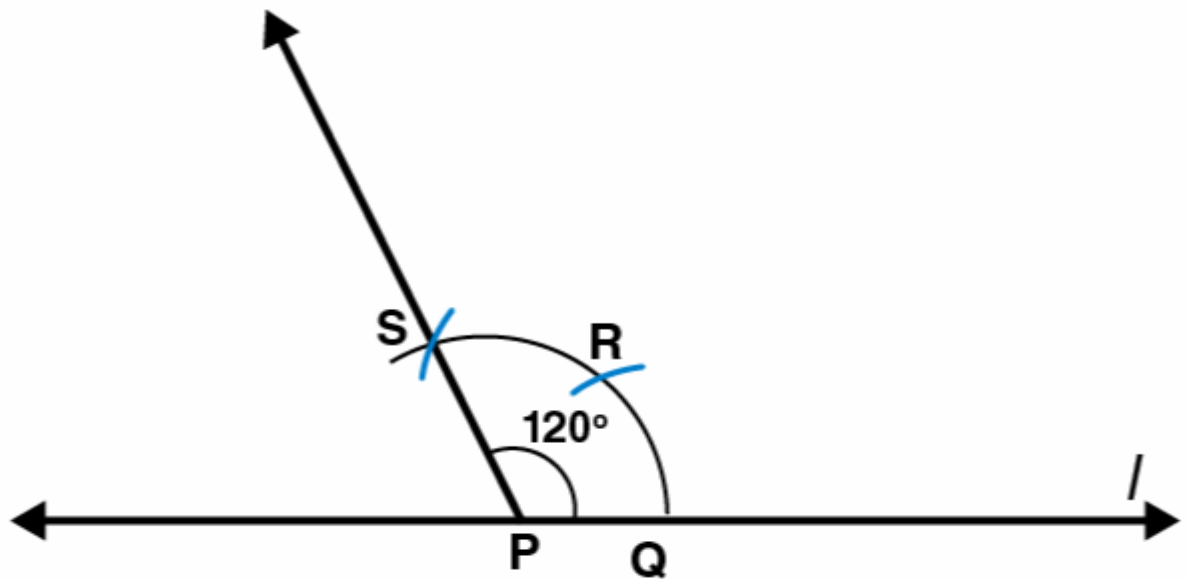
- (ii) Take Q as centre and with the same radius as before, draw an arc intersecting the previously drawn arc at R
- (iii) By taking R as centre and with the same radius as before, draw an arc intersecting the arc at S as shown in figure
- (iv) Now take R and S as centre, draw arc of same radius to intersect each other at T.
- (v) Join PT, which is the required ray making 90° with the line l.



(d) 120°

Following steps are followed to construct an angle of measure 120°

- (i) Draw a line l and mark a point P on it. Taking P as centre and with convenient radius, draw an arc of circle such that it is intersecting the line l at Q.
- (ii) By taking Q as centre and with the same radius as before, draw an arc intersecting the previously drawn arc at R.
- (iii) Take R as centre and with the same radius as before, draw an arc such that it is intersecting the arc at S as shown in figure.
- (iv) Join PS, which is the required ray making 120° with the line l

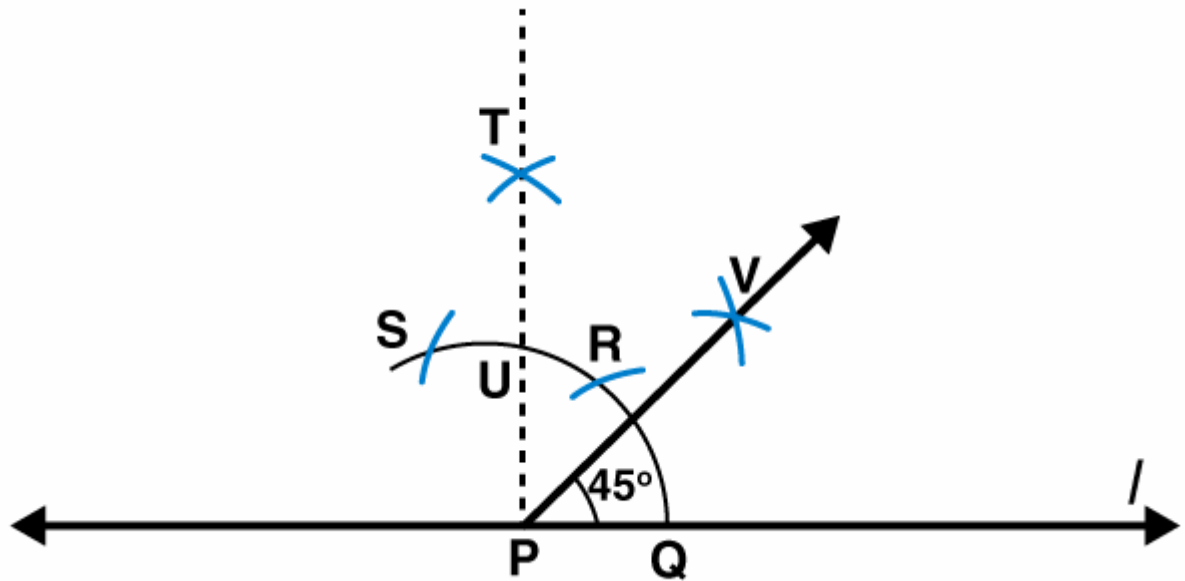


(e) 45°

Following steps are followed to construct an angle of measure 45°

- (i) Draw a line l and mark a point P on it. Take P as centre and with convenient radius, draw an arc of a circle such that it is intersecting the line l at Q .
- (ii) Take Q as centre and with the same radius as before, draw an arc intersecting the previously drawn arc at R
- (iii) By taking R as centre and with the same radius as before, draw an arc such that it is intersecting the arc at S as shown in figure.
- (iv) Take R and S as centres and draw arcs of same radius such that they are intersecting each other at T
- (v) Join PT . Let this intersect the major arc at point U .
- (vi) Now take Q and U as centres and draw arcs with radius more than $1/2 QU$ to intersect each other at point V . Join PV .

PV is the required ray making 45° with the line l



(f) 135°

Following steps are followed to construct an angle of measure 135°

(i) Draw a line l and mark a point P on it. Taking P as centre and with convenient radius, draw a semicircle which intersects the line l at Q and R respectively.

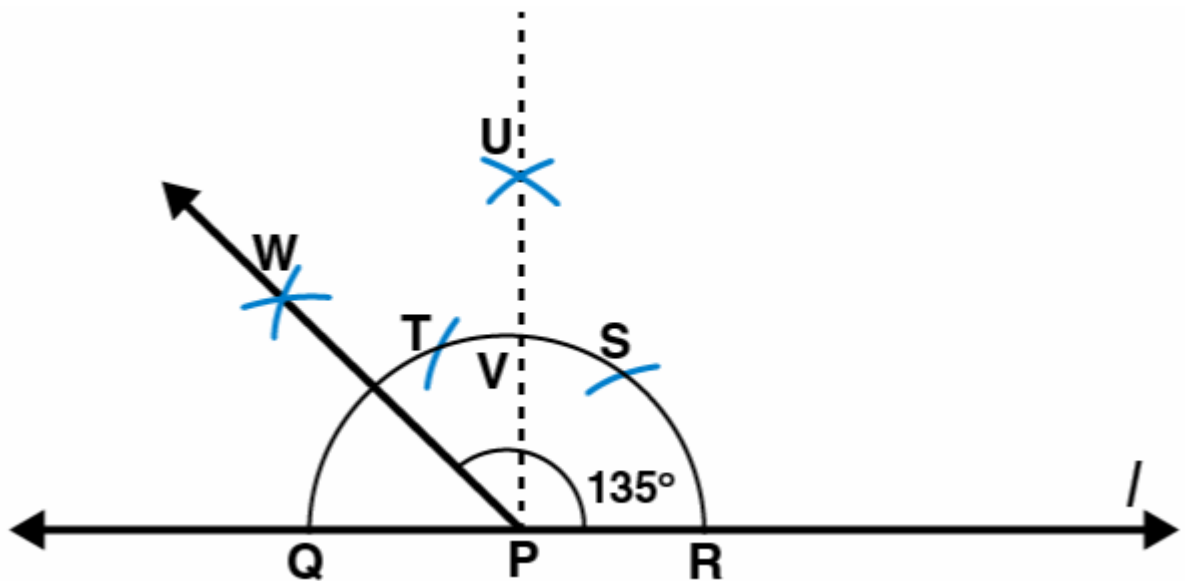
(ii) By taking R as centre and with the same radius as before, draw an arc intersecting the previously drawn arc at S

(iii) Taking S as centre and with the same radius as before, draw an arc such that it is intersecting the arc at T as shown in figure

(iv) Take S and T as centres, draw arcs of same radius to intersect each other at U .

(v) Join PU . Let this intersect the arc at V . Now take Q and V as centres and with radius more than $1/2 QV$, draw arcs to intersect each other at W .

(vi) Join PW which is the required ray making 135° with the line l



6. Draw an angle of measure 45° and bisect it.

Solutions:

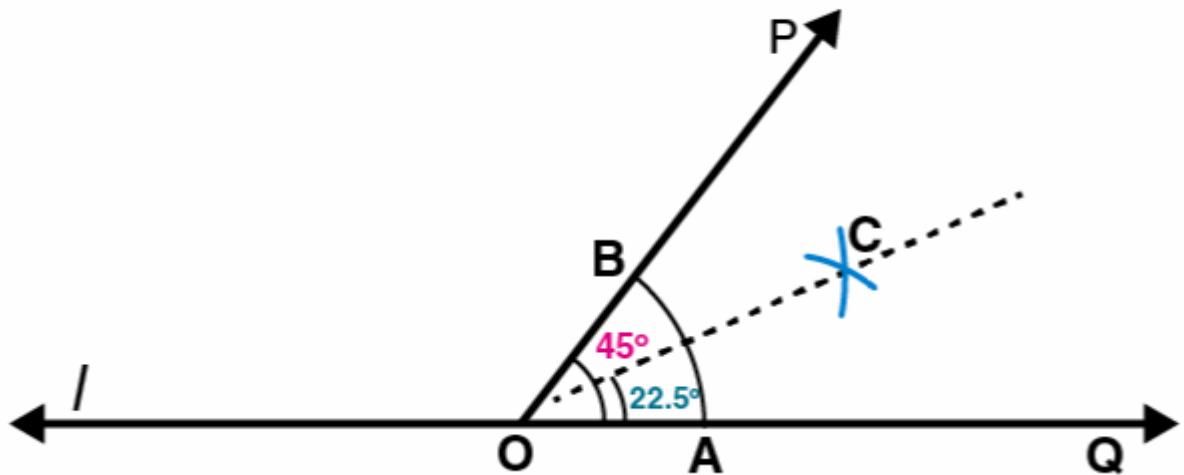
Following steps are followed to construct an angle of measure 45° and its bisector.

(i) Using the protractor $\angle POQ$ of 45° measure may be formed on a line l

(ii) Draw an arc of convenient radius with centre as O . Let this intersects both rays of angle 45° at points A and B

(iii) Take A and B as centres, draw arcs of radius more than $1/2 AB$ in the interior of angle of 45° . Let these intersect each other at C . Join OC

OC is the required bisector of 45° angle



7. Draw an angle of measure 135° and bisect it.

Solutions:

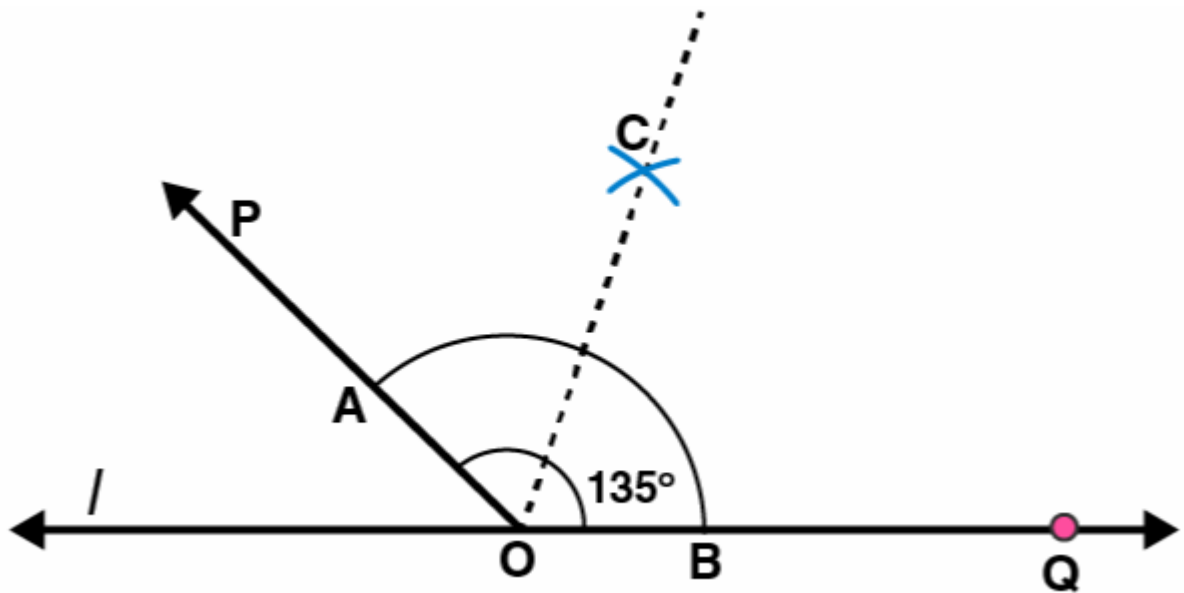
Following steps are followed to construct an angle of measure 135° and its bisector.

(i) By using a protractor $\angle POQ$ of 135° measure may be formed on a line l

(ii) Draw an arc of convenient radius by taking O as centre. Let this intersect both rays of angle 135° at points A and B respectively.

(iii) Take A and B as centres, draw arcs of radius more than $1/2 AB$ in the interior of angle of 135° . Let these intersect each other at C . Join OC .

OC is the required bisector of 135° angle

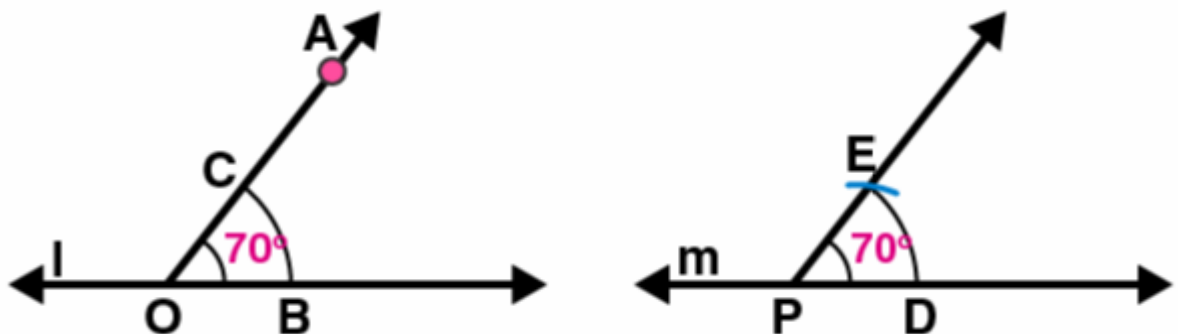


8. Draw an angle of 70° . Make a copy of it using only a straight edge and compasses.

Solutions:

Following steps are followed to construct an angle of measure 70° and its copy.

- (i) Draw a line l and mark a point O on it. Now place the centre of protractor at point O and the zero edge along line l .
- (ii) Mark a point A at an angle of measure 70° . Join OA . Now OA is the ray making 70° with line l . With point O as centre, draw an arc of convenient radius in the interior of 70° angle. Let this intersects both rays of angle 70° at points B and C respectively
- (iii) Draw a line m and mark a point P on it. Again draw an arc with same radius as before and P as centre. Let it cut the line m at point D
- (iv) Adjust the compasses up to the length of BC . With this radius draw an arc taking D as centre which intersects the previously drawn arc at point E .
- (v) Join PE . Here PE is the required ray which makes same angle of measure 70° with the line m



9. Draw an angle of 40° . Copy its supplementary angle.

Solutions:

Following steps are followed to construct an angle of measure 45° and a copy of its supplementary angle

(i) Draw a line segment

\overline{PQ} and mark a point O on it. Place the centre of protractor at point O and the zero edge along line segment \overline{PQ} .

(ii) Mark a point A at an angle of measure 40° . Join OA. Here OA is the required ray making 40° with

\overline{PQ} . $\angle POA$ is the supplementary angle of 40°

(iii) With point O as centre, draw an arc of convenient radius in the interior of $\angle POA$.

Let this intersects both rays of $\angle POA$ at points B and C respectively.

(iv) Draw a line m and mark a point S on it. Again draw an arc by taking S as centre with the same radius as used before. Let it cut the line m at point T.

(v) Now adjust the compasses up to the length of BC. Taking T as centre draw an arc with this radius which will intersect the previously drawn arc at point R.

(vi) Join RS. Here RS is the required ray which makes same angle with the line m, as the supplementary of 40° [i.e 140°]

