

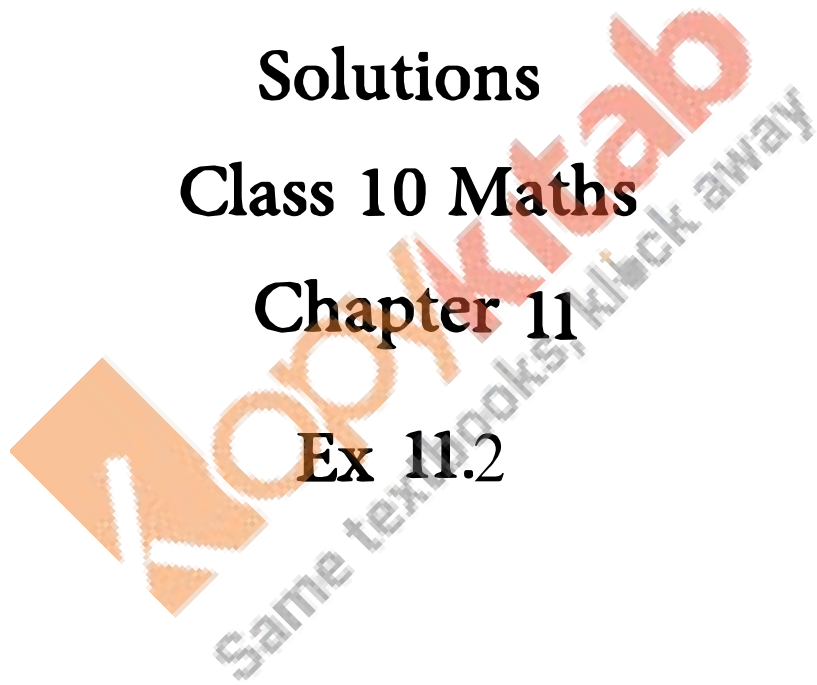
**RD SHARMA**

**Solutions**

**Class 10 Maths**

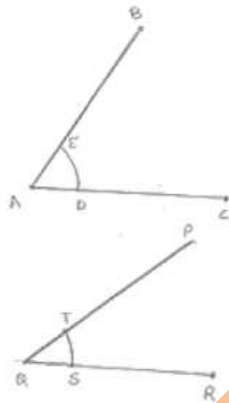
**Chapter 11**

**Ex 11.2**



1. Draw an angle and label it as  $\angle BAC$ . Construct another angle, equal to  $\angle BAC$ .

**Sol:**

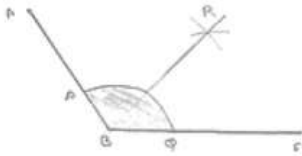


**Steps of construction:**

1. Draw an angle  $\angle BAC$  and a line segment  $QR$
  2. With center  $A$  and any radius, draw an arc which intersects  $\angle BAC$  at  $E$  and  $D$
  3. With center  $Q$  and same radius draw arc which intersects  $QR$  at  $S$ .
  4. With center  $S$  and radius equal to  $DE$ , draw an arc which intersects previous arc at  $T$
  5. Draw a line segment joining  $Q$  and  $T$
- $\therefore \angle PQR = \angle BAC$

2. Draw an obtuse angle. Bisect it. Measure each of the angles so obtained.

**Sol:**

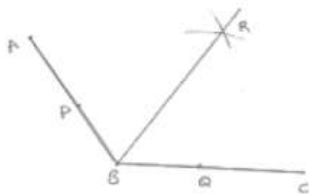


**Steps of construction:**

1. Draw angle  $ABC$  of  $120^\circ$
2. With center  $B$  and any radius, draw an arc which intersects  $AB$  at  $P$  and  $BC$  at  $Q$
3. With center  $P$  and  $Q$  and radius more than  $\frac{1}{2}PQ$ , draw two arcs, which intersect each other at  $R$ .
4. Join  $BR$   
 $\therefore \angle ABR = \angle RBC = 60^\circ$

3. Using your protractor, draw an angle of measure  $108^\circ$ . With this angle as given, draw an angle of  $54^\circ$ .

**Sol:**

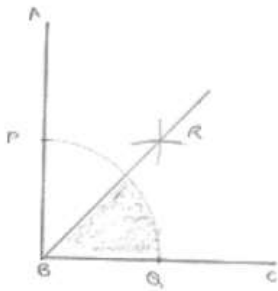


**Steps of construction:**

1. Draw an angle  $ABC$  of  $108^\circ$
2. With center  $B$  and any radius, draw an arc which intersects  $AB$  at  $P$  and  $BC$  at  $Q$
3. With center  $P$  and  $Q$  and radius more than  $\frac{1}{2}PQ$ , draw two arcs, which intersect each other at  $R$ .
4. Join  $BR$   
 $\therefore \angle RBC = 54^\circ$

4. Using protractor, draw a right angle. Bisect it to get an angle of measure  $45^\circ$ .

**Sol:**

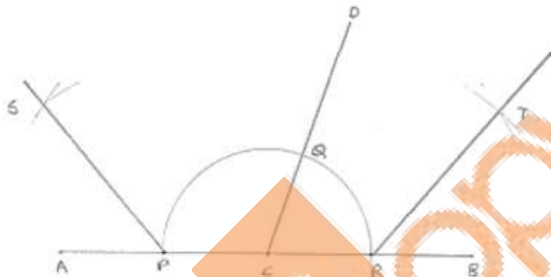


**Steps of construction:**

1. Draw an angle ABC of  $90^\circ$
  2. With center B and any radius, draw an arc which intersects AB at P and BC at Q
  3. With center P and Q and radius more than  $\frac{1}{2}PQ$ , draw two arcs, which intersect each other at R.
  4. Join RB
- $\therefore \angle RBC = 45^\circ$

5. Draw a linear pair of angles. Bisect each of the two angles. Verify that the two bisecting rays are perpendicular to each other.

**Sol:**



**Steps of construction:**

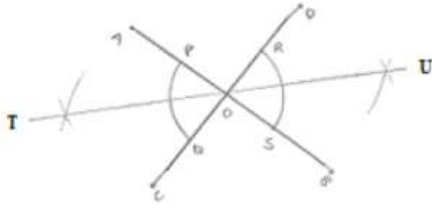
1. Draw two angle DCA and DCB forming Linear pair
2. With center C and any radius, draw an arc which intersects AC at P, CD at Q and CB at R.
3. With center P and Q and any radius draw two arcs which intersect each other at S
4. Join SC
5. With center Q and R any radius draw two arcs, which intersect each other at T.
6. Join TC

$\angle SCT = 90^\circ$

[By using protractor]

6. Draw a pair of vertically opposite angles. Bisect each of the two angles. Verify that the bisecting rays are in the same line.

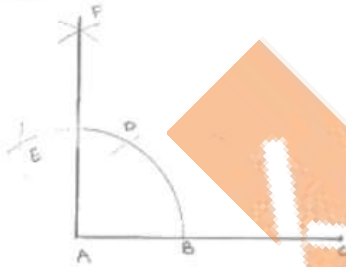
**Sol:**



**Steps of construction:**

1. Draw a pair of vertically opposite angle AOC and DOB
  2. With center O and any radius drawn two arcs which intersect OA at P, Q · OB at S and OD at R.
  3. With center P and Q and radius more than  $\frac{1}{2}PQ$ , draw two arcs which intersect each other at T.
  4. Join to
  5. With center R and S radius more than  $\frac{1}{2}RS$ , draw two arcs which intersect each other at U.
  6. Join OU.  
∴ TOU is a straight line
7. Using ruler and compasses only, draw a right angle.

**Sol:**

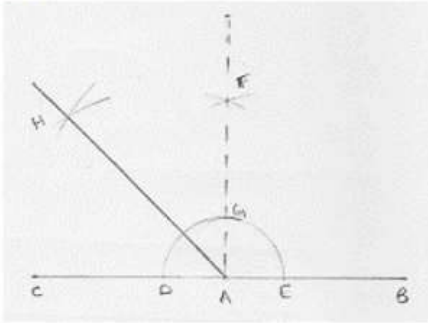


**Steps of construction:**

1. Draw a line segment AB
2. With center A and any radius draw arc which intersect AB at C.
3. With center C and same radius draw an arc which intersects AB at C.
4. With center D and same radius draw arc which intersect arc in (2) at E.
5. With centers E and C and any radius, draw two arcs which intersect each other at F.
6. Join FA  
 $\angle FAB = 90^\circ$

8. Using ruler and compasses only, draw an angle of measure  $135^\circ$ .

**Sol:**

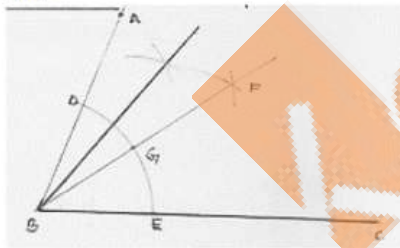


**Steps of construction:**

1. Draw a line segment AB and produce BA to point C.
2. With center A and any radius draw arc which intersect AC at D and AB at E.
3. With center D and E and radius more than  $\frac{1}{2}DE$ , draw two arcs which intersect each other at F.
4. Join FA which intersect the arc in (2) at G.
5. With centers G and D and radius more than  $\frac{1}{2}GD$ , draw two arcs which intersect each other at H.
6. Join HA  
 $\therefore \angle HAB = 135^\circ$

9. Using a protractor, draw an angle of measure  $72^\circ$ . With this angle as given, draw angles of measure  $36^\circ$  and  $54^\circ$ .

**Sol:**



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**Steps of construction:**

1. Draw an angle ABC of  $72^\circ$  with the help of protractor.
2. With center B and any radius, draw an arc which intersect AB at D and BC at E.
3. With center D and E and radius more than  $\frac{1}{2}DE$ , draw two arcs which intersect each other at F.
4. Join FB which intersect the arc in (2) at G.
5. With centers D and G and radius more than  $\frac{1}{2}DG$ , draw two arcs which intersect each other at H.
6. With centers D and G and radius more than  $n\frac{1}{2}DG$  draw two arcs which intersect each other at H.
7. Join HB

$$\therefore \angle HBC = 54^\circ$$

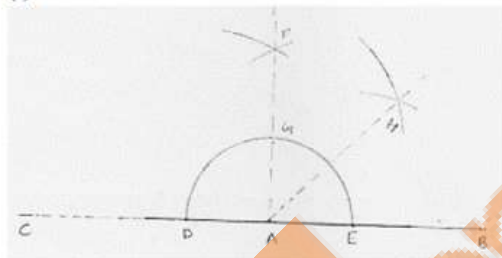
$$\angle FBC = 36^\circ$$

10. Construct the following angles at the initial point of a given ray and justify the construction:

(i)  $45^\circ$  (ii)  $90^\circ$

**Sol:**

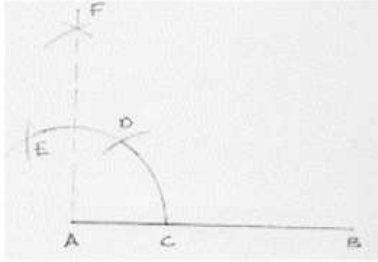
(i)

**Steps of construction:**

1. Draw a line segment AB and produce BA to point C.
2. With center A and any radius drawn an arc which intersect AC at D and AB at E.
3. With center D and E and radius more than  $\frac{1}{2}DE$ , draw arcs cutting each other at F.
4. Join FA which intersect arc in (2) at G.
5. With centers G and E and radius more than  $\frac{1}{2}GE$ , draw arcs cutting each other at H.

6. Join HA  
 $\therefore \angle HAB = 45^\circ$

(ii)



**Steps of construction:**

1. Draw a line segment AB.
2. With center A and any radius draw an arc which intersects AB at C.
3. With center C and same radius draw an arc which intersects previous arc at D.
4. With centers D same radius draw an arc which intersects are in (2) at E.
5. With centers E and D same radius more than  $\frac{1}{2}$  ED draw an arc cutting each other at F.
6. Join FA  
 $\angle FAB = 90^\circ$

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