

**EXERCISE 19.4**

1. Construct the following angles with the help of a protractor:

$45^\circ$ ,  $67^\circ$ ,  $38^\circ$ ,  $110^\circ$ ,  $179^\circ$ ,  $98^\circ$ ,  $84^\circ$

**Solution:**

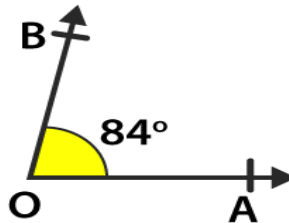
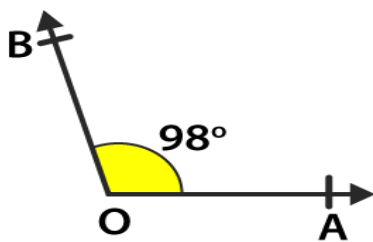
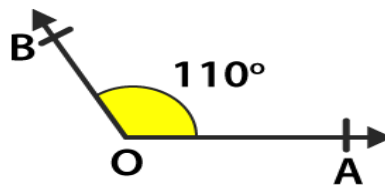
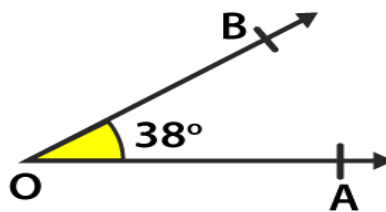
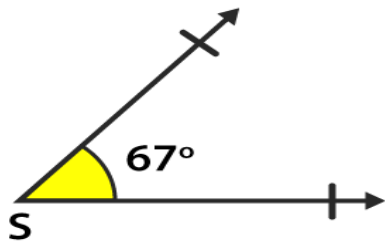
Construct a ray OA.

Now place the protractor on the ray OA such that its centre coincides with point O and the diameter coincides with OA.

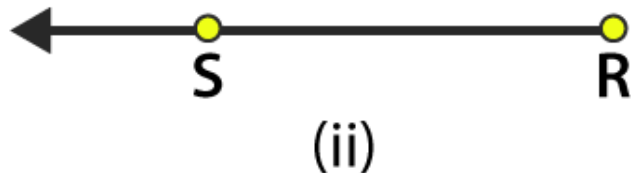
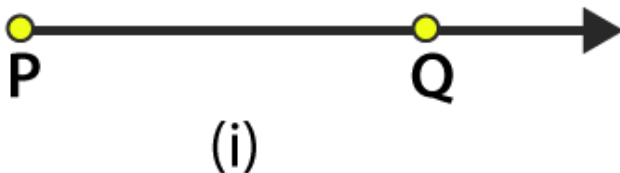
Mark a point B against the mark of  $45^\circ$  on the protractor.

Remove the protractor and construct the line OB where  $\angle AOB$  is the required angle.

In the same way draw the angles  $67^\circ$ ,  $38^\circ$ ,  $110^\circ$ ,  $179^\circ$ ,  $98^\circ$  and  $84^\circ$



2. Draw two rays PQ and RS as shown in Fig. 19.14 (i) and (ii). Using protractor, construct angles of  $15^\circ$  and  $138^\circ$  with one arm PQ and RS respectively.

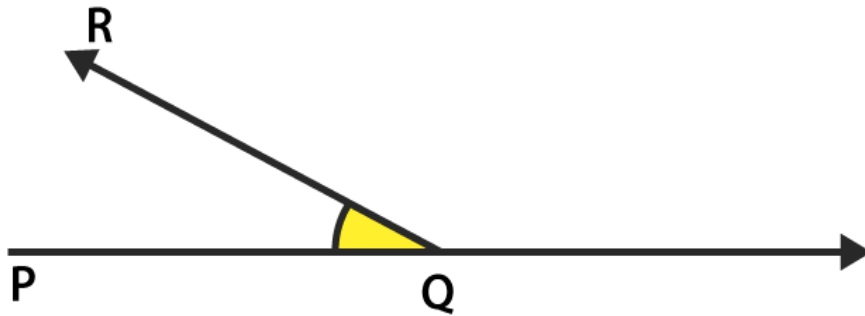


**Solution:**

(i) Construct a ray PQ as given in the question.

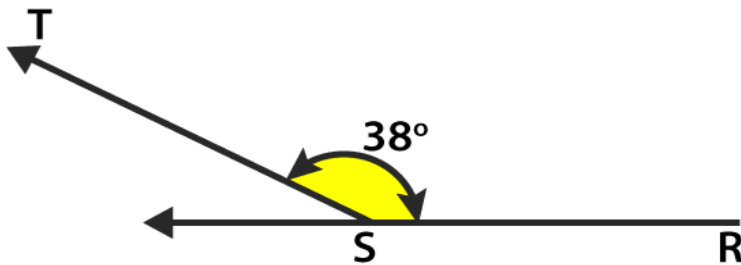
Now place the protractor on PQ such that its centre coincides with the point P and the diameter coincides with

PQ.  
Mark B against the mark of 15° on the protractor.  
Construct PB by removing the protractor.



Here  $\angle QPB$  is the required angle of  $15^\circ$ .

(ii) Construct a ray RS as given in the question.  
Now place the protractor on RS such that its centre coincides with the point R and the diameter coincides with RS.  
Mark T against the mark of  $138^\circ$  on the protractor.  
Construct RJ by removing the protractor.



Here  $\angle SRT$  is the required angle of  $138^\circ$ .