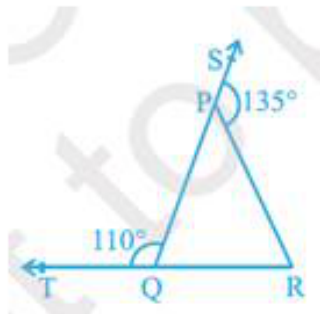




NCERT solutions for class 9 Maths Lines and Angles Ex 6.3

**Q1.** In the given figure, sides QP and RQ of  $\triangle PQR$  are produced to points S and T respectively. If  $\angle SPR = 135^\circ$  and  $\angle PQT = 110^\circ$ , find  $\angle PRQ$ .



**Ans.** We are given that  $\angle SPR = 135^\circ$  and  $\angle PQT = 110^\circ$ .

We need to find the value of  $\angle PRQ$  in the figure given below.

From the figure, we can conclude that  $\angle SPR$  and  $\angle RPQ$ , and  $\angle SPR$  and  $\angle RPQ$  form a linear pair.

We know that the sum of angles of a linear pair is  $180^\circ$ .

$$\angle SPR + \angle RPQ = 180^\circ, \text{ and } \angle PQT + \angle PQR = 180^\circ.$$

$$135^\circ + \angle RPQ = 180^\circ, \text{ and } 110^\circ + \angle PQR = 180^\circ,$$

$$\text{Or, } \angle RPQ = 45^\circ, \text{ and } \angle PQR = 70^\circ.$$

From the figure, we can conclude that

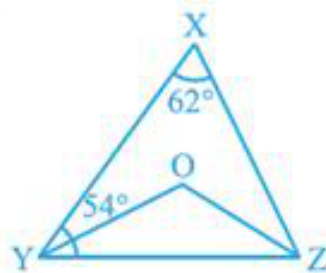
$\angle PQR + \angle RPQ + \angle PRQ = 180^\circ$ . (Angle sum property)

$$\Rightarrow 70^\circ + 45^\circ + \angle PRQ = 180^\circ \Rightarrow 115^\circ + \angle PRQ = 180^\circ$$

$$\Rightarrow \angle PRQ = 65^\circ.$$

Therefore, we can conclude that  $\angle PRQ = 65^\circ$ .

**Q2.** In the given figure,  $\angle X = 62^\circ$ ,  $\angle XYZ = 54^\circ$ . If YO and ZO are the bisectors of  $\angle XYZ$  and  $\angle XZY$  respectively of  $\triangle XYZ$ , find  $\angle OZY$  and  $\angle YOZ$ .



**Ans.** We are given that  $\angle X = 62^\circ$ ,  $\angle XYZ = 54^\circ$  and  $YO$  and  $ZO$  are bisectors of  $\angle XYZ$  and  $\angle XZY$ , respectively.

We need to find  $\angle OZY$  and  $\angle YOZ$  in the figure.

From the figure, we can conclude that in  $\triangle XYZ$   
 $\angle X + \angle XYZ + \angle XZY = 180^\circ$ . (Angle sum property)  
 $\Rightarrow 62^\circ + 54^\circ + \angle XZY = 180^\circ \Rightarrow 116^\circ + \angle XZY = 180^\circ$   
 $\Rightarrow \angle XZY = 64^\circ$ .

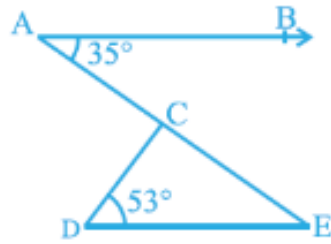
We are given that  $OY$  and  $OZ$  are the bisectors of  $\angle XYZ$  and  $\angle XZY$ , respectively.

$$\angle OYZ = \angle XYO = \frac{54^\circ}{2} = 27^\circ, \text{ and}$$
$$\angle OZY = \angle XZO = \frac{64^\circ}{2} = 32^\circ.$$

From the figure, we can conclude that in  $\triangle OYZ$   
 $\angle OYZ + \angle OZY + \angle YOZ = 180^\circ$  (Angle sum property)  
 $27^\circ + 32^\circ + \angle YOZ = 180^\circ \Rightarrow 59^\circ + \angle YOZ = 180^\circ$   
 $\Rightarrow \angle YOZ = 121^\circ$ .

Therefore, we can conclude that  $\angle YOZ = 121^\circ$  and  $\angle OZY = 32^\circ$ .

**Q3.** In the given figure, if  $AB \parallel DE$ ,  $\angle BAC = 35^\circ$  and  $\angle CDE = 53^\circ$ , find  $\angle DCE$ .



**Ans.** We are given that  $AB \parallel DE$ ,  
 $\angle BAC = 35^\circ$  and  $\angle CDE = 53^\circ$ .

We need to find the value of  $\angle DCE$  in the figure given below.

From the figure, we can conclude that

$$\angle BAC = \angle CED = 35^\circ \text{ (Alternate interior)}$$

From the figure, we can conclude that in  $\triangle DCE$

$$\angle DCE + \angle CED + \angle CDE = 180^\circ \text{ (Angle sum property)}$$

$$\angle DCE + 35^\circ + 53^\circ = 180 \Rightarrow \angle DCE + 88^\circ = 180^\circ$$

\*\*\*\*\* END \*\*\*\*\*