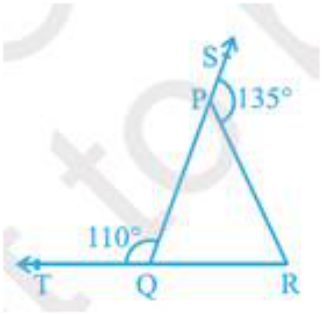
NCERT solutions for class 9 Maths Lines and Angles Ex 6.3

Q1. In the given figure, sides QP and RQ of ΔPQR are produced to points S and T respectively. If $\angle$ SPR = 135° and $\angle$ PQT = 110°, 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°.

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

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

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

From the figure, we can conclude that

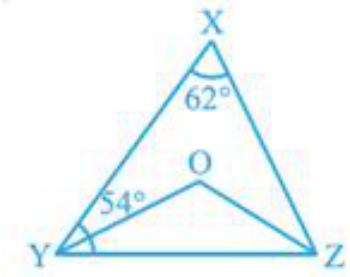
$\angle PQR + \angle RPQ + \angle PRQ = 180^{\circ}$. (Angle sum property)

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

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

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

Q2. In the given figure, $\angle$ X = 62°, $\angle$ XYZ = 54°. If YO and ZO are the bisectors of $\angle$ XYZ and $\angle$ XZY respectively of ΔXYZ, 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 ΔXYZ

$\angle X + \angle XYZ + \angle XZY = 180^\circ$. (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.

$\angle OYZ = \angle XYO = \frac{54^\circ}{2} = 27^\circ$, and

$\angle OZY = \angle XZO = \frac{64^\circ}{2} = 32^\circ.$

From the figure, we can conclude that in ΔOYZ

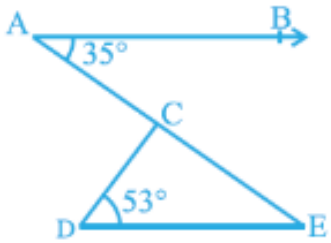
$\angle OYZ + \angle OZY + \angle YOZ = 180^\circ$ (Angle sum property)

$27^\circ + 32^\circ + \angle YOZ = 180^\circ \Rightarrow 59^\circ + \angle YOZ = 180^\circ$

$\Rightarrow \angle YOZ = 121^\circ.$

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

Q3. In the given figure, if AB || DE, ∠ BAC = 35° and ∠ CDE = 53°, find ∠ DCE.



Ans. We are given that $AB \| DE$,

$\angle BAC = 35^\circ$ 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

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

From the figure, we can conclude that in ΔDCE

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

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

********** END **********