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Class-09.

Sub-.Maths

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5. In Fig. 6.17, POQ is a line. Ray OR is perpendicular to line PQ. OS is another ray lying between rays OP and OR. Prove that $\angle ROS = \frac{1}{2} (\angle QOS - \angle POS)$.

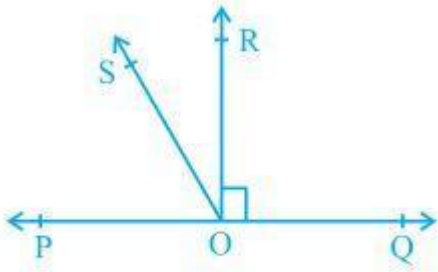


Fig. 6.17

Solution:

In the question, it is given that $(OR \perp PQ)$ and $\angle POQ = 180^\circ$

So, $\angle POS + \angle ROS + \angle ROQ = 180^\circ$

Now, $\angle POS + \angle ROS = 180^\circ - 90^\circ$ (Since $\angle POR = \angle ROQ = 90^\circ$)

$\therefore \angle POS + \angle ROS = 90^\circ$

Now, $\angle QOS = \angle ROQ + \angle ROS$

It is given that $\angle ROQ = 90^\circ$,

$\therefore \angle QOS = 90^\circ + \angle ROS$

Or, $\angle QOS - \angle ROS = 90^\circ$

As $\angle POS + \angle ROS = 90^\circ$ and $\angle QOS - \angle ROS = 90^\circ$, we get

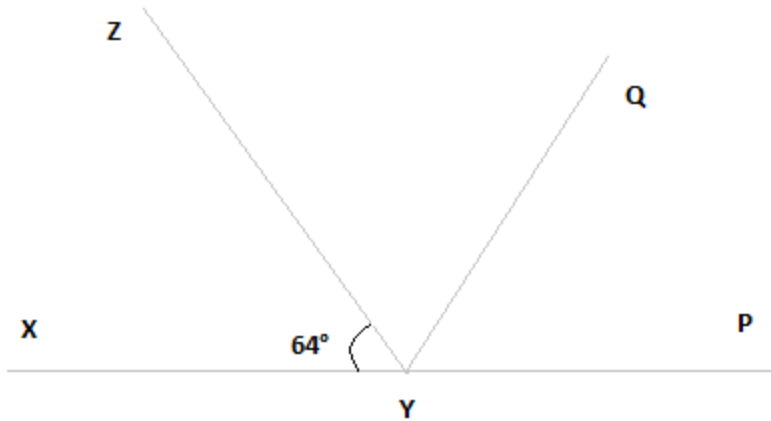
$\angle POS + \angle ROS = \angle QOS - \angle ROS$

$2 \angle ROS + \angle POS = \angle QOS$

Or, $\angle ROS = \frac{1}{2} (\angle QOS - \angle POS)$ (Hence proved).

6. It is given that $\angle XYZ = 64^\circ$ and XY is produced to point P. Draw a figure from the given information. If ray YQ bisects $\angle ZYP$, find $\angle XYQ$ and reflex $\angle QYP$.

Solution:



Here, XP is a straight line

So, $XYZ + ZYP = 180^\circ$

Putting the value of $XYZ = 64^\circ$ we get,

$$64^\circ + ZYP = 180^\circ$$

$$\therefore ZYP = 116^\circ$$

From the diagram, we also know that $ZYP = ZYQ + QYP$

Now, as YQ bisects ZYP,

$$ZYQ = QYP$$

$$\text{Or, } ZYP = 2ZYQ$$

$$\therefore ZYQ = QYP = 58^\circ$$

Again, $XYQ = XYZ + ZYQ$

By putting the value of $XYZ = 64^\circ$ and $ZYQ = 58^\circ$ we get.

$$XYQ = 64^\circ + 58^\circ$$

$$\text{Or, } XYQ = 122^\circ$$

Now, reflex $QYP = 180^\circ + XYQ$

We computed that the value of $XYQ = 122^\circ$.

So,

$$QYP = 180^\circ + 122^\circ$$

$$\therefore QYP = 302^\circ$$