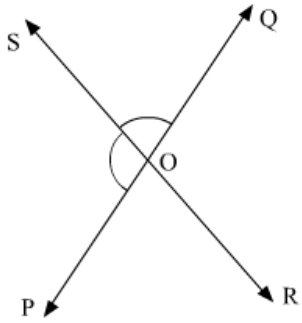
Lines and Angles Ex 8.2 Q18

Answer :

Let $\angle POR$ and $\angle ROQ$ be $5x$ and $7x$ respectively.



Since, Ray OR stand on line POQ .Thus, $\angle POR$ and $\angle ROQ$ form a linear pair.

Therefore, their sum must be equal to 180^0.

Or,

$$\begin{aligned}\angle POR + \angle ROQ &= 180^0 \\ 5x + 7x &= 180^0 \\ 12x &= 180^0 \\ x &= \frac{180^0}{12} \\ x &= 15^0 \qquad \text{(i)}\end{aligned}$$

Thus,

$$\begin{aligned}\angle POR &= 5x \\ &= 5(15) \\ &= 75\end{aligned}$$

$$\boxed{\angle POR = 75^0}$$

Thus,

$$\begin{aligned}\angle ROQ &= 7x \\ &= 7(15) \\ &= 105\end{aligned}$$

$$\boxed{\angle ROQ = 105^0}$$

It is evident from the figure, that $\angle QOS$ and $\angle POR$ are vertically opposite angles.

And we know that vertically opposite angles are equal.

Therefore,

$$\angle QOS = \angle POR$$

$$\boxed{\angle QOS = 75^0}$$

Similarly, $\angle POS$ and $\angle ROQ$ are vertically opposite angles.

And we know that vertically opposite angles are equal.

Therefore,

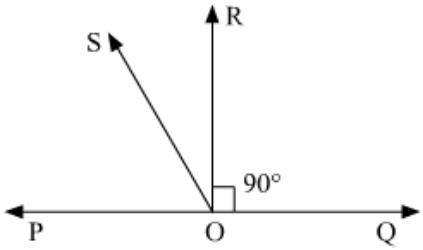
$$\angle POS = \angle ROQ$$

$$\boxed{\angle POS = 105^0}$$

Lines and Angles Ex 8.2 Q19

Answer :

The given figure is as follows:



We have *POQ* as a line. Ray *OR* is perpendicular to line *PQ*. Therefore,

$\angle ROQ = 90^0$

$\angle POR = 90^0$

From the figure above, we get:

$\angle ROS + \angle POS = 90^0$ (i)

$\angle POS$ and $\angle QOS$ form a linear pair. Therefore,

$\angle QOS + \angle POS = 180^0$ (ii)

From (i) and (ii) equation we get:

$$\angle QOS + \angle POS = 2 \times 90$$

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

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

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

$$\boxed{\angle ROS = \frac{1}{2}(\angle QOS - \angle POS)}$$

Hence proved.

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