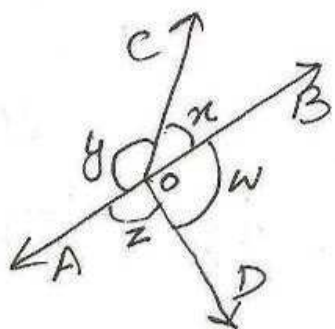


④



to prove AOB is a line
proof

$$x + y + z + w = 360 \quad \left[\begin{array}{l} \text{Sum} \\ \text{of angles} \\ \text{around a} \\ \text{point} \end{array} \right]$$

$$x + y + x + y = 360 \quad [\because y = w \text{ and } z = x]$$

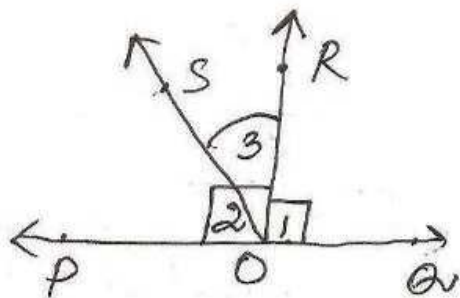
$$\Rightarrow 2(x + y) = 360$$

$$\Rightarrow x + y = \frac{360}{2} = 180$$

\therefore AOB is a line
[linear pair axiom]

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⑤



To prove

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

Proof $\angle QOS = \angle 1 + \angle 3 \dots$ (i)

$\angle 2 = \angle 3 + \angle POS \dots$ (ii)

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① + ②

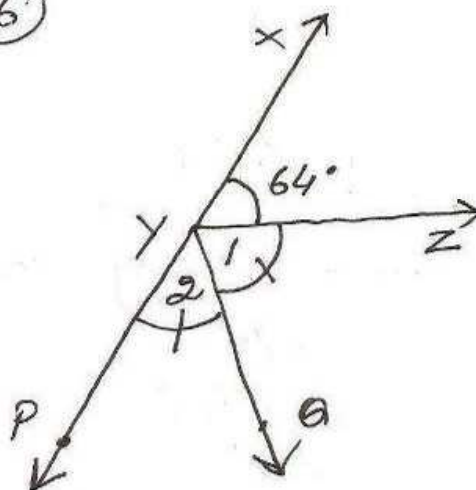
$$\angle QOS + \angle 2 = \angle 1 + \angle 3 + \angle 3 + \angle POS$$

$$[\because \angle 1 = \angle 2 = 90^\circ]$$

$$\Rightarrow 2\angle 3 = \angle QOS - \angle POS$$

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

⑥



to find $\angle XYQ$,
reflex $\angle QYP$

Sol

$$\angle PYZ + \angle XYZ = 180^\circ$$

[linear pair axiom]

$$64^\circ + \angle 1 + \angle 2 = 180^\circ$$

$$\angle 1 + \angle 1 = 180^\circ - 64^\circ$$

$$[\because \angle 1 = \angle 2]$$

$$\Rightarrow 2\angle 1 = 116$$

$$\Rightarrow \angle 1 = \frac{116}{2} = 58^\circ$$

$$\begin{aligned} \angle XYQ &= \angle XYZ + \angle 1 \\ &= 64^\circ + 58^\circ \\ &= 122^\circ \end{aligned}$$

$$\begin{aligned} \text{reflex } \angle QYP &= 360^\circ - 58^\circ \\ &= 302^\circ \end{aligned}$$