EXERCISE - 6.1

1. Since AB is straight line,
∴ $\angle AOC + \angle COE + \angle BOE = 180°$ (straight line measures 180°)

$\Rightarrow (\angle AOC + \angle BOE) + \angle COE = 180°$
$\Rightarrow 70° + \angle COE = 180°$
$\therefore \Rightarrow \angle COE = 110°$

$\Rightarrow \angle COE + \angle BOE + \angle BOD = 180°$
$\Rightarrow 110° + \angle BOE + 40° = 180°$
$\therefore \Rightarrow \angle BOE = 30°$

∴ $\angle BOE = 30°$
$\angle COE = 110°$

2. Since XOY is straight line,
∴ $b + a + \angle POY = 180°$
$\Rightarrow b + a + 90° = 180°$
$\Rightarrow b + a = 180° - 90°$
$\therefore \Rightarrow b + a = 90°$ ......(i)

$a : b = 2 : 3 \rightarrow b = \frac{3a}{2}$ ......(ii) (Given)

Now from (i) & (ii), we get
$\frac{3a}{2} + A = 90°$

$\Rightarrow \frac{5a}{2} = 90° \rightarrow a = \frac{90°}{5} \times 2 = 36°$

From (ii) we get,

$b = \frac{3}{2} \times 36° = 54°$

Since XY & MN intersect at O,

$\therefore c = [a + \angle POY]$ (vertically oppo. angles)

$\Rightarrow c = 36° + 90° = 126°$

Thus, req. measure of 'c' = 126°

Q3. Since ST is a straight line,

$\therefore \angle PQR + \angle PQS = 180°$ .... (i) (Linear Pairs)

Similarly, $\angle PRT + \angle PRQ = 180°$ .... (ii) (Linear pair)

From (i) & (ii), we get

$\therefore \angle PQR + \angle PQS =$ ~~180~~ $\angle PRT + \angle PRQ$

But, $\angle PQR = \angle PRQ$ (Given)

$\therefore \angle PQS = \angle PRT$ [Hence prooved]

Q4. Sum of all the angles meeting at a point = 360°

$\therefore x + y + w + z = 360°$

$\Rightarrow (x+y) + (w+z) = 360°$

$\therefore \Rightarrow (x+y) + (x+y) = 360°$ (As, $x+y = w+z$)

$\Rightarrow 2(x+y) = 360°$

$\therefore \Rightarrow x+y = 180°$

$\therefore$ AOB is a straight line

Q5. Given,

* POQ is a line
* Ray OR is ⊥ to line PQ.
* OS is another ray lying between OP & OR

<u>To prove :-</u>

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

<u>Proof :-</u>

Since POQ is a straight line

$\therefore \angle POS + \angle ROS + \angle ROQ = 180°$

But $OR \perp PQ$

$\therefore \angle ROQ = 90°$

$\Rightarrow \angle POS + \angle ROS + 90° = 180°$

$\therefore \Rightarrow \angle POS + \angle ROS = 90°$

$\rightarrow \angle ROS = 90° - \angle POS$ ......(i)

Now we have $\angle ROS + \angle ROQ = \angle QOS$

$\Rightarrow \angle ROS + 90° = \angle QOS$

$\Rightarrow \angle ROS = \angle QOS - 90°$ ....(ii)

Adding (i) & (ii), we get

$\rightarrow 2\angle ROS = (\angle QOS - \angle POS)$

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

~~Q6. Its given that ∠XYZ = 64°~~

Q6. Given,

$\angle XYZ = 64^\circ$

XY is produced ~~by~~ B to point P

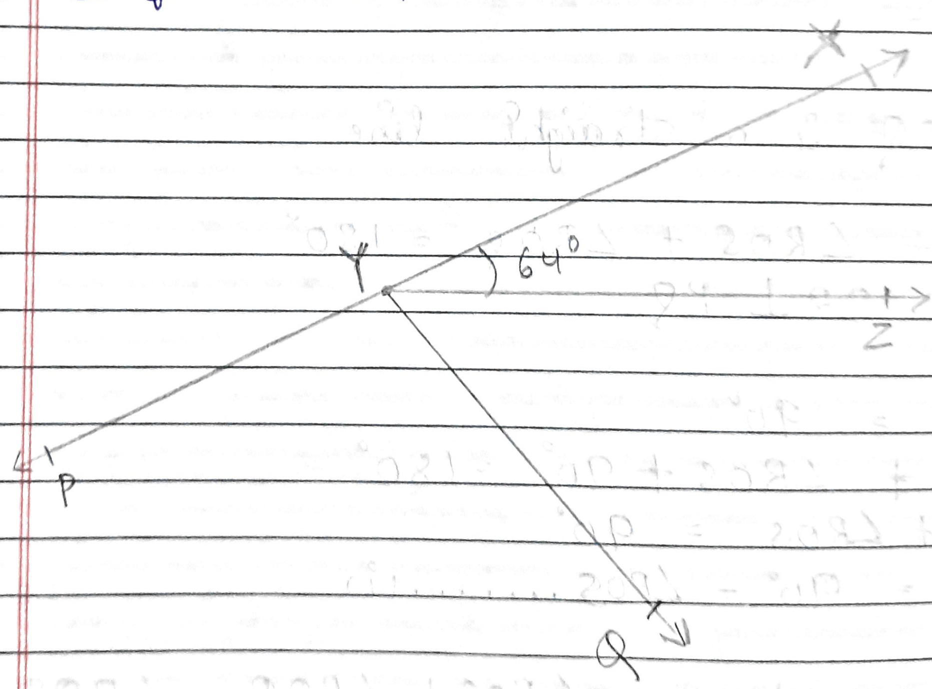
Ray YQ bisects $\angle ZYP$.

To ~~Prove~~ Find :-

$\angle XYQ$ & reflex $\angle QYP$

~~Find~~

~~Proof~~ Solution :-



Since, XYP is a straight line

$\therefore \angle PYQ + \angle QYZ + \angle XYZ = 180^\circ$

$\Rightarrow \angle PYQ + \angle QYZ + 64^\circ = 180^\circ$

$\Rightarrow \angle PYQ + \angle QYZ = 116^\circ$

$\Rightarrow 2\angle QYP = 116^\circ$ (As, Ray YQ, bisects $\angle PYZ$, so $\angle QYP = \angle QYZ$)

$\therefore \Rightarrow \angle QYP = 58^\circ$

~~$\angle QYP + \angle QYZ + \angle XYZ = \angle 180$~~

Now,

To find, $\angle XYQ$

$\therefore \Rightarrow \angle XYQ = \angle XYZ + \angle ZYQ$

$\Rightarrow \angle XYQ = 64^\circ + 58^\circ$ (Because $\angle QYZ = \angle QYP$)

$\therefore \Rightarrow \angle XYQ = 122^\circ$

Reflex angle of $\angle QYP = 360^\circ - 58^\circ$

$= 302^\circ$