H.W

Exercise → 6.1

13.5.21

Q1) In fig. 6.13, lines AB and CD intersect at O. If $\angle AOC + \angle BOE = 70°$ and $\angle BOD = 40°$, find $\angle BOE$ and reflex $\angle COE$.

From the diagram, we have
($\angle AOC + \angle BOE + \angle COE$) & ($\angle COE + \angle BOD + \angle BOE$) form a straight line.

So, $\angle AOC + \angle BOE + \angle COE = \angle COE + \angle BOD + \angle BOE = 180°$

Now, by putting the values of $\angle AOC + \angle BOE = 70°$ and $\angle BOD = 40°$ we get $\angle COE = 110°$ ~~and~~ $\angle BOE = 30°$

So, reflex $\angle COE = 360° - 110° = 250°$

Q2> In fig. 6.14, lines XY and MN intersect at O. If POY = 90° and a:b = 2:3, find c.

we know that the sum of a linear pair is always equal to 180°.

So,

POY + a + b = 180°

Putting the value of POY = 90°, we get, a+b = 90°

Now, it is given that a:b = 2:3, so,
Let a be 2x and b be 3x.

$\therefore$ $2x + 3x = 90°$

Solving this, we get

$5x = 90°$

$x = 18$

$a = 2 \times 18° = 36°$

$b = 3 \times 18° = 54°$

From the diagram, b+c also forms a straightline so,

$b + c = 180°$

$c + 54° = 180°$

$\therefore$ $c = 126°$

Q3) In fig. 6.15, PQR = PRQ, then prove that PQS = PRT.

?

Since ST is a straight line so,

$\angle PQS + \angle PQR = 180°$

$\angle PRT + \angle PRQ = 180°$

Now, $\angle PQS + \angle PQR = \angle PRT + \angle PRQ = 180°$

Since $\angle PQR = \angle PRQ$ (as given)

$\angle PQS = \angle PRT$.

Q4) For providing AOB is a straight line, to prove x y is a linear pair,

i.e. $x + y = 180°$

The angles around a point are 360°, so

$x + y + w + z = 360°$

Given :-

$x + y = w + z$

So, $(x+y) + (x+y) = 360°$

$2(x+y) = 360°$

$x + y = \frac{360}{2}$ 180°

∴ proved.

Q5) Given that, ($OR \perp PQ$) and $\angle POQ = 180°$

So, $POS + ROS + ROQ = 180°$

$POS + ROS = 180° - 90°$ (since $PQR = ROQ = 90°$)

$\therefore POS + ROS = 90°$

Now, $QOS = ROQ + ROS$

It is given that $ROQ = 90°$

$\therefore QOS = 90° + ROS$

Or, $QOS - ROS = 90°$

As $POS + ROS = 90°$ and $QOS - ROS = 90°$,

we get

$POS + ROS = QOS - ROS$

$2\,ROS + POS = QOS$

or,

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

$\therefore$ proved.

Q6) Here, XP is a straight line.

So, $XYZ + ZYP = 180°$

By putting the value of $XYZ = 64°$, we get

$64° + ZYP = 180°$

$ZYP = 116°$

$ZYP = ZYQ + QYP$

Now, as YQ bisects ZYP,

$ZYQ = QYP$

Or, $ZYP = 2ZYQ$

$\therefore ZYQ = QYP = 58°$

Again, $XYQ = XYZ + ZYQ$

By putting the value of $XYZ = 64°$ and $ZYQ = 58°$, we get,

$XYQ = 64° + 58°$

$XYQ = 122°$

Now, Reflex $QYP = 180° + XYQ$

the value of $XYQ = 122°$

So,

$QYP = 180° + 122°$

$\therefore QYP = 302°$