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Class-09 Sub-.Maths

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1. In Fig. 6.13, lines AB and CD intersect at O. If $\angle AOC + \angle BOE = 70^\circ$ and $\angle BOD = 40^\circ$, find $\angle BOE$ and reflex $\angle COE$.

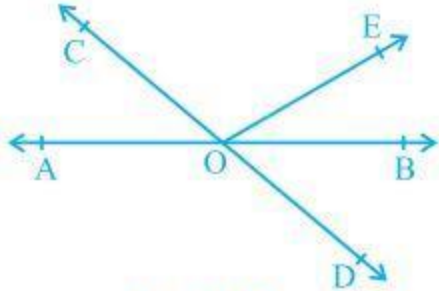


Fig. 6.13

Solution:

From the diagram, we have

$(\angle AOC + \angle BOE + \angle COE)$ and $(\angle COE + \angle BOD + \angle BOE)$ forms a straight line.

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

Now, by putting the values of $\angle AOC + \angle BOE = 70^\circ$ and $\angle BOD = 40^\circ$ we get

$\angle COE = 110^\circ$ and $\angle BOE = 30^\circ$

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

2. In Fig. 6.14, lines XY and MN intersect at O. If $\angle POY = 90^\circ$ and $a : b = 2 : 3$, find c.

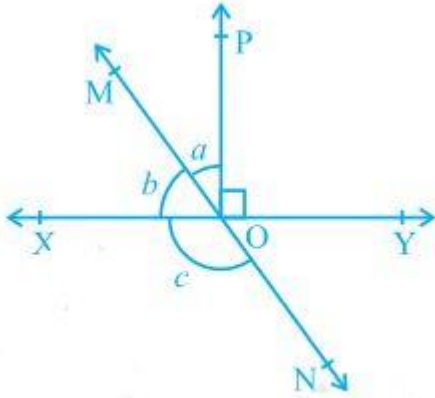


Fig. 6.14

Solution:

We know that the sum of linear pair are always equal to 180°

So,

$$POY + a + b = 180^\circ$$

Putting the value of $POY = 90^\circ$ (as given in the question) we get,

$$a + b = 90^\circ$$

Now, it is given that $a : b = 2 : 3$ so,

Let a be $2x$ and b be $3x$

$$\therefore 2x + 3x = 90^\circ$$

Solving this we get

$$5x = 90^\circ$$

$$\text{So, } x = 18^\circ$$

$$\therefore a = 2 \times 18^\circ = 36^\circ$$

Similarly, b can be calculated and the value will be

$$b = 3 \times 18^\circ = 54^\circ$$

From the diagram, $b + c$ also forms a straight angle so,

$$b + c = 180^\circ$$

$$c + 54^\circ = 180^\circ$$

$$\therefore c = 126^\circ$$

3. In Fig. 6.15, $\angle PQR = \angle PRQ$, then prove that $\angle PQS = \angle PRT$.

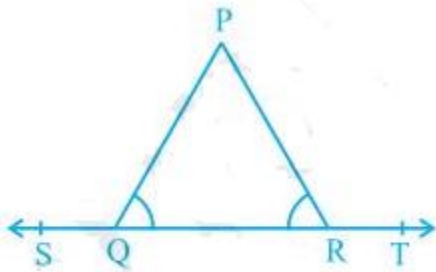


Fig. 6.15

Solution:

Since ST is a straight line so,

$\angle PQS + \angle PQR = 180^\circ$ (linear pair) and

$\angle PRT + \angle PRQ = 180^\circ$ (linear pair)

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

Since $\angle PQR = \angle PRQ$ (as given in the question)

$\angle PQS = \angle PRT$. (Hence proved).