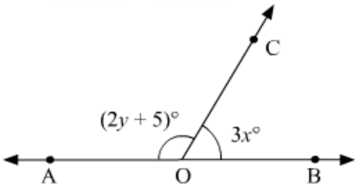
Lines and Angles Ex 8.2 Q1

Answer :

In figure:

Since OA and OB are opposite rays. Therefore, AB is a line. Since, OC stands on line AB. Thus, $\angle AOC$ and $\angle BOC$ form a linear pair, therefore, their sum must be equal to 180^0.



Or, we can say that

$\angle AOC + \angle BOC = 180^0$

From the given figure:

$\angle AOC = (2y+5)$ and $\angle BOC = 3x$

On substituting these two values, we get

$$(2y+5)+3x=180$$
$$3x+2y=180-5$$
$$3x+2y=175 \qquad ...(i)$$

(i) On putting $x=25$ in (i), we get:

$$3(25)+2y=175$$
$$75+2y=175$$
$$2y=175-75$$
$$2y=100$$
$$y=\frac{100}{2}$$
$$y=\boxed{50}$$

Hence, the value of y is $\boxed{50}$.

(ii) On putting in $y=35$ in equation (A), we get:

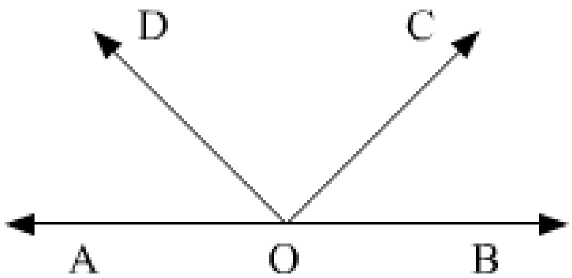
$$3x+2(35)=175$$
$$3x+70=175$$
$$3x=175-70$$
$$3x=105$$
$$x=\frac{105}{3}$$
$$x=\boxed{35}$$

Hence, the value of x is $\boxed{35}$.

Lines and Angles Ex 8.2 Q2

Answer :

The figure is given as follows:



The following are the pair of adjacent angles:

$\angle AOD$ and $\angle COD$

$\angle BOC$ and $\angle COD$

The following are the linear pair:

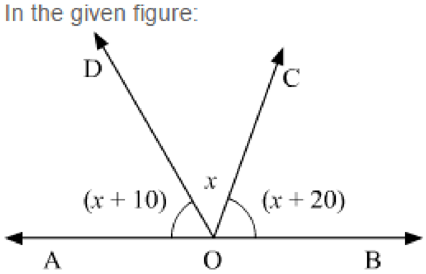
$\angle AOD$ and $\angle BOD$

$\angle BOC$ and $\angle COA$

Lines and Angles Ex 8.2 Q3

Answer :

In the given figure:



AB is a straight line. Thus, $\angle AOD$, $\angle COD$ and $\angle BOC$ form a linear pair.

Therefore their sum must be equal to 180^0.

We can say that

$\angle AOD + \angle COD + \angle BOC = 180^0$ (i)

It is given that $\angle AOD = (x+10)^0$, $\angle COD = x^0$ and $\angle BOC = (x+20)^0$.

On substituting these values in (i), we get:

$$\begin{aligned}
(x+10)+x+(x+20) &= 180 \\
x+x+x+10+20 &= 180 \\
3x+30 &= 180 \\
3x &= 180-30 \\
3x &= 150 \\
x &= \frac{150}{3} \\
x &= \boxed{50}
\end{aligned}$$

It is given that:

$$\angle AOD = x + 10$$
$$= 50 + 10$$
$$= 60$$

Therefore, $\boxed{\angle AOD = 60^0}$

Also,

$$\angle COD = x$$

Therefore, $\boxed{\angle COD = 50^0}$

$$\angle BOC = x + 20$$
$$= 50 + 20$$
$$= 70$$

Therefore, $\boxed{\angle BOC = 70^0}$

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