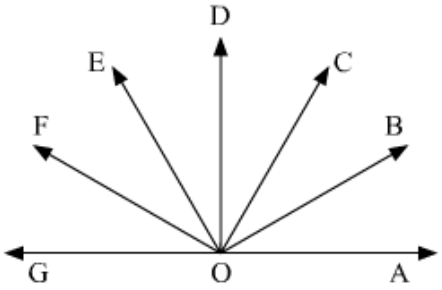
Lines and Angles Ex 8.2 Q15

Answer :

The given figure is as follows:



(i)

It is given that $\angle AOB$, $\angle FOE$, $\angle EOB$ and $\angle FOG$ form a linear pair .

Therefore, their sum must be equal to 180^0 .

That is ,

$\angle AOB + \angle FOE + \angle EOB + \angle FOG = 180^0$

It is given that :

$\angle FOG = 30^0$,

$\angle AOB = 30^0$ and

$\angle EOB = 90^0$ in equation above, we get:

$$\angle AOB + \angle FOE + \angle EOB + \angle FOG = 180^0$$
$$30^0 + \angle FOE + 90^0 + 30^0 = 180^0$$
$$\angle FOE + 150^0 = 180^0$$
$$\angle FOE = 180^0 - 150^0$$
$$\angle FOE = \boxed{30^0}$$

It is given that:

$$\angle FOC = 90^0$$

From the above figure:

$$\angle FOE + \angle DOE + \angle COD = 90^0$$
$$30^0 + \angle DOE + 30^0 = 90^0$$
$$\angle DOE + 60^0 = 90^0$$
$$\angle DOE = 90^0 - 60^0$$
$$\angle DOE = \boxed{30^0}$$

Similarly, we have:

$$\angle EOB = 90^0$$

From the above figure:

$$\angle DOE + \angle DOC + \angle COB = 90^0$$
$$30^0 + 30^0 + \angle COB = 90^0$$
$$\angle COB + 60^0 = 90^0$$
$$\angle COB = 90^0 - 60^0$$
$$\angle COB = \boxed{30^0}$$

(ii)

We have:

$\angle FOG = 30^0$

$\angle FOE = 30^0$

$\angle EOD = 30^0$

$\angle COD = 30^0$

$\angle COB = 30^0$

$\angle AOB = 30^0$

From the figure above and the measurements of the calculated angles we get two right angles as $\boxed{\angle DOG}$ and $\boxed{\angle AOD}$.

Two right angles are already given as $\boxed{\angle FOC}$ and $\boxed{\angle EOB}$.

(iii)

We have to find the three pair of adjacent complementary angles.

We know that $\angle EOB$ is a right angle.

Therefore,

$\angle EOC$ and $\angle COB$ are complementary angles.

Similarly, $\angle AOD$ is a right angle.

Therefore,

$\angle AOB$ and $\angle BOD$ are complementary angles.

Similarly, $\angle AOD$ is a right angle.

Therefore,

$\angle AOC$ and $\angle COD$ are complementary angles.

(iv)

We have to find the three pair of adjacent supplementary angles.

Since, $\angle AOG$ is a straight line.

Therefore, following are the three linear pair, which are supplementary:

$\angle AOB$ and $\angle BOG$;

$\angle AOC$ and $\angle COG$ and

$\angle AOD$ and $\angle DOG$

(v)

We have to find three pair of adjacent angles, which are as follows:

$\angle AOB$ and $\angle BOC$

$\angle COD$ and $\angle DOE$

$\angle EOF$ and $\angle FOG$

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