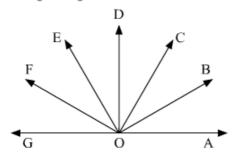


Lines and Angles Ex 8.2 Q15

Answer:

The given figure is as follows:



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

Therefore, their sum must be equal to $180^{\rm o}$.

That is,

 $\angle AOB + \angle FOE + \angle EOB + \angle FOG = 180^{\circ}$

It is given that:

 $\angle FOG = 30^{\circ}$

 $\angle AOB = 30^{\circ}$ and

 $\angle EOB = 90^{\circ}$ in equation above, we get:

$$\angle AOB + \angle FOE + \angle EOB + \angle FOG = 180^{\circ}$$

 $30^{\circ} + \angle FOE + 90^{\circ} + 30^{\circ} = 180^{\circ}$
 $\angle FOE + 150^{\circ} = 180^{\circ}$
 $\angle FOE = 180^{\circ} - 150^{\circ}$
 $\angle FOE = \boxed{30^{\circ}}$

It is given that:

$$\angle FOC = 90^{\circ}$$

From the above figure:

$$\angle FOE + \angle DOE + \angle COD = 90^{\circ}$$

$$30^{\circ} + \angle DOE + 30^{\circ} = 90^{\circ}$$

$$\angle DOE + 60^{\circ} = 90^{\circ}$$

$$\angle DOE = 90^{\circ} - 60^{\circ}$$

$$\angle DOE = \boxed{30^{\circ}}$$

Similarly, we have:

$$\angle EOB = 90^{\circ}$$

From the above figure:

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

(ii)

We have:

 $\angle FOG = 30^{\circ}$

 $\angle FOE = 30^{\circ}$

 $\angle EOD = 30^{\circ}$

 $\angle COD = 30^{\circ}$

 $\angle COB = 30^{\circ}$

 $\angle AOB = 30^{\circ}$

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 $\angle FOC$ and $\angle EOB$

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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, ∠AOD is a right angle. Therefore, $\angle AOC$ and $\angle COD$ are complementary angles. 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 $\angle DOE$ ∠EOF and ∠FOG ******* END ******