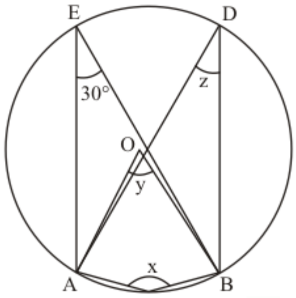
Circles Ex 16.5 Q14

**Answer :**

It is given that, $O$ is the center of the circle and $\angle AEC = 30^0$




We have to find the value of $\angle y$ and $\angle z$

Since angle in the same segment are equal

So $\angle AEC = \angle ADC = 30^0$

And $\angle z = 30^0$ Because same arc subtend same angle on the circumference of the same circle.

Since $\angle AOC = 2\angle ADC$ ( $\angle y$ is at center)

As angle subtended by a arc on the center is double the angle subtended at the circumference.

Then

$$y = 2\angle z$$
$$= 2 \times 30^0 \ (\angle z = 30°)$$
$$= 60^0$$

Now since angle in alternate segment are complementary

So

$$\angle z + \angle x = 180^0$$
$$\angle x = 180^0 - \angle z$$
$$\angle x = (180^0 - 30^0) \text{(Since } \angle z = 30^0 \text{ )}$$
$$\Rightarrow \angle x = 150^0$$

Hence

$$\boxed{\angle x = 150^0}$$

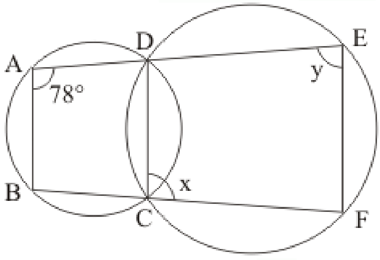
$$\boxed{\angle y = 60^0}$$

and $\boxed{\angle z = 30^0}$

Circles Ex 16.5 Q15

**Answer :**

It is given that, $\angle A = 78^0$ and $ABCD$ , $DCFE$ are cyclic quadrilateral




We have to find $\angle x$ and $\angle y$

Since $ABCD$ is cyclic quadrilateral

So $\angle A + \angle BCD = 180^0$ (opposite angle of a cyclic quadrilateral are supplementary)

$\angle BCD = 180^0 - \angle A \left(\angle A = 78^0\right)$

$\angle BCD = 180^0 - 78^0$

$\angle BCD = 102^0$ ...... (1)

Total angle at point $C$ is $180^0$ ( $BF$ is straight line)

So

$$\begin{aligned}\angle BCD + \angle DCF &= 180^0\\ \angle DCF &= 180^0 - \angle BCD\\ \angle x &= 180^0 - 102^0\\ &= 78^0\end{aligned}$$

Now in cyclic quadrilateral $DCFE$

$$\begin{aligned}\angle x + \angle y &= 180^0\\ \angle y &= 180^0 - 78^0\\ &= 102^0\end{aligned}$$ (opposite angle of a cyclic quadrilateral are supplementary)

Hence $\boxed{\angle x = 78^0}$ and $\boxed{\angle y = 102^0}$

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