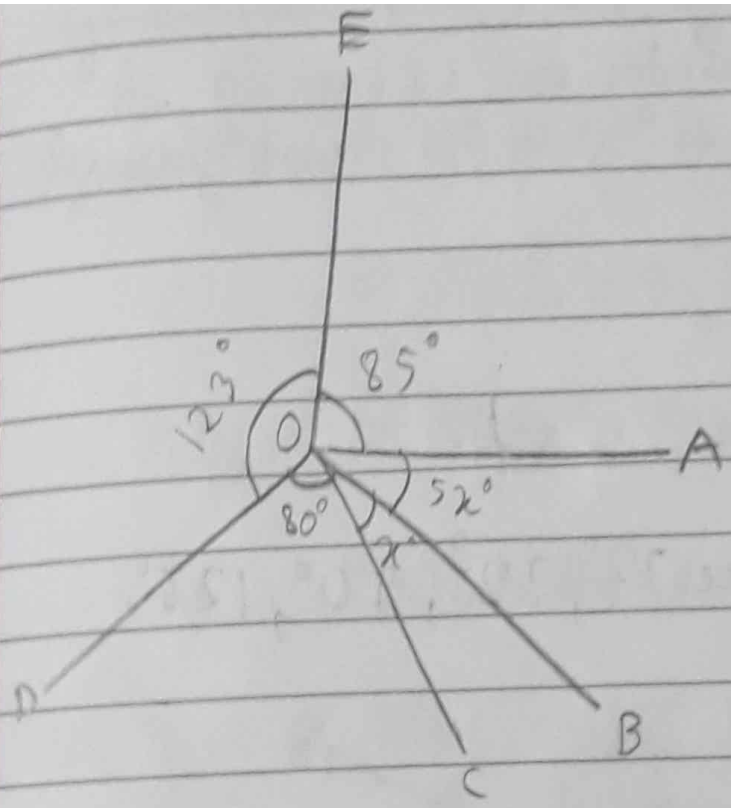
23.



From the above figure it is clear that

$$123^\circ + 85^\circ + 80^\circ + 5x^\circ + x^\circ = 360^\circ$$

$$\Rightarrow 288^\circ + 6x^\circ = 360^\circ$$

$$\Rightarrow 6x^\circ = 360^\circ - 288^\circ = 72^\circ$$

$$\Rightarrow x = \frac{72^\circ}{6} = 12^\circ$$

$\therefore \angle AOB = 5x^\circ$

$= 5 \times 12^\circ$

$= 60^\circ$

$\angle BOC = x^\circ$

$= 12^\circ$

24. From the above figure it is clear that

$2y^\circ + 2y^\circ + 2\frac{1}{2}y^\circ + 3\frac{1}{2}y^\circ = 360^\circ$

$\Rightarrow y^\circ \times (2 + 2 + 2\frac{1}{2} + 3\frac{1}{2}) = 360^\circ$

$\Rightarrow y^\circ \times (4+6) = 360^\circ$

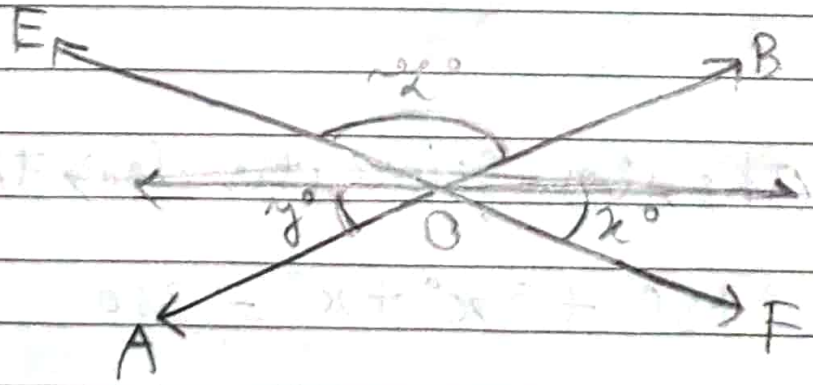
$\Rightarrow y^\circ \times 10 = 360^\circ$

$\Rightarrow 10y^\circ = 360^\circ$

$\Rightarrow y^\circ = \frac{360^\circ}{10} = 36^\circ$

$\therefore$ the angles are $72^\circ, 72^\circ, 90^\circ, 126^\circ$.

25.



(i) From the given figure it is clear that

$y^\circ + \angle COE + z^\circ = 180^\circ$ (as $\overleftrightarrow{AB}$ is a straight line)

$\Rightarrow 45^\circ + \angle COE + 90^\circ = 180^\circ$

$\Rightarrow \angle COE = 180^\circ - 135^\circ = 45^\circ$

So, $x^\circ = 45^\circ$ (as $\angle COE$ and $\angle DOF$ are vertically opposite angles)

(ii) From the given figure it is clear that

$x^\circ = 3a$, $y^\circ = 5x$, $z^\circ = 6x$

As $\overline{CD}$ and $\overline{EF}$ are intersecting at O, so $\angle COE = \angle DOF$

Given that $y^\circ + x^\circ + z^\circ = 180^\circ$ (As AB is a straight line)

$\Rightarrow 5x^\circ + x^\circ + 6x^\circ = 180^\circ$

$\Rightarrow 12x^\circ = 180^\circ$

$\Rightarrow 12 \times 3a^\circ = 180^\circ$

$\Rightarrow a^\circ = \frac{180^\circ}{36} = 5^\circ$