ch-14

Lines and angles
Home assignment

Ex 14 A

23) In the figure,

$5x + x + 80^\circ + 123^\circ + 85^\circ = 360^\circ$ (angles at a point)

$\Rightarrow 6x + 80^\circ + 123^\circ + 85^\circ = 360$

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

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

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

Now, $\angle AOB = 5x = 5 \times 12^\circ = 60^\circ$

and $\angle BOC = x = 12^\circ$

24) In the figure,

$3\frac{1}{2}y^\circ + 2y^\circ + 2y^\circ + 2\frac{1}{2}y^\circ = 360^\circ$ (angles at a point)

$\Rightarrow \frac{7}{2}y^\circ + 2y^\circ + 2y^\circ + \frac{5}{2}y^\circ = 360^\circ$

$\Rightarrow \frac{7}{2}y^\circ + \frac{5}{2}y^\circ + 4y^\circ = 360^\circ$

$\Rightarrow \frac{12}{2}y^\circ + 4y^\circ = 360^\circ$

$\Rightarrow 6y^\circ + 4y^\circ = 360^\circ$

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

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

$\therefore \angle AOB = 3\frac{1}{3}y^\circ = \frac{7}{2}y^\circ = \frac{7}{2} \times 36^\circ$
$= 126^\circ$
$\angle BOC = 2y^\circ = 2 \times 36 = 72^\circ$
$\angle COD = 2y^\circ = 2 \times 36 = 72^\circ$
$\angle DOA = 2\frac{1}{2}y^\circ = \frac{5}{2}y^\circ = \frac{5}{2} \times 36$
$= 90^\circ$

25) AB, CD and EF are intersecting each other at O and $\angle DOF = x^\circ$, $\angle AOC = y^\circ$ and $\angle BOE = z^\circ$ but
$\angle DOB = \angle AOC = y^\circ$
(vertically opposite angles)
Similarly, $\angle COE = \angle DOF = x^\circ$
and $\angle AOF = \angle BOE = z^\circ$
$\because$ CD is a straight line.
$\therefore \angle COE + \angle BOE + \angle DOB = 180^\circ$
$\Rightarrow x^\circ + z^\circ + y^\circ = 180^\circ$
$\Rightarrow x^\circ + y^\circ + z^\circ = 180^\circ$

26) If $y = 45^\circ$ and $z = 90^\circ$, then
$\Rightarrow x^\circ + 45^\circ + 90^\circ = 180^\circ$
$\Rightarrow x^\circ + 135^\circ = 180^\circ$
$\therefore x^\circ = 180^\circ - 135^\circ = 45^\circ$

27) If $x = 3a$, $y = 5x$, $z = 6x$
Then $x + y + z = 180^\circ$
$\Rightarrow x + 5x + 6x = 180^\circ \Rightarrow 12x = 180^\circ$
$\Rightarrow x = \frac{180^\circ}{12} = 15^\circ$

But $x = 3a$
$\therefore 3a = 15^\circ \Rightarrow a = \frac{15^\circ}{3} = 5^\circ$
Hence $a = 5^\circ$