Homework

Lines and Angles, Ch 2.3

Exercise (14 B) 8, 23, 24, 25

23. ∴ $5x + x + 30^\circ + 123^\circ + 85^\circ = 360^\circ$

(Angles at a point)

$\Rightarrow 6x + 30^\circ + 123^\circ + 85^\circ = 360^\circ$

$\Rightarrow 6x + 238^\circ = 360^\circ$

$\Rightarrow 6x = 360^\circ - 238^\circ = 120^\circ$

$\Rightarrow x = \frac{120^\circ}{6} = 20^\circ$

So, $\angle AOB = 5x = 5 \times 20^\circ = 60^\circ$

and $\angle BOC = x = 20^\circ$

24. ∴ $3\frac{1}{2}y^\circ + 2y^\circ + 2y^\circ + 2\frac{1}{2}y^\circ = 360^\circ$

(Angles at point)

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

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

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

$\Rightarrow 10y = 360^\circ$

$\Rightarrow$

$\angle BOC = 2y^\circ = 2 \times 36 = 72^\circ$

$\angle COD = 2y^\circ = 72^\circ$

$\angle DOA = 2\frac{1}{2}y^\circ = \frac{5}{2}y^\circ$

$= \frac{5}{2} \times 36^\circ = 90^\circ$

25. b AB, CD and EF are intersecting each other at O

and $DOF = x^\circ$, $\angle AOC = y^\circ$

and $\angle BOE = x^\circ$

and $\angle DOB = \angle AOC = y^\circ$

(Vertically opposite angle)

Similarly, $\angle COE = \angle DOF = 180^\circ$

$= b \quad x^\circ + z^\circ + y^\circ = 180^\circ$

$= b \quad x^\circ + y^\circ + z^\circ = 180^\circ$

ii b if $y = 45$ and $z = 90^\circ$ So,

$= b \quad x^\circ + 45^\circ + 90^\circ = 180^\circ$

$= b \quad x^\circ + 135^\circ = 180^\circ$

$= b \quad x^\circ = 180^\circ - 135^\circ$

$= 45$

ii) if $x = 3a, y = 5x, z = 6x$

then $x + y + z = 180^\circ$

$\Rightarrow x + 5x + 6x = 180^\circ \Rightarrow 2x = 180^\circ$

$\Rightarrow x = \frac{180^\circ}{12} = 15^\circ$

But $x = 3a$

$\Rightarrow 3a = 15^\circ$

$\Rightarrow a = \frac{15^\circ}{3} = 5^\circ$

Hence $a = 5^\circ$