Lines and Angles

CHAPTER 6

TRY YOURSELF SOLUTIONS

1. Angle in figure (iii) is an acute angle, as $\angle ABC$ will lie between $0°$ and $90°$.

2. Measure of reflex angle lies between $180°$ and $360°$.

3. Since, $\angle AOB$ is an obtuse angle, therefore x will lie between $90°$ and $180°$.

4. Clearly, $\angle AOB$ + Reflex $\angle AOB = 360°$

$\therefore$ $35°$ + Reflex $\angle AOB = 360°$

$\Rightarrow$ Reflex $\angle AOB = 360° - 35° = 325°$

5. If the perpendicular distance between two lines is not same everywhere, then the lines will not be parallel and so they will intersect each other.

Hence, the given statement is true.

6. Let the measure of required angle be x.

Then, by the given condition we have

$x = (180° - x) + 100°$

$\Rightarrow$ $2x = 280° \Rightarrow x = 140°$

7. Let x be the measure of required angle.

Then, by the given condition we have

$6(90° - x) = 2(180° - x) - 20°$

$\Rightarrow$ $540° - 6x = 360° - 2x - 20°$

$\Rightarrow$ $4x = 540° - 360° + 20°$

$\Rightarrow$ $4x = 200° \Rightarrow x = 50°$

8. Since, OA and OB are opposite rays, therefore they will form a line.

Now, as OC is a ray stand on line AB

$\therefore$ $\angle AOC + \angle BOC = 180°$ (By linear pair axiom)

$\Rightarrow$ $y + x = 180°$

(i) If $x = 85°$, then $y = 180° - x = 180° - 85° = 95°$

(ii) If $y = 115°$, then $x = 180° - y = 180° - 115° = 65°$

9. Since, OD is a ray on line AB.

$\therefore$ $\angle AOD + \angle BOD = 180°$ (By linear pair axiom)

$\Rightarrow$ $\angle AOC + \angle COD + \angle BOD = 180°$

[$\because$ $\angle AOD = \angle AOC + \angle COD$]

$\Rightarrow$ $x + (x + 27°) + (x + 33°) = 180°$

$\Rightarrow$ $3x + 60° = 180°$

$\Rightarrow$ $3x = 120° \Rightarrow x = 40°$

10. Here, AOB is a straight line. (By linear pair axiom)

$\angle AOC + \angle BOC = 180°$

$\Rightarrow$ $84° + 2x = 180° \Rightarrow 2x = 96° \Rightarrow x = 48°$

Also, $\angle COA = \angle BOD$ (Vertically opposite angles)

$\therefore$ $84° = z$

Now, as COD is also a straight line.

$\therefore$ $\angle AOC + \angle EOA + \angle EOD = 180°$

$\Rightarrow$ $84° + 75° + y = 180°$

$\Rightarrow$ $y = 180° - 159° \Rightarrow y = 21°$

Hence, $x = 48°$, $y = 21°$ and $z = 84°$.

11. Since, $l \parallel m$ and $m \parallel n$, therefore $l \parallel n$

Clearly, using the concept of vertically opposite angles and the concept of co-interior angles, we get

$\omega + \theta = 180°$

$\Rightarrow$ $(3p + 5)° + (2p)° = 180°$

$\Rightarrow$ $(3p + 5) + 2p = 180$

$\Rightarrow$ $5p = 175$

$\Rightarrow$ $p = 35$

$\therefore$ $\omega = (3p + 5)° = (3 \times 35 + 5)° = 110°$

and $\theta = (2p)° = (2 \times 35)° = 70°$

Also, $y = \theta = 70°$ (Corresponding angles as $l \parallel n$)

$z = y = 70°$ (Alternate interior angles as $l \parallel m$)

and $x = y = 70°$ (Vertically opposite angles)

12. Since, $AB \parallel CD$ and $CD \parallel EF$, therefore $AB \parallel EF$.

So, $\angle BAE + \angle AEF = 180°$ (Co-interior angles)

$\Rightarrow$ $90° + \angle AEF = 180°$ ($\because$ $EA \perp AB$)

$\Rightarrow$ $27° + z = 90° \Rightarrow z = 63°$

Also, $y + z = 180°$ (Co-interior angles as $CD \parallel EF$)

$\Rightarrow$ $y = 180° - z = 180° - 63° = 117°$

and $x = y = 117°$ (Corresponding angles as $AB \parallel CD$)