

9. PARALLEL LINES AND TRANSVERSAL

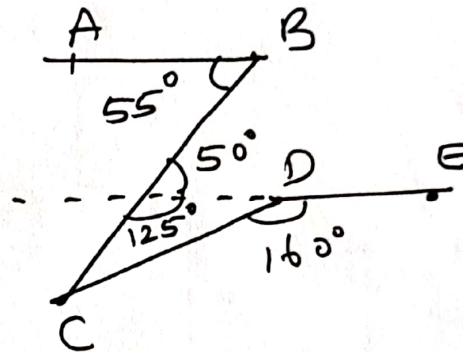
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Class: IX. MATHEMATICS

INTEGRATED. SOLUTIONS

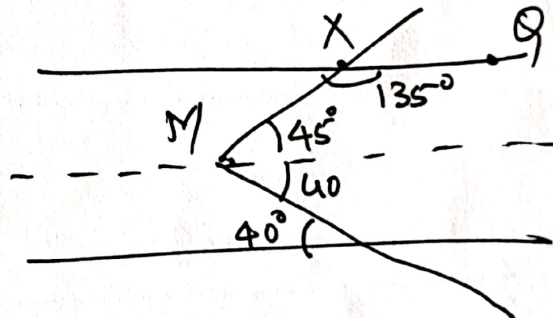
TEACHING TASK
JEE MAINS LEVEL

01. $\angle BCD = 160^\circ - 125^\circ$
 $= 35^\circ$



Ans: A

02. $\angle XMY = 85^\circ$

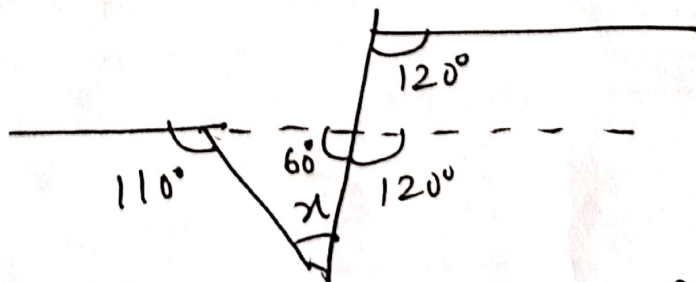


Ans: D

03. $x + y = 180^\circ$; $x : y = 2 : 3$
 $y = \frac{3}{5} \times 180^\circ = 108^\circ$

Ans: A

04. $x = 50^\circ$



Ans: B

06

$$a + 30^\circ + a + 70^\circ = 180^\circ \Rightarrow a = 40^\circ$$

(2)

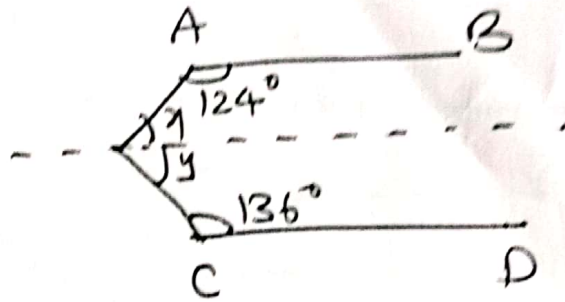
Ans: A

07

$$x = 180^\circ - 124^\circ = 56^\circ$$

$$y = 180^\circ - 136^\circ = 44^\circ$$

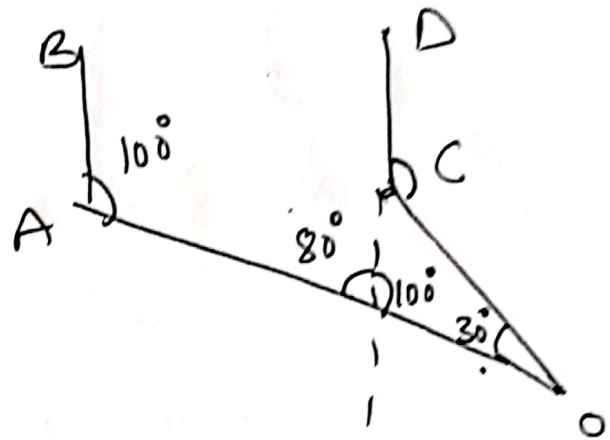
$$\therefore x + y = 100^\circ$$



Ans: C

08

$$\angle OCD = 100^\circ + 30^\circ = 130^\circ$$



Ans: A

09

$$\frac{7}{21} = \frac{x}{24} \Rightarrow x = 8 \text{ cm}$$

Ans: A

10

$$\frac{AB}{BC} = \frac{AD}{DE} \quad | \quad BC = 35$$

$$\Rightarrow \frac{20}{BC} = \frac{4}{7}$$

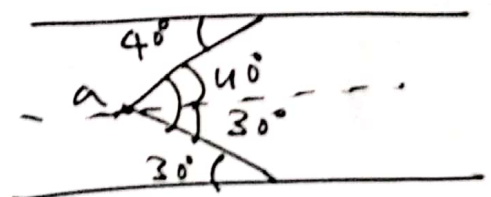
Ans: D

JEE ADVANCED

11

$$\angle b = 30^\circ + 40^\circ = 70^\circ$$

$$\angle a = 360^\circ - 70^\circ = 290^\circ$$

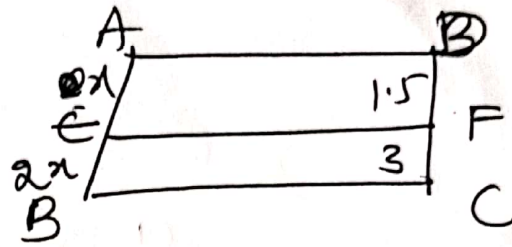


Ans: A, B

12 $\angle Z = 90^\circ - 55^\circ = 35^\circ$; $\angle Y = 180^\circ - 55^\circ = 125^\circ$ (3)
 $\therefore \angle X = \angle Y = 125^\circ$

Ans. A, B

13 Statement I:



$$\frac{AE}{ED} = \frac{BF}{FC} \Rightarrow \frac{x}{2x} = \frac{1.5}{3}$$

$$\Rightarrow FC = 3 \text{ cm (False)}$$

Statement II: Conceptual (True)

Ans. D

14 Statement I: $\angle 1 = \angle 3 = 70^\circ$
 $\angle 6 = 180^\circ - 70^\circ = 110^\circ$ (True)

Statement II: Conceptual (True) Ans. A

15 Statement I: $\angle X = 180^\circ - 70^\circ = 110^\circ$
 $\angle Y = \angle X = 110^\circ$

Ans: A

Statement II:

16 $z : y = 2 : 3$; $z + y = 180^\circ$
 $\angle y = \frac{3}{5} \times 180^\circ = 108^\circ$ $\therefore \angle x = \angle y = 108^\circ$ Ans. B

17 $\frac{AD}{DB} = \frac{AE}{EC} \Rightarrow \frac{4x-3}{3x-1} = \frac{8x-7}{5x-3}$

Clearly, $x=1$, satisfies the above eqn.
 Ans: 1

$$18 \quad \angle 4 + \angle 6 + \angle 3 + \angle 5 = 360^\circ = 4 \times 90^\circ$$

Ans. 4 (4)

$$19 \quad a) \angle x = \angle z = 138^\circ (P) \quad c) \angle z = 138^\circ (P)$$

$$b) \angle y + 52^\circ = 180^\circ$$

$$\therefore \angle y = 128^\circ (Q)$$

$$d) x + z - y = 138^\circ + 138^\circ - 128^\circ = 148^\circ (t)$$

Ans. P, Q, P, t

Learner's TASK (CUES)

01 Conceptual

Ans: B

02 Conceptual

Ans B

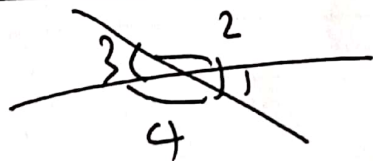
$$03 \quad \frac{3}{2} \times 90^\circ = 135^\circ$$

Ans: D

$$04 \quad 180^\circ - x = 4 (90^\circ - x) \Rightarrow x = 60^\circ$$

Ans: C

05 =



Ans: D

06 Conceptual

Ans: C

07 Conceptual

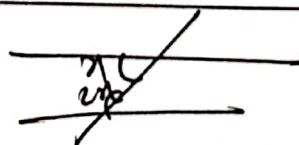
Ans: A

$$08 \quad \begin{aligned} \angle a + \angle b &= 180^\circ \\ 85^\circ + \angle b &= 180^\circ \end{aligned}$$

$$\angle b = 95^\circ$$

Ans: B

$$09 \quad \begin{aligned} x + 2x &= 180^\circ \\ x &= 60^\circ \end{aligned}$$



Greater angle
= 120°

Ans: A

10 $\frac{2}{4} = \frac{3}{HJ} \Rightarrow HJ = 6 \text{ cm}$

Ans. D

JEE MAINS LEVEL

01. $x = 180^\circ - x \Rightarrow x = 90^\circ$

Ans. A

02. Clearly, A) $51^\circ + 39^\circ = 90^\circ$
 $51^\circ - 39^\circ = 12^\circ$

Ans. A

03 $x = (90^\circ - x) + 24^\circ$
 $\Rightarrow x = 57^\circ$

Ans. D

04 $x = \frac{1}{4} (180^\circ - x) \Rightarrow x = 36^\circ$

Ans. A

05 $x = \frac{1}{4} (90^\circ - x) \Rightarrow x = 18^\circ$

Ans. B

06 $x:y = 7:11$ $x+y = 90^\circ$

$x = \frac{7}{18} \times 90 = 35^\circ$, $y = 55^\circ$

Ans. C

07 $2x + 3x = 180^\circ \Rightarrow x = 36^\circ$

$y + 2x = 180^\circ \Rightarrow y = 108^\circ$

Ans. B

08 $2x + 5 = 75^\circ \Rightarrow x = 35^\circ$, $y - 5 = 75^\circ \Rightarrow y = 80^\circ$
 $10x - 4y = 10(35^\circ) - 4(80^\circ)$
 $= 30^\circ$

Ans. B

69. We have

$$\frac{BE}{EC} = \frac{BD}{DA}$$

Also

$$\frac{BC}{CL} = \frac{BD}{DA}$$

$$\therefore \frac{BE}{EC} = \frac{BC}{CL}$$

$$\Rightarrow \frac{8}{x} = \frac{8+x}{6}$$

$$\Rightarrow 48 = 8x + x^2$$

$$\Rightarrow x^2 + 8x - 48 = 0$$

$$\Rightarrow (x+12)(x-4) = 0$$

$$\Rightarrow x = 4 \therefore EC = 4 \text{ cm}$$

Ans: C

10

$$\frac{AM}{MB} = \frac{AO}{OC} = \frac{2.4}{3.6} = \frac{2}{3}$$

Ans: C

11

$$z = x = 138^\circ, \quad y + 52^\circ = 180^\circ \Rightarrow y = 128^\circ$$

Ans: A, B, D

12

Statement I:

We have

$$\frac{AD}{DB} = \frac{AE}{EC}$$

$$\Rightarrow AE = EC$$

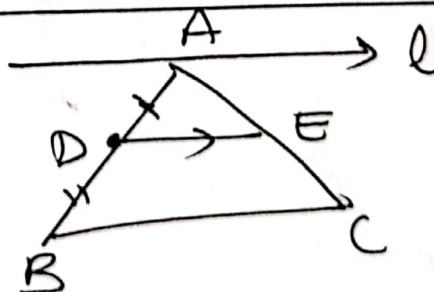
Also given

$$AB = AC$$

$$\Rightarrow \frac{AB}{2} = \frac{AC}{2}$$

Statement II

Conceptual (True)



$$\Rightarrow AD = AE$$

Hence $\triangle ADE$ is isosceles (True)

Ans: A

$$13. \quad 2x - 5 + x - 5 + 4x + 3x + 20 = 360^\circ$$

$$\Rightarrow x = 35^\circ$$

Ans: A

14 Form figure

$$y + b + p = 360^\circ$$

$$\Rightarrow \frac{3z}{2} + z + 165^\circ = 360^\circ \Rightarrow z = 78^\circ$$

Ans: 78

15 a) $50^\circ (x)$

b) $120^\circ (p)$

c) $t = 120^\circ$

$$x + t = 50^\circ + 120^\circ = 170^\circ (s)$$

d) $z = 130^\circ$

$$z - y = 130^\circ - 120^\circ = 10^\circ ()$$

Ans: x, p, s, -

$\Rightarrow$ THE END $\Leftarrow$

