

8. LINES AND ANGLES ①

Class: 9th. MATHEMATICS

INTEGRATED SOLUTIONS

2025/26

TEACHING TASK

JEE MAINS LEVEL

01. $n=5.$

No. of line segments = $\frac{n(n-1)}{2} = \frac{5 \times 4}{2} = 10$
Ans. A

02

$$V + F = 2 + E$$

$$8 + 6 = 2 + E \Rightarrow E = 12$$

Ans. A

03

$$4(4.5) - 2(6) = 18 - 12 = 6$$

Ans. D

04

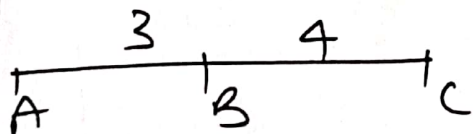
$$AB = 42 \times \frac{3}{2} = 63$$

$$BC = 42 \times \frac{2}{7} = 12 \text{ cm}$$

$$AB > BC$$

Ans. C

05



$$AB : BC = 3 : 4$$

Given $BC = 24 \text{ cm}$

$$4 \text{ parts} = 24 \text{ cm}$$

$$1 \text{ part} = 6 \text{ cm}$$

$$AB = 3 \times 6 = 18 \text{ cm}$$

$$AC = AB + BC$$

$$= 18 + 24$$

$$= 42 \text{ cm}$$

Ans. D

06

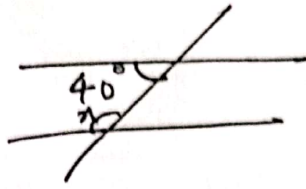
$$2(4.9) - 4 = 9.8 - 4 = 5.8 \text{ cm}$$

Ans. A

07.

$$x + 40^\circ = 180^\circ$$

$$x = 140^\circ$$



Ans: C

08

$$\alpha + \beta = 90^\circ$$

$$40^\circ + \beta = 90^\circ \Rightarrow \beta = 50^\circ$$

Ans: B

09

$$x + y = 90^\circ$$

$$30^\circ + y = 90^\circ$$

$$y = 60^\circ$$

Ans: B

10

$$\text{Reflex angle} = 360^\circ - 80^\circ = 280^\circ$$

Ans: —

11.

$$\text{Supplement of } 110^\circ = 180^\circ - 110^\circ = 70^\circ$$

Ans: A

12

$$A + B = 180^\circ \rightarrow \text{Supplementary}$$

Ans: B

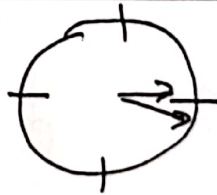
13

Acute

Ans: A

14

Acute angle



Ans: C

15

$$x = 180^\circ - 120^\circ = 60^\circ$$

Ans: A

16

Supplementary

Ans: B

17

$$\alpha : \beta = 7 : 8 ; \alpha + \beta = 90^\circ$$

$$\alpha = \frac{7}{15} \times 90^\circ = 42^\circ \therefore \beta = 48^\circ$$

Ans: C

18

$$\alpha + \beta = 180^\circ ; \alpha : \beta = 4 : 5$$

$$\alpha = \frac{4}{9} \times 180^\circ = 80^\circ \therefore \beta = 100^\circ$$

Ans: C

$$19. x^\circ + 2x - 21^\circ = 180^\circ \Rightarrow x = 67^\circ$$

③
Ans: B

$$20. x = 35^\circ, y = 4 \times 35^\circ = 140^\circ, z = 3 \times 35^\circ = 105^\circ$$

$$x + y + z = 35^\circ + 140^\circ + 105^\circ = 280^\circ \text{ Ans: D}$$

21 JEE ADVANCED LEVEL

01 $\angle ABC = 60^\circ, \angle PQR = 90^\circ$;
Complement of B = 30° , Supplement of Q = 90°
Ans: B, D
Ans: A, D

02 Conceptual

03 Conceptual

Ans: A, C

04 Conceptual

Ans: C, D

05 Conceptual

Ans: A, E

06 Assertion: Conceptual (True)

Reason: Conceptual (True)

Ans: A

07 Assertion: Conceptual (True)

Reason: Conceptual (True)

Ans: A

08 Assertion: Conceptual (True)

Reason: Conceptual (True)

Ans: A

09 Assertion: Conceptual (True)

Reason: Conceptual (True)

Ans: A

10. Assertion: Conceptual (False)

(4)

Reason: Conceptual (True)

Ans: D

11.

Assertion: Conceptual (True)

Reason: Conceptual (True)

Ans: A

12

Assertion: Conceptual (True)

Reason: Conceptual (True)

Ans: A

13 Statement I:

$$\text{Given } x + 30^\circ = 2(180^\circ - x)$$

$$\Rightarrow x = 110^\circ$$

$$\text{Supplement} = 180^\circ - 110^\circ = 70^\circ \text{ (True)}$$

Statement II: Conceptual (False)

Ans: C

14. Statement I: $n = 4$.

$$\text{No. of line segments} = \frac{n(n-1)}{2}$$

$$= \frac{4 \times 3}{2} = 6 \text{ (False)}$$

Statement II: Conceptual (True)

Ans: D

15

$$50 \text{ cm} = 50 \times 1 \text{ cm} = 50 \times \frac{1}{100} \text{ m} = 0.5 \text{ m}$$

Ans: A

16

$$5 \text{ m} = 5 \times \text{m} = 5 \times \frac{1}{1000} \text{ km} =$$

$$= 5 \times 1000 \text{ mm}$$

$$= 5000 \text{ mm}$$

Ans: A



$$17. \quad 2.5 \text{ Kilom} = 2.5 \times 1000 \text{ m} \\ = 2500 \text{ m}$$

(5)

Ans: A

$$18. \quad 48 \text{ cm} = 48 \times 1 \text{ cm} = 48 \times \frac{1}{100} \text{ m} \\ = 0.48 \text{ m}$$

Ans: A

$$19. \quad \angle BCD = 30^\circ + 40^\circ = 70^\circ$$

Ans: C

$$20. \quad 180^\circ \text{ (linear pair)}$$

Ans: D

$$21. \quad 3x + 40^\circ + x - 20^\circ = 180^\circ \\ \Rightarrow 4x + 20^\circ = 180^\circ \\ \Rightarrow x = 40^\circ$$

Ans: 40

$$22. \quad AB = 35 \times \frac{2}{5} = 14 \text{ cm}$$

Ans: 14

$$23. \quad 15,000 \text{ mm} = 15000 \times \frac{1}{1000} \text{ m} = 15 \text{ m}$$

Ans: 15

$$24. \quad 98000 \text{ mm} = 98 \text{ m}$$

Ans: 98

$$25. \quad a) \frac{1}{1000} \text{ m} \text{ (e)}$$

$$b) \frac{1}{10} \text{ m} \text{ (r)}$$

$$c) 10 \text{ m} \text{ (q)}$$

$$d) 1000 \text{ m} \text{ (t)}$$

Ans: s, r, q, t



26) a) $89^\circ, 70^\circ$ (s, t)

6

b) 91° (p)

c) 181° (q)

d) 90° (r)

LEARNER'S TASK (CUES)

01 $V + F = E + 2$

Ans: A

02 Same point

Ans: C

03 Conceptual

Ans: A

04 Vertices $n = 5$

No. of line segments = $\frac{n(n-1)}{2} = \frac{5 \times 4}{2} = 10$

Ans: C

05 Conceptual

Ans: A

06 Conceptual

Ans: B

07 Conceptual

Ans: A

08 Reflex angle since $204^\circ > 180^\circ$

Ans: D

09 $90^\circ - 2^\circ = 88^\circ$

Ans: B

10 $180^\circ - 178^\circ = 2^\circ$

Ans: B

JEE MAINS LEVEL

(7)

01. $\angle A + \angle B = 180^\circ$

$$\Rightarrow \angle A + 130^\circ = 180^\circ \Rightarrow \angle A = 50^\circ$$

Ans: C

02. $CD = 2x + 5 = 13 \Rightarrow x = 4$

$$AD = 5x + 20 = 5 \times 4 + 20 = 40$$

$$AB = x + 10 = 4 + 10 = 14$$

$$AB + CD + DA = 14 + 4 + 40 = 58$$

Ans: —

03

$$3(6) - 4 \cdot 5 = 18 - 4 \cdot 5 = 13 \cdot 5$$

Ans: D

04

$$90^\circ - 41^\circ = 49^\circ$$

Ans: C

05

$$23^\circ + 67^\circ = 90^\circ$$

Ans: A

06

$$60^\circ + 30^\circ = 90^\circ$$

Ans: B

07

$$90^\circ - 45^\circ = 45^\circ$$

Ans: A

08

$$180^\circ - 135^\circ = 45^\circ$$

Ans: A

09

$$x = 3(180^\circ - x)$$

$$\Rightarrow 4x = 3 \times 180^\circ \Rightarrow x = 135^\circ$$

Ans: —

10

Conceptual

Ans: B

11.

$$181^\circ, 279^\circ$$

Ans: C

12

12. $LA = 72^\circ \times \frac{5}{4} = 90^\circ$

$\frac{2}{3} \times 90^\circ + 132 = 192^\circ$

$360 - 192^\circ = 168^\circ$

Ans: D

13. $50^\circ + 40^\circ = 90^\circ, \quad 50^\circ - 40^\circ = 10^\circ$

Ans: C

14. $a = 90^\circ - 25^\circ = 65^\circ$

$b = 90^\circ - 65^\circ = 25^\circ$

Ans: A

15. $x + 10^\circ + x + 40^\circ = 90^\circ \quad \left| \quad x + 10^\circ, x + 40^\circ \right.$
 $\Rightarrow x = 20^\circ ; \quad \text{---} \quad = 30^\circ, 60^\circ$

Ans: D

16. JEE ADVANCED LEVEL

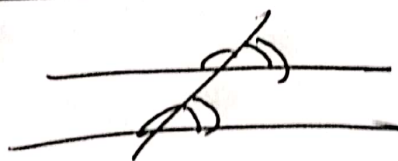
01. Conceptual

Ans: A, C

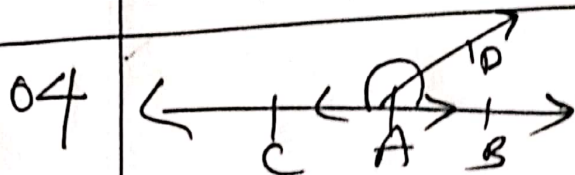
02. Conceptual

Ans: A,

03. Conceptual



Ans: B



$5x - 30^\circ + 2x = 180^\circ$
 $\Rightarrow x = 30^\circ$

Ans: C

05. Assertion: Conceptual (True)

Reason: Conceptual (True)

Ans: A

06. Assertion: Conceptual (True)
Reason: Conceptual (True)

9
Ans: A

07. Assertion: Conceptual (False)
Reason: Conceptual (True)

Ans: ~~A~~
D

08. Assertion: Conceptual (True)
Reason: Conceptual (True)

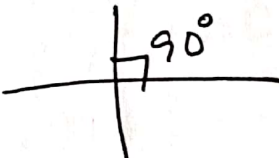
Ans: A

09. Assertion: Conceptual (True)
Reason: Conceptual (True)

Ans: A

10. Assertion: Conceptual (True)
Reason: Conceptual (True)

Ans
Ans: A

11. Assertion:  Conceptual (False)

Reason: Conceptual (True)

Ans: D

12. Assertion: Conceptual (True)
Reason: Conceptual (True)

Ans: A

13. Statement I: $x = 50^\circ$, $y = 150^\circ$, $z = 180^\circ$
 $\therefore \angle x + \angle y + \angle z = 50^\circ + 150^\circ + 180^\circ = 360^\circ$ (True)
Statement II: $4 \times 90^\circ = 360^\circ$ (True)

Ans: A

14.	Conceptual	Ans: B ⁽¹⁰⁾
15.	Conceptual	Ans: B
16	Conceptual	Ans: B
17	Conceptual	Ans: B
18	Conceptual	Ans: C
19	Conceptual	Ans: B

20

$$AB = 19.6 \times \frac{7}{4} = 34.3$$

$$BC = 37.9 - 12.4 = 25.5$$

$$CD = 30.1 + 4.6 = 34.7$$

$$DE = 2.7 \times 8 = 21.6$$

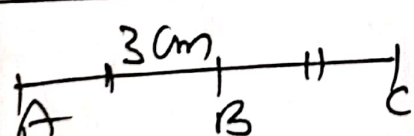
$$AB + BC + CD - x = DE$$

$$= 34.3 + 25.5 + 34.7 - x = 21.6$$

$$\Rightarrow x = 72.9$$

Ans: A

21.



∴ AC = 6 cm

Ans: 6

22

$$15,000 \text{ mm} = 15 \text{ m}$$

Ans: 15

23

$$120^\circ + x + x = 180^\circ \Rightarrow x = 30^\circ$$

Ans: 30°

24

a) Conceptual (x) | c) Conceptual (t)
b) Conceptual (s) | d) Conceptual (q) A: x, s, t, q

⇒ THE END ⇐