---

13. BASIC GEOMETRICAL IDEAS

TEACHING TASK

JEE MAINS LEVEL QUESTIONS

1. Number of lines that can be drawn through "n" non collinear points is .....

A) $\frac{n(n+2)}{2}$ B) $\frac{n(n-1)}{2}$ C) $\frac{n-1}{2}$ D) $\frac{n+1}{2}$

Key: B

Explanation: Each pair of points determines one line; number of pairs = $\frac{n(n-1)}{2}$

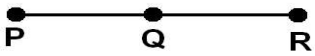
2. If the number of vertices of a solid are 8, and number of faces are 6, then number of edges are .....

A)12 B)10 C)14 D)8

Key: A

Explanation: Using Euler's formula $V+F=E+2 : 8+6=E+2 \Rightarrow E=12.$

3. If PR = 10 cm and PQ = 3 cm then find QR ?



A) 6cm B) 7cm C) 9cm D) 5cm

Key: B

Explanation: QR = PR – PQ = 10 – 3 = 7 cm.

4. If A,B,C are collinear and AB : BC = 3:4 , BC = 24 cm then AB , AC are ....

A) 20 cm , 42 cm B) 18 cm , 30 cm C) 42 cm , 18 cm D)18m, 42cm

Key: B

Explanation: AB = $\frac{3}{4}$×24=18 cm; AC = AB + BC = 18 + 24 = 42 cm.

5. If AB = 6 cm and CD = 4.5 cm then 4 CD - 2 AB = ...

A) 0 cm B) 2 cm C) 4 cm D) 6 cm

Key: D

Explanation: 4×4.5 – 2×6 = 18 – 12 = 6 cm.

6. If $\frac{2}{3}AB=\frac{7}{2}BC=42$ cm then .....

A) AB = BC B) AB < BC C) AB > BC D) $AB \le BC$

Key: C

Explanation: $\frac{2}{3}$AB=42$\Rightarrow$AB=63cm; $\frac{7}{2}$BC=42$\Rightarrow$BC=12cm$\Rightarrow$AB>BC.

7. If AD = (5x + 20) cm, AB = (x + 10) cm , CD = (2x + 5) cm = 13 cm, then AB + CD + DA =
   A) 67 cm B) 42cm C) 57cm D) 63 cm

Key: A

Explanation: CD = 13 $\Rightarrow$ 2x + 5 = 13 $\Rightarrow$ x = 4. AB = 14, AD = 40, CD = 13. Sum = 14 + 13 + 40 = 67? Wait, check: AD = 5×4 + 20 = 40, AB = 4+10=14, CD=13. Sum = 14+13+40=67, but options: A=67, so answer is A.

8. Two lines which never meet , even when they are extended infinitely are known as ...
   A) Intersecting lines B) perpendicular lines
   C) parallel lines D)concurrent lines

Key: C

Explanation: Parallel lines never meet.

9. Relation between diameter and radius of a circle is
   A) d = 2r B) r = 2d C) d = r/2 D) None

Key: A

Explanation: Diameter = 2 × radius.

10. If the line segment AB = 4.6 cm and CD = 3.8 cm , then the measure of the line segment whose length is equal to the difference of AB and CD is .....
   A) 1.8 cm B) 2.8 cm C) 0.8 cm D) 8.4 cm

Key: C

Explanation: Difference = AB – CD = 4.6 – 3.8 = 0.8 cm.

JEE ADVANCED LEVEL QUESTIONS

Multi correct answers type Questions

11. A line _____
   A) Has two end points B) Has no end points
   C) Extends in both the directions infinitely D) Has only one end point

Key: B, C

Explanation: A line has no endpoints and extends infinitely.

12. If AB = 6.5 cm & CD = 3.5 cm, then 2AB – 3CD = _____
   A) 4.5 cm B) 0.45 cm C) 2.5 cm D) $\frac{5}{2}$ cm

Key: C

Explanation: 2×6.5 – 3×3.5 = 13 – 10.5 = 2.5 cm.

Statement Type Questions

A)Both statement I & II are true.
B) Both statement I & II are false.
C)Statement I is true but statement II is false
D) Statement I is false but statement II is true

13. **Statement I :** Two diameters of a circle will necessarily intersect.

Statement II : The centre of a circle is always in its interior.

Key: A

Explanation: Both true; diameters intersect at centre, centre is always interior.

14. **Statement I :** Number of linesegment that can be drawn through "4" non collinear points is 6.

Statement II : Number of line that can be drawn through "n" non collinear points is $\frac{n(n-1)}{2}$

Key: A

Explanation: Both true: 4 points $\rightarrow$ 6 segments, n points $\rightarrow$ nC2 lines.

Comprehension Type Questions

If $\frac{4}{7}$AB = 19.6 cm & BC + 12.4 cm = 37.9 cm, CD – 4.6 cm = 30.1 cm & DE $\div$ 8 = 2.7 cm, then

15. AB + BC > _____

A) DE + BC B) AB + CD C) CD + BC D) none

Key: D

Explanation: AB+BC = 59.8; DE+BC=47.1; AB+CD=69; CD+BC=60.2 ? AB+BC > DE+BC but also < CD+BC? 59.8 < 60.2, so not > CD+BC. None matches all.

16. AB + BC+CD–x =DE, then x= _____

A) 72.9cm B) 63.9cm C) 64.9 cm D) 62.9 cm

Key: A

Explanation: 94.5 – 21.6 = 72.9.

Integer ANSWER type Questions

17. If diameter of a circle is 20cm then the radius of the circle in cm is _____.

Key: 10

Explanation: Diameter D=20 cm, radius $r = \frac{D}{2} = \frac{20}{2} = 10cm$.

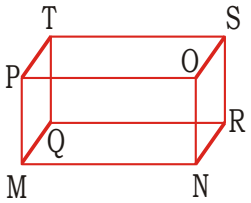
18. If AB = 6cm and CD = 5cm then the value of 3AB - CD in cm is _____.

Key: 13

Explanation: $3AB - CD = 3 \times 6 - 5 = 18 - 5 = 13\text{cm}.$

Matrix matching type Questions

19. From the adjacent figure "Cuboid"



Column-I	**Column-II**
a) Number of its vertices	p) 12
b) Number of faces	q) 14
c) Number of edges	r) 8
d) Number of sides	s) 6

Key: r, s, p, q

20.

Column-I		**Column-II**
a) 1 mm = ____ mts	[ ]	p) 10^4
b) 1 decimeter = _____ mts	[ ]	q) 10
c) 1 decameter = _____ mts	[ ]	r) 1/10
d) 1 km = _____ mts	[ ]	s) 1/1000
		t) 1000

Key: s, r, q, t

LEARNERS TASK

CONCEPTUAL UNDERSTANDING QUESTIONS (CUQ's)

1. A line contains .....number of points

A)Finite B)Infinite C)0 D)2

Key: B

Explanation: A line has infinitely many points.

2. In a solid , the number of vertices V, number of faces are F, and number of edges E,then the relation between them is .....

A)V+F=E+2 B)V+E=F+2 C)V+F=E-2 D)V+2=E+F

Key: A

Explanation: Euler's formula.

3. The number of end points of a line segment are .....

A) 3 B) 4 C) 2 D) 1

Key: C

Explanation: A line segment has exactly two endpoints.

4. 1 km = ...m

A) 1000 B) 10 C) 100 D) 10,000

Key: A

Explanation: 1 kilometer = 1000 meters.

5. If AB=6cm,CD=4cm then AB+2CD is.....

A)2cm B)10cm C)24 cm D)14 cm

Key: D

Explanation: AB + 2CD = 6 + 2×4 = 6 + 8 = 14 cm.

6. If AB = 6 cm, CD = 3cm the relation between AB and CD is .....
   A) $AB = CD$ B) $AB > CD$ C) $AB < CD$ D) 2AB = CD

Key: B
Explanation: 6 > 3, so AB > CD.

7. The number of linesegments determined by 5 points on PQ .....
   A) 10 B) 5 C) 15 D) 20

Key: A
Explanation: Number of segments = C(5,2) = 10.

8. A curve that never crosses itself is called
   A) Simple curve B) Closed curve C) Open curve D) Line segment

Key: A
Explanation: A simple curve does not intersect itself.

9. A region in the interior of a circle enclosed by a chord and an arc is called
   A) chord B) segment C) sector D) diameter

Key: B
Explanation: That region is called a segment.

10. The minimum number of points of intersection of different lines in a plane is
    A) 4 B) 3 C) 5 D) 1

Key: D
Explanation: Two lines intersect at one point minimum.

JEE MAINS LEVEL QUESTIONS

1. If A,B,C are collinear and also AB = BC then B is .....
   A)Point between A and C B)Mid Point of AC
   C) Bisector of AC D) All the above

Key: D
Explanation: B lies between A and C, is the midpoint, and bisects AC.

2. One hectameter is equal to 100 times x meters then x = ...
   A) 1 B) 10 C) 100 D) 1000

Key: A
Explanation: 1 hectameter = 100 meters $\Rightarrow$ x = 1.

3. Convert 35cm into metres
   A) 0.35m B) 3.5cm C) 35m D) 350m

Key: A
Explanation: 35 cm = 0.35 m (since 1 m = 100 cm).

4. 1 m = ... m.m
   A) 10 B) 100 C) 1000 D) 10,000

Key: C
Explanation: 1 m = 1000 mm.

5. Two line segments having same length are said to be .....
   A) Congruent segments B) Unequal segments
   C) Non congruent segments D) None

Key: A
Explanation: Equal length segments are congruent.

6. Find the length of $\frac{BC}{2}$, if BC = 20cm
   A) 20cm B) 10cm C) 5cm D) None

Key: B
Explanation: BC/2 = 20/2 = 10 cm.

7. If AB = x + 10 = 5 cm , BC = X + 5 cm then AB + BC = ...
   A) 5cm B) 25 cm C) 20 cm D) 10 cm

Key: A
Explanation: AB = 5 $\Rightarrow$ x + 10 = 5 $\Rightarrow$ x = –5. Then BC = 0. AB + BC = 5 + 0 = 5 cm.

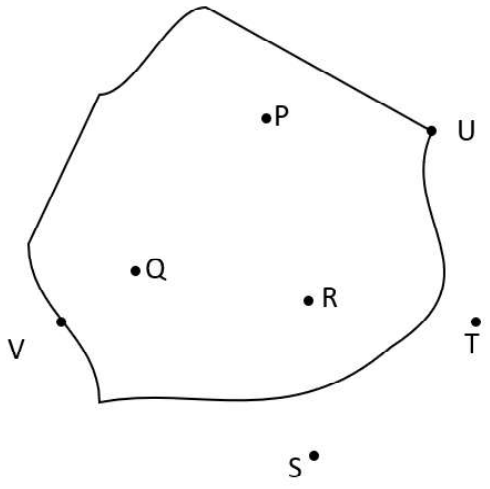
8. The meeting point of a pair of sides is called
   A) side B) diagonal C) intersection D) vertex

Key: D
Explanation: The meeting point of sides is a vertex.

9. A three-sided polygon is called
   A) quadrilateral B) polygon C) straight line D) triangle

Key: D
Explanation: Three-sided polygon = triangle.

10. Identify the poins which are in interior of the closed curve.



   A) P, Q, S B) U, V C) P,Q,R D) T,S

Key: D
Explanation: Three-sided polygon = triangle.

JEE ADVANCED LEVEL QUESTIONS

Multicorrect answer type Questions

11. AB = 5cm and CD = 3cm then 5AB - 3CD =

A) 16cm B) $4^2 cm$ C) $4 \times 4cm$ D) $4+4cm$

Key: A, B, C

Explanation: 5×5 – 3×3 = 25 – 9 = 16 cm = 4^2 cm = 4×4 cm.

Statement Type Questions

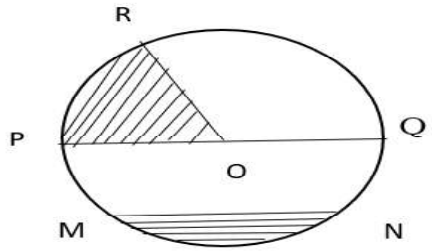
12. Statement I - Three lines can pass through three non-collinear points
Statement II - Infinite number of lines can be passed through one given point.

A)Both statement I & II are true.
B)Both statement I & II are false.
C)Statement I is true but statement II is false
D) Statement I is false but statement II is true

Key: D

Explanation: Statement I is false (only one line through two points), Statement II is true.

Comprehension Type Questions



13. What is the chord in the given figure?

A. $\overline{OR}$ B. $\overline{PQ}$ C. $\overline{MN}$ D. $\overline{OP}$

Key: C

Explanation: Chord is a line segment joining two points on the circle, likely MN.

Integer Answer Type Questions

14. The number of line segments that can be drawn through '4' non-collinear points is _____

Key: 6

Explanation: Number of segments = C(4,2) = 6.

Matrix matching type Questions

15.

Column I	**Column II**
a. Number of pairs of opposite sides of a quadrilateral	p. 3
b. Number of pairs of adjacent sides of a quadrilateral	q. 2
c. Number of pairs of adjacent angles of a quadrilateral	r. 4
d. Number of sides of a triangle	s. 5

Key: q, r, r, p