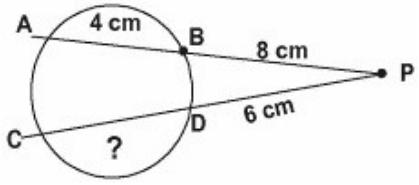
1. In the given diagram shown below, if PB = 8 cm, AB = 4 cm, PD = 6 cm, then CD =?



A. $\frac{16}{3}cm$
B. 10 cm
C. 6 cm
D. 7 cm

Right Answer:: B

2. If α, β be the roots of equation $4x^2 - 7x + 3 = 0$ then the value of $\frac{\alpha}{\beta} + \frac{\beta}{\alpha}$ will be

A. $\frac{25}{12}$
B. $\frac{23}{8}$
C. $\frac{24}{25}$
D. $\frac{24}{23}$

Right Answer:: A

3. In a soccer tournament the average of goals scored in Anupam's first 5 games was 6.4. The average of his next four games was 6.5. If there were 9 goals scored in the tenth game what was the overall average?

A. 7.6
B. 6.7
C. 9.2
D. 4.8

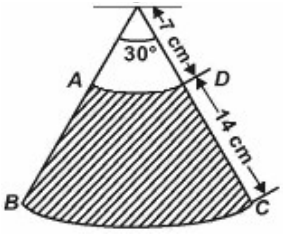
Right Answer:: B

4. Mania and Sania graduated from university together. Sania became a teacher and earned half what Mania earned for 5 years. Mania spent 1/3 of her money; Sania spent 1/4 every year for those 5 years. Sania has Rs. 80,000 after 5 years. How much does Mania have?

A. Rs. 15333.3
B. Rs. 142222.22
C. Rs. 15000
D. Rs. 152222.52

Right Answer:: B

5. The given diagram represents the area swept by the wiper of a car. With the dimensions given in the figure, calculate the shaded area swept by the wiper.



A. 102.67 cm^2
B. 205.34 cm^2
C. 51.33 cm^2
D. 208.16 cm^2

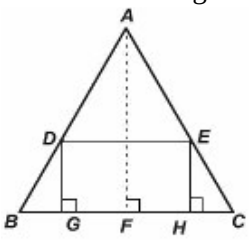
Right Answer:: A

6. Ashish is heavier than Govind. Mohit is lighter than Jack. Pawan is heavier than Jack but lighter than Govind. Who among them is the heaviest?

A. Govind
B. Jack
C. Pawan
D. Ashish

Right Answer:: D

7. In the given figure, ABC is a triangle and GHED is a rectangle. BC = 12 cm, HE = 6 cm, FC = BF and altitude AF is 24 cm. The area of the rectangle is _____.



A. 56 cm^2
B. 54 cm^2
C. 60 cm^2
D. 72 cm^2

Right Answer:: B

8. Find the missing frequencies in the given frequency distribution if it is given that the mean is 1.46.

Variables	0	1	2	3	4	5	Total
Frequency	46	?	?	25	10	5	200

A. 76, 36
B. 37, 38
C. 76, 38
D. 70, 38

Right Answer:: C

9. H.C.F. of (10224, 1608) is _____.

A. 12
B. 24
C. 48
D. 96

Right Answer:: B

10. A real number wil l have $\frac{2^2 \times 3^2 \times 7^2}{2^5 \times 5^3 \times 3^2 \times 7}$ will have _____.

A. Terminating decimal
B. Non-terminating decimal
C. Non-terminating and non-repeating decimal
D. Terminating repeating decimal

Right Answer:: A

11. The two irrational numbers between $\sqrt{2}$ and $\sqrt{3}$ are___.

A. $2^{\frac{1}{2}}, 6^{\frac{1}{4}}$
B. $3^{\frac{1}{4}}, 3^{\frac{1}{6}}$
C. $6^{\frac{1}{8}}, 3^{\frac{1}{4}}$
D. $\sqrt{5}, \sqrt{\frac{3}{2}}$

Right Answer:: C

12. $x_1, x_2, x_3, \ldots\ldots, x_{10}$ are integers, none of which are divisible by 3. The remainder when $x_1^2 + x_2^2 + x_3^2 + \ldots\ldots + x_{10}^2$ isdivided by 3 is _____.

A. 0
B. 0 or 2
C. 1 or 2
D. 1

Right Answer:: D

13. If a and b are the roots of the quadratic equation $x^2 + px + 12 = 0$ with the condition a - b = 1, then the value of 'p' is _____.

A. 1
B. 7
C. -7
D. 7or-7

Right Answer:: D

If α and β are the roots of the equation $x^2 - px + q = 0$, then the quadratic

14. equation w hose roots $\frac{\alpha}{\beta}$ and $\frac{\beta}{\alpha}$ is _____.

A. $qx^2 - px + 1 = 0$
B. $qx^2 + (p^2 - 2q)x + q = 0$
C. $qx^2 + (2q - p^2)x + q = 0$
D. $px^2 + (2p^2 - q^2)x + q = 0$
Right Answer:: C

15. When $3x^2 - x^3 - 3x + 5$ is divided by $x - 1 - x^2$, the quotient and remainder are_____.

A. x + 2, 3
B. x - 2, -3
C. x -2, 3
D. x + 2,-3
Right Answer:: C

16. A polynomial of the form $ax^5 + bx^3 + cx^2 + dx + e$ has atmost _____.

A. 3 zeroes
B. 5 zeroes
C. 7 zeroes
D. 11 zeroes
Right Answer:: B

17. If the system of equations
$2x + 3y = 7$
$2ax + (a + b)y = 28$
has infinitely many solutions, then _____.

A. a = 2b
B. b = 2a
C. a + 2b = 0
D. 2a + b = 0
Right Answer:: B

18. The value of k for which the system of equations x + 2y - 3 = 0 and 5x + ky + 7 = 0 has no solution, is _____.

A. 10
B. 6
C. 3
D. 1
Right Answer:: A

19. A boat goes 30 km upstream and 44 km downstream in 10 hours. In 13 hours, it can go 40 km upstream and 55 km downstream. If x represents the speed of the boat in still water in km/hr and y represents the speed of the stream in km/hr, then _____.

A. x + y =11, x - y = 5

B. $x + y = 5, x - y = 11$
C. $x + y = 6, x - y = 10$
D. $x + y = 10, x - y = 6$

Right Answer:: A

20. The value of k, for which the system of equations $kx - 3y + 6 = 0, 4x - 6y + 15 = 0$ represent parallel lines is _____.

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

Right Answer:: B

21. Two numbers whose sum is 6 and the absolute value of whose difference is 8 are the roots of the equation _____.

A. $x^2 - 6x + 7 = 0$
B. $x^2 - 6x - 7 = 0$
C. $x^2 + 6x - 8 = 0$
D. $x^2 - 6x + 8 = 0$

Right Answer:: B

22. The roots of the equation $2\sqrt{x} + 2x^{-\frac{1}{2}} = 5$ can be found by solving _____.

A. $4x^2 - 25x + 4 = 0$
B. $4x^2 - 25x - 4 = 0$
C. $4x^2 - 17x + 4 = 0$
D. $3x^2 - 15x - 4 = 0$

Right Answer:: C

23. The root/roots of $\sqrt{2x - 3} + \sqrt{3x - 5} - \sqrt{5x - 6} = 0$ is/are _____.

A. 2
B. $\frac{7}{6}$
C. 2 or $\frac{7}{6}$
D. $\pm\frac{1}{3}$

Right Answer:: A

24. The solution of $\sqrt{5x - 1} + \sqrt{x - 1} = 2$ is _____.

A. $x = 2, x = 1$
B. $x = 2$
C. $x = 1$
D. $x = 3$

Right Answer:: C

25. If the sum of first n even natural numbers is equal to K times the sum of first n odd natural numbers, then K is equal to _____.

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

Right Answer:: D

26. If a, b, c are in A.P., then, $a^3 + 4b^3 + c^3$ is equal to _____.

A. $3b(a^2 + c^2)$
B. $3b(a^2 - c^2)$
C. $3b(c^2 - a^2)$
D. $3b^2(a^2 + c^2)$

Right Answer:: A

27. If 7^{th} and 13^{th} terms of an A.P. are 34 and 64 respectively, then its 18^{th} term is _____.

A. 87
B. 88
C. 89
D. 90

Right Answer:: C

28. If four numbers are in A.P. such that their sum is 50 and the greatest number is 4 times the least, then the numbers are _____.

A. 5, 10, 15, 20
B. 4, 10, 16, 22
C. 3, 7, 11, 15
D. None of these

Right Answer:: A

29. The vertices of Δ ABC are A(2,1), 8(6, -2), C(8, 9). If AD is angle bisector, where D meets on BC, then coordinates of D are _____.

A. $\left(\frac{20}{3}, \frac{5}{3}\right)$
B. (5, 2)
C. (4, 3)
D. $\left(\frac{14}{3}, \frac{7}{3}\right)$

Right Answer:: A

30. The coordinate of the third vertex of an equilateral triangle whose two vertices are at (3, 4), (-2, 3) are _____.

A. (1, 7)
B. (5, 1)
C. $\left(\frac{1+\sqrt{3}}{2}, \frac{7-5\sqrt{3}}{2}\right) \text{or} \left(\frac{1-\sqrt{3}}{2}, \frac{7+5\sqrt{3}}{2}\right)$
D. (- 5, 5)

Right Answer:: C

31. If $D(3,-1), E(2,6)$ and $F(-5,7)$ are the midpoints of the sides of ΔABC, the area of the triangle is _____.

A. 96 sq. units
B. 24 sq. units
C. 48 sq. units
D. 50 sq. units

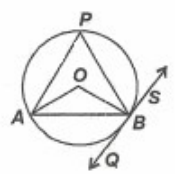
Right Answer:: A

32. In a ΔABC, coordinates of A are (1, 2) and the equations of the medians through B and C are x + y = 5 and x = 4 respectively, so the coordinates of B and C are _____.

A. (4, 3), (7, -2)
B. (7, -2), (4, 3)
C. (8, -3), (4, 5)
D. (5, 0), (4, 2)

Right Answer:: B

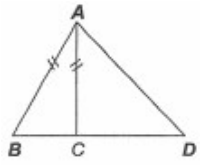
33. In the given figure, QBS is a tangent t o circle with centre O. AB is a chord subtending an angle 110° at centre. Then ∠ABQ is



A. 55°
B. 220°
C. 60°
D. 70°

Right Answer:: A

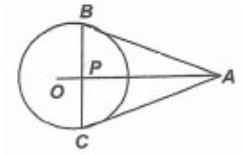
34. In the figure, ΔABC is isosceles. Then $AD^2 - AC^2$ = _____.



A. AD ′ CD
B. BC ′ CD
C. BD ′ CD
D. AB ′ AD

Right Answer:: C

35. In the figure, O is the centre of the circle, AB and AC are two tangents. Then OA is_____.



A. Trisects BC
B. Bisects BC but not perpendicular
C. Is perpendicular but does not bisect BC
D. Is perpendicular bisector of BC

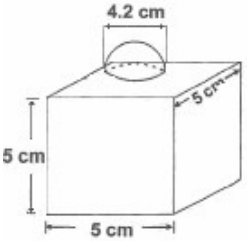
Right Answer:: D

36. A cylindrical vessel of diameter 4cm is partly filled with water. 300 lead balls are dropped in it. The rise in water level is 0.8 cm. The diameter of each ball is _____.

A. 0.8 cm
B. 0.4 cm
C. 0.2 cm
D. 0.5 cm

Right Answer:: B

37. The decorative block shown in figure is made of two solids, a cube and a hemisphere. The base of the block is a cube with edge 5 cm, and the hemisphere fixed on the top has a diameter of 4.2 cm. The total surface area of the block is _____.



A. 150 cm^2
B. 160.86 cm^2
C. 162.86cm^2
D. 163.86cm^2

Right Answer:: D

38. The areas of two concentric circles are 962.5 cm^2 and 1386 cm^2 respectively. The width of the ring is _____.

A. 3.4 cm
B. 3.5 cm
C. 3.2 cm
D. 3.1 cm

Right Answer:: B

39. The average temperatures of Tuesday, Wednesday and Thursday was 42°C. The average temperature of Wednesday, Thursday and Friday was 47°C. If the temperature on Tuesday was 43°C, then the temperature on Friday was _____.

A. 58°C
B. 50°C
C. 53°C
D. 49°C

Right Answer:: A

40. Two dice are thrown simultaneously. The probability of getting a doublet or a total of 4 is _____.

A. $\frac{2}{9}$
B. $\frac{3}{7}$
C. $\frac{4}{9}$
D. $\frac{5}{9}$

Right Answer:: A

41. 'More than' ogive is _____.

A. An ascending curve
B. A descending curve
C. First ascending curve and then descending curve
D. First descending curve and then ascending curve

Right Answer:: B

42. If $\tan\theta + \sin\theta = m$ and $\tan\theta - \sin\theta = n$, then $m^2 - n^2$ equals _____.

A. $4\sqrt{\frac{m}{n}}$
B. $4\sqrt{\frac{n}{m}}$
C. $4\sqrt{mn}$
D. 4mn

Right Answer:: C

43. If $x = r\sin\theta\cos\phi$, $y = r\sin\theta\sin\phi$ and $z = r\cos\theta$, then _____.

A. $x^2+y^2+z^2 = r^2$
B. $x^2+y^2-z^2 = r^2$
C. $x^2-y^2+z^2 = r^2$
D. $z^2+y^2-x^2 = r^2$

Right Answer:: A

44. If $\frac{x}{a}\cos\theta + \frac{y}{b}\sin\theta = 1, \frac{x}{a}\sin\theta - \frac{y}{b}\cos\theta = 1$, then _____.

A. $x^2 + y^2 = a^2 + b^2$

B. $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 2$

C. $a^2x^2 + b^2y^2 = 1$

D. $x^2 - y^2 = a^2 - b^2$

Right Answer:: B

45. Which of the four is least like the other three?

A. Inch

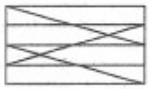
B. Mile

C. Acre

D. Yard

Right Answer:: C

46. How many right angled triangles are there in the given figure.



A. 12

B. 15

C. 9

D. 11

Right Answer:: A

47. A fish has a head 9 inches long. The tail is equal to the size of the head plus one-half the size of the body. The body is the size of the head plus the tail. How long is the fish?

A. 27”

B. 54”

C. 63”

D. 72”

Right Answer:: D

48. 2 men and 7 boys can do a piece of work in 14 days, 3 men and 8 boys can do the same in 11 days. 8 men and 6 boys can do 3 times the amount of this work in _____.

A. 21 days

B. 18 days

C. 24 days

D. 36 days

Right Answer:: A

49. A is thrice as good a workman as B and takes 10 days less to do a piece of work than B takes. B can do the work in _____.

A. 12 days
B. 15 days
C. 20 days
D. 30 days

Right Answer:: B

50. Six bells commence tolling together and toll at intervals of 2, 4, 6, 8, 10 and 12 seconds respectively. In 30 minutes, how many times do they toll together?

A. 4
B. 10
C. 15
D. 16

Right Answer:: D