doubtnut
India's Number 1 Education App

MATHS

BOOKS - ARIHANT PUBLICATION BIHAR

MODEL SOLVED PAPER 2016

Questions

1. A can do a certain work in the same time in which B and C together can do it. If A and B

together could do it in 10 days and C alone in 50 days, then B alone could do the work in

A. 15

B. 20

C. 25

D. 30

Answer: C

Watch Video Solution

2. From the top of a cliff 90 m high, the angles of depression of the top and bottom of a tower are observed to be 30° and 60° respectively. The height of the tower is :

A. 60 m

B. 75 m

C. 30 m

D. 45 m

Answer: A

Watch Video Solution

3. HCF of expression $x^4 + 3x^2 - 4$ and $x^4 - 4x^2 + 3$ will be

A. $(x - 1)$

B. $(x + 1)$

C. $(x^2 - 1)$

D. $(x^2 - 3)$

Answer: C

Watch Video Solution

4. The two roots of equation $x^2 - px + 8p - 15 = 0$ are equal, then the value of p will be

A. 3 or 5

B. 2 or 5

C. 3 or 4

D. 2 or 30

Answer: D

Watch Video Solution

5. The edge of a cube is increased by 100% , the surface area of the cube is increased by :

A. 100%

B. 200%

C. 300%

D. 400%

Answer: D

Watch Video Solution

6. Rs. 12000 invested at 20% per annum compounded semiannually amount to Rs. 13200. The period of investment is

A. 1 yr

B. $\frac{1}{2}$ yr

C. 2 yr

D. $2\frac{1}{2}$ yr

Answer: B

Watch Video Solution

7. Four bells ring at intervals of 4, 6, 8 and 14 seconds. They start ringing simultaneously at 12.00 O' clock. At what time will they again ring simultaneously?

A. 2 min 48 s past 12

B. 3 min past 12

C. 3 min 20 s past 12

D. None of these

Answer: A

Watch Video Solution

8. If $x = \frac{\sqrt{2}-1}{\sqrt{2}+1}$, then $\left(x + \frac{1}{x}\right)$ is

A. 6

B. 5

C. 3

D. $2\sqrt{2}$

Answer: A

Watch Video Solution

9. If $\tan\alpha + \cot\alpha = 2$, then $\tan^2\alpha + \cot^2\alpha$ is

A. 2

B. 16

C. 64

D. 128

Answer: A

Watch Video Solution

10. If the ratio of angles In a triangle is $2:5:3$, then the value of least angle is

A. $\frac{\pi}{20}$

B. $\frac{\pi}{10}$

C. $\frac{2\pi}{5}$

D. $\frac{\pi}{5}$

Answer: D

Watch Video Solution

11. If

$x = a\cos\theta - b\sin\theta$ and $y = b\cos\theta + a\sin\theta$,

then the value of $x^2 + y^2$ is

A. a^2

B. b^2

C. $\frac{a^2}{b^2}$

D. $a^2 + b^2$

Answer: D

Watch Video Solution

12. The distance between the points (0,0) and the intersecting point of the graphs of x= 3 and y = 4 is

A. 3 units

B. 2 units

C. 5 units

D. 4 units

Answer: C

Watch Video Solution

13. The value of $\log_4 128$ is

A. $\frac{7}{3}$

B. 16

C. $\frac{3}{7}$

D. 7

Answer: A

Watch Video Solution

14. Median of $10, 11, 13, 11, 12, 10, 13, 11, 12, 15, 12$ is.

A. 10

B. 11

C. 12

D. 15

Answer: C

Watch Video Solution

15. The value of $(\sin A + \cos A)^2 + (\cos A - \sin A)^2$ is

A. 0

B. 1

C. 2

D. 3

Answer: C

Watch Video Solution

16. The maximum value of $\cos\theta + \sin\theta$, if

A. 30°

B. 45°

C. 60°

D. 90°

Answer: B

Watch Video Solution

17. If $\cos ecx + \cot x = a$, then $\cos x$ is

A. $\frac{a-1}{a^2+1}$

B. $\frac{a^2-1}{a^2+1}$

C. $\frac{2a}{a^2+1}$

D. $\frac{2a}{a^2-1}$

Answer: B

Watch Video Solution

18. The value of $\tan 15^\circ \tan 25^\circ \tan 45^\circ \tan 65^\circ \tan 75^\circ$ is

A. 1

B. 2

C. 3

D. 4

Answer: A

Watch Video Solution

19. If $A + B + C = 270^\circ$, then the value of $\cos 2A + \cos 2B + \cos 2C + 4 \sin A \sin B \sin C$ is

A. 0

B. 1

C. 2

D. 3

Answer: B

Watch Video Solution

20. If A and B are non empty sets, then $(A - B) \cup (B - A)$ equals

A. $(A \cup B) - B$

B. $A - (A \cap B)$

C. $(A \cup B) - (A \cap B)$

D. $(A \cap B) - (A \cup B)$

Answer: C

Watch Video Solution

21. 3. The value of $\frac{1}{1+p^{(x-y)}} + \frac{1}{1+p^{(y-x)}}$

A. 1

B. $\frac{1}{p}$

C. p

D. None of these

Answer: A

 Watch Video Solution

22. If the rate of interest of Rs. 5000 is 10% per annum for the first 2 yr and $15\ \%$ for the next 2 yr is given, then the compound interest is

A. Rs. 1680

B. Rs. 3001

C. Rs. 4100

D. Rs. 3750

Answer: B

Watch Video Solution

23. A purse contains 5 silver and 2 gold coins. A second purse contains 4 silver and 3 gold coins.

A coin is taken out of any purse. The probability that it is a silver coin is

A. $\frac{9}{6}$

B. $\frac{20}{40}$

C. $\frac{9}{14}$

D. None of these

Answer: C

Watch Video Solution

24. The distance of the point $(-2, 3)$ from the line $x - y = 5$ is

A. $5\sqrt{2}$

B. $2\sqrt{5}$

C. $3\sqrt{5}$

D. $5\sqrt{3}$

Answer: A

Watch Video Solution

25. Find the angles between the pairs of straight line $x - y\sqrt{3} = 5$ and $\sqrt{3}x + y = 7$

A. 90°

B. 60°

C. 75°

D. 30°

Answer: A

Watch Video Solution

26. The first, second and last terms of an AP are $4, 7$ and 31 respectively, then

A. the third term is 15

B. the number of terms is 10

C. the sum of the terms is 155

D. None of these

Answer: B

Watch Video Solution

27. If the variance of a data is 256, then the standard deviation is

A. 15

B. 16

C. 13

D. 14

Answer: B

 Watch Video Solution

28. The coordinates of the point O which divides the join of $A(5, -2)$ and $B(9, 6)$ in the ratio $3:1$ are

A. $(6, 0)$

B. $(9, 5)$

C. $(8, 4)$

D. $(4, 8)$

Answer: C

Watch Video Solution

29. The sum of the present ages of Varun and Kapil is 42 yr. The ratio of their ages after 5 yr will be $15:11$. What is the present age of Kapil ?

A. 17 yr

B. 24 yr

C. 25 yr

D. 22 yr

Answer: C

Watch Video Solution

30. If $x = \frac{b}{a-b}$ and $y = \frac{a}{a+b}$, then the value of $\frac{1}{x} + \frac{1}{y}$ is:

A. $\frac{a^2+b^2}{ab}$

B. $\frac{b^2-a^2}{ab}$

C. $\frac{a^2-b^2}{ab}$

D. None of these

Answer: A

Watch Video Solution

31. What is the area of a sector of a circle of radius 5 cm formed by an arc of length 3.5 cm?

A. $8.5 \ \ \text{cm}^2$

B. $8.75 \ \ \text{cm}^2$

C. $7.75 \ \ \text{cm}^2$

D. $125 \ \ \text{cm}^2$

Answer: B

Watch Video Solution

32. Find the length of the longest rod that can be placed in a room 16 m long, 12 m broad and $10\frac{2}{3}m$ high.

A. 23 m

B. 68 m

C. $22\frac{2}{3}$ m

D. $22\frac{1}{3}$ m

Answer: C

Watch Video Solution

33. A solid of 10 cm height and base radius 20 cm is melted to form balls of 2 cm radius. How many such balls can be made?

A. 25

B. 75

C. 50

D. 375

Answer: D

Watch Video Solution

34. The number of non-empty subsets of the set $\{1, 2, 3, 4\}$ is

A. 16

B. 12

C. 15

D. 8

Answer: C

Watch Video Solution

35. If a,b, and c are in G.P then a+b,2b and b+ c are in

A. AP

B. GP

C. HP

D. None of these

Answer: C

Watch Video Solution

36. If $8\sin x = 4 + \cos x$, then the values of sin x are

A. $\frac{3}{5}, \frac{-5}{13}$

B. $\frac{-3}{5}, \frac{-5}{13}$

C. $\frac{3}{5}, \frac{5}{13}$

D. $\frac{5}{3}, \frac{5}{13}$

Answer: C

Watch Video Solution

37. $\log_a b = \log_b c = \log_c a,$ then a, b and c are such that

A. $a = b = c$

B. $a = b \neq c$

C. $a = c \neq b$

D. $b = c \neq a$

Answer: A

Watch Video Solution

38. $\sin\frac{\pi}{4}\cos\frac{\pi}{12}-\cos\frac{\pi}{4}\sin\frac{\pi}{12}$ is equal to

A. $\frac{1}{\sqrt{3}}$

B. $\sqrt{3}$

C. $\frac{\sqrt{3}}{2}$

D. $\frac{1}{2}$

Answer: D

Watch Video Solution

39. If

$\tan\theta + \sin\theta = 1, \quad \text{then} \cos^2\theta = n \quad \text{then} m^2 - n^2$

is equal

A. $4\sqrt{AB}$

B. $\sqrt{AB}$

C. $2\sqrt{AB}$

D. $2AB$

Answer: A

Watch Video Solution

40. In a polygon the number of diagonals is 54. the number of sides of the polygon, is

A. 10

B. 12

C. 9

D. None of these

Answer: B

Watch Video Solution

41. The area of a square is given by $A = x^2 + 4x + 4$, then the diagonal of the square is

A. $(x + 2)$

B. $\sqrt{(x - 4)}$

C. $\sqrt{2}(x + 2)$

D. $\frac{\sqrt{3}}{2}(x + 2)$

Answer: C

Watch Video Solution

42. The value of $\cot 15^\circ \cot 16^\circ \cot 17^\circ \ldots\ldots \cot 73^\circ \cot 74^\circ \cot 75^\circ$ is :

A. 0

B. 1

C. -1

D. $\frac{1}{2}$

Answer: B

Watch Video Solution

43. $x^4 + 4y^4$ is divisible by which one of the following ?

A. $\left(x^2 + 2xy + 2y^2\right)$

B. $\left(x^2 + 2y^2\right)$

C. $\left(x^2 - 2y^2\right)$

D. None of these

Answer: A

Watch Video Solution

44. If $\frac{\tan 26^\circ + \tan 19^\circ}{x(1 - \tan 26^\circ \tan 19^\circ)} = \cos 60^\circ$, then the value of x is

A. 1

B. $\sqrt{2}$

C. 2

D. $\sqrt{3}$

Answer: C

Watch Video Solution

45. The equation $(1+n^2)x^2+2ncx+(c^2-a^2)=0$ will have equal roots if

A. $a^2=c^2(1-m^2)$

B. $c^2=a^2(1-m^2)$

C. $a^2=c^2(1+m^2)$

D. $c^2=a^2(1+m^2)$

Answer: D

Watch Video Solution

46. If the interior angle is 144° more than exterior angle of regular polygon, then what will be the number of sides of polygon?

A. 10

B. 8

C. 20

D. 15

Answer: C

Watch Video Solution

47. The diameter of a roller is 2.4 m and its length is 1.68 m. If its rotates 1000 time to level a ground. Find the area of the ground.

A. $126720 \ \mathrm{m}^2$

B. $12672 \ \mathrm{m}^2$

C. $1267.2 \ \mathrm{m}^2$

D. $12.672 \ \mathrm{m}^2$

Answer: B

Watch Video Solution

48. Two numbers x and y are the ratio of $3:4$. If 10 is added to each number, the ratio becomes $5:6$. Then, the numbers x and y are

A. 12 and 16

B. 15 and 20

C. 3 and 4

D. 30 and 40

Answer: B

Watch Video Solution