



MATHS

BOOKS - ARIHANT PUBLICATION

JHARKHAND

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Section I Mathematics

1. In a flower bed, there are 23 rose plants in the first row, 21 in the second, 19 in the third

and so on. There are 5 rose plants in the last row. Then, the number of rows in the flower bed is.

A. 15

B. 18

C. 10

D. 9

Answer: C



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2. The sum of the reciprocals of Rehman's ages, (in years) 3 years ago and 5 years from now is $\frac{1}{3}$. Find his present age.

A. 5

B. 7

C. 8

D. 9

Answer: B



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3. A motor boat whose speed is 18 km/h in still water takes 1 hour more to go 24 km upstream than to return downstream to the same spot. Find the speed of the stream.

A. 6 km/h

B. 7 km/h

C. 10 km/h

D. 24 km/h

Answer: A



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4. For what value of k , are the roots of the quadratic equation $kx(x-2) + 6 = 0$ equal ?

A. 5

B. 6

C. 10

D. 1

Answer: B



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5. The pair of equations $y = 0$ and $y = -7$ has

A. no solution

B. one solution

C. Infinitely many solutions

D. two solutions

Answer: A



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6. If $x + 3$ is a factor of $x^3 + ax^2 - bx + 6$ and $a + b = 7$. Then, the values of a and b are respectively

A. 1, 6

B. 0, 7

C. 0, -7

D. 2, 5

Answer: B



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7. If $x - y = 0$ and $2x - y = 2$, then values of x and y are

A. 3,3

B. 2,2

C. $-2, -2$

D. $-3, -3$

Answer: B



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8. The value of k for which the system of equations $2x - 3y = 1$ and $kx + 5y = 7$ have a unique solution, is

A. $k \neq 1$

B. $k \neq 10$

C. $k \neq \frac{-10}{3}$

D. any real value of k

Answer: C



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9. A quadratic polynomial whose zeroes are 3 and -5, is

A. $x^2 + 2x - 15$

B. $x^2 - 2x + 15$

C. $x^2 - 8x + 15$

D. $x^2 + 8x - 15$

Answer: A



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10. Which of the following is incorrect?

A. $\tan \theta = 3$

B. $\sin \theta = 3$

C. $\sec \theta = 3$

D. $\cot \theta = 3$

Answer: B



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11. If $\cos(A - B) = \frac{1}{2}$ and $\sin(A + B) = \frac{1}{2}$

then find the smallest value of A and B

A. $15^\circ, 15^\circ$

B. $30^\circ, 0^\circ$

C. $45^\circ, 15^\circ$

D. $15^\circ, 45^\circ$

Answer: C



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12.

If

$\cos \theta + \sin \theta = \sqrt{2} \cos \theta$ then $\cos \theta - \sin \theta$ is
equal to

A. $\sqrt{2} \cos \theta$

B. $\sqrt{2} \sin \theta$

C. 0

D. 1

Answer: B



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13. If $\tan \theta = \frac{5}{4}$, then the value of $\left(\frac{3 \sin \theta + 4 \cos \theta}{3 \sin \theta - 4 \cos \theta} \right)^2$ is

A. 31^2

B. 30^2

C. 17^2

D. 7^2

Answer: A



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14. The arithmetic mean of a set of 40 values is 65. If the 40 values is increased by 5, then the mean of the new set of values is

A. 65

B. 70

C. 60

D. cannot be deterimed

Answer: B



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15. The sum of the deviations of the variate values 3, 4, 6, 7, 8, 14 from their mean is

A. 1

B. 2

C. 0

D. 10

Answer: C



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16. The value of $(\tan 1^\circ \tan 2^\circ \tan 3^\circ \dots \tan 89^\circ)$ is

A. 0

B. 1

C. 89

D. $1 \times 2 \times \dots \times 89$

Answer: B



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17. A quadratic polynomial whose one zero is -5 and the product of the zeroes is 0 , is .

A. $x^2 + 5x$

B. $x^2 - 5x$

C. $x^2 + 5x + 5$

D. $x^2 - 5x + 1$

Answer: A



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18. The value of m , so that $4x^2 - 6x - m$ is divisible by $x = -3$, is exact divisor of

A. 9

B. 45

C. 20

D. 54

Answer: D



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19. Find the area of a quadrant of a circle whose circumference is 22cm.

A. $\frac{77}{8}$

B. 70

C. 100

D. 11

Answer: A



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20. The angle of elevation of the top of a tower from a point on the ground which is 30 m away from the foot of the tower , is 30° . Then , the height (in m) of the tower is .

A. $\frac{10}{\sqrt{3}}$

B. $30\sqrt{3}$

C. $10\sqrt{3}$

D. 10

Answer: C



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21. The value of k , if the point $A(2, 3)B(4, k), C(6, -3)$ are collinear is .

A. 7

B. -7

C. 1

D. 0

Answer: D



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22. If the points $A(6,1), B(8,2), C(9,4), D(p,3)$ are the vertices of a parallelogram, taken in order, then the value of p is ..

A. 7

B. -7

C. 6

D. 10

Answer: A



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23. The ratio in which the line joining the point $(5,6)$ and $(-1,-4)$ is divided by Y - axis is .

A. 5 : 1

B. 3 : 2

C. 5 : 2

D. 1 : 5

Answer: A



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24. ABC and BDF are two equilateral triangle such that D is the mid - point of BC. Ratio of the areas of triangles ABC and BDF is .

A. 2: 1

B. 1: 2

C. 4: 1

D. 1: 4

Answer: C



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25. If the first and the last term of an AP are 17 and 350 respectively and the common difference is 9, then the number of terms is .

A. 38

B. 35

C. 30

D. 40

Answer: A



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26. Mr. A and Ms. B are friends . The probability that they both will have different birthday is (ignoring a leap year) .

A. $\frac{1}{365}$

B. $\frac{2}{365}$

C. $\frac{364}{365}$

D. 1

Answer: C



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27. Empirical relationship between the three measures of central tendency is

A. $2 \text{ Mean} + \text{Mode} = 3 \text{ Median}$

B. $\text{Median} + \text{Mode} = 2 \text{ Mean}$

C. $\text{Mean} + 2 \text{ Mode} = 3 \text{ Median}$

D. $\text{Mode} + \text{Mean} = 2 \text{ Median}$

Answer: A



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28. A cone of height 24 cm and radius of base 6 cm is made up of modelling clay . A child reshapes it in the form of a sphere . Then , the radius of the sphere is .

A. 6 cm

B. 8 cm

C. 9 cm

D. 3 cm

Answer: A



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29. If two cubes of volume 64cm^3 are joined end to end, then the surface area of the resulting cuboid is

A. 128cm^2

B. 160cm^2

C. 162cm^2

D. 64cm^2

Answer: B



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30. $(\sec A + \tan A)(1 - \sin A)$ equals to

A. $\sec A$

B. $\sin A$

C. $\operatorname{cosec} A$

D. $\cos A$

Answer: C



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31. The value of $\sin^2 63^\circ + \sin^2 27^\circ$ is

A. 0

B. 1

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

D. $\frac{3}{2}$

Answer: B



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32. If $\sin 2A = 2 \sin A$, then A is equal to

A. 0°

B. 30°

C. 45

D. 60°

Answer: A



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33. If $\cot \theta = \frac{7}{8}$ then find the value

$$\frac{(1 - \sin \theta)(1 + \sin \theta)}{(1 - \cos \theta)(1 + \cos \theta)}$$

A. $\frac{64}{49}$

B. $\frac{50}{40}$

C. $\frac{49}{64}$

D. 1

Answer: C



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34. Sum of first 15 multiples of 8 is

A. 240

B. 960

C. 800

D. 690

Answer: B



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35. A sum of ₹ 700 is to be used to give give cash prizes to students of a school for their academic excellence. If each prize is ₹20 less

than its preceding prize then first prize amount is

A. ₹140

B. ₹150

C. ₹160

D. ₹120

Answer: C



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36. The number of 3-digit numbers divisible by

7 is

A. 126

B. 128

C. 130

D. 127

Answer: B



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37. Find the 20th term from the last term of the

AP : 3, 8, 13, ..., 253.

A. 140

B. 158

C. 98

D. 90

Answer: B



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38. Find two consecutive odd positive integers, sum of whose squares is 290

A. 11,13

B. 9,11

C. 13,15

D. 19,17

Answer: A



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39. The value of k , so that the following system of equations $3x - y + 5 = 0$ and $6x - 2y + k = 0$ has no solution, is

A. $k \neq 1$

B. $k = 1$

C. $k = 10$

D. $k \neq 10$

Answer: D



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40. The value of λ for which the lines $3x + 4y = 5$, $5x + 4y = 4$ and $\lambda x + 4y = 6$ meet at a point is 2 b. 3 c. 1 d. 4

A. 1

B. 2

C. 3

D. 4

Answer: B



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41. Which of the following cannot be the difference between a two-digit number and the number obtained by interchanging the digits?

A. 72

B. 36

C. 54

D. 48

Answer: D



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42. If $\triangle ABC$ is right angled at C, then the value of $\cos(A+B)$ is

A. 1

B. 0

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

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

Answer: B



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43. If $\sec \theta + \tan \theta = p$, then $\tan \theta$ is equal to

A. $\frac{2}{x}$

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

C. $\frac{x^2 - 1}{2x}$

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

Answer: C



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44. If $\sin \theta = \sqrt{3} \cos \theta$, $0 < \theta < 90^\circ$, then θ is equal to .

A. 30°

B. 45°

C. 60°

D. 90°

Answer: C



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45.

If

$\tan \theta + \cot \theta = 2$, then $\tan^2 \theta + \cot^2 \theta$ is equal to

A. 2

B. 3

C. 4

D. 8

Answer: A



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46. 2 men and 7 boys can do a piece of work in 4 days . 4 men and 4 boys can do the same work in 3 days . Then the number of days a boys a boy take to complete the same job is .

A. 50 days

B. 60 days

C. 30 days

D. 55 days

Answer: B



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47. In an examination , one mark is awarded for every correct answer , while $\frac{1}{4}$ mark is deducted for every wrong answer . If a student gets 90 marks by answering 120 questions , then how many questions did she answer correctly ?

A. 96

B. 100

C. 90

D. 95

Answer: A



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48. If $x = a \sin \theta$ and $y = b \tan \theta$, then prove

that
$$\frac{a^2}{x^2} - \frac{b^2}{y^2} = 1$$

A. 0

B. 1

C. -1

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

Answer: B



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49. Side of 2 similar triangles are in the ration
3 : 7 . Arease of these trinagles are in the
ration .

A. 9 : 35

B. 9 : 49

C. 49: 9

D. 9: 42

Answer: B



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