



MATHS

BOOKS - BEYOND PUBLICATION

QUESTION PAPER

Exercise

1. Is 'zero' a term of the Arithmetic Progression 31, 28, 25,? Justify your answer.



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2. Explain the terms in the formula.

$$S_n = \frac{n}{2} [2a + (n - 1)d].$$



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3. Show that 2 and $-\frac{1}{3}$ are zeroes of the polynomial $3x^2 - 5x - 2$.



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4. $A = \{x : x \in \mathbb{N}, \text{ and } x \text{ is a factor of } 30\}$, $B = \{x : x \in \mathbb{N} \text{ and } x \text{ is a prime factor of } 30\}$. Draw Venn diagram for $A \cup B$.



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5. If the measure of angles of a triangle are x° , y° and 40° and difference between the two measures of angles x° and y° is 30° then find the values of x° and y°



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6. If the distance between the two points $(8, x)$ and $(x, 8)$ is $2\sqrt{2}$ units, then find the value of 'x'.



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7. Express 2016 as product of prime factors.



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8. Use Euclid's division lemma, to show that the cube of any positive integer is of the form $3p$ or $3p + 1$ or $3p + 2$ for any integer 'p'.



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9. Prove that $\sqrt{3} - \sqrt{5}$ is an irrational number.



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10. Draw the graph of the polynomial $p(x) = x^2 - 5x + 4$ on the graph paper. Find

its zeroes from the graph.



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11. Draw the graph for the equations $2x-y-4=0$ and $x+y+1=0$ on the graph paper and check whether they are consistent or not.



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12. On dividing $x^3 - 3x^2 - 7$ by $x^2 - 2x + 4$, if the remainder is in the form of $Ax + B$, find

the values of A and B.



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13. $A = \{x : x \in \mathbb{N}, \text{ and } x \text{ is a multiple of } 4\}$,

$B = \{x : x \in \mathbb{N}, \text{ and } x \text{ is a multiple of } 6\}$,

$C = \{x : x \in \mathbb{N}, \text{ and } x \text{ is a multiple of L.C.M of } 4 \text{ and } 6\}$:

Find $A \cap B$. How can you relate the sets

$A \cap B$ and C?



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14. If the points $P(-3,9)$, $Q(a, b)$ and $R(4, -5)$ are collinear and $a + b = 1$, then find the values of a and b .



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15. The sum of the three terms which are in an Arithmetic Progression is 33. If the product of the first and the third terms exceeds the second term by 29, find the Arithmetic Progression.



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16. The logarithmic form of $a^b = c$ is.....

A. $\log_a c = b$

B. $\log_b c = a$

C. $\log - ab = c$

D. $\log + ba = c$

Answer:



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17.3 $\log(x+3) = \log 27$ అయిన x విలువ

A. 0

B. 1

C. 6

D. 24

Answer:



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18. In the formula of n^{th} term of term of a Geometric Progression $a_n = a \cdot r^{n-1}$, r denotes

- A. first term
- B. common ratio
- C. common difference
- D. number of terms

Answer:



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19. Which one of the following rational numbers has terminating decimal expression?

A. $\frac{11}{7000}$

B. $\frac{91}{21000}$

C. $\frac{243}{2^3 \times 5^3 \times 7^3}$

D. $\frac{21}{9000}$

Answer:



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20. The common difference of an Arithmetic Progression in which $a_{25} - a_{12} = -52$ is

A. 4

B. -4

C. -3

D. 3

Answer:



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21. Which one of the following statements is False?

A. Every set is subset of itself.

B. Empty set is subset of every set.

C. Intersection of two disjoint sets is empty set.

D. Cardinal number of an infinite set is zero.

Answer:





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22. If the co-ordinates of the vertices of a rectangle are $(0, 0)$, $(4, 0)$, $(4, 3)$ and $(0, 3)$, then the length of its diagonal

A. 4

B. 5

C. 7

D. 3

Answer:



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23. The quadratic polynomial having $\frac{1}{3}$ and $\frac{1}{2}$ as its zeroes, is....

A. $x^2 + \frac{5x + 1}{6}$

B. $-6x^2 - 5x + 1$

C. $x^2 + \frac{5x - 1}{6}$

D. $-6x^2 - 5x - 1$

Answer:



24. Sum of 10 terms of the progression

$\log 2 + \log 4 + \log 8 + \log 6 + \dots$ is

A. $45 \log 2$

B. $90 \log 2$

C. $10 \log 2$

D. $55 \log 2$

Answer:



25. Which term of the Arithmetic Progression 24, 21, 18, Is the first negative term?

A. 8^{th}

B. 9^{th}

C. 10^{th}

D. 12^{th}

Answer:



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26. Find the curved surface area of a cylinder of radius 14 cm and height 21 cm.

$$(\pi = 22/7)$$



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27. It is given that $\triangle ABC \sim \triangle DEF$. Is it true to say that $\frac{BC}{DE} = \frac{AB}{EF}$? Justify your answer.



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28. Find the probability of getting a prime number, when a card drawn at random from the numbered cards from 1 to 25.



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29. Evaluate $\left(\frac{\sin 58^\circ}{\cos 32^\circ} \right) + \left(\frac{\tan 42^\circ}{\cot 48^\circ} \right)$



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30. "The length of the tangent from an external point 'P' to a circle with centre 'O' is always less than OP ". Is this statement true ?

Give reasons .



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31. Write the formula to find the volume of a cone and explain each term in it.



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32. If a tower of height 'h' is observed from a point with a distance 'd' and angle ' θ ', then express the relation among h,d, θ .



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33. If $x = a \sec\theta$ and $y = b \tan\theta$ then prove

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



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34. There are 5 red balls, 4 green balls and 6 yellow balls in a box. IF a ball is selected at random, what is the probability of not getting a yellow ball?



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35.

C.I.	10 - 20	20 - 30	30 - 40	40 - 50	50 - 60
Frequency	5	8	10	5	2

Find the value of $\sigma f_i x_i$ for the above data, where x is the mid value of each class.



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36. A toy is in the form of a cone mounted on a hemisphere. The radius of the base and the height of the cone are 7 cm and 8 cm respectively. Find the surface area of the toy.
($\pi = 22/7$)



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37. AB is a chord of the circle and AOC is its diameter, such that $\angle ACB = 60^\circ$. If AT is

the tangent to the circle at the point A , then
find the measure of $\angle BAT$



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38. Draw a circle with 5 cm radius and
construst a pair of tangents to the circle .



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39. Two dice are rolled at same time and the
sum of the numbers appearing on them is

noted. Find the probability of getting each sum from 3 to 5 separately.



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40. If $\frac{\sin \theta}{1 - \cos \theta} + \frac{\sin \theta}{1 + \cos \theta} = 4(0^\circ < \theta < 90^\circ)$, then find the value of θ .



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41. The scores of 20 students in a test is tabulated as follows:

Marks	10 - 20	20 - 30	30 - 40	40 - 50	50 - 60
No. Of Students	1	6	7	4	2

Find the mode of the data.

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42. Two concentric circles of radii 10 cm and 6 cm are drawn . Find the length of the chord of the larger circle which touches the smaller circle .

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43. A tree is broken without separating from the stem by the wind. The top touches the ground making an angle 30° at a distance of 12m from the foot of the tree. Find the height of the tree before breaking.



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44. How many spherical balls each 7 cm in diameter can be made out of a solid lead cube whose edge measures 66 cm ?





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45. Construct a triangle of sides 5cm, 6 cm and 7 cm . Then construct a triangle similar to it. Whose sides are $1\frac{1}{2}$ times the corresponding sides of the first triangle.



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46. The value of $\tan \theta$ in terms of $\operatorname{cosec} \theta$ is.....

$$\text{A. } \frac{1}{\sqrt{\cos ec^2\theta - 1}}$$

$$\text{B. } \frac{\cos ec\theta}{\sqrt{\cos ec^2\theta - 1}}$$

$$\text{C. } \frac{2 \cos ec\theta}{\sqrt{\cos ec^2\theta - 1}}$$

$$\text{D. } \frac{2}{\sqrt{\cos ec^2\theta - 1}}$$

Answer:



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47. Observe the following: (I)

$$\sin^2 20^\circ + \sin^2 70^\circ = 1 \quad \text{(II) } \log_2(\sin 90^\circ) = 1$$

Which one is CORRECT?

A. (I) only

B. (II) only

C. Both (I) and (II)

D. Neither (I) nor (II)

Answer:



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48. In $\triangle ABC$ $AC=12$ cm , $AB=5$ cm and $\angle BAC = 30^\circ$, then area of the $\triangle ABC$ is.....

A. 30cm^2

B. 15cm^2

C. 60cm^2

D. 20cm^2

Answer:



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49. Which one of the following can not be the probability of an event?

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

B. $\frac{4}{5}$

C. 0.7

D. $\frac{5}{4}$

Answer:



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50. Which measure of central tendency is given by the x coordinate of the point of

intersection of the more than ogive and less than ogive.

A. median of the data

B. mode of the data

C. mean of the data

D. average of mid values of the data

Answer:



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51. Ratio of volumes of two spheres is 8:27
then ratio of their curved surface areas is

A. 2:3

B. 4:3

C. 2:9

D. 4:9

Answer:



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52. A solid ball is exactly fitted inside the cubical box of side 'a'. The volume of the ball is

...

A. $\frac{1}{3}\pi a^3$

B. $\frac{1}{6}\pi a^3$

C. $\frac{4}{3}\pi a^3$

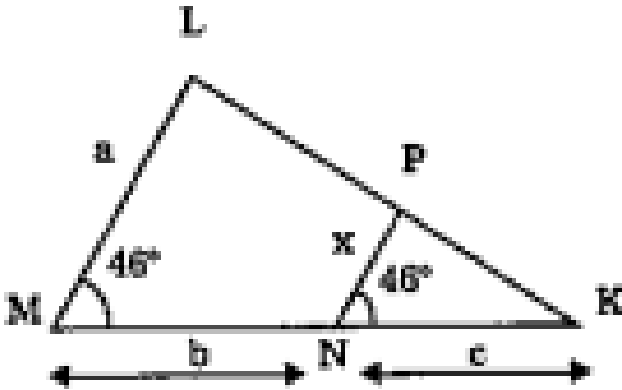
D. $\frac{8}{3}\pi a^3$

Answer:



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53. Express 'x' in terms of a, b and c in the following figure.



A. $x = \frac{ac}{b + c}$

B. $x = \frac{bc}{b + c}$

C. $x = \frac{b + c}{ac}$

D. $x = \frac{ab}{a + c}$

Answer:



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54. If the angle of elevation of sun increases from 0° to 90° , then the length of shadow of the tower.....

A. no change

B. increase

C. decreases

D. can't be decided

Answer:



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55. In a right angled triangle with integral sides at least one of its measurements must be.....

- A. multiple of 3
- B. multiple of 9
- C. multiple of 2
- D. multiple of 7

Answer:



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