MATHS

BOOKS - UNITED BOOK HOUSE

RAMAKRISHNA MISSION VIDYALAYA, NARENDRAPUR

Exercise

1. The population of the village increases by r% each year. If P be the population aftern years,

then population n years ago was

A. $P\left(1+\frac{r}{100}\right)^{-n}$

B. $P\left(1-\frac{r}{100}\right)^{-n}$

C. $P\left(1-\frac{r}{100}\right)^{n}$

D. None of these

Answer:

Watch Video Solution

2. If $x=7+4\sqrt{3}$ then the value of $x-\frac{1}{x}$ is

A. 2

B. $8\sqrt{3}$

C. 4

D. $2 - \sqrt{3}$

Answer:

Watch Video Solution

3. Two chords AB and CD of circle having centre O intersect each other at P. If $\angle APC = 40^\circ$, then $\angle AOC + \angle BOD$=

A. 60°

B. 80°

C. 120°

D. 40°

Answer:

Watch Video Solution

4. If $\frac{\sin\theta + \cos\theta}{\sin\theta - \cos\theta} = \frac{3}{2}$ then $\cos\theta$=

A. $\frac{1}{5}$

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

C. $\frac{1}{\sqrt{26}}$

D. $\frac{1}{\sqrt{13}}$

Answer:

Watch Video Solution

5. The median of the multiples of 3 between the numbers 1 and 20 is

Watch Video Solution

6. if a sphere occupies maximum space of a cube, then ratio of the volume of the sphere and cube is

A. $\pi : 3$

B. $\pi : 2$

C. $\pi : 4$

D. $\pi : 6$

Answer:

Watch Video Solution

7. Fill in the blanks

The minimum value of the expression $x^2 + 2x + 3$ is _____.

Watch Video Solution

8. Fill in the blanks

AB and CD are two chords of same length of a circle with centre at O. Ratio of $\angle BAO$ and $\angle CDO$ is_____.

Watch Video Solution

9. Fill in the blanks

All circle are_____.

Watch Video Solution

10. Fill in the blanks

$$\frac{\sin 1^\circ}{\cos 89^\circ} + \frac{\sin 3^\circ}{\cos 87^\circ} + \ldots\ldots + \frac{\sin 87^\circ}{\cos 3^\circ} + \frac{\sin 89^\circ}{\cos 1^\circ}$$

Watch Video Solution

11. Fill in the blanks

In partnership business A,B,C invested in the

ratio of $\frac{1}{p} : \frac{1}{q} : \frac{1}{r}$ and if the profit after one year be Rs. X, then profit of B is_____.

Watch Video Solution

12. Fill in the blanks

If the total surface area and the height of a right circular (solid) cylinder be $24\pi sqcm$ and 4 cm respectively, then diameter of the base is_____.

Watch Video Solution

13. Write True or False

Perpendicular bisectors of two chords of a circle, which are not the diameters, meet at the centre of the circle.

Watch Video Solution

14. Write True or False

$\sqrt{6}|a||b|$ is a mean proportional to $2a^2$ and $3b^2$.

Watch Video Solution

15. Write True or False

IF partners invest sum of money of equal period of time, when it sis called compound pertnership business.

Watch Video Solution

16. Write True or False

If an angle measures x° and y^c then the value of x:y is $180 : \pi$.

Watch Video Solution

17. Write True or False

Median of $x^2, y^2, x^2 + y^2$ is x^2 if x>y>0

Watch Video Solution

18. The annual income of a man reduced by Rs 60 when the rate of interest decreased from 4% to `3 3/4% . Find the required sun.

Watch Video Solution

19. A,B and C invested in the ratio of $\frac{2}{3} : \frac{4}{5} : \frac{3}{4}$ in a partnership business. If the total profit is Rs 26600, then what is the profit of B?

Watch Video Solution

20. If the roots of the equation $x^2 + 7x + m = 0$ are two consecutive whole number, then find the value of m.

Watch Video Solution

21. Two circles intersect each other. Radius of both the circles is 10cm in length and length of the common chord is 16cm. What is the distance between the centres of the two circles?

Watch Video Solution

22. If $x^2 + y^2 - 4x - 6y + 13 = 0$, then find the value of (x+y):(y-x).

Watch Video Solution

23. The cruved surface area of a shpere is reduced from 16π sq cm to 4π sq cm. By what percent will the volume be decreased?

Watch Video Solution

24. If the radius of a cone be r units, its height h unit and lateral surface areas S sq unit, then prove that $h = \frac{\sqrt{S^2 - \pi^2 r^4}}{\pi r}$.

Watch Video Solution

25. If the ratio of areas of two similar traingles be 64:49, then find the ratio of their correspondig sides.

Watch Video Solution

26. What is the value of the third angle of a triangle in radian when its two angles are $65^\circ 56' 44''$ and $64^\circ 3' 16''$?

Watch Video Solution

27. $\angle B$ is the right angle of a right angled isosceles $\triangle ABC$. The bisector of $\angle BAC$ intersects BC at D. If BD = 2cm, then CD= ?

Watch Video Solution

28. If $2x^2 + 3y^2 \alpha xy$, then show that $x \alpha y$.

Watch Video Solution

29. If the numbers $1, \frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \ldots \frac{.1}{n}$ have frequencies 1,2,3,4...n respectively then find their

arithmetic mean.

Watch Video Solution

30. The simnple interest and compound interest on a certain sum os money for 2 years in Rs. 840 and Rs 869.40 respectively Find the sum and the annual rate of interest.

Watch Video Solution

31. Nivedita and Uma have started a business with capital Rs.3000 and Rs 5000 respectively. After 6 months Nivediata invested Rs. 4000 more but after 6 months Uma withdreq Rs. 1000. If the profit at the end of the year is Rs. 6175,, calculate the profit share of each of them.

Watch Video Solution

32. Solve: $\frac{a}{x-b}+\frac{b}{x-a}=2(x\neq b,a)$

Watch Video Solution

33. A man goes to a place covering distance of 8km and returns to the same place by boat in 4 hours 16 minutes. If the speed of the stream is $1km/hr$ then find the speed of the boat is still water.

Watch Video Solution

34. If $x = \frac{\sqrt{2}+1}{\sqrt{2}-1}$ and $x - y = 4\sqrt{2}$ then find the value of $x^4 + y^4$.

Watch Video Solution

35. Three variable x,y,z such that y+z-x is a constant and if (z+x-y)(x+y-z) α yz, then show that $(x+y+z)\alpha yz$.

Watch Video Solution

36. If $\frac{ad-bc}{a-b-c+d} = \frac{ac-bd}{a-b+c-d}$ then show that each ratio = $\frac{a+b+c+d}{4}$

Watch Video Solution

37. If a+c = 2b and $\frac{2}{c} = \frac{1}{b} + \frac{1}{d}$ then prove that a:b = c:d.

Watch Video Solution

38. Prove that opposite angles of a cyclic quadrilateral are supplementary

Watch Video Solution

39. State and prove Pythagoras theorem.

Watch Video Solution

40. In $\triangle ABC$, $\angle B$ is an acute angle and $AD \perp BC$. Prove that $AC^2 = AB^2 + BC^2 - 2BC.BD$.

Watch Video Solution

41. AC is a diamter of a circle with centre O, If $\triangle ABC$ is cyclic and $OP \perp AB$, then prove that OP:BC = 1:2.

Watch Video Solution

42. Construct a right angled triangled whose hypotenuse is 10cm and aother side is 6.5 cm . Construct incircle of that triangle.

Watch Video Solution

43. Find geometrically, the value f $2\sqrt{5}$.

Watch Video Solution

44. Define radian, Prove that $1^\circ < 1^c$.

Watch Video Solution

45. If $5\cos\theta + 12\sin\theta = 13$ show that $\tan\theta = \frac{12}{5}$.

Watch Video Solution

46. Find the value of $\left(\frac{\cos^2\pi}{16} + \frac{\cos^2(3\pi)}{16} + \frac{\cos^2(5\pi)}{16} + \frac{\cos^2(7\pi)}{16}\right)$.

Watch Video Solution

47. A passenger in an aeroplane flying over a straight road observed two consecutive milestones, 1km apart on the straight road at 60° and 30° angle of depression respectively. Find the height of the plane from the road at that time.

Watch Video Solution

48. As seen from the deck of a ship the angle of elevations of the top and bottom of light house

situated on the seaside are 60° and 30°. If the lgiht house is located 8 metre above the sea level and the deck of the ship[is at a height of 3 metre from sea level, then what is the height of the light house?

Watch Video Solution

49. The diameter of the base and height of a solid right circular cylinder are both 21cm. Find the sphere of maximum volume that can be obtained from the cylinder. Find the ratio of the volumes of the cylinder and sphere.

Watch Video Solution

50. The cloth required to make a right circular conical tent is $188\frac{4}{7}$ sq meter. If the circumference of bae of the tent is $37\frac{5}{7}$ metre, find the slant height, radius ad height of the tent.

Watch Video Solution

51. If the median of the following data is 32, find the values of x and by when the sum of the

frequencies is 100.

Class Interval	0-10	10-20	20-30	30-40	40-50	50-60
Frequency	10	x	25	30	y	10

Watch Video Solution

52. From the frequency distribution table give, below, draw a less than type ogive.

Marks	30-39	40-49	50-59	60-69	70-79	80-89	90-99
No. of students	1	4	10	18	45	32	10

Watch Video Solution

53. Find the mode from the following distribution table.

Weight (in kg)	44-47	48-51	52-55	56-59	60-63	64-67
Frequency	23	25	37	18	7	2

Watch Video Solution