MATHS

BOOKS - UNITED BOOK HOUSE

RAMKRISHNA MMISSION BOYS SCHOOL

Exercise

1. If the number of phase of compound interest in a year is 2 then the amount for Rs. P at the rate r% p.a. will be

A. $RsP\left(1 + \dfrac{\frac{r}{2}}{100}\right)^{2n}$

B. $RsP\left(1 + \dfrac{r}{100}\right)^{n}$

C. $RsP\left(1 + \dfrac{r}{100}\right)^{\frac{n}{2}}$

D. $Rs\dfrac{Pm}{100}$

Answer:

2. If $x + y\alpha x - y$ then

A. $x\alpha\dfrac{1}{y}$

B. $x\alpha y$

C. No relation

D. $x^2 = y^2$

Answer:

3. ABCD is a cyclic trapezium, AD||BC and $\angle ABC = 70°$, then $\angle BCD$=

A. $100°$

B. $80°$

C. $70°$

D. $180°$

Answer:

▶ Watch Video Solution

4. Circular value of $67\dfrac{1}{2}°$ is

A. $\dfrac{\pi}{8}$

B. $\dfrac{3\pi}{16}$

C. $\dfrac{\pi}{2}$

D. $\dfrac{3\pi}{8}$

Answer:

▶ Watch Video Solution

5. If surface area of a sphere is A sq.unit then length of the diameter will be

A. $\sqrt{\dfrac{A}{\pi}}$ unit

B. $\sqrt{\dfrac{\pi}{4}}$ unit

C. 4π unit

D. $\dfrac{\pi}{4}$ unit

Answer:

▶ Watch Video Solution
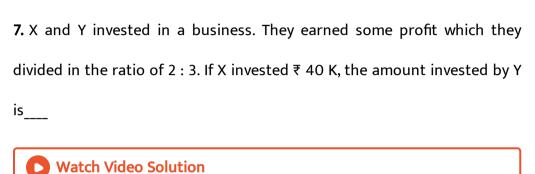
6. Mean of the prime numbers between 1 and 10 is

A. 4

B. 4.25

C. 2.45

D. 42.5

Answer:

---

7. X and Y invested in a business. They earned some profit which they divided in the ratio of 2 : 3. If X invested ₹ 40 K, the amount invested by Y is____
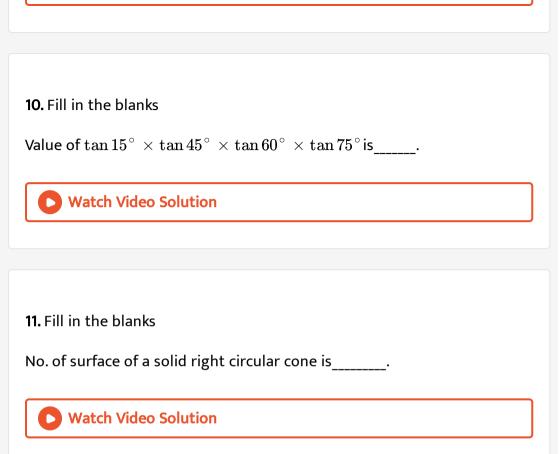
---

8. Fill in the blanks

No. of real roots of $3x^2 + 4 = 0$ is_____.

---

9. Fill in the blanks

Maximum number of common tangent of two intersecting circles is_____.

10. Fill in the blanks

Value of $\tan 15° \times \tan 45° \times \tan 60° \times \tan 75°$ is _____.

11. Fill in the blanks

No. of surface of a solid right circular cone is _____.

12. Fill in the blanks

If $\dfrac{\sum x_i}{n} = \bar{x}$ then $\dfrac{\sum (x_i - a)}{n}$ - _____.

13. Write True or False

At present the population of a city is P and rate of increae of population p.a. is 100r% . Increase of population after n years will be $P\{(1+r)^n - 1\}$.

▶ Watch Video Solution

14. Write True or False

Mean proportional of $-\dfrac{1}{12}$ and $-\dfrac{1}{75}$ is $\pm\dfrac{1}{30}$.

▶ Watch Video Solution

15. Write True or False

Simplified value of $(\sec\theta + \tan\theta)(1 - \sin\theta)$ is $\cos\theta$,

▶ Watch Video Solution

16. Write True or False

Two differenct Rhombuses are always similar.

> ▶ **Watch Video Solution**

17. Write True or False

Total surface area of a hemisphere is $36\pi sq.\, m$. Its length of radius is 3 cm.

> ▶ **Watch Video Solution**

18. Write True or False

Graph of cumulative frequency is called an ogive.

> ▶ **Watch Video Solution**

19. The rate of simple interest per annum reduces from 4% to 3 3/4% and for this, a person's annual income decreases by ₹. 60. Determine the principal of that person.

20. A and B invest $\text{Rs}(a+b)^2$ and $Rs(a^2+b^2)$ in a business. After 1 year there is a profit of Rs 2ab. Find A's profit.

21. Product of root of $(m-2)x^2 - (m-3)x + (m+1) = 0$ is thrice of their sum . Find the value of m.

22. Arrange in descending order: $\sqrt[9]{7}, \sqrt[6]{5}, \sqrt[3]{2}.$

23. The radii of two circles are 8 cm and 6 cm respectively. Find the radius of the circle having area equal to the sum of the areas of the two circles.
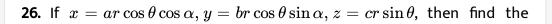
24. Two circles of radii 9cm and 4cm touch each other externally. Another circle of radius C touchs these two circles and their direct common tangent. Find C.

25. O is any point inside the rectangle ABCD. If OB = 6cm, OD = 8cm and OA = 5cm, then find the length of OC.

26. If $x = ar \cos \theta \cos \alpha$, $y = br \cos \theta \sin \alpha$, $z = cr \sin \theta$, then find the relation between x,y,z independent of θ, α.

▶ Watch Video Solution

27. V_1, V_2, V_3 are the volumes of a coe, a hemisphere and a cylinder with equal radii and heights, find $V_1 : V_2 : V_3$.

▶ Watch Video Solution

28. The volumes of a solid hemisphere is 144Π cu. Cm, then find the diameter of the sphere.

▶ Watch Video Solution

29. Two angles of a triangle are $65° 56' 55''$ and $64° 3' 5''$ resp. Find the circular value of its 3rd angle.

▶ Watch Video Solution

30. Calculate the compound interest and amount on Rs 1600 for $1\frac{1}{2}$ years at the rate of 10% compound interest p.a. compounded at the interval of 6 months.

31. Dipu, Rabeya and Megha started a partnership business on 1st January of last year with capitals of Rs 50,000 ,Rs 60,000 and Rs 70,000 respectively. On the 1st April, Rabeya invested Rs 10,000 more money but on 1st June Megha withdrew Rs 10,000. If the total profit upto 31th December was Rs 39,240, then calculate the profit share of each one of them on the basis of the ratio of their capitals.

32. From the equation whose roots are reciprocals to the roots of the equation $x^2 + px + 1 = 0$.

33. A clock seller sold a clock by purchasing it at Rs 336. The amount of his profit percenty is as much as the amount with which he bought the clock. Find the cost price of the clock.

34. $x = \dfrac{\sqrt{3}+1}{\sqrt{3}-1}$ and $y = \dfrac{\sqrt{3}-1}{\sqrt{3}+1}$. Then $\dfrac{x^2 + xy + y^2}{x^2 - xy + y^2}$ is equal to :

35. To dig a well of x dcm deep, one part of the total expenses varies directly with x and other part varies directly with x^2. If the expenses of digging well of 100 dcm depths are Rs 5000 and Rs 12000 respectively. Calculate the expenses of digging a well of 250 dcm depth.

36. If $x : a = y : b = z : c$, then show that :
$$\left(a^2 + b^2 + c^2\right)\left(x^2 + y^2 + z^2\right) = (ax + by + cz)^2.$$

37. $a + b + c + d = 4$ হলে ,

$$\frac{1}{(1-a)(1-b)(1-c)} + \frac{1}{(1-b)(1-c)(1-d)} + \frac{1}{(1-c)(1-d)(1-a)}$$

= কত?

38. Answer any One queation : Prove that, if a perpendicular is draw on the hypotenuse from the right angled triangle, two triangles so formed on the two sides of the perpendicular are each similar to the original triangle and also similar to each other.

39. Prove that the tangent and the radius through the point of contact of a circle are perpendicular to each other.

40. Answer any One question : In $\triangle ABC$, AD is perpendicular on BC and $AD^2 = BD$. DC, prove that $\angle BAC$ is a right angle.
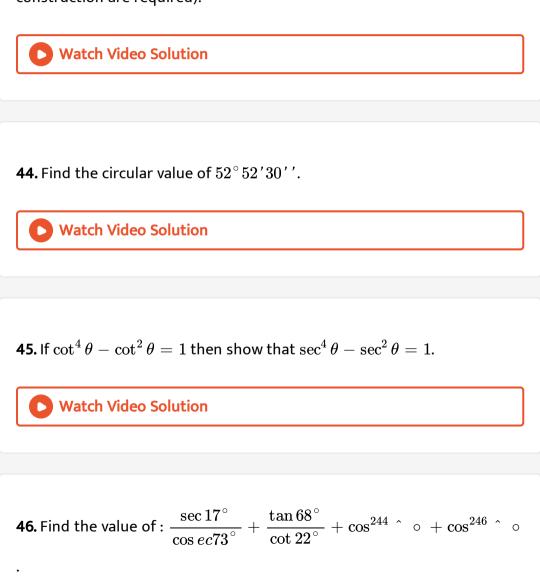
41. Two circles touch externally at P. A direct common tangent AB to two circles touch the circles at A and B. Then the measure of $\angle APB$ is

42. Geometrically find the value of $\sqrt{21}$,

43. Construct a triangle whose two sides are 9 cm and 7 cm and the angle between them is $60°$ Construct the incircle of the triangle. (Only traces of construction are required).

> ▶ Watch Video Solution

44. Find the circular value of $52°\,52'30''$.

> ▶ Watch Video Solution

45. If $\cot^4\theta - \cot^2\theta = 1$ then show that $\sec^4\theta - \sec^2\theta = 1$.

> ▶ Watch Video Solution

46. Find the value of : $\dfrac{\sec 17°}{\cos ec73°} + \dfrac{\tan 68°}{\cot 22°} + \cos^{244}\widehat{\ \ }° + \cos^{246}\widehat{\ \ }°$

.

> ▶ Watch Video Solution

47. From a point on the roof a house 11 metres height, it is observed that the angles of depression of the tip and foot of a lamp post are $30°$ and $60°$ respectively. Find the height of the lamp post.

48. If the angle of depression of two consecutive km stones on a road from an aeroplane are $60°$ and $30°$ respectively, then find the height of the aeroplane when the two km stones on the same side of the aeroplane.

49. The volume of a sphere and a right circular cone are same. The height of the cone is twice the length of the radius of the cone. Find the ratio of the curved surface area of the cone and sphere.

50. An outlet pipe in the roof with length 13m and breadth 11m was closed at the time of rain fall. After rain fall, it was seen that water habing logged in the roof with 7cm depth. The length of diameter of outlet pipt is 7cm and water comes our cylindrically with 200m length/min. Calculate the time required is drainout whole amount of water after opening the pipe.

51. The external radius of a hollow sphere made of lead sheet of 1 cm thickness in 6cm.. If melting the sphere, a solid circular rod of 2cm radius is made, then find the length of the rod.

52. 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

---

53. Find the mean of the following data.

Class limit	20-29	30-39	40-49	50-59	60-69	70-79
frequency	12	20	14	6	5	3

▶ Watch Video Solution

---

54. Draw an ogive(greater than type) from the following.

Class	120-130	130-140	140-150	150-160	160-170	170-180	180-190
frequency	4	6	10	14	6	6	4

▶ Watch Video Solution