MATHS

BOOKS - UNITED BOOK HOUSE

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Exercise

1. If a sum of money doubles itself at compound interest in n years, then it will be 4

times in

A. 2 n years

B. $\frac{n}{2}$ yrs

C. 3n yrs

D. $\frac{n}{3}$ yrs

Answer:

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2. Conugate surds of $\sqrt{7}+5$ is

A. $\sqrt{7} - 5$

B. $-\sqrt{7} + 5$

C. $-\sqrt{7} - 5$

D. $7 - \sqrt{5}$

Answer:

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3. Length of radii of two circles are 3.5cm and 2cm. Two circles touch internally. Distance between two centres of the circles is

A. 5.5 cm

B. 1cm

C. 1.5 cm

D. none of these

Answer:

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4. If $\tan\theta + \cot\theta = 2$, then $\tan^2\theta + \cot^2\theta$=

A. 1

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

C. 2

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

Answer:

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5. If mean of 6,8,x,12,y,14 is 10 then

A. x+y = 21

B. x+y = 20

C. x-y = 20

D. x-y = 21

Answer:

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6. If the radius will be half and height will be doubled of a cylinder then the volume of the cylinder will be the volume of previous is

A. same

B. double

C. half

D. 4 times

Answer:

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7. Fill in the blanks

If some things are increased by fixed rate with respect to time, that is____.

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8. Fill in the blanks

Two tangents to a circles at the end points of a diametre are____.

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9. Fill in the blanks

If the mean of n numbers $x_1, x_2, x_3, \ldots, x_n$ is $\bar{x}$ then the mean of $kx_1, kx_2, kx_3, \ldots, kx_n$ is_____.

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10. Fill in the blanks

The height of a tower is $50\sqrt{3}$ metre. The angle of elevation of the top of a tower from a point at a distance of 50 metre of root of the tower is ____.

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11. Fill in the blanks

If the roots of a quadratic equation

$4x^2 + 12 + c = 0$ are equal then c=___.

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12. Fill in the blanks

By melting a solid sphere, a solid right circular cylinder is made. The ratio of the volume of sphere and cylinder is____.

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13. In a business, the ratio of the capital of Rajus and Asif is 5:4 and if the profit of Rajus is Rs 80 then the profit share of Asif will be___

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14. Write True or False

If $y\alpha\frac{1}{x}$ then $\frac{y}{x}$= non zero constant.

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15. Write True or False

If $0^\circ \leq \alpha \leq 90^\circ$ then the minimum value of $\left(\sec^2 \alpha + \cos^2 \alpha\right)$ is 2.

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16. Write True or False

The incentre and circumcentre of an equilateral triangle are same.

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17. Write True or False

If the length of radius of a sphere is doubled then the volume of it will be doubled.

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18. Write True or False

Mode of the data 2,3,9,10,9,3,9 is 10.

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19. What is the rate of simple interest in percent per annum if the total interest of Rs 73,000 for 1 day is 50 paisa?

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20. If $\sqrt{3}\sin\theta + \cos\theta = 2,$ then $\theta = ?(0^\circ \leq \theta \leq 90^\circ).$

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21. The price of machine decreased by 10% in each year. If the present price of machine is Rs 1000 then calculate the price of a machine after 2 years.

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22. If the sum of the roots of the equation $x^2 - x = K(2x - 1)$ is zero, then find the value of K.

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23. In a partnership business, the ratio of the capitals of three partners is 3:8:5, and the profit of 1st partner is Rs 60 less of the 3rd person, then calculate the total profit of that business.

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24. If $\tan 3x.\tan 3y = 1$, then $\sin(x+y)=?$

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25. A circle with centre O, a point P is 25 cm away from the centre of the circle and the length of the tangent drawn from point P to the circle is 10cm. Find the length of the diametre of the circle.

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26. If $x = \frac{\sqrt{5}+1}{2}$, show that $x^2 - x - 1 = 0$

.

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27. If the length of radius of a sphere is increased by 50%, then how much percent will be increased of its curved surface area.

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28. Find the value of $\sum_{i=1}^{10} (10 \times i)$.

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29. The length of base diameter and height of a right circular cone are 16 cm and `17 cm respectively. Find the volume of the cone.

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30. If a principal beocmes Rs 560 in 3 years and Rs 600 in 5 years at the same rate of simple interest in percent per annum, then find the principal and the rate of simple interest in percent per annum.

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31. Two friends invested Rs 40,00 and Rs 50,00 respectively to stard a business. They made a contract that they would divide 50% of the profit equally among themselves and the remaining profit in the ratio of their capitals. Find the share of profit of the first friend if it is Rs 800 less than that of 2nd friend.

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32. Solve:

$$\frac{1}{x} - \frac{1}{x+b} = \frac{1}{a} - \frac{1}{a+b} (x \neq 0, -b).$$

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33. If the roots of the quadratic equation

$$\left(a^2 + b^2\right)x^2 - 2(ac + bd)x + \left(c^2 + d^2\right) = 0$$

are equal, prove that $\frac{a}{b} = \frac{c}{d}$.

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34. If $\frac{x+\sqrt{x^2-1}}{x-\sqrt{x^2-1}}+\frac{x-\sqrt{x^2-1}}{x+\sqrt{x^2-1}}=14$

,then find the value of x.

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35. If $\frac{1}{x}-\frac{1}{y}\alpha\frac{1}{y-x}$, show that $x\alpha y$.

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36. If ay - bx/c = cx - az/b = bz - cy/a, then prove that x/a = y/b = z/c.

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37. If $\frac{x}{y+z} = \frac{y}{z+x} = \frac{z}{x+y}$ prove that the value of each ratio is either $\frac{1}{2}$ or -1.

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38. State and prove Pythagoras theorem.

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

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40. O is any point inside a rectangle. Prove that $OA^2 + OC^2 = OB^2 + OD^2$.

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41. ABCD is a cyclic quadrilaterla. Extended AB and DC intersect at P. Prove that PA.PB = PC.PD.

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42. Geometrically calculate the value of $\sqrt{23}$. (Only traces of construction are required).

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43. Draw a triangle whose one of the side is 7.2 cm and adjacent angles of this side are 50° and 70°. Now draw the incircle of this traingle.

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44. Sum of two angles is 135° and their difference is $\frac{\pi^c}{12}$. Find the sexagicimal and circular values of these two angles.

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45. If $\cos\theta = \dfrac{x}{\sqrt{x^2+y^2}}$ show that $x\sin\theta = y\cos\theta$.

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46. If $\sin 17^\circ = \dfrac{x}{y}$ show that $\sec 17^\circ - \sin 73^\circ = \dfrac{x^2}{y\sqrt{y^2-x^2}}$.

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47. From a point on the roof of five storied building the angle of elevation of the top of a monument and that of depression of the foot of the monument are 60° and 30° respectively. If the height of the building is 16 metres, then calculate the height of the monument and the distance of the building from the monument.

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48. Mohit, standing in the midst of a field, observes a flying birds in his north at an anlge of elevation of 30° and after 2 minutes he observes the birds in his south at an angle of elevation of 60°. If the bird flies in a straight line all along at a height of $50\sqrt{3}$ metres then find its speed in km/hr.

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49. The curved surface of a solid metalic sphere is cut in such a way that the curved surface area of a new sphere is half of the previous one. Calculate the ratio of the volumes of the protion cut off and remaining portion of the sphere.

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50. A right circular cylindrical tank of 9 metre height is filled with water. Water comes out

from there though a pipe having length of 6 cm diameter with a speed of 225 metre per minute and the tank becomes empty after 2 hrs. 24 minutes. Calculate the length of diameter.

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51. Half of the cuboidal water tank with length 2.1m and breadth of 1.5m is filled with water. If 630 lit water is poured more into the tank,

then calculate and write the depth that will be increased by.

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52. find the median of the following frequency distribution

Marks obtained	0-10	10-30	30-60	60-70	70-90
No. of students	15	25	30	4	10

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53. Find the mode of the following frequency distribution.

Class	45-54	55-64	65-74	75-84	85-94	95-104
frequency	8	13	19	32	12	6

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54. Draw an ogiove (less than type) from the given data.

Class	50-55	55-60	60-65	65-70	70-75	75-80	80-85
frequency	2	8	12	24	34	16	4

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