



MATHS

BOOKS - UNITED BOOK HOUSE

BEGUNKODAR HIGH SCHOOL

Exercise

1. A principal becomes twice its amount in 20 years at a certain rate of simple interest. At

the same rate of simple interest, that principal becomes thrice of its amount in

A. 30 yrs

B. 35 yrs

C. 40 yrs

D. 45 yrs

Answer:



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2. If $x = 2 + \sqrt{3}$ then $x + \frac{1}{x} =$

A. 2

B. $2\sqrt{3}$

C. 4

D. $2 - \sqrt{3}$

Answer:



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3. If ABCD is a cyclic parallelogram then $\angle A$ is

A. 30°

B. 60°

C. 90°

D. none of these

Answer:



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4. If $2 \cos 3\theta = 1$, then $\theta =$

A. 10°

B. 15°

C. 20°

D. 30°

Answer:



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5. If the length of the diagonals of a rhombus are 24 cm and 10 cm then the perimeter of it is

A. 13 cm

B. 26 cm

C. 52 cm

D. 25 cm

Answer:



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6. Median of a frequency distribution indicate graphically with the help of

- A. frequency curve
- B. frequency polygon
- C. Histogram
- D. Ogive

Answer:



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7. Fill in the blanks

The compound interest and simple interest for _____ year at the fixed rate of interest of fixed sum of money are equal.



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8. Fill in the blanks

If $\frac{a}{b} = \frac{c}{d} = \frac{e}{f} = \frac{2}{3}$ then $\frac{a + c - e}{b + d - f} =$ _____



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9. Fill in the blanks

If $\triangle ABC$, if $AC=BC$ and $AB^2 = 2AC^2$ then

$\angle C = \underline{\hspace{2cm}}$



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10. Fill in the blanks

Value _____ of

$\tan 15^\circ \times \tan 45^\circ \times \tan 60^\circ \times \tan 75^\circ$

is _____.



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11. Ratio of the volume of two solid sphere is 1:8. The ratio of their curved surface area is



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12. Fill in blanks

If the mean of x_1, x_2, \dots, x_n is $batx$, then mean of ax_1, ax_2, \dots, ax_n will be _____.
($a \neq 0$).



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13. Write True or False

In case of compound interest, interest is to be added to principal at the fixed time interval i.e. the amount of principal increase continuously.



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14. Write True or False

If $A \propto \frac{1}{C}$ and $C \propto \frac{1}{B}$, then $A \propto B$.



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15. The angle in the segment of a circle which is less than a semi circle is an obtuse angle.



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16. Write True or False

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



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17. Write True or False

Height, radius and slant height of a right circular cone are the sides of the right angled triangle.



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18. Write True or False

Mode of 2,3,5,10,5,3,5 is 10.



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19. If the amount of Rs 100 for 2 years is Rs 121, then find the rate of compound interest in percent per annum.



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20. In a partnership business, the ratio of the capital of A,B,C is $\frac{1}{6} : \frac{1}{5} : \frac{1}{4}$. If total profit of the business is Rs 3,700, then calculate the profit share of C.



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21. If $p:q = 5:7$ and $p-q = -4$, then find the value of $3p+4q$.



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22. Write down the methods of milk preservation.



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23. O is the incentre of triangle ABC and if



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24. In trapezium ABCD, $BC \parallel AD$ and $AD = 4\text{cm}$.

Diagonals AC and BD intersect at O. If

$\frac{AO}{OC} = \frac{DO}{OB} = \frac{1}{2}$ then find the length of BC.



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25. O is the circumcentre of $\triangle ABC$ and D is the mid point of BC. If $\angle BAC = 40^\circ$ then $\angle BOD = ?$





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26. If $\tan 40^\circ \times \tan 6\theta = 1$ and 6θ is a positive acute angle. find the value of θ ?



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27. In a circle, if an arc of 220 cm length subtends an angle of measure 60° at the centre, then determine the radius of the circle



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28. The ratio of the length of base radii of a right circular cylinder and a right circular cone is 3:4 and the ratio of their height is 2:3. Find the ratio of their volume.



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29. If each edge of a cube is increased by 50% , then how much the total surface area of the cube will be increased in percent?



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



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31. Rahimchacha takes a loan amount of Rs 2,40,000 from a bank for constructing a building at the rate of simple interest of 12% per annum. After 1 year of taking the loan he rents the house at the rate of Rs 52000 per month. Determine the number of years he

would take to repay his loan along with interest from the income of the house rent.



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32. Through the publicity of road safety programmes the street accident in a state has been decreased by 10% in comparison to its previous year. If the present year if the number of street accidents be 2916, then find the number of street accidents that had been in the state 3 years before.



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33. The ratio of the roots of the quadratic equation $ax^2 + bx + c = 0$ ($a \neq 0$) is 1:r, then

show that $\frac{(r + 1)^2}{r} = \frac{b^2}{ac}$.



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34.

Solve:

$$\frac{a}{ax - 1} + \frac{b}{bx - 1} = a + b \left(x \neq \frac{1}{a}, \frac{1}{b} \right).$$



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35. If $x = \frac{\sqrt{7} + \sqrt{3}}{\sqrt{7} - \sqrt{3}}$ and $xy = 1$ then find the value of $\frac{x^2 - xy + y^2}{x^2 + xy + y^2}$.



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36. The total expenses of a hostel are partly constant and partly vary directly as the number of boarders. When the number of boarders are 120 and 100 the total expenses are ₹.2,000 and ₹.1,700 respectively. What will

be the number of boarders when the total expenses is ₹. 1.880?



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37. If $(10x+3y):(5x+2y)= 9:5$ then find $(2x+y):$
 $(x+2y)$.



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38. If $\frac{a^2}{b+c} = \frac{b^2}{c+a} = \frac{c^2}{a+b} = 1$, show
that $\frac{1}{1+a} + \frac{1}{1+b} + \frac{1}{1+c} = 1$



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



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40. State and Prove Pythagoras theorem.



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



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42. Prove that two equal chords are equidistant from the centre of the circle.



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43. Draw a triangle ABC whose $BC = 9$ cm, $AB = 7$ cm and $AC = 8$ cm. Now draw the incircle of the $\triangle ABC$. (Only traces of construction are required).



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44. Geometrically find the value of $\sqrt{\infty}$.



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45. If the sum of two angles is 135° and their difference is $\frac{\Pi}{2}$, then determine the sexagesimal and circular value of two angles.



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46. If $(\sin \theta)(x) = \frac{\cos \theta}{y}$, then prove that $\sin \theta - \cos \theta = \frac{x - y}{\sqrt{x^2 + y^2}}$.



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47. Answer any two questions : If $\sin 17^\circ = \frac{x}{y}$, show that $\sec 17^\circ - \sin 73^\circ = \frac{x^2}{y\sqrt{y^2 - x^2}}$.



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48. Two pillars of equal heights are on the either side of a road, which is 150 metre wide. The angles of elevation of the top of the pillars are 60° and 30° respectively at a point on the road between the pillars. Find the height of each pillar.



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49. The height of two towers are 180 metres and 60 metres respectively. If the angle of elevation of the top of the 1st tower from the foot of the 2nd tower is 60° , then calculate what is the angle of elevation of the top of the 2nd tower from the foot of the first?



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50. Determine the number of coins with diameter and thickness of 3cm and 8 cm respectively can be made by melting a solid copper rectangular parallelepiped piece with length of 11 cm , breadth of 9 cm and thickness of 6 cm.



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51. Three spheres made of copper having the lengths of 6cm, 8 cm and 10 cm diameters are

melted and a large sphere is made. Calculate the length of diameter of a large sphere.



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52. A tank of length 21 dcm, breadth 11 dcm and 6 dcm deep is half filled with water. If 100 solid iron balls of diameter 21 cm are completely immersed in the tank, then how much dcm of water level is raised?



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53. If the median of the given data is 32, then find the value of x and y when total frequency is 100.

Class limit	0-10	10-20	20-30	30-40	40-50	50-60
frequency	10	x	25	30	y	10



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54. Find the mode of the following frequency distribution table.

Class limit	0-5	5-10	10-15	15-20	20-25	25-30	30-35	35-40
frequency	2	6	10	16	22	11	8	5



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