



MATHS

BOOKS - UNITED BOOK HOUSE

ANISHMALI UNITED ACADEMY

Exercise

1. Interest of Rs. a for b months in 10% simple interest per annum is

A. $Rs. a \frac{b}{10}$

B. $Rs. A \frac{b}{100}$

C. $Rs. A \frac{b}{120}$

D. $Rs. a \frac{b}{1200}$

Answer:





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2. If the roots of the quadratic equation $ax^2 + cx + b = 0 (a \neq 0)$ are equal then

A. $C^2 - 4ab = 0$

B. $b^2 - 4ac = 0$

C. $a^2 - 4bc = 0$

D. $c^2 + 4ab = 0$

Answer:



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3. ABCD is a cyclic Trapezium whose $AB \parallel CD$. If $\angle ABC = 75^\circ$, then $\angle BCD$

A. 105°

B. 75°

C. 990°

D. 150°

Answer:



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4. If the radius of the circle is r then find the area of circle?

A. $3\pi R^2$

B. $2\pi r^2$

C. $2\pi r^2$

D. πr^2

Answer:



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5. Simplest value of $\sin 30^\circ + \cos 60^\circ$ is

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

B. 1

C. $\frac{\sqrt{3}}{2}$

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

Answer:



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6. Median of 16,6,12, 14,8,10 is

A. 7

B. 9

C. 11

D. 16

Answer:



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7. Fill in the blanks:

Total profit of a partnership business of A and B is Rs. 1500. If the profit share of A is Rs 900 then the ratio of the capital of A and B is _____.



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8. Fill in the blanks:

Conjugate surds of $(\sqrt{3} + 2)$ is _____.



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9. Fill in the blanks:-

HCL is produced in _____.



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10. Fill in the blanks:

An object having two surfaces is _____.

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11. Fill in the blanks:

If $\sec^2 \theta + \tan^2 \theta = \frac{13}{12}$ then $\sec^4 \theta - \tan^4 \theta =$ _____.

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12. Fill in the blanks:

If the mean of X_1, X_2, \dots, X_{10} is \bar{X} , then $(X_1 - \bar{X}) + (X_2 - \bar{X}) + \dots + (X_{10} - \bar{X})$ _____.

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13. Write True or False:

Present price of a commodity is `Rs 100. Decreasing rate of the price of commodity is 10% per annum. Total decrease in two years is Rs 20.



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14. Write True or False:

Fourth proportional xyz , y^2x and z^2x is z^2y



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15. Write True or False:

Two tangents can be drawn from any external point to a circle.



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16. Write True or False:

Value of $\sin^{25} \theta + \cos^{25} \theta = 5$



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17. Write True or False:

The curved surface area of a solid hemisphere with radius r cm is $2\pi r^2$ sq.cm.



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18. Write True or False:

Mode of 2,3,5,6,4,2,4,8,9,5,4,7 is 9



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19. Calculate the number of years for which a principal becomes twice of its amount having the rate of simple interest of 10% per annum.



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20. In a partnership business, Pallabi invests Rs 600 for 7 months and Rajia invests Rs 1400 for 1 year. Calculate the ratio of their profit share

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21. If $p:q = 3:5$ and $q-p = 4$ then $(3p+4q) = ?$

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22. In $x = 2 + \sqrt{3}$ then $\frac{x^2 + 1}{x} = ?$

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23. Length of two chords of a circle with centre at O are 6 cm and 8 cm. If the length from centre to the smaller chord is 4 cm then find the distance from centre of the greater chord.

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24. The radius of a circle with centre O is 5cm. P is a point at a distance 13cm from O. PQ and PR are two tangents to this circle. Find the area of the quadrilateral PQOR.

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25. If the ratio of the length of the sides of a triangle be $1 : \sqrt{3} : 2$ then the ratio of the angle be

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26. Height and base radius of a cone are equal. Find the ratio of the curved surface area for this cone and a solid hemisphere of equal base radius.

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27. If each edge of a cube is doubled then how much the volume of the cube will be increased?

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28. If $\tan 6\theta \cdot \tan 4\theta = 1$ then find the value of $\sin 5\theta$.

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29. The length of radius of a circle 14 cm. Determine the circular value of angle subtended by an arc of 11 cm length at the centre of this circle.

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30. If the mean of a frequency distribution is 8.1 $\sum f_i x_i = 133 + 5k$ and $\sum f_i = 30$, find the value of k.

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31. Find the sum of money if the difference between compound interest and simple interest for 3 years becomes Rs 930 at the rate of 10% interest per annum.

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32. Dipu, Rabeya and Megha have started a small business by investing that capitals Rs 6500, Rs 5200 and Rs 9100 respectively and just after one year they make a profit of Rs 14,400. IF they divided $\frac{2}{3}rd$ of the profit equally among themselves and the remainin in the ratio of their capitals, then find the profit share of each.

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33. If the roots of the quadratic equation $(b - c)x^2 + (c - a)x + (a - b) = 0$ are equal, then prove that $2b=a+c$.

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34.

Solve:

$$\frac{1}{(x-1)(x-2)} + \frac{1}{(x-2)(x-3)} + \frac{1}{(x-3)(x-4)} = \frac{1}{6} [x \neq 1, 2, 3, 4]$$

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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. If $(x^3 + y^3) \propto (x^3 - y^3)$ prove that $(x^2 + y^2) \propto (x^2 - y^2)$.

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37. If a, b, c , are in continued proportion then prove that

$$a^2 b^2 c^2 \left(\frac{1}{a^3} + \frac{1}{b^3} + \frac{1}{c^3} \right) = a^3 + b^3 + c^3.$$

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38. If $\frac{x}{y} = \frac{a+2}{a-2}$ show that $\frac{x^2 - y^2}{x^2 + y^2} = \frac{4a}{a^2 + 4}$

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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. Prove that cyclic trapezium is isoscles trapezium and the length of its diagonals are same.



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

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43. Answer any one question : Draw an equilateral triangle of side of 6 cm and draw the incircle of the triangle. (only traces of construction are required).

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44. Geometrically find the value of $\sqrt{9}$.

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45. If $\tan \theta = \frac{a}{b}$ then find the simplest value of $\frac{b \cos \theta - a \sin \theta}{b \cos \theta + a \sin \theta}$

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46. Prove that $\frac{2 \tan^2(30^\circ)}{1 - \tan^2(30^\circ)} + \sec^2(45^\circ) - \cot^2(45^\circ) = \sec(60^\circ)$.

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47. Show that $\cos ec^2(25^\circ) \cot^2(65^\circ) = \sin^2(25^\circ) + \sin^2(65^\circ) + \cot^2(65^\circ)$.

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48. The height of 2nd tower is equal to $\frac{1}{3}rd$ the height of 1st tower. They lie on same base. 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 1st?



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49. If the angle of elevation of the top and Monument when observed from a point on the roof of a building of 16 metre height is 60° and the angle of depression of the foot of the Monument, when observed from the same point is 30° , calculate the height of the Monument and the distance from Monument to the building.



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50. Total surface area of a right circular pot open at one end is 2002 sq.cm. If the length of diameter of base of the pot is 14cm, then calculate how much litre of water may the pot contain.



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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. The base diameter and height of a right circular cone are 21 m and 14 m respectively. Calculate the volume of the cone.



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53. Draw the ogive (less than type) from following frequency distribution table:

Marks	0-10	10-20	20-30	30-40	40-50	50-60
Number of students	7	10	23	51	6	3



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