



MATHS

BOOKS - UNITED BOOK HOUSE

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Exercise

1. The number of years for which a principal becomes 3 times of its amount having the rate

of simple interest of $6\frac{1}{4}\%$ p.a. is

A. 16 years

B. $16\frac{2}{3}$ years

C. 20 years

D. 32 years

Answer:



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2. IF the roots of the equation

$$3x^2 + 8x + 2 = 0 \text{ are } \alpha, \beta \text{ then } \left(\frac{1}{\alpha} + \frac{1}{\beta} \right) =$$

A. $-\frac{3}{8}$

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

C. -4

D. 4

Answer:



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3. ABCD is a cyclic quadrilateral and O is the centre of the circle and AB is the diameter. If $AB \parallel DC$ and $\angle BAC = 25^\circ$ then $\angle DAC =$

A. 50°

B. 25°

C. 130°

D. 40°

Answer:



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4. If the numerical values of volume and curved surface area of a solid sphere are same then the radius of the sphere is

A. 4 unit

B. 3 unit

C. 2 unit

D. 1 unit

Answer:



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5. If $3x = \operatorname{cosec} \alpha$ and $\frac{3}{x} = \cot \alpha$ then

$$3 \left(x^2 - \frac{1}{x^2} \right) =$$

A. $\frac{2}{27}$

B. $\frac{1}{81}$

C. $\frac{1}{3}$

D. $\frac{1}{9}$

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

A man who gives a loan is called_____.



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8. Fill in the blanks

If sum and product of two quadratic surds is a rational number then they are _____ surds.



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9. Fill in the blanks

If the Sun's angle of elevation increases, the length of shadow of post is ____.



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10. The numbers of plane surface of a solid hemisphere are _____



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11. Fill in the blanks

Two triangles are similar if their _____ sides are proportional.



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12. Fill in the blanks

Mean, median, mode are the measure of _____.



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13. Write True or False

In compound interest, time and total interest are directly proportional.



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14. Write True or False

The roots of the equation $x^2 + kx + 1 = 0$ will be real if $k^2 < 4$.

A. q

B.

C.

D.

Answer:



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15. Let's find if the following statements are true or false.

The diagonals of any rectangular figure are equal.



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16. If surface area and volume of a sphere are S and V respectively, Then value of $\frac{S^3}{V^2}$ is ___



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17. Write True or False

In cyclic quadrilateral ABCD,

$$\tan\left(\frac{A}{2}\right) \cdot \tan\left(\frac{C}{2}\right) = 1$$



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18. Find the angle between the x-axis and the line joining the points $(3, -1)$ and $(4, -2)$.



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19. Ratio of capital between three man is 4:8:9. If the difference of the profit share between 1st and 3rd man is Rs 200, then find the profit share of 2nd man.



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20. In how many years will Rs 10,000 in compound interest at the rate of 10% per annum gets Rs 3,310 as compound interest.



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21. If one of the root of the equation $x^2 - (2 + b)x + 6 = 0$ is 2, then find its other root.



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22. If $(a + b) : \sqrt{ab} = 2 : 1$ find a:b.



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23. AB is a chord of a circle with centre at O and radius 13 cm in length If AB = 10cm then find the distance from centre to the chord.



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24. AB is the diameter of a hemisphere with radius 4 cm in length and $\angle ACB$ is a semicircular angle. If $BC = 2\sqrt{7} \text{ cm}$, then find the length of AC .



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25. In a circle, if an arc of 220 cm length subtends an angle of measure 63° at the centre, then determine the radius of the circle.



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26. If $\tan 8\theta \cdot \tan 10\theta = 1$ and 10θ is a positive acute angle, then find the value of θ .



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27. The curved surface area of a right circular cone is $\sqrt{10}$ times of its base area. Find the ratio of its height and the length of radius.



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28. If the total surface area of a cube is 216 sq.meter, then find its volume.



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29. Three angles of a triangle are $\alpha - \beta$, α , $\alpha + \beta$. If the greatest angle is 2 times of the smallest angle then find the general angle in circular measure.



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30. If $u_i = \frac{x_i - 25}{10}$, $\sum f_i u_i = 30$ and $\sum f_i = 50$, find \bar{x} .



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31. If the rate of compound interest for the 1st and 2nd year are 4% and 5% respectively, then find the compound interest on Rs 25,000 for 2 years.



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32. At the same rate of simple interest in percent per annum, if a principal becomes the amount of Rs 1248 in 7 years and or Rs 1056 in 4 years. Find the principal and rate of simple interest in percent per annum.



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33.

Solve:

$$\frac{x}{x+1} + \frac{x+1}{x} = 2\frac{1}{12} (x \neq 0, -1)$$



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34. If the price of 1 dozen pin is reduced by 2 paisa, then 6 more pins will be got in 42 paisa.

Calculate the present price of 1 dozen pin.



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35. If $x = \sqrt{\frac{\sqrt{5} + 1}{\sqrt{5} - 1}}$, show that

$$x^2 - x - 1 = 0$$



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36. y is sum of two variables, one in which varies directly with x and another varies inversely with x . When $x=1$ then $y=1$ and $x=3$ the $y=5$. Find the relation between x and y ,



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37. If $\frac{x^2 - yz}{a} = \frac{y^2 - zx}{b} = \frac{z^2 - xy}{c}$, show that $(a+b+c)(x+y+z)=(ax+by+cz)$.



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38. If $\frac{b}{a+b} = \frac{a+c-b}{b+c-a} = \frac{a+b+c}{2a+b+2c}$

where $a+b-c \neq 0$, show that $\frac{a}{2} = \frac{b}{3} = \frac{c}{4}$

.



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39. Answer any one question : Prove that angles in the same segment of a circle are equal.



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40. State and prove the converse of the 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. In an isosceles triangle ABC, $\angle B$ is a right angle. The bisector of $\angle BAC$ intersects BC at D.

Prove that $CD^2 = 2BD^2$.



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43. Draw a triangle ABC whose $BC = 5\text{cm}$, $BA = 5.5\text{ cm}$ and $\angle ABC = 70^\circ$ draw the incircle of $\triangle ABC$.



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44. Geometrically find the value of $\sqrt{24}$.



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45. Difference between two acute angles of the right angled triangle is $\frac{2\pi^c}{5}$. Find the value of the angles in both degree and radian.



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46. In $\triangle XYZ$, $\angle Y = 90^\circ$. If $XY = 2\sqrt{3}$ unit and $XZ - YZ = 2$ units, find the value of $\sec X + \tan X$



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47. If $\angle A + \angle B = 90^\circ$, show that

$$1 + \frac{\tan A}{\tan B} = \sec^2 B \tan^2 A.$$



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48. The heights of two towers are 180 metres and 60 metres respectively. If the angle of elevation of the top of the second tower from the foot of the 1st tower is 30° , then calculate what is the angle of elevation of the top of the 1st tower from the foot of the 2nd tower?



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49. The length of shadow of a tower standing on the ground is found to be 60 metres more when the Sun's angle of elevation changes from 45° to 30° . Find the height of the tower.



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50. If two solid spheres with the radii of 1 cm and 6 cm lengths are melted and a hollow

sphere with the thickness of 1 cm is made, calculate the outer curved surface area of the hollow sphere.



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51. Two parallel planes which are parallel to the base of a right circular, cone cut the height of the cone are equally. Show that the ratio of the volume of three parts of the cone is 1:17:19.



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52. The length of radius of a right circular cylinder is increased by 50%. How much percent of the height will be decreased if the volume of the cylinder is unchanged.



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53. If the mean age of 50 men is 41.1 years then find the values of x and y from the following frequency distribution table.

Age (years)	30-34	35-39	40-44	45-49	50-54	55-59
frequency	12	x	12	6	y	3



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54. Find the mode of the following data.

Value	Less than 10	Less than 20	Less than 30	Less than 40	Less than 50	Less than 60	Less than 70	Less than 80
frequency	5	16	40	76	96	112	120	125



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55. Make a cumulative frequency distribution table from the given data and draw a ogive.

Class limit	100-120	120-140	140-160	160-180	180-200
frequency	12	14	8	6	10



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