MATHS

BOOKS - UNITED BOOK HOUSE

TAMLUK HAMILTON HIGH SCHOOL

Exercise

1. The amount(A) on Rs P for n years at the rate of r% compound interest per annum compounded at the interval of 3 months is

A. $A = P\left(1 + \frac{r}{100}\right)^{n}$

B. $A = P\left(1 + \frac{r}{2 \times 100}\right)^{2n}$

C. $A = P\left(1 + \frac{r}{3 \times 100}\right)^{3n}$

D. $A = P\left(1 + \frac{r}{4 \times 100}\right)^{4n}$

Answer:

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2. Area of triangle = $\frac{1}{2} \times base \times height$- it is variation is

A. direct variation

B. inverse variation

C. joint variation

D. none of these

Answer:

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

A. acute angle

B. obtuse angle

C. right angle

D. reflex angle

Answer:

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4. If $\cos ec^2 x - \cot^2 y = 1$ then cos(x-y)=

A. 0

B. -1

C. 1

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

Answer:

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5. Area of three consecutive surfaces of a cuboid are x,y,z. The volume of the cuboid is

A. xyz

B. 2xyz

C. $\sqrt{xyz}$

D. $3\sqrt{xyz}$

Answer:

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6. $(10 \times 1) + (10 \times 2) + \ldots . + (10 \times 8)$=

A. $\sum_{i=1}^{10} (10 \times 1)$

B. $\sum_{i=1}^{8} (10 \times i)$

C. $\sum_{i=1}^{10}(10 \times 1)$

D. $\sum_{i=1}^{8}(10 \times 8)$

Answer:

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7. Fill in the blanks

If the interest of Rs 10 in 1 year is Rs 1, then the interest of Rs 1 in 1 year will be____.

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8. Fill in the blanks

If the eqation $ax^2 + bx + c = 0$ is not a quadratic equation then the co-efficient of x^2 is_____.

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9. Fill in the blanks

The area bounded by two radius and their adjacent arc is called_____.

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10. Fill in the blanks

Maximum value of $\frac{1}{\sec\theta}$ is_____.

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11. Fill in the blanks

Formed by completely (360°) revolving a right angled triangle once by taking the hypotenuse as axis is_____.

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12. Fill in the blanks

If the mean of frequency distribution is 20, $\sum f_i x_i = 200$, then total frequency is_____.

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13. Write True or False

If there is not clearly mentioned in the contract of partnership business, then the profit share will be divide equally.

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14. Write True or False

If (5x-2y):(2x+3y) = 2:3 then x:y = 12:11

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15. Write True or False

Maximum four common tangents can draw to two circles which are not touh and intersect each other.

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16. Write True or False

Trigonometrical angle may be less than 0°, not only from 0° to 360°.

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17. Write True or False

If the inner and outer radii of a hollow sphere are r unit and R unit, then the volume of hollow sphere is $\frac{4}{3}\pi\left(R^3 - r^3\right)$ c.unit.

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18. Write True or False

If n is even then $\frac{n+1}{2}$th term is the median.

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19. In a business, the ratio of investment of A and B is 3:2. 5% of total profit spend the social work and after the profit share of A is Rs 855. Find the total profit of this business.

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20. If $\frac{a}{2} = \frac{b}{3} = \frac{c}{5} = \frac{3a - 5b + 4c}{K}$ then find the value of K.

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21. Find the quadratic equation whose one of the root is $2 + \sqrt{5}$.

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22. In trapezium ABCD, BC||AD and AD = 4cm. 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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23. The lengths of radii of two circles are 8 cm and 3 cm and the distance between two centres is 13 cm. What is the length of the direct common tangent of two circle?

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24. In a isoscles triangle ABC, AB = AC. If we draw a circle with diameter AB, then the circle intersect BC at D. IF BD = 4cm then find the length of CD.

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25. If $2\sin\theta\cos\theta = 1$, then find the value of $\sin\theta - \cos\theta$.

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26. If $\tan 50^\circ = x$ and $\cot(\theta + 5^\circ) = 1$, then find the value of $\sec(90^\circ - \theta)$ in terms of x.

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27. The length of radius of a right circular cylinder is decreased by 50% and height is increased by 50%. How much percent of the volume will be changed?

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28. Curved surface area and volume of a solid sphere are S and V respectively. Find the value of $\frac{S^3}{V^2}$.

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29. If $u_i = \frac{x_i - 25}{10}, \sum f_i u_i = 20$ and $\sum f_i = 100$ then find the value of $\bar{x}$.

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30. Rameshbabu deposits Rs 3,70,000 in total in three banks. The rates of simple interest per annum in three banks are 4%,5% and 6% respectively, after 1 year the total interests in three banks are equal. Calculate the amount he heas deposited in eah of the three banks.

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31. Tow friends start a partnership business investing ₹. 40,000 and ₹. 50,000 respectively.

There is an agreement between them that 50% of the profit will be divided equal and rest amount of profit will be distributed between them in the ratio of their principal. If the share of profit of 1 st friend is ₹. 800 less than that of the 2nd friend, find the share of profit of the 1 st friend.

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32. 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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33. If $2x = \sqrt{a} + \frac{1}{\sqrt{a}}$. Show that $\frac{\sqrt{x^2-1}}{x-\sqrt{x^2-1}}(a-1)$

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34. x varies directly with y and inversely with z. When y =5, z= 9 then $x = \frac{1}{6}$. Find the relation among three variables x,y and z and find the value of x when y = 6 and $z = \frac{1}{5}$.

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35. If a,b,c,d are in continued proportion then show that $(b-c)^2+(c-a)^2+(b-d)^2=(a-d)^2$.

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36. State and prove the convere of the Pythagoras theorem.

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37. Prove that the tangent to the circle at any point on it is perpendicular to the radius passes through the point of contact.

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38. Two chords AB and CD of a cricle with centre O intersect at P. Prove that $\angle AOD + \angle BOC = 2\angle BPC.$

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

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40. Draw a triangle whose two sides are 9 cm and 7 cm in length and the angle between two sides is 60°. Draw the incircle of this triangle.

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41. For which value of $\theta(0^\circ \leq \theta \leq 90^\circ)\sin^2\theta - 3\sin\theta + 2 = 0$ is true.

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42. If α and β are complementary angles, then show that $\cot\beta + \cos\beta = \frac{\cos\beta}{\cos\alpha}(1 + \sin\beta)$.

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43. If $0^\circ < (\alpha) < 90^\circ$, then find the minimum value of $4\cos ec^2(\alpha) + 9\sin^2(\alpha)$

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44. A palm tree stands on the bank of a river. A post is fixed I the earth on the other bank just opposite to the palm tree. On moving $7\sqrt{3}$ metres from the post laong the bank, it is found the tree makes an angle of 60^2 at that

point with respect to this bank. Find the width of the river.

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45. 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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46. The length of outer and inner diameter of a hallow right circular cylinder are 16 cm and 12 cm respectively. Height of cylinder is 36 cm. Calculate how many solid cylinders of 2 cm radius and 6 cm length may be obtained by melting this cylinder.

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47. On the curved surface of the axis of a globe with the length of 14cm radius, two circular

holes are made each of which has the length of radius 0.7cm. Find the area of metal sheet surrounding its curved surface.

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48. 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.

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49. Draw an ogive (less than type) from the following frequency distribution table.

Class	50-60	60-70	70-80	80-90	90-100
frequency	4	8	12	6	10

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50. 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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51. Find the mean of the following frequency distribution table.

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

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