MATHS

BOOKS - UNITED BOOK HOUSE

QUESTION PAPER 2017

Exercise

1. Choose the correct answer : If the ratio of

principal and yearly amount be in the ratio 25 :

28, then the yearly rate of interest is ____

A. 0.03

B. 0.12

C. 0.10714285714286

D. 8%.

Answer:

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2. Under what condition one root of the quadratic equation `ax^2 + bx + c = 0 is zero?

A. a =0

B. b = 0

C. c = 0

D. none of these.

Answer:

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3. The number of common tangents of two circle when they do not touch or intcrsect each other is _____

A. 2

B. 1

C. 3

D. 4

Answer:

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4. If $\sin\theta = \cos\theta$, then the value of 2θ will

be_____

A. $30°$

B. $60°$

C. $45°$

D. $90°$.

Answer:

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5. If each of radius of the base and height of a cone be doubled, then the volume of it will be____

A. 3 times

B. 4 times

C. 6 times

D. 8 times of the previous one.

Answer:

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6. The median of the numbers 2, 8, 2, 3, 8, 5, 9, 5, 6 is _____
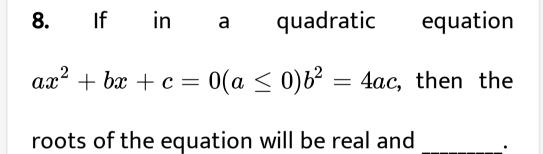
A. 8

B. 6.5

C. 5.5

D. 5

Answer:

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7. Fill in the blanks (any five) : At same rate per cent per annum, the simple interest and

compound interest of same principal are same in _____year.

8. If in a quadratic equation $ax^2 + bx + c = 0 (a \leq 0) b^2 = 4ac$, then the roots of the equation will be real and _____.

9. If the length of the sides of two triangles are in proportion, then two triangles are _____

10. If $\cos \circ \theta - \sin^2 \theta = \dfrac{1}{x}$, (x > 1), then
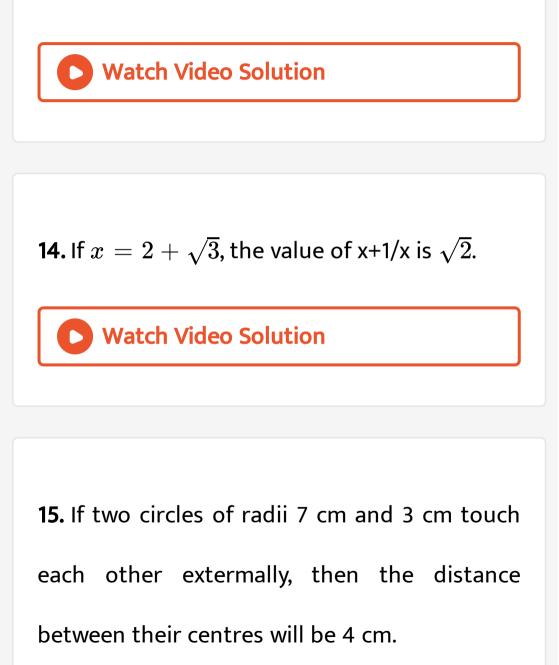
$\cos^4 \theta - \sin^4 \theta =$ _____
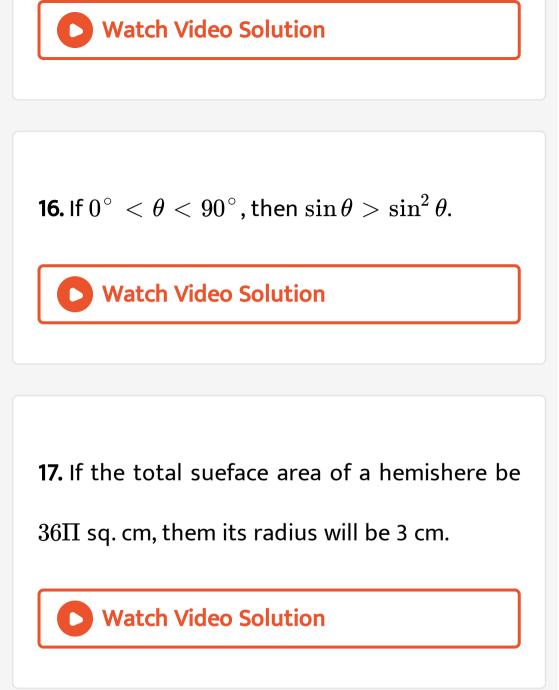
11. The numbers of plane surface of a solid hemisphere are _____

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12.

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13. Write True or False (any five) : A starts a business with ₹. 10,000 and B gives ₹. 20,000

after 6 months. At the end of the year their profit will be equal.

14. If $x = 2 + \sqrt{3}$, the value of x+1/x is $\sqrt{2}$.

15. If two circles of radii 7 cm and 3 cm touch each other extermally, then the distance between their centres will be 4 cm.

16. If $0° < \theta < 90°$, then $\sin\theta > \sin^2\theta$.

17. If the total sueface area of a hemishere be

36Π sq. cm, them its radius will be 3 cm.

18. If the perpendicular drawn on x-axis from the point of intersection of both ogives, the abscissa of the point of intersection of this penpendicular with the x-axis will be the median.

19. Answer the followings questions (any ten) :

A sum of money is doubled in 8 years at r% rate of compound interest per annum. At the

same rate in how many years it will be four times of the sum?

20. A invests 1, 1/2 times more than B invests in a business. At the end of the year B receives ₹. 1,500 as profit. How much profit A will get at the end of that year?

21. Without solving, find the values of 'p' for which the equation $x^2 + (p - 3)x + p = 0$ has real and equal roots.

22. If $x \propto yz$ and y prop zx` , show that z is a non zero constant.

23. The perimeter of two similar triangles are 20 cm and 16 cm respectively. If the length of one side of the first triangle is 9 cm, then find the length of the length corresponding side of second triangle.

24. In $\angle ABC$, $\angle ABC = 90°$, AB = 5 cm, BC = 12 cm. Find the length of the circumradius of $\triangle ABC$.

25. In $\triangle ABC$, if AB = (2a - 1) cm, AC = $2\sqrt{2}a$ cm and Bc = (2a + 1) cm, then write down the value of $\triangle BAC$.

26. If $x = a \sec\theta$ and $y = b \tan\theta$, then find the relation between x and y free from θ.

27. If $\tan(\theta + 15°) = \sqrt{3}$, find the value of $\sin\theta + \cos\theta$.

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28. The diameter of one sphere is double the diameter of another sphere. If the numerical value of total surface area of larger sphere is equal to the volume of smaller sphere, then find the radius of the smaller sphere.

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29. If the number of surface of a cuboid is x, the number of edges is y, the number of vertices is z and the number of diagonals is P, then find the value of x - y + z + P.

30. If 11, 12, 14, x - 2, x + 4, x + 9, 32, 38, 47 are arranged in ascending order and their median is 24, find x.

31. Answer any one question : The difference between simple interest and compound interest for 2 years of a sum of money becomes ₹. 80 at 4% interest per annum. Calculate the sum of money.

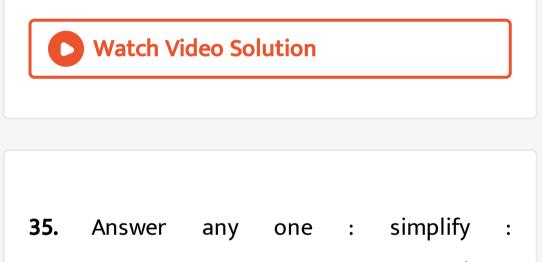**32.** A, B, C start a business jointly investing ₹. 1,80,000 in together. A gives ₹. 20,000 more

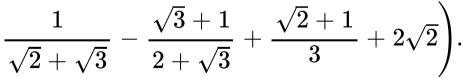than that of B and B gives ₹.20,000 more than that of C. Distribute the profit of ₹. 10,800 among them.

33. Answer any one : 1/a+b+x = 1/a+1/b+1/x, $[x \neq 0, -(a+b)]$

34. If 5 times of a positive whole number is less by 3 than twice of its square, then find the numbers?

35. Answer any one : simplify :

$$\frac{1}{\sqrt{2} + \sqrt{3}} - \frac{\sqrt{3} + 1}{2 + \sqrt{3}} + \frac{\sqrt{2} + 1}{3} + 2\sqrt{2} \Big).$$

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?

37. Answer any one : If a/b+c = b/c+a = c/a+b, then prove that each ratio is equal to 1/2 or - 1.

38. If (b+c-a)x = (c+a-b)y = (a+b-c) z =2,then show that (i/x+1/y) (1/y+1/z) (1/z+1/x) =abc.

39. Answer any one : If in a triangle, the area of the square drawn on one side is equal to the sum of the areas of the squares drawn on other two sides, then prove that the angle opposite to the first side will be a right angle.

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40. If two tangents are drawn to a circle from a point outside it, them the line segments

joining the point of contacts and the exterior point are equal.

41. Answer any one question : Prove that the quadrilateral foemed by the internal bisectors of the four angles of a quadrilateral is cyclic.

42. O is the circumcentre of $\triangle ABC$ and $OD \perp Bc$, prove that $\angle BOD = \angle BAC$.

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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).
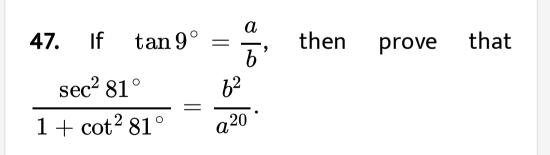
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44. Construct a rectangle with sides 8 cm and 6 cm construct a square equal in area to that of the rectangle. (only traces of construction are required.)

45. If the measures of three angles of a quadrilateral are $\dfrac{\Pi}{3}$, $\dfrac{5\Pi}{6}$ and $90°$, then determine the fourth angle in sexagesimal and circular measure.

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

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47. If $\tan 9° = \dfrac{a}{b}$, then prove that $\dfrac{\sec^2 81°}{1 + \cot^2 81°} = \dfrac{b^2}{a^{20}}$.

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48. Answer any one question : The distance between two pillars is 150 m. Height of one is thrice the other. From the midpoint of the line segment joining the foot of the pillars, the angle of elevation of the top of the pillars are complementary to each other. Find the height of the shorter pillar.

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49. If the angle of depression from a lighthouse of two ships situated in the same line with the lighthouse are $60°$ and $30°$ and if the nearer ship is 150 in away from the lighthouse, then find the distance of the other ship from the lighthouse.

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50. Answer any two questions : Determine the volume of a solid right circular cone which can

be made from a solid wooden cube of 4.2 dcm

efge length by wasting minimum quantity of

wood .

51. A hemispherical bowl with radius of 9 cm is

completely filled with water. How many

cylindrical bottle of diameter 3 cm and height

4 cm can be filled up with the water in the

bowl.

52. Area of the base of a closed cylindrical water tank is 616 sq. meter and height is 21 meter. Find the total surface area of the tank.

53. From the data given below, if the meadian is 32 find the value of f_1 and f_2 when total frequency is 100

Flass boundary	0-10	10-20	20-30	30-40	40-50	50-60
Frequency	10	f_1	25	30	f_2	10

54. Find the mode from the following distribution table :

Class interval	1-5	6-10	11-15	16-20	21-25	26-30	31-35
Frequency	2	3	6	7	5	4	3

55. In a frequency distribution having 6 class intervals the total frequency is 100 and cumulative frequency less than type and

cumulative frequency more than type corresponding to the fourth class interval are 86 and 50 respectively. Find the frequency of the fourth class interval.

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