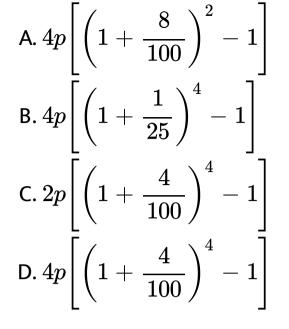# MATHS

BOOKS - UNITED BOOK HOUSE
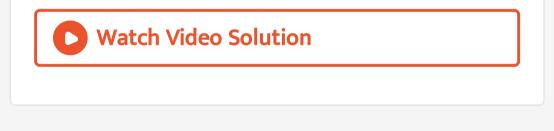
PATHA BHAVAN

Exercise

1. What will be the compound interest of Rs. 4p after 2 years if the rate of interest is 8% per annum compounded half -yearly?

A. $4p\left[\left(1 + \dfrac{8}{100}\right)^2 - 1\right]$

B. $4p\left[\left(1 + \dfrac{1}{25}\right)^4 - 1\right]$

C. $2p\left[\left(1 + \dfrac{4}{100}\right)^4 - 1\right]$

D. $4p\left[\left(1 + \dfrac{4}{100}\right)^4 - 1\right]$

Answer:

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2. If the sum of two roots of a quadratic equation is 7 and the difference of two roots is 3, then the equation will be

A. $x^2 - 7x + 3 = 0$

B. $x^2 - 7x - 3 = 0$

C. $x^2 - 7x + 10 = 0$

D. $x^2 - 10x + 7 = 0$

Answer:

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3. In a cyclic parallelogram, the measure of the angles will be as follows

A. Two angles will be greater than 90

B. Two angles will be less than $90°$

C. all angles are equal

D. Only one of the angles will be $90°$.

Answer:

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4. If the radius of a solid sphere is r unit, the total surface area of the quarter sphere is

A. $2\pi r^2$ sq unt

B. $3\pi r^2$ sq.unit

C. $4\pi r^2$ sq.unit

D. πr^2 sq.unit

Answer:

5. If $\cos\theta + \sin\theta = \sqrt{2}\cos\theta$, then $\cos\theta - \sin\theta$

is___

A. 1

B. -1

C. 0

D. none of these

Answer:

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6. If the average of any five integers is zero, then

one integer must be

A. -5

B. 5

C. 0

D. None of these or any one of these

Answer:

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7. Fill in the blanks

If a line intersects a circle at two points, then it
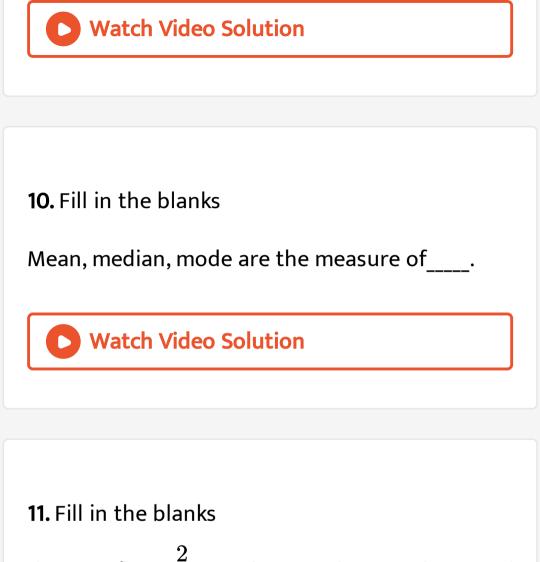
is called_____.

8. Fill in the blanks

If the ratio of the profit of three partners in a business is $\frac{1}{3} : \frac{1}{4} : \frac{1}{5}$ then the ratio of their capital will be_____.

9. Fill in the blanks

"If m:n = p:q, then m:p = n:q this rule is called as_____.

10. Fill in the blanks

Mean, median, mode are the measure of_____.

11. Fill in the blanks

If $\sec\theta = \dfrac{2}{\sqrt{3}}$ then the value of $\cos(90° - 3\theta) + \sin(90° - 2\theta)$ is_____.

12. Fill in the blanks

If the slant height and radius of a cone are p and q respectively, then its volume is_____.

A.

B.

C.

D.

Answer:

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13. In true or false text

In the case of simple interest, the principal is not fixed for every year.

14. Write true or false

Sum of two surds will be always irrational number.

15. In true or false text
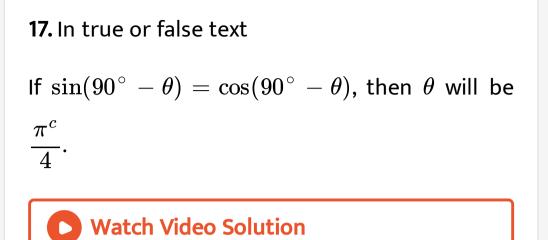
Median of 7,8,12,14,14,4 is 8.

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16. In true or false text

If two circles touch each other internally, then three will be only one direct common tangent.

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17. In true or false text

If $\sin(90° - \theta) = \cos(90° - \theta)$, then θ will be $\dfrac{\pi^c}{4}$.

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18. In true or false text

The ratio of the diagonal of a cubic room and diagonal of its floor is $\sqrt{2} : \sqrt{3}$.

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19. If α and β be the roots of the equation $x^2 + 3x + 4 = 0$ find the equation whose roots are $(\alpha + \beta)^2$ and $(\alpha - \beta)^2$.

20. If $\dfrac{3x - 5y}{3x + 5y} = \dfrac{1}{2}$ find the value of $\dfrac{3x^2 - 5y^2}{3x^2 + 5y^2}$

21. In a partnership business the ratio of capitals of Ram and Hari is 3:4 and the ratio of capitals of Hari and Jadu is 5:6. If the anuual profit is Rs 590, Find the share of profit of Hari.

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22. If the amount of Rs 400 in 2 years is Rs 441, find the annual rate of compound interest.

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23. In triangle ABC, AB = (2a-1)cm, $AC = 2\sqrt{2a}$cm, BC = (2a+1)cm, find $\angle BAC$.

24. AD is a median of triangle ABC, X is a point on AD such that AX:XD = 1:2 produced B X intersects AC at E. IF AC = 15cm, find AE.
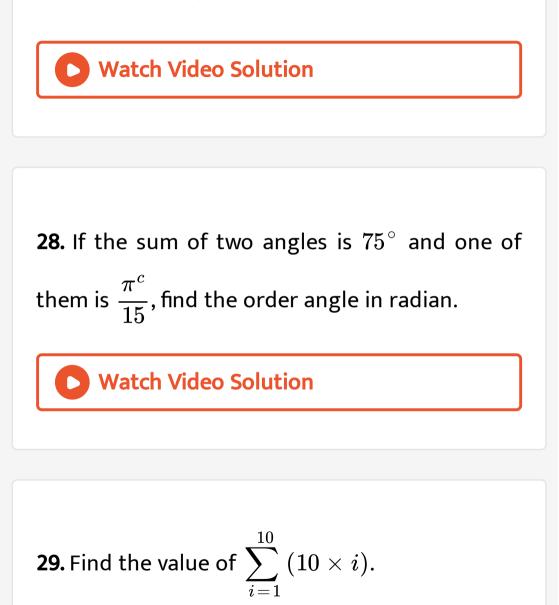
25. Volume of a cuboid is V. Length , breadth and height are a,b, and c respectively. If tottal surface area of S, prove that $= \dfrac{1}{V} = \dfrac{2}{S}\left(\dfrac{1}{a} + \dfrac{1}{b} + \dfrac{1}{c}\right)$.

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26. The curved surface area of a right circular cone is 10 times of its area of base. Find the ratio of height and diameter of the base of the cone.

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27. If tan 2x.tan2y = 1, find sec(x+y).

28. If the sum of two angles is $75°$ and one of them is $\dfrac{\pi^c}{15}$, find the order angle in radian.

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

30. The frequency of three numbers 12, 15 ,20 are x+2, x and x-1 respectively. If the mean of this data is 7, find x.

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31. The simple interest and compound interest of some amount of money in 2 years are Rs,840 and Rs.869.40. Find the amount of money and annual rate of interest.

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32. Mary and Sayan start a partnership business with the amount Rs. 25,000 and Rs 35,000 respectively and there is a condition that $\frac{1}{3}$ of the total profit are to be divided between them equally and the rest to be divided according to the ratio of their capitals. If the amount of profit at the end of the year is Rs. 36,000 find the share of the amount of profit of Sayan.

33. Solve:

$$\frac{x+5}{2-x} + 2\left(\frac{2-x}{x+5}\right) = 3[x \neq 2, \ -5]$$

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34. The breadth of a rectangle is 3cm less than its length. If the area of the rectangle be 40 square cm. Find its perimeter.
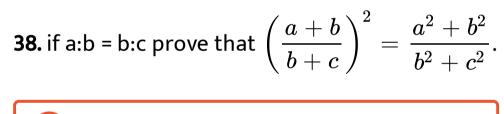
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35. If $x = \dfrac{2\sqrt{10}}{7}$ find the value of $\dfrac{\sqrt{1+x} + \sqrt{1-x}}{\sqrt{1+x} - \sqrt{1-x}}$

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36. If $\dfrac{x}{y}\infty x + y$ and $\dfrac{y}{x}\infty x^2 - xy + y^2$, then show that $x^3 + y^3$ is constant.

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37. If $\dfrac{a}{4-a} + \dfrac{b}{4-b} + \dfrac{c}{4-c} = 1$ prove that $\dfrac{1}{4-a} + \dfrac{1}{4-b} + \dfrac{1}{4-c} = 1$

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38. if a:b = b:c prove that $\left(\dfrac{a+b}{b+c}\right)^2 = \dfrac{a^2+b^2}{b^2+c^2}.$

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39. State and prove Pythagoras theorem.

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40. If two circles touch each other externally then the point of contact will on the line-segment joining the two centers___prove it.

41. In a triangle PQR, $\angle PQR = 90°$ S is any point onQR. Prove that $PS^2 + QR^2 = PR^2 + QS^2.$

42. AB is a diameter of a circle with centre O and AC is a chord . The straight line through O parallel to AC meets the arc BC at D. Prove that, BD= CD.
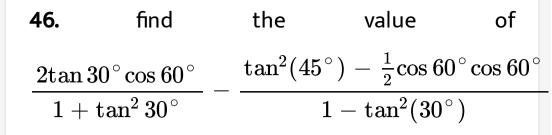
43. Answer any one question : Draw an equilateral triangle of side of 6 cm and draw the incircle of the triangle. (only traces of construction are required).

44. Geometrically find the value of $\sqrt{15}$.

45. If $x \sin^3 a + y \cos^3 a = \sin a \cos a$ and $x \sin a - y \cos a = 0,$ then show that $x^2 + y^2 = 1.$

46. find the value of

$$\frac{2\tan 30° \cos 60°}{1 + \tan^2 30°} - \frac{\tan^2(45°) - \frac{1}{2}\cos 60° \cos 60°}{1 - \tan^2(30°)}$$

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47. If 2sinA-1 = 0 then show that

$$\sin 3A = 3\sin A - 4\sin^3 A.$$

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48. The upper part of a lamp-post is broken by strom and the top touches the ground at an angle of $30°$ and at a distance of $8\sqrt{3}$ meter from the foot of the post. What was the height of the post.

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49. If the angle of elevation of the Sun is $60°$, then the length of the shadow of a vertical pole of length h metre is

A. q

B.

C.

D.

Answer:

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50. The area of curved surface of right circular cylinder is 880sq.cm. and its length is 20 cm. Find the volume of the cylinder.

51. From a solid iron sphere of diameter 18cm, a right circular cylindrical rod is formed. If the length of the rod is 24 cm, then what will be it diameter?

52. The vertical height of a conical text tent is 10 metre and diameter of base is 15 metre. If the

cost of canvas per sq.m. is RS 3.50, find the cos

tof canvas to make the tent.

53. Find the median from the following given

data.

Class limit	100–200	200–300	300–400	400–500	500–600
frequency	10	20	40	20	10

54. In the frequency distribution table given below, the average daily wage is Rs. 117.

Salary (in Rs.)	100	110	120	X	140
No. of employee :	1	4	2	2	1

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55. find the mode from the following given data.

Height (in cm.)	52-55	55-58	58-61	61-64.
frequency	15	20	25	10

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