1. If $\tan\theta + \cot\theta = 5$, then the value of $\tan^2\theta + \cot^2\theta$ is

1. 22 2. 25 3.23 4. 27

Ans. 3

Explanation

Given: $\tan\theta + \cot\theta = 5$

Square both sides → $\tan^2\theta + \cot^2\theta + 2 = 25$; $\tan^2\theta + \cot^2\theta = 23$ ($\because \cot\theta \times \tan\theta = 1$)

2. When a number is divided by 56, the remainder will be 29. If the same number is divided by 8, then the remainder will be

1. 6 2. 7 3.5 4. 3

Ans. 3

Explanation

Let the number be x;

Then the number will be= 56x + 29;

When the above expression will be divided by 8, then the remainder will be equal to (29÷8 = 5).

When the second divisor is factor of first divisor, the second remainder is obtained by dividing the first remainder by the second divisor. Hence, on dividing 29 by 8, the remainder is 5

3. The average of marks of 17 students in an examination was calculated as 71. But it was later found that the mark of one student had been wrongly entered as 65 instead of 56 and another as 24 instead of 50. The correct average is

1.70 2.71 3.72 4. 73

Ans. 3

Explanation

The total marks obtained by the students= 71× 17= 1207;

After correction, the total marks obtained= 1207 – 65 + 56 -24 +50= 1224;

The average of marks obtained by the students= $\frac{1224}{17}$ = 72;

4. The simple interest on a sum for 5 years is two-fifth of the sum. The rate of interest per annum is

1.0.1 2.0.08 3.0.06 4. 0.04

Ans. 2

Explanation

SI=$\frac{PNR}{100}$; N =5

Given: SI= $\frac{2}{5}$× P = $\frac{PNR}{100}$

R= $\frac{\frac{2}{5}\times 100}{5}$ = 8%= 0.08.

5. If a - b = 3 and $a^2 + b^2 = 25$, then the value of ab is

1.16 2.8 3.10 4. 15

Ans. 2

Explanation

$(a - b)^2 = a^2 + b^2 – 2ab$

Substitute the values given, $3^2 = 25 – 2ab$

$2ab = 25 – 9 = 16;$

$ab = 8;$

6. A cylindrical container of 32 cm height and 18 cm radius is filled with sand. Now all this sand is used to form a conical heap of sand. If the height of the conical heap is 24 cm, what is the radius of its base?

1.12cm 2.24cm 3.36cm 4. 48 cm

Ans. 3

Explanation

Cylinder

$V_{cl} = \pi r^2 h_1$

$h_1 = 32$

$r_1 = 18$

Cone

$V_{co} = \frac{1}{3}\pi r_2^2 h_2$

$h_2 = 24$

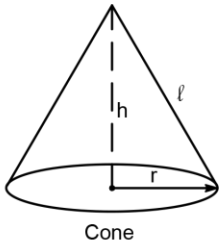
$r_2 = ?$

Given: $V_{cl} = V_{co}$

$r_1^2 h_1 = \frac{1}{3} r_2^2 h_2$

$18^2 \times 32 = \frac{1}{3} r_2^2 x\ 24 \rightarrow r_2^2 = 18^2 \times 32\ x3x\frac{1}{24} = 1296 = 36 \times 36 \therefore r_2 = 36.$

The surface features of a cone and cylinder are shown below:



Cone

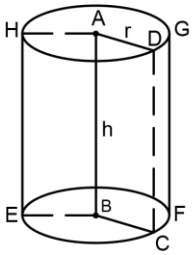
a. Curved surface area = πrℓ

b. Total surface area = πr (ℓ+r)

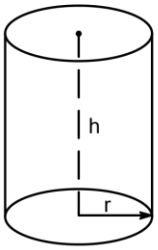
where, $\ell = \sqrt{r^2 + h^2}$

c. Volume of cone = $\frac{1}{3}\pi r^2 h$

a. Cone.



b. Development of right circular cylinder.



c. Cylinder.

a. Curved surface area = 2πrh

b. Total surface area = $2\pi r^2 + 2\pi rh$
= 2πr (h+r)

c. Volume of cylinder = $\pi r^2 h$

7. The angle of elevation of the top of a pillar from the foot and the top of a building 20m high, are 60° and 30° respectively. The height of the pillar is

1.10m 2.$10\sqrt{3}$m 3.60m 4. 30 m

Ans. 4

Explanation

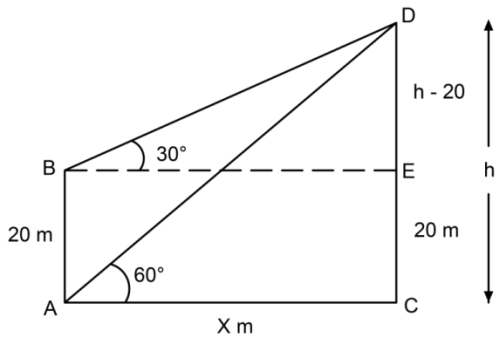
In Triangle ACD, $\tan 60° = \frac{h}{x}$;

In Triangle BED, $\tan 30° = \frac{h-20}{x}$

Divide both the expression,

$$\frac{\tan 60°}{\tan 30°} = \frac{\left(\frac{h}{x}\right)}{h-\frac{20}{x}} \rightarrow \frac{h}{h-20}$$

$$i.e., \frac{\sqrt{3}}{\frac{1}{\sqrt{3}}} = 3 = \frac{h}{h-20} \rightarrow h = 30 \text{ m};$$



8. If the area of the base, height and volume of a right prism be $(3\sqrt{3}/2)$ P^2 cm^2, $100\sqrt{3}$ cm and 7200 cm^3 respectively, then the value of P will be?

1. $\frac{2}{\sqrt{3}}$ 2. $\sqrt{3}$ 3. $\frac{3}{2}$ 4. 4

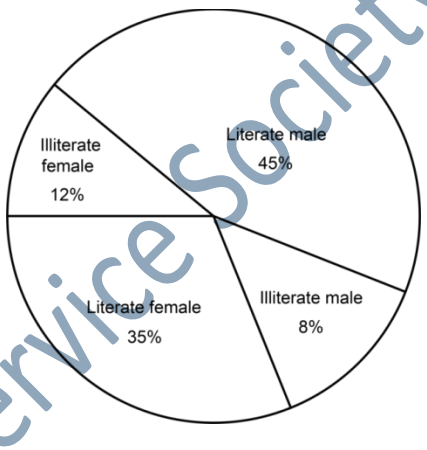
Ans. 4

Explanation

Volume of prism = area of base × height;

$7200 = \left(\frac{3\sqrt{3}}{2}\right) P^2 \times 100\sqrt{3} = 450\ P^2 \rightarrow P^2 = 16 \rightarrow P = 4$;

9. The pie-chart shows the percentage of literate and illiterate male and female in a state. Study the diagram and answer the following questions.



If the total number is 35000, then the difference between the numbers of literate male and literate female is

1. 3500 2. 3700 3. 400 4. 4500

Ans. 1

Explanation

Percentage difference among the literate male and female= 45 – 35 = 10 and

Hence their total = 35000×10%= 3500.

10. If A, B and C can complete a work in 6 days. If A can work twice faster than B and thrice faster than C, then the number of days C alone can complete the work is:

1. 22 Days 2. 44 Days 3. 33 Days 4. 11 Days

Ans. 3

Explanation

From the given condition, if A can finish the work in x days, B can finish in 2x days and C in 3x days.

Let A's one day work be a, B's a/2 and C's a/3.

One day combined work of A, B and C =a +a/2+a/3 =11a/6 = 1/6 (Given) → a =1/11

∴ A can finish the work in 11 days, B in 22 days and C 33 days

11. The internal bisector of the ∠A and ∠B of the ΔABC, intersect at O. If ∠C = 100, then the measure of ∠BOA is:-

1.110 2. 130 3. 140 4. 120

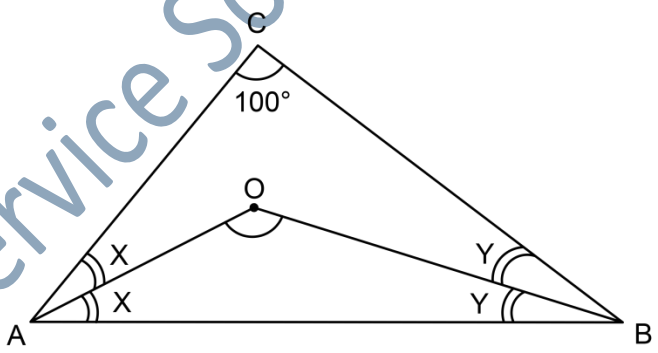
Ans. 3

Explanation

In triangle ABC, 100 + 2x + 2y = 180; => x + y = 40;

In triangle ABO,

∠AOB= 180 – (x + y) = 180 – 40 = 140;



12. A conical iron object having diameter 28 cm and height 30cm is totally immersed in a cylinder containing water and it results in the rise of water level by 6.4cm. The diameter, in cm, of the vessel is

1. 3.5 2. 32 3.35 4. $\frac{35}{2}$

Ans. 3

Explanation

Let the radius of the cylindrical vessel be R cm and the radius and height of cone be r_c and h_c respectively. Let the rise in water level in the cylinder be h cm.

Volume of displaced water in the cylinder = volume of conical iron object

i.e., $\pi R^2 h = \frac{1}{3}\pi r_c^2 h_c$ (given r_c = 14 cm and h_c= 30cm)

i.e., $R^2 \times 6.4 = \frac{1}{3} \times (14)^2 \times 30 \rightarrow R = 17.5$ cm;

Hence, the diameter of the vessel = 35 cm.

13. If the discount of 10% is given on the marked price of a TV, the gain is 20%. If the discount is increased to 20%, the gain is:-

1. 5% 2) 6.67% 3 7.62% 4 6.25%

Ans. (2)

Explanation

Let the marked price be Rs. 100;

Price after discount of 10%, i.e., SP = Rs. 90;

Since, the realized gain = 20%; Hence, the cost price = Rs. 75;

If the discount price = 20%, then the price after discount = Rs. 80;

Hence, the required answer = 5×100/75 = (20/3) %=6.67%;

14. If $4a - 4/a + 3 = 0$ then the value of $a^3 - 1/a^3 + 3$ =?

1. $\frac{3}{16}$ 2. $\frac{21}{64}$ 3. $\frac{7}{16}$ 4. $\frac{21}{16}$

Ans.4

Explanation

Ans. $4a - 4/a + 3 = 0 \rightarrow a - \frac{1}{a} = -\frac{3}{4}$;

Cubing both sides: $a^3 - 1/a^3 - 3\times(a - \frac{1}{a}) = -\frac{27}{64}$;

$a^3 - 1/a^3 = -\frac{27}{64} + 3 \times(-\frac{3}{4})$;

$a^3 - 1/a^3 = -\frac{171}{64}$; $a^3 - 1/a^3 + 3 = -\frac{171}{64} + 3 = \frac{21}{16}$;

15. Find the number of sides of a regular polygon if each of its interior angles is 135^o

1. 6 2. 7 3.8 4. None

Ans: 8

16. A circular swimming pool is surrounded by a concrete wall 4m wide. If the area of the concrete wall surrounding the pool is $\frac{11}{25}^{th}$ that of the pool, then the radius (in m) of the pool is:

1. 8 2. 20 3. 16 4. 30

Ans. 2

Explanation

Let the radius of the swimming pool = R meter;

Radius of concrete wall = (R + 4) meter;

$\pi\{(R+4)^2 - R^2\} = \frac{11}{25} \times \pi \times R^2$;

$8(R+2) = \frac{11}{25} \times R^2$ R = 20 meter.

17. Two pipes A and B can fill a tank with water in 30 minutes and 45 minutes respectively. The water pipe C can empty the tank in 36 minutes. First A and B are opened. After 12 minutes C is opened. Total time (in minutes) in which the tank will be filled up is:-

1. 12 2. 30 3. 36 4. 24

Ans. 4

Explanation

Part filled in 12 minutes by taps A and B = $\left(\frac{1}{30} + \frac{1}{45}\right) \times 12 = \frac{5}{90} \text{ x}12 = \frac{2}{3}$.

The balance part to fill = $\frac{1}{3}$.

Part filled in a minute when A, B and C are opened = $\frac{1}{30} + \frac{1}{45} - \frac{1}{36} = \frac{6+4-5}{180} = \frac{5}{180} = \frac{1}{36}$.

i.e., $\frac{1}{36}$ the part is filled in 1 minute.

∴Time required to fill the balance $\frac{1}{3}$part = $\frac{1}{1/36} \text{ x } \frac{1}{3}$ =12 minute.

Total time =12+12 = 24 minute

18. A shopkeeper allows a discount of 10% on the marked price of a camera. Marked price of the camera, which costs him Rs. 600, to make a profit of 20% should be:-

1.Rs. 750 2. Rs. 800 3. Rs. 700 4. Rs. 650

Ans. 1

Explanation

Cost price = Rs. 600;

Suppose the marked price = Rs. x;

$x \times 0.8 - 500 = 500 \times 20\%$;

$x = 500 \times \frac{1.2}{0.8}$ = Rs. 750;

19. The sum of the squares of the first n natural numbers is

1. $n^2 + 1$ 2. $\frac{n^4+1}{n}$ 3. $\frac{n(n+1)(2n+1)}{6}$ 4. $\frac{(n+1)(n+2)}{n}$

Ans: 3.

20 If 1^o=k radian, then k is equal to

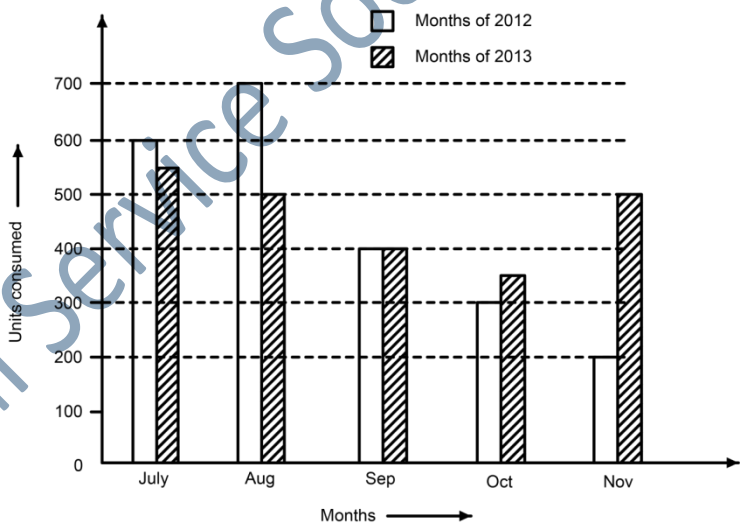
1. 0.5716 2. 0.0175 3. 0.027 4. 0.174

Ans: 2

One radian = 57.3^o
1^o= 0.0175radian

21. Directions: Study the following bar-diagram and answer the questions.

Electricity units consumed by a family in two consecutive years during July to November.



In how many months in 2012, the consumption of electric units was more than the average units consumption in that years.

1. 5 2. 2 3. 3 4. 4

Ans. 2

Explanation

Average of electric units in the year 2012

$= \frac{600 + 700 + 400 + 300 + 200}{5} = \frac{2200}{5} = 440$; hence, there will be only two months where consumption of units will be higher than the average i.e. July and August.

22. The maximum difference in the units consumption between these two years has been found in the month of

1. October 2 August 3. November 4. July

Ans. 3

Explanation

In November, difference between the consumption of electric units = 500- 200 = 300; (which is higher than others)

23. AB is a transverse common tangent to two circles with centers P and Q and radii 6cm and 3cm at the point A and B respectively. If AB cuts PQ at the point X and AX = 8cm then the length of PQ is:-

1.12 cm 2. 13 cm 3. 10 cm 4.15 cm

Ans.4

Explanation

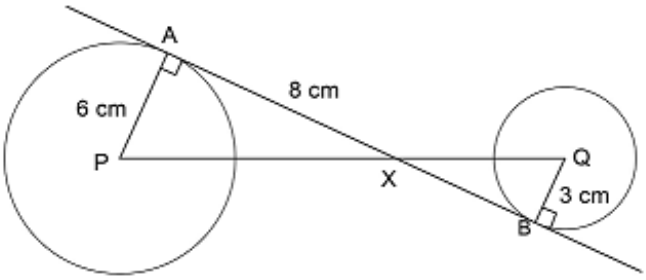
In triangle ΔAXP, PX = 10 cm; (Pythagoras theorem)

ΔAXP and ΔBQX are similar triangles; The sides of ΔBQX are ½ that of ΔAXP.

BX = 4 CM AND QX = 5 cm.

(The sides of ΔBQX and ΔAXP are Pythagorean triples)

PQ = 10 + 5 = 15 cm;



24. Find the value of the following expression:

$x^2 + y^2 + z^3 + 3xyz - ab$ if x = 1, y = 1, z = 2, a = -2 and b = 3.

Ans.

$1^2 + 1^2 + 2^3 + 3(1)(1)(2) - (-2)(3) = 1 + 1 + 8 + 6 + 6 = 22$

25. The interest on Rs. 3000 at 6% for 15 days is _____ .

Ans: SI= $\frac{PNR}{100} = 3000 \times \frac{\frac{1}{2}}{12} \times \frac{6}{100}$ = Rs. 7.5

26. A dealer sold a bicycle at a profit of 10%. Had he brought the bicycle at 10% less price and sold it at a price Rs. 60 more, he would have gained 25%. The cost price of the bicycle was-

1. Rs. 2600 2. Rs. 2200 3.Rs. 2400 4. Rs. 2000

Ans.3

Explanation

Cost price = Rs. x; SP = 1.1x;

0.9×CP ×125%= 1.1x + 60;

1.25×0.9×x = 1.1x + 60; => x = Rs. 2400;

27 Directions: The income of a State under different heads is given in the following pie-chart. Study the chart and answer the questions.

27. The central angle of the sector representing income tax is

1. 126° 2. 119° 3. 135° 4. 150°

Note: Custom duty is 4%

Ans.1

Explanation:

The required angle = 35% of 360 = 126 °.

28. If the total income in a year be Rs. 733 crores then the income (in Rs. crores) from 'Income tax' and 'Excise duty' is:-

1. Rs. 329.80 2. Rs. 331.50 3. Rs. 331.45 4. Rs. 329.85

Ans. (4)

Explanation

Income from income tax and excise duty = (35 +10)% of 733 = 733×0.45

= Rs. 329.85;

29. If the income from the market tax in a year be Rs. 165 crores then the total income from other sources is (in Rs. crores):-

1. Rs. 335 2. Rs. 345 3. Rs. 325 4. Rs. 365

Ans.1.

Explanation

Market tax = 33% of the total tax;

Hence, the total tax = 165 $\times\frac{100}{33}$ = Rs. 500;

The required total income = 67% of total tax = Rs. 335;

30. A dealer buys an article listed at Rs. 100 and gets successive discounts of 10% and 20%. He spends 10% of the Cost Price on transportation. At what price should he sell the article to earn a profit of 15%?

1 Rs. 91.20 2. Rs. 92.00 3. Rs. 90.80 4.Rs. 91.08

Ans.4

Explanation

Resultant successive discount = 20% + 10% - 20% × 10% = 28%;

The buying price of the article= 100 × (100-28)% = 100×72% = Rs. 72;

Buying price after transportation= 72 + 7.2 = Rs. 79.2;

Hence, the selling price = 79.2 × 1.15 = Rs. 91.08;

31. A librarian purchased 50 books for his library. But he saw that he could get 14 more books by spending Rs. 76 more and the average price per book would be reduced by Rs. 1. The average price (in Rs.) of each book he bought was:

1. 25 2. 15 3. 20 4. 10

Ans.4

Explanation:

Suppose, Total price of 50 story-books = Rs. x; Average price of 1 book $= \frac{x}{50}$;

Total price of 64 books including 14 books = x + 76; Average price of 1 book $= \frac{x+76}{64}$ = x/50 -1; => Rs. 500;

Hence, The average price of 1 book = $\frac{500}{50}$ = Rs. 10;

32. The speed of a boat in still water is 6 km/hr and the speed of stream is 1.5 km/hr. A man rows to a place at a distance of 22.5 km and comes back to the starting point. The total time taken by him is

1. 6 hour 2. 8 hour 3. 10 hour 4. 4 hour

Ans. 2

Explanation

Total time taken for upstream travel = $\frac{22.5}{6+1.5}$ = 5

Total time taken for upstream travel= $\frac{22.5}{6-1.5} = 3$

Total time taken for downstream travel= $\frac{22.5}{6+1.5} + \frac{22.5}{6-1.5}$= 3 + 5 = 8 hour;

33. A and B together can do a piece of work in 30 days. B and C together can do it in 20 days. A starts the work and works on it for 5 days, then B takes up and works for 15 days. Finally C finishes the work in 18 days. The number of days in which C alone can do the work when doing it separately is:-

1. 40 Days 2. 24 Days 3. 120 Days 4. 60 Days

Ans. 2

Explanation

$\frac{1}{x}+\frac{1}{y}=\frac{1}{30}$ --------- (1)

$\frac{1}{y}+\frac{1}{z}=\frac{1}{20}$ -------- (2)

$\frac{5}{x}+\frac{15}{y}+\frac{18}{c}=1$

$\frac{5}{x}+\frac{5}{y}=\frac{5}{30}$

(3) – (4) + $\frac{10}{y}+\frac{18}{z}=1-\frac{5}{30}$

$\frac{10}{y}+\frac{10}{z}=\frac{10}{20}$

$\frac{8}{z}=\frac{25}{30}-\frac{12}{20}=\frac{15}{6}-\frac{1}{2}=\frac{1}{3}\rightarrow$ z=24.

34. If $\tan\theta + \cot\theta = 2$, then the value of $\tan^{10}\theta + \cot^{10}\theta$ is-

1. 1 2. 2^{10} 3. 2 4. 4

Ans. 3.

Explanation:

Given: $\tan\theta + \cot\theta = 2$,

Put $\theta = 45^0 \rightarrow 1 + 1 = 2$;

Hence, $\tan^{10}A + \cot^{10}A = (1)^{10} + (1)^{10} = 2$.

35. ABCD is a cyclic quadrilateral. Diagonals AC and BD meets at O. If ∠AOB = 110° and ∠CBD = 30°, then ∠ADB measures-

1. 55° 2.80° 3. 70° 4. 30°

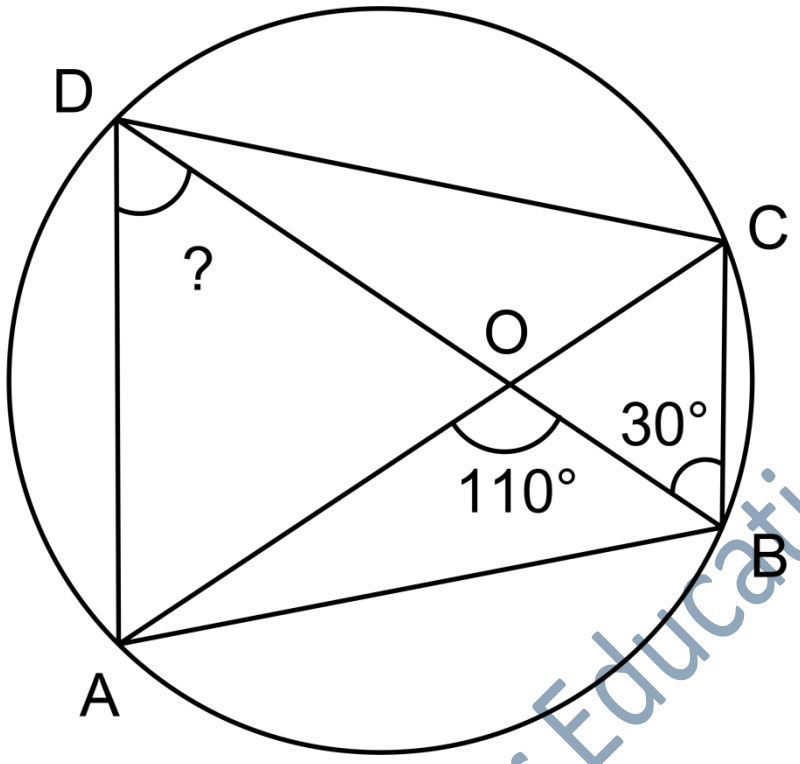
Ans. 2.

Explanation

Angle COB = 180 – 110 =70;

Angle OCB = 180 – (30 + 70) = 80;

Hence, angle ADB = angle OCB = 80. (Angles subtended by a chord are equal);



36. If a + b - c = 14 then the value of: $2b^2c^2 + 2c^2a^2 + 2a^2b^2 – a^4 – b^4 – c^4$

1.) 14 2) 0 3.) 28 4) 7

Ans.2.

Explanation

$(a+b-c)^2$

Assume a= 7, b=7 and c=0;

$=2b^2c^2 + 2c^2a^2 + 2a^2b^2 – a^4 – b^4 – c^4 = 0$;

37. The percentage of metals in a mine of lead ore is 60%. Now the percentage of silver is 3/4 % of metals and the rest is lead. If the mass of ore extracted from this mine is 8000kg, the mass (in kg.) of lead is:

1. 4763 2, 4762 3. 4761 4.4764

Ans. 4.

Explanation

The percentage of lead = 60 % of 8000 = 4800 kgs.

The mass of silver = 4800 ×&frac.34; % = 36 kgs.

Hence, the mass of lead = 4800 – 36 = 4764 kgs;

38. Average weight of 3 men A, B, C is 84 kg. Another man D joins the group and the average now becomes 80 kg. If another man E whose weight is 3kg more than that of D replaces A then the average weight of B, C, D and E becomes 79 kg. The weight of A in Kg is :

1. 72 2. 70 3. 80 4.75

Ans. 4.

Explanation

Given : Total weight of A + B + C = 84×3;

Average age of 4 mare given (A + B + C + D)/4 = 80; AB + C +D = 320

=> D = 320 – 252 = 68 kg;

The weight of E = 71 kgs; (i.e, weight of D +3 kg)

(B + C + D + E)/4 = 79; => B + C = 79×4 – 68 -71 = 177 kg;

Hence, the weight of A = 252 -177 = 75 kg.

39. If x = z = 225 and y = 226 then the value of: $x^3 + y^3 + z^3 - 3xyz$ =?

1. 765 2. 674 3.676 4. 576

Ans. 3.

Explanation

$x^3 + y^3 + z^3 - 3xyz = (x + y + z)[(x-y)^2 + (y - z)^2 + (z - x)^2]$;

$= (225 + 226 + 225) [(-1)^2+(1)^2-0] = 676×2/2= 676$;

40 AB and CD are two parallel chords of a circle lying on the opposite side of the center and the distance between them is 17cm. The length of AB and CD are 10 cm and 24 cm respectively. The radius (in cm) of the circle is:-

1. 18 2.13 3. 15 4. 9

Ans. 2

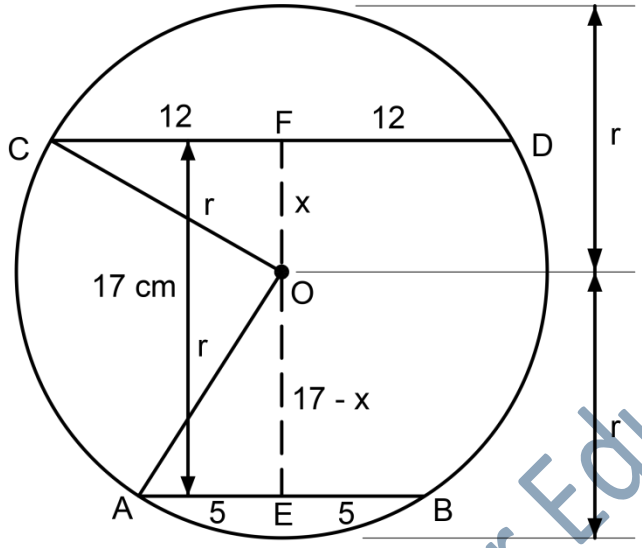
Explanation

Let OF = x and hence OE = 17- x and radius = r

From $\Delta OFC \text{ and } \Delta OEA$, $12^2 + x^2 = (17 - x)^2 + 5^2 = r^2 \rightarrow 34x = 170 \rightarrow x = 5$.

Substitute in Eq, $12^2 + x^2 = r^2 \rightarrow 139 = r^2 \rightarrow r = 13$

Hence, the radius of the circle is 13 cm.



41. Two towers A and B have lengths 45m and 15m respectively. The angle of elevation from the bottom of the B tower to the top of the A tower is 60°. If the angle of elevation from the bottom of A tower to the top of the B tower is θ then value of sin θ is:-

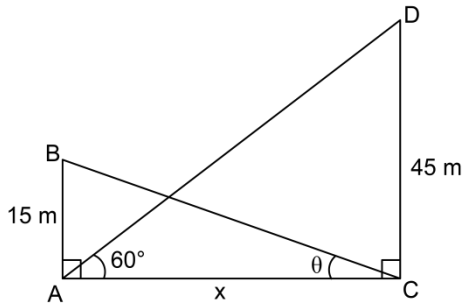
1. ½ 2. 1/√2 3. √3/2 4.2/√3

Ans. 1

Explanation

$\tan 60 (= \sqrt{3}) = \frac{45}{x} \rightarrow x = \frac{45}{\sqrt{3}} = \frac{45x\sqrt{3}}{\sqrt{3}x\sqrt{3}} = \frac{45x\sqrt{3}}{3} = 15\sqrt{3}$

$\therefore \tan\theta = \frac{15}{15\sqrt{3}} = \frac{1}{\sqrt{3}} \rightarrow \theta = 30^{o}; \therefore \sin\theta = ½.$



42. If two numbers are in the ratio 2 : 3 and the ratio becomes 3 : 4 when 8 is added to both the numbers, then the sum of the two numbers is:-

1. 40 2. 80 3. 100 4. 10

Ans. 1

Explanation

Let numbers be 2x and 3x;

After adding 8, (2x + 8)/(3x + 8) = 34; (2x +8) × 4 = 3 (3x +8) => 8x + 32 = 9x + 24;

x = 8;

Hence, the sum of these numbers = 5x = 40;

43. In ΔABC, D and E are two mid points of sides AB and AC respectively. If ∠ACB = 40° and ∠BAC = 65° then ∠DEB is :-

1. 125° 2. 105° 3. 75° 4. 130°

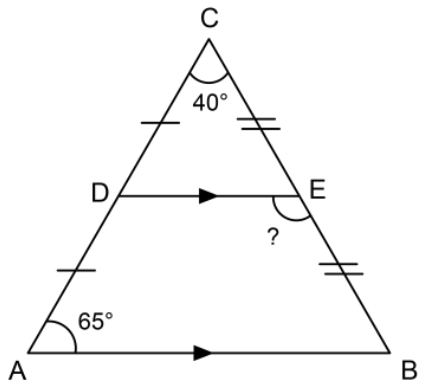
Ans. (2)

Explanation

∠CDE = ∠ BAC = 65;

∠BED = ∠CDE+C = 65+40 = 105;

Hence, ∠ CED = 180 – 75 = 105;



44. If $x + 1/x = 1$; then the value of: $2/(x^2-x+2)$=?

1. 2/3 2. 4 3. 1 4. 2

Ans. 4.

Explanation

Given: $x + 1/x = 1 \rightarrow x^2 - x + 1 = 0$;

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

$\therefore 2/(x^2-x+2) = \frac{2}{1} = 2$. Hence, the required answer = 2;

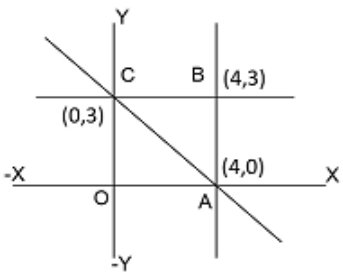
45. The area of the triangle ABC formed by the graphs of the equations x = 4, y = 3 `and 3x + 4y = 12 as a part of square OABC is

1. 12 sq. unit 2. 6 sq. unit 3. 4 sq. unit 4. 3 sq. unit

Ans. 2

Explanation

The given conditions are presented in the following figure:



The area of triangle ABC $= \frac{1}{2} \times AB \times BC = \frac{1}{2} \times 3 \times 4 = 6$ sq. units. (Area of square is 12 sq. init)

46. Ram deposited a certain sum of money in a company at 12% per annum simple interest for 4 years and deposited equal amount in fixed deposit in a bank for 5 years at 15% per annum simple interest. If the difference in the interest from two sources is Rs. 1350 then the sum deposited in each case is :-

1.Rs. 5000 2. Rs. 4000 3. Rs. 3000 4. Rs. 6500

Ans. 1

Explanation

Let the principal amount be P.

SI = $\frac{PNR}{100}$

The difference in SI = $\frac{P\times5\times15}{100} - \frac{P\times4\times12}{100}$ = 1350;

75P - 48P = 135000;

27P = 135000; → P = Rs. 5000;

47. A train leaves station A at 5 AM and reaches station B at 9 AM on the same day. Another train leaves station B at 7 AM and reaches station A at 10.30 AM on the same day. The time at which the two trains cross one another is:-

1. 7.36 AM 2. 8 AM 3. 7.56 AM 4. 8.26 AM

Ans. 3

Explanation

The time taken by first train to reach from A to B= 4 hours;

The time taken by second train to reach from B to A= 3.5 hours;

Let the distance between A and B = x km.

Hence, the speed of first train = $\frac{x}{5}$ km/hr;

The speed of second train = $\frac{x}{3.5}$ km/hr;

Distance travelled by first train in two hour = 50 kms.

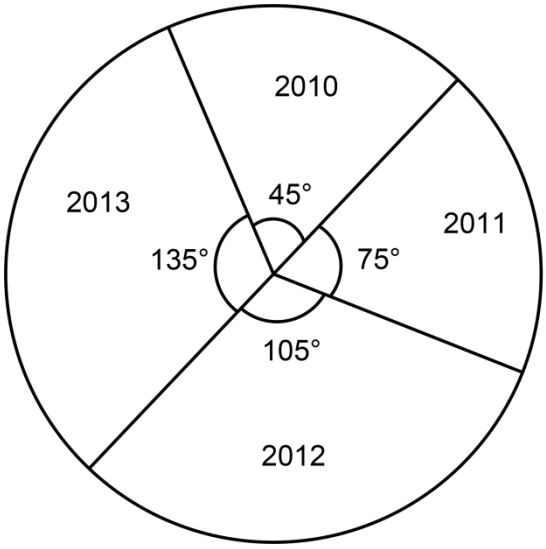
The time taken to meet each other = $\frac{50}{53.57}$ = 0.93 hrs = 55.8 minutes = 56 minutes;

Hence, the time to cross trains each other= 7:56 AM

48. In any π- chart, the sum of the central angles is

1. 90^o 2. 180^o 3. 270^o 4. 360^o

Ans:4. Example is shown below:



49. If x =1/($\sqrt{2}$ +1) ; then (x + 1) equals to ?

1. 2 2. $\sqrt{2}$-1 3. $\sqrt{2}$+1 4.$\sqrt{2}$

Ans. 4

Explanation

x = $\frac{1}{\sqrt{2}+1}$ → $x = \frac{1}{\sqrt{2}+1}\frac{\sqrt{2}-1}{\sqrt{2}-1} = \sqrt{2}$-1

Desired: x +1 = $\sqrt{2}$ – 1 + 1 = $\sqrt{2}$

50. How many cubes of side 3 cm can be cut from a cube of side 27 cm

1. 27 2. 64 3. 216 4. 729

Ans:4

Explanation

For side a, V = a^3

∴ Number of small cubes that can be cut, N = $\frac{V_1}{V_2} = \frac{27 \times 27 \times 27}{3 \times 3 \times 3} = 729$