1. If radius of a circle is 7 cm, its circumference is

1. 96 sq.cm. 2. 44 sq.cm. 3. 140 sq.cm. 4. 192 sq.cm.

Ans: 2

Explanation

Circumference: $2\pi r = 2 \times \frac{22}{7} \times 7 = 44 \text{ cm}^2$

2. The base and height of a parallelogram are 12 cm. and 8 cm. Its area is

1. 96 sq.cm. 2. 48 sq.cm. 3. 20 sq.cm. 4. None.

Ans: 1

Explanation

Area, A =bh = 12 x 8 = 96

3. The length, breadth and height of a cube are 6 cm, 4 cm and 3 cm respectively. Its volume is

1. 24 cubic cm 2. 18 cubic cm. 3. 72 cubic cm. 4. None

Ans: 3

Explanation

V = ℓ b h = 6 x 4 x 3 =72

4. In a college, 1/5th of the girls and 1/8th of the boys took part in a social camp. What part of the total number of students in the college took part in the camp ?

1. 13/40 2. 13/80 3. 2/13 4. 4/13

Ans:3

Explanation

Out of the 5 girls, 1 took part in the camp. Out of the 8 boys, 1 took part in the camp.

∴ 2/13 of total number of students took part in the camp.

5. The average of first five multiples of 3, is

1. 12 2. 15 3. 6 4. 9

Ans:4

Explanation

The first five multiples of 3 are 3,6,9,12,15

Average = $\frac{3+6+9+12+15}{5} = \frac{45}{5} = 9$

6. The average of the squares of seven consecutive integers is 53. The average of these integers is

1. 4 2. 5 3. 6 4. 7

Ans:4

Explanation

Let the square of integers be $n_1^2 + n_2^2 + n_3^2 + \ldots\ldots + n_7^2$.

Sum of integers = $n_1 + n_2 + n_3 + \ldots\ldots + n_7$.

Average of the integers = sum of integers/ 7 = 7n/7 =n.

Given that average of squares of integers is 53.

i.e. $(n-3)^2 + (n-2)^2 + (n-1)^2 + n^2 + (n+1)^2 + (n+2)^2 + (n+3)^2 = 53x7$

Simplifying we get 7n^2 + 9 + 9 + 4 + 4 + 1 + 1 = 371

i.e. $7n^2 + 28 = 371$

i.e. $7n^2 = 343$

$n^2 = 49$

So, n= average of integers = 7.

7. The sum of three numbers is 98. If the ratio between the first and the second is 2:3 and that between the second and the third is 5:3, then the second number is

1. 30 2. 20 3. 58 4. 48

Ans:1

Explanation

Let the first number be n_1, the second number be n_2 and the third number be n_3

Given: $n_1 + n_2 + n_3 \rightarrow \frac{2}{3} n_2 + n_2 + \frac{3}{5} n_2 = 98$

$=> n_2\left(\frac{10+1+24}{15}\right) = 98$

$=> n_2 = 30$

8. If x : y = 2:3 and 2 : x = 1:2, then the value of y is

1. 1/3 2. 3/2 3. 6 4. 4

Ans: 3

Explanation

The given statements → 3x = 2y and x = 4

∴ $y = \frac{3X}{2} = \frac{3x4}{2} = 6$

9. 606.0061 - 16.016 - 7.106 = ?

1. 582.4781 2. 588.2881 3. 558.4801 4. 582.8841

Ans:4

10. If twelve persons can complete a work in 4 days, in how many days can 8 persons complete that work ?

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

Ans: 3

Explanation

For the same work, Man-Days (i.e., number of men x number of days taken to complete the work) are equal

4x12 = 8 x ? The number of days for 8 men to complete the work→ 6

11. 64309 - 8703 + 798 - 437 = ?

1. 55608 2. 55695 3. 55967 4. 73303

Ans: 3

12. 15 + 75 ÷ 5 - 5 * 5 = ?

1. 55 2. 5 3. 15 4. 0

Ans:2

Explanation

$15 + \frac{75}{5} - 5 \times 5 = 5$

13. One-third of three-fifth of a number is 35. What is that number ?

1. 7 2. 105 3. 175 4.Cannot be determined

Ans: 3

Explanation:

Given: $\frac{1}{3}x\ \frac{3}{5}xN = 35 \rightarrow\ N = 175$

14. Travelling at a uniform speed, a car covers a distance of 35 km. in 15 minutes. What is the distance that the car will cover in three hours ?

1. 425 km 2. 420 km 3. 430 km 4. 105 km

Ans: 2

Explanation

Speed of the car, V = Distance/time

$= \frac{35}{15/60} = 140$ kmph (since 15 minute is equal to $\frac{15}{60}$ hr)

∴ Distance travelled in 3 hr = 140 x 3 = 420 km

15. The square of a natural number subtracted from its cube gives 100. The number is

1. 25 2. 16 3. 6 4. 5

Ans:4

Explanation

Given condition: $a^3 - a^2 = 100 \rightarrow a^3 - a^2 - 100 = 0$; i.e., $f(a) = a^3 - a^2 - 100$

Instead of factoring, solve the sum by substation of given options one-by one:

i) f (25) = 25x25 × 25 – 625 -100 ≠0

ii) f (16) = 16^3-16^2 -100 ≠ 216 – 36-100≠0

iii) f (6) ≠ 0

iv) f (5) =125-25-100= 0

16. A sphere of radius 2 cm is put into water contained in a cylinder of radius 4 cm. If the sphere is completely immersed in the water, the water level in the cylinder is given by

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

Ans:3

Explanation

From the given condition,

Volume of sphere, V_s= Volume of displaced water to a height h in cylinder, V_c

(i.e., $V_s = V_c$)

$V_s = \frac{4}{3}\pi r^3 = \frac{4}{3}\pi \times 2 \times 2 \times 2$

$V_c = \pi r^2 h = \pi \times 4 \times 4 \times h$

$\frac{4}{3}\pi \times 2 \times 2 \times 2 = \pi \times 4 \times 4 \times h$

$\therefore\ h = \frac{2}{3}$cm

17. Find the radius of a circle whose area is equal to the sum of areas of two circles with radii 6 cm and 8 cm.

1. 14 cm 2. 12 cm 3. 10 cm 4. 9 cm

Ans: 3

Explanation

Given: $\pi r_1^2 + \pi r_2^2 = \pi r_3^2$

$r_1^2 + r_2^2 = r_3^2$

i.e., $6^2 + 8^2 = r_3^2$

i.e., $6^2 + 8^2 = 10^2$(Pythagorean triples)

18. 5 men and 6 women together earn Rs.135. 3 men and 2 women together earn Rs.65. The wages (in rupees) of 4 men and 4 women will be

1. 120 2. 110 3. 105 4. 100

Ans:4

Explanation

No. of Men	No. of Women	Earnings
5	6	135
3	2	65
4	4	?

Let the ways of man be x and women be y.

Given:5x+6y=135 .....(1)

3x+2y=65.....(2)

3 x Eqn.(2) → 9x+6y=195.....(3)

Eqn.(3) – Eqn.(1) → 4x = 60 → x=15 and solve for → y=10.

Therefore wages for 4 men and women =100

19. For a non-zero ration number x, $x^8 \div x^2$ is equal to

1) x^4 2)x^6 3)x^{10} 4)x^{16}

Ans: 2 (Note: $x^{8-2} = x^6$)

20. The rate at which a sum at simple interest will treble itself in 8 years is

1. 32% 2. 28% 3. 25% 4. 23%

Ans: 3

Explanation: Given: A is 3P after 8 years on SI

A = P + SI = 3P

∴ SI = 2P.

SI = $\frac{PNR}{100}$, i.e ., 2P = P × 8 × $\frac{R}{100}$ = 25%

21. A and B together can do a work in 6 days and A alone can do it in 9 days. B alone can do the work in how many days ?

1. 18 days 2. 3 days 3. 15 days 4. 7½ days

Ans: 1

Explanation

A's one day work = $\frac{1}{9}$

A and B's one day work = $\frac{1}{6} - \frac{1}{9}$

Number of days required to complete the work by B alone = $\frac{1}{\frac{1}{6}-\frac{1}{9}} = \frac{54}{9-6} = 18$

Note: In competitive exams, use the last step only.

22. A cistern is filled in 9 hours, but takes one hour longer to be filled due to a leak in its bottom. If the cistern is full, in what time will the leak empty it ?

1. 30 hour 2. 40 hour 3. 45 hour 4. 90 hour

Ans: 4

Explanation

Filling time without leak = 9 hr

Filling time with leak = 10 hr

(due to leak instead of 9 hr, the cistern takes 1 hr extra, i.e., now the filling time is 10 hr)

Let the leak rate be = x hr; (i.e., time taken to completely leak a filled volume)

Given: Time taken to fill with simultaneous leaking $= \frac{1}{9} - \frac{1}{x} = \frac{1}{10}$

$\therefore \frac{1}{9} - \frac{1}{10} = \frac{1}{x} = \frac{1}{90} \rightarrow x = 90$

23. If $125^x = 3125$, then x equals

1. 25 2. 5/3 3. 3/5 4. ¼

Ans: 2 →

Explanation

$125^x = 3125$

i.e., $5^{3x} = 5^5$ $(3125 = 5 \times 625 = 5x25^2 = 5 \times 5^4 = 5^5)$

i.e., $5^{3x} = 5^5 \rightarrow 3x = 5$ (the indices are equal). $\therefore x = \frac{5}{3}$

24. The simplification of $\frac{5}{8+\frac{6}{8-\frac{10}{11}}}$ gives

1. 6/13 2. 11/13 3. 5/23 4. 13/23

Ans:4

Explanation

$$\frac{5}{8+\frac{6\times11}{78}} = \frac{5\times78}{624+66} = \frac{5\times78}{690}$$

$$= \frac{390}{690} = \frac{13}{23}$$

25. Three consecutive even numbers total to 48. The greatest of them is

1. 16 2. 18 3. 20 4. 22

Ans:2

Explanation

Let the numbers be x, x+2 and x+4

Sum of the numbers: x +x+2+x+4= 48, i.e., 3x+6 =48 → 3x = 42 ∴ x = 14

The numbers are x = 14 ; x+2 = 16; x+4 = 18

26. One number is greater than another by 155, and their sum is 547. The greater number is

1. 392 2. 374 3. 351 4. 196

Ans:3

Explanation

Let the numbers be x, y and x be the greater number.

x – y = 155 ……(1)

x+ y = 547 ……(2)

Solving Eq. (1) and Eq.(2) (i.e., adding both equations) → 2x = 702 → x = 351

27. The sum of first 20 odd numbers is

1. 381 2. 400 3. 425 4. 625

Ans: 2

Explanation

Sum = 1 + 3+5+ …….. +39 (20 terms)= $n^2 = 20^2 = 400$.

28. 3.75 m are what percent of 5.0 m?

1. 55% 2. 75% 3. 80% 4. 85%

Ans: 2

Explanation

$\frac{3.75}{5} = \frac{375}{500} = \frac{75}{100}$ ∴ 75%

29. Mani gets 178 marks and fails by 22 marks. To pass he has to secure 40% marks. The maximum marks are

1. 400 2. 450 3. 500 4. 550

Ans: 3

Explanation:

Let the total marks be x.

Given: Pass mark = $\frac{40\ x}{100}$

Given condition: $\frac{40\ x}{100} - 22 = 178 \rightarrow \frac{40\ x}{100} = 178 + 22 = 200 \rightarrow x = 500.$

x = 500

30. The difference between two consecutive even numbers is 2. What is the first of these two numbers ?

1. 20 2. 22 3. 24 4. Cannot be solved.

Ans: 4

Explanation

Always the difference between any 2 consecutive even numbers or odd numbers is 2. So there are infinite solutions.

31. The difference between the cost price and sale price of an article is Rs.240. If the profit is 20%, at what price was the article sold ?

1.Rs.1240 2.Rs.1600 3.Rs.1440 4. Data inadequate

Ans:3

Explanation

Profit = 20%

Let CP = 100 and profit 20. ∴ SP = 120

Given: SP – CP = Profit = 240

∴ SP of the article = $\frac{120}{20} \times 240 = 1440$

Box: Important formulae in profit & loss

(i) Profit = SP – CP ….(if SP>CP)

(ii) Loss = CP – SP ….(if CP>SP)

(iii) % Profit = $\frac{SP-CP}{CP} \times 100 = \frac{profit}{CP} \times 100$

(iv) % Loss = $\frac{CP-SP}{CP} \times 100 = \frac{loss}{CP} \times 100$

32. Three-fifths of forty per cent of a number is 12. What is the number ?

1. 50 2. 60 3. 75 4. 90

Ans: 1

Explanation

Let the number be x

$\frac{3}{5} \times \frac{40}{100} \times x = 12$

∴x= 50

33. Ramu's father was 4 times as old as Ramu 10 years back. After 10 years, his age will be twice as that of Ramu's age. What is the present age of Ramu ?

1. 20 years 2 .2 years 3. 26 years 4.25 years

Ans: 1

Explanation

	Father	Ramu
Present age	x	y
10 years before	x-10	y-10
10 years after	x+10	y +10

Given:10 years before 4(y – 10) = x -10 ……(1)

10 years henceforth 2(y +10) = x+10 ……(2)

Eqn.(1) → 4y – 40 = x – 10 → 4y – x = 30 ……..(3)

Eqn.(2) → 2y + 20 = x + 10 → 2y – x = -10 ……(4)

Eqn.(3) – Eqn.(4) → 2y = 40 → y = 20

34. If 3A = 4B, the ratio A:B is

1. 3:4 2. 4:3 3. 3:7 4. 7:4

Ans: 2

Explanation

$3A = 4B \rightarrow \frac{A}{B} = \frac{4}{3}$

∴ A: B = 4:3

35. $\sqrt{841}$ + ? = 57

1. 28 2. 29 3. 47 4. 18

Ans: 1

Explanation

$\sqrt{841} = \pm 29$. The given sum → 29 + ? = 57. Therefore the missing number is 28.

36. The average age of 24 boys and the teacher is 15. When the teacher's age is excluded, the average decreases by one. What is the age of the teacher ?

1. 39 years 2. 38 years 3. 40 years 4. Data inadequate

Ans:1

Explanation

Let the teacher age be x.

With teacher, the average age of the class is 15 and total number of persons (boys+teacher) is 25.

∴ Sum of ages of 24 boys and a teacher age = 25× 15 = 375

When teacher's age is deleted, the average is 14, i.e.,$\frac{375-x}{24} = 14$

375 – x = 14 × 24 = 336. → x = 39

37. 0.7 + 0.007 + 0.00077 = ?

1. 0.77707 2. 0.0777 3. 0.70777 4. 0.7707

Ans: 3

38. Which one of the following figures will generate a cone when rotated about one of its straight edges ?

1. An equilateral triangle 2. A sector of a circle

3. A segment of a circle 4. A right angled triangle

Ans:4

39. 10% of 20 plus 20% of 10 equals

1. 10% of 20 2. 20% of 10 3. 1% of 200 4. 2% of 200

Ans: 4

Explanation

The given sum: 10/100 × 20 + 20/100 ×10 = 400/100 =4.

The values of the given options are 2, 2, 2, 4. Therefore option 4 is the right answer.

40. A man purchase a two wheeler for Rs.40000/- and got it insured for 75% of the value. The two wheeler as totally destroyed in an accident and the insurance company compensated him for only 75% of the claim. Thus the person must have lost ….of the value of the two wheeler.

1. 54% 2. 62% 3. 43.75% 4. 28%

Ans: 3

Explanation

Two numbers 2 wheelers cost= Rs. 40000

Amount incurred for insurance = 75% of 40000 =Rs. 30000

Insurance claim = Rs.30000 × 0.75 = 22500.

Loss = 40000-22500 = 17500

Loss = 17500 / 40000 = 0.4375/100 = 43.75%

41. Cube root of $4\frac{12}{125}$ is

1. $\frac{1}{5}$ 2. $2\ \frac{1}{5}$ 3. $1\ \frac{3}{5}$ 4. $1\frac{4}{5}$

Ans: 3

Explanation

Ans: $4\frac{12}{125} = \frac{512}{125}$

$\therefore \sqrt[3]{\frac{512}{125}} = \frac{512^{1/3}}{125^{1/3}} = (8x8x8/5x5x5)^{1/3} = \frac{8}{5} = 1\frac{3}{5}$

42. The average marks of 96 students in a class is 90. The average marks of the girls in the class is 80 and the average marks of the boys in the class is 100. What is the ratio between the number of boys and girls in the class?

1. 2:1 2. 1:2 3. 3:1 4. 1:1

Ans: 4.

Explanation
Given: Total students = 96
Let the number of boys be x, girls be y
∴x + y =96 ……... (1)
Total marks of boys =100x
Total marks of girls = 80y
Given : Total marks of the class = 96 × 90 = 8640
∴100x +80y = 8640→ 10x +8y = 864 …….. (2)
10 x Eqn.(1) →10x + 10y = 960 ……(3)
Subtract Eqn.(2) from Eqn.(3) → 2y = 96 ∴ y = 48 and x = 48.
∴ x :y = 1 : 1

43. In a basket the number of apples are more than the number of Oranges by 20% of the total no. of fruits. The ratio of apples to oranges is

1. 1:2 2. 2:3 3. 6:5 4. 7:5

Ans: 3

Explanation
Apples: Oranges

120:100→6:5

44. A man invested ½ of his capital at 10%, ¼ of his capital at 8% and the balance at 12%. If his annual income is Rs.1800, the capital amount is:

1.Rs.7524 2. Rs.6976 3. Rs.21,176 4. Rs. 23,866

Ans: 3

Explanation
Let x be total capital invested.
Given: Total investments details and interest thereof:

$$\frac{x}{2}\times\frac{10}{100}+\frac{x}{4}\times\frac{8}{100}+\frac{x}{4}\times\frac{12}{100}=1800$$

$$=\frac{5x}{100}+\frac{2x}{400}+\frac{3x}{100}=1800$$

$$=\frac{20x+2x+12x}{400}=\frac{34x}{400}=1800\rightarrow x=8000\times\frac{400}{34}=21{,}176.$$

45. 2 years ago, father's age was 15 times the age of his son. After 2 years, if father/s age is 28 years more than the age of his son, find the ratio of the age of the father to that of the son.

1.7:1 2. 8:1 3. 9:2 4. 6:1

Ans:2

Explanation
Father and son age relation is given below:

	Father	Son
Now age	x	y
Before 2 years	x - 2	y - 2
After 2 years	x+2	y+2

Before 2 years, age relation: x- 2 = 15(y -2) → $x = 2 + 15(y - 2)$…….(1)
After 2 years, age relation: x – y = 28 → x = y+ 28…….(2)

From the above 2 equations, 2+15y-30 = y + 28 → y = 56 /14 = 4

x= 32
∴ 32: 4 → 8:1

46. If the simple interest on a sum of money at 6% per annum for 3 years is Rs.1800, the compound interest on the same sum for the same period at the same rate is:

1. Rs.1910. 2. Rs.1576 3. Rs.1856 4. Rs.1346

Ans: 1

Explanation

SI = $\frac{PNR}{100}$ =1800 = P × 3 × $\frac{6}{100}$

∴ P = 10000

For CI: A =P$(1+\frac{r}{100})^3$ = 10000$(1+\frac{6}{100})^3$ = 11,910/-

Interest = 11910-10000 = 1910/-

47. A man pays 15% of his salary as tax. If after spending 80% of the remainder, he has Rs. left. What was his salary before taxation?

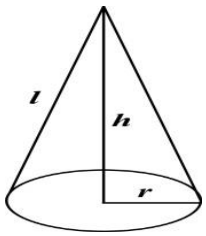
1. Rs.2000 2. Rs.2500 3. Rs.2800 4. None of these

Ans:1

Explanation

100 → tax 15 → 85 × $\frac{80}{100}$ → 68 = $\frac{340}{85-68} \times 100 = 2000$

48. The total surface area (TSA) of cone given in the fig is:



1. πrl 2. πr (l + r) 3. $\frac{1}{3}\pi r^2 h$ 4. None of these

Ans: 2.

Explanation

TSA = Area of base circle + Area of slant surface = $\pi r^2 + \pi rl = \pi r (l + r)$

49. Two trains, one from A to B and the other from B to A start simultaneously. After they meet, the trains reach their destinations after 9 hrs. and 16 hrs. respectively. The ratio of their speeds per hour is:

1. 2 : 3 2. 4 : 3 3. 6 : 7 4. 9 : 16

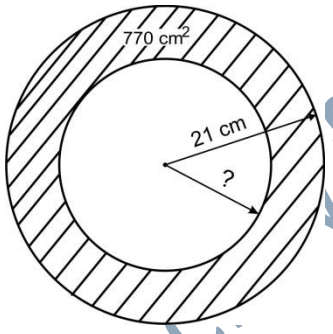
Ans:2.

Explanation
If two persons/trains X and Y start at the same time from two points A and *B* towards each other and after crossing they take T_1 and T_2 hours in reaching *Y* and *X* respectively, then

The ratio: $\frac{A's\ speed}{B's\ speed} = \frac{\sqrt{T_2}}{\sqrt{T_1}}$

i.e., A' speed : B's speed:: $\sqrt{T_2} : \sqrt{T_1} \rightarrow \sqrt{16} : \sqrt{9} \rightarrow 4: 3$

50. The area enclosed between two concentric circles is 770 cm^2. The area of outer circle is 1386 cm^2. What is the radius of the inner circle?



1. 14 cm 2. 22 cm 3. 7 cm 4.none of these

Ans: 1

Explanation

Let outer radius be R= 21 and inner radius r =?

$\pi (R^2 - r^2) = 770$

$\pi R^2 = 1386$

$R^2 = \frac{7 \times 1386}{22} = 7 \times 7 \times 9$

$\therefore R = 7 \times 3 = 21$

$\frac{22}{7}((21^2 - r^2) = 770$

$\therefore 21^2 - r^2 = \frac{770 \times 7}{22}$

$\therefore 21^2 - 35 \times 7 = r^2$

$441 - 245 = r^2$

$r^2 = 196$

$r = 14$