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Word Problems Quiz 4

Direction: Read the following questions carefully and choose the right answer.

1. Find the difference between compound interest and simple interest on a sum of Rs.120000 at the rate of 12% per annum for three years.

- A. Rs. 8311.36 B. Rs. 5391.36 C. Rs. 6361.36 D. Rs. 7291.36 E. None of these

2. A car can travel a distance of 450 km in 15 hours and a bus can travel a distance of 540 km in 30 hours. Speed of a truck is half of the sum of the speeds of the car and the bus. Find the distance travelled by the truck in 5 hours.

- A. 115 km B. 120 km C. 130 km D. 125 km E. None of these

3. Find the circumference of a semicircle whose diameter is equal to the radius of a hemisphere having total surface area 7392 cm^2 .

- A. 42 cm B. 56 cm C. 72 cm D. 48 cm E. None of these

4. A shopkeeper sold an item at 20% profit and another item at 10% loss. If the cost price of both the items is same, find the overall profit percent.

- A. 7.55% B. 6% C. 5% D. 6.5% E. None of these

5. Puneet, Sumit and Amit started a business jointly investing Rs. 11 lakh, Rs. 16.5 lakh and Rs. 8.25 lakh respectively. The profit earned by them in the business at the end of three years was Rs. 19.5 lakh. What will be the half of Amit's share in the profit?

- A. Rs. 4.5 lakh B. Rs. 2.25 lakh C. Rs. 2.5 lakh D. Rs. 3.75 lakh E. None of these

6. Average of the ages of Rakesh, Mahesh, Suresh and Ramesh three years ago was 32 years. Average of the present ages of Mahesh and Suresh is 36 years. Ramesh is 4 years older than Rakesh. Find the present age of Rakesh.

- A. 32 years B. 36 years C. 34 years D. 38 years E. None of these

7. Find the volume of a cone whose height is twice of its radius and the radius of the cone is $\frac{3}{2}$ rd of the side of the square whose area is 196cm^2 .

- A. 17204 cm^3 B. 19404 cm^3 C. 17404 cm^3 D. 19204 cm^3 E. None of these

8. 8 males and 6 females can do a piece of work in 5 days. 5 males and 6 females can complete the same work in 7 days. How many days will a female take to do the job, if she works alone?

- A. 135 days B. 142 days C. 126 days D. 110 days E. None of these

9. A bag contains 5 green, 7 yellow and 4 red balls. Three balls are drawn at random, find the probability that all the balls are of same colour.

- A. $\frac{5}{46}$ B. $\frac{9}{70}$ C. $\frac{7}{78}$ D. $\frac{7}{80}$ E. None of these

10. Sony has produced 9500 Stereo systems out of which 20% were found defective. Out of the remaining, if 25% were not sold, then how many Stereo systems were sold?

- A. 5200 B. 5700 C. 5350 D. 5400 E. None of these



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Correct Answers:

1	2	3	4	5	6	7	8	9	10
B	B	C	C	B	A	B	C	D	B

Explanations:

1. Method I:

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

$$\Rightarrow CI = 120000 \times \frac{112}{100} \times \frac{112}{100} \times \frac{112}{100} - 120000$$

$$\Rightarrow CI = 168591.36 - 120000$$

$$\Rightarrow CI = \text{Rs.}48591.36$$

$$SI = \frac{P \times r \times t}{100}$$

$$\Rightarrow SI = \frac{120000 \times 12 \times 3}{100} = \text{Rs.} 43200$$

Required difference = Rs. (48591.36 – 43200) = Rs.5391.36

Method II:

We know that, for three years

$$CI - SI = P \left(\frac{r}{100} \right)^2 \times \frac{300 + r}{100}$$

$$\Rightarrow CI - SI = 120000 \times \left(\frac{12}{100} \right)^2 \times \frac{300 + 12}{100}$$

$$\Rightarrow CI - SI = 120000 \times \left(\frac{3}{25} \right)^2 \times \frac{312}{100}$$

$$\Rightarrow CI - SI = 120000 \times \frac{9}{625} \times \frac{312}{100}$$

$$\Rightarrow CI - SI = \text{Rs.}5391.36$$

Hence, option (B) is correct.



2.

$$\text{Speed of the car} = \frac{450}{15} = 30 \text{ km/h}$$

$$\text{Speed of the bus} = \frac{540}{30} = 18 \text{ km/h}$$

$$\text{Sum of the speeds of the car and the bus} = (30 + 18) = 48 \text{ km/h}$$

$$\text{Speed of the truck} = \frac{48}{2} = 24 \text{ km/h}$$

$$\text{Distance travelled by the truck in 5 hours} = \text{speed} \times \text{time} = 24 \times 5 = 120 \text{ km}$$

Hence, option (B) is correct.

3. Total surface area of hemisphere = $3\pi r^2 = 7392$

$$\Rightarrow 3 \times \frac{22}{7} \times r^2 = 7392$$

$$\Rightarrow r^2 = 7392 \times \frac{7}{22} \times \frac{1}{3}$$

$$\Rightarrow r^2 = 784$$

$$\Rightarrow r = \sqrt{784}$$

$$\Rightarrow r = 28 \text{ cm}$$

Diameter of the semicircle = radius of the hemisphere = 28 cm

$$\text{Radius of the semicircle} = \frac{28}{2} = 14 \text{ cm}$$

$$\text{Circumference of the semicircle} = \pi r + 2r$$

$$= \frac{22}{7} \times 14 + 2 \times 14 = 44 + 28 = 72 \text{ cm}$$

Hence, option (C) is correct.

4. Let cost price of each of the article = Rs.100

$$\text{Selling price of one article} = 100 \times \frac{120}{100} = \text{Rs.120}$$

$$\text{Selling price of other article} = 100 \times \frac{90}{100} = \text{Rs.90}$$

$$\text{Total cost price} = 100 + 100 = \text{Rs.200}$$

$$\text{Total selling price} = 120 + 90 = \text{Rs.210}$$

$$\text{Profit \%} = \frac{210 - 200}{200} \times 100 = 5\%$$

Hence, option (C) is correct.

5. Profit ratio = Investment by Puneet \times Time : Investment by Sumit \times Time : Investment by Amit \times Time
 $= 11 \times 3 : 16.5 \times 3 : 8.25 \times 3$
 $= 11 : 16.5 : 8.25 = 44 : 66 : 33 = 4 : 6 : 3$

Amit's share in profit $= \frac{3}{13} \times 19.5 = \text{Rs. } 4.5 \text{ lakh}$

\therefore 50% of Amit's share $= \frac{1}{2} \times 4.5 = \text{Rs. } 2.25 \text{ lakh}$

Hence, option B is correct.

6. Sum of the present ages of Rakesh, Mahesh, Suresh and Ramesh $= 32 \times 4 + 3 \times 4 = 140$ years
 Sum of the present ages of Mahesh and Suresh $= 36 \times 2 = 72$ years

Let the present age of Rakesh $= x$ years

Ramesh $= x + 4$ years

Now,

$x + 72 + x + 4 = 140$

$\Rightarrow 2x = 140 - 76$

$\Rightarrow 2x = 64$

$\Rightarrow x = 32$ years.

Hence, option (A) is correct.

7. Area of square $= (\text{side})^2$
 then,

$(\text{side})^2 = 196 \text{ cm}^2$

$\therefore \text{side} = 14 \text{ cm}$

the radius of the cone $= \frac{3}{2} (\text{side})$

\therefore Radius of the cone $= \frac{3}{2} \times 14 = 21 \text{ cm}$

then,

Height of the cone $= 2 \times (\text{Radius of cone})$

$= 2 \times 21 = 42$

Now,

$= \frac{1}{3} \pi (\text{Radius})^2 (\text{Height})$

$= \frac{1}{3} \times \frac{22}{7} \times (21)^2 \times 42$

$= 22 \times 21 \times 21 \times 2 = 19404 \text{ cm}^3$

Hence, option (B) is correct.

8. Let required number of days = y

$$(8m + 6f) \times 5 = (5m + 6f) \times 7$$

$$\Rightarrow 40m + 30f = 35m + 42f$$

$$\Rightarrow 5m = 12f$$

Now

$$(5m + 6f) \times 7 = 1f \times y$$

$$\Rightarrow (12f + 6f) \times 7 = 1f \times y$$

$$\Rightarrow 18 \times 7 = y$$

$$\Rightarrow y = 126 \text{ days}$$

Hence, option (C) is correct.

9. Green = 5

Yellow = 7

Red = 4

Total = 16

Probability that all the balls are of same colour

$$= \frac{{}^5C_3 + {}^7C_3 + {}^4C_3}{{}^{16}C_3} = \frac{10 + 35 + 4}{560}$$

$$= \frac{49}{560} = \frac{7}{80}$$

Hence, option (D) is correct.

10. Initially 20% of stereo systems were not sold, so stereo systems remaining

$$= \frac{80}{100} \times 9500 = 7600$$

Now out of 7600, 25% were not sold.

Therefore stereo systems which were sold by Sony

$$= \frac{75}{100} \times 7600 = 5700$$

Hence, option (B) is correct.



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