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Mixed Maths Questions for SBI PO Pre, IBPS PO Pre, IBPS Clerk Mains and SBI Clerk Mains Exams.

Word Problems Quiz 16

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

1. A person buys an article for some rupees. He finds that if he had sold the article at a profit of 13% of the selling price than he sold it at a profit of 13% of the cost price then he would have got Rs. 422.5 more. Find the cost price of the article.

- A. Rs. 21650 B. Rs. 42250 C. Rs. 52000 D. Rs. 27300 E. Rs. 21750

2. Two persons P, and Q start running simultaneously in the same direction from the point X and Y respectively. If the distance between X and Y is 10 km. P reaches another point Z which is in the same line and returns immediately after travelling for 10 km more from the point Z, he meets Q at point R which is in between point X and Point Z. If the rate of speed of P, and Q is 10 km and 5 km per hour then find the distance between X and Z. (it is given that $XZ > YZ$)

- A. 50 km B. 45 km C. 35 km D. 40 km E. None of these

3. Some number of solid metallic right circular cones radius of which is equal to the side of the square which area is 9 cm^2 and height is 100% more than the inradius of that square are melted to form a solid sphere of radius 6 cm. find the number of right circular cones is required.

- A. 64 B. 36 C. 27 D. 32 E. None of these

4. Ram borrowed Rs. x from Shyam at the rate of 13% simple interest and Rs. $2x$ from Mohan at the rate of 26 % simple interest he then added Rs. 82500 with the total amount he borrowed from Shyam and Mohan together and lend it to Sohan at the rate of 10% simple interest. The total profit, he received at the end of one year in this process was Rs. 1725. Find the value of x ?

- A. 18642.85 B. 19642.85 C. 16625.52 D. 17462.85 E. None of these

5. Two trains A, and B of same length start from Chennai for Bangalore at 10:00 pm. After travelling for 50% of the total distance train A meets with an accident and start a travelling at the rate of $\frac{2}{3}$ rd of its original speed. In this way, both the train a reach Bangalore at 08:00 am. Find the ratio of their original speed?

- A. 3 : 2 B. 5 : 3 C. 5 : 2 D. 5 : 4 E. Can't be determined

6. If the length of a cuboid is increased by 10%, the breadth is decreased by 10% and the height is increased by 10% then by how much its volume will increase or decrease?

- A. 9.9% increase B. 9.9% decrease C. 8.9% decrease D. 11% increase E. None of these

7. The price of a radio is Rs. 1900. Ram marks the price of this radio at 19% above the cost price then he allows a discount of 5% on the marked price. He also gives a discount of 8% on the discounted price if customer pays by cash. Then his profit/loss percent is, if customer pays by cash is

- A. 4% profit B. 4% loss C. 4.5% profit D. 4.5% loss E. 4.2% loss

8. When a two digits number was reversed then it became 35% less than the original number. Find by how much percentage the unit place digit is less than the tenth-place digit. (In original number)

- A. 70% B. 41.18% C. 41.28% D. 65% E. 65.01%

9. In a group of 15 students there are exactly 6 girls and 9 boys. Each day one student leaves the group. What is the probability that after four days there are exactly 8 boys in that group?

- A. $\frac{12}{91}$ B. $\frac{8}{13}$ C. $\frac{2}{13}$ D. $\frac{8}{15}$ E. None of these

10. Three persons A, B and C started their business with an investment of Rs. 900, Rs. 1200 and Rs. 1500 respectively. After 1 year they made another investment of Rs. 600, Rs. 200 and Rs. 500 respectively. After another 1 year they withdrew some of their capitals i.e. Rs. 300, Rs. 400 and Rs. 200 respectively and decided to shut down the business at the end of the third year. B, out of his share of profit from the business, purchased a bike whose price depreciates at the rate of 10% per annum. Find the price of the bike after 3 years from the date of purchase, if total profit earned from the business is Rs. 2.5 lakh.

- A. Rs. 77274 B. Rs. 58320 C. Rs. 52488 D. Rs. 72000 E. None of these

Correct Answers:

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

Explanations:

1. Let the cost price of the article = Rs. $100x$

Case 1

When he sells it at the 13% profit on the cost price then his profit will be 13% of $100x = \text{Rs. } 13x$ ----(i)

In the first case. He sells it at 13% profit on selling price

Case 2

Let his selling price in the second case is Rs. $100y$ then according to question

His profit will be 13% of $100y = \text{Rs. } 13y$ ----(ii) and cost price of the article will become Rs. $(100y - 13y) = \text{Rs. } 87y$

Here article is same in the both case so $100x$

$$100x = 87y \Rightarrow y = \frac{100x}{87}$$

And selling price would have been (in terms of x) = $100 \times \frac{100x}{87}$

Then profit from the equation (ii)(in term of x) = $13 \times \frac{100x}{87}$

Now according to question, if he had sold the article at a profit of 13% of the selling price than he sold it at a profit of 13% of the cost price then he would have got Rs. 422.5 more

$$\frac{1300x}{87} - 13x = 422.5$$

$$1300x - 1131x = 87 \times 422.5$$

$$169x = 87 \times 422.5$$

$$x = 87 \times 2.5 = 217.5$$

So, the cost price of the article was $100x = 100 \times 217.5 = \text{Rs. } 21750$

Hence, option E is correct.

2. Rate of speed of P = 10KM/Hr

Rate of speed of Q = 5KM/Hr

Let after returning from point z they meet at point R



In the time P will travel 10 + X + 10 + 10 km in the same time Q will travel only x km

We know that distance = speed × time

Here time is equal so

Time taken by P to travel 30 + x km = time taken by Q to travel x km

$$\frac{(30 + x)}{10} = \frac{x}{5}$$

By solving this equation, we get value of x = 30 km

So the distance between x and z = 10 + 30 + 10 = 50 km

Hence, option A is correct.

3. Area of square = 9 sq. cm so side of the square = root of 9 sq. cm = 3 cm = Radius of the metallic right circular cone

$$\text{In radius of the square} = \frac{\text{side}}{2} = \frac{3}{2} = 1.5 \text{ cm}$$

From the question, height of the cone will become 100% more than 1.5 = 3 cm

Let x number of cones are melted to form a solid sphere

$$\text{Then } x \times \frac{1}{3} \pi r^2 h = \text{volume of cone}$$

$$= \text{volume of the sphere} = \frac{4}{3} \pi r^3$$

$$x \times \frac{1}{3} \times \pi \times 9 \times 3 = \frac{4}{3} \times \pi \times 6 \times 6 \times 6$$

By solving this, x = 32

Hence, option D is correct.

4. Total money borrowed by Ram from Shyam = Rs. x = let x be $100a$
 The total interest paid by him to Shyam = 13% of $100a = 13a$
 Total money borrowed by ram from Mohan = $2x =$ So it becomes $200a$
 The total interest paid by him to Mohan = 26% of $200a = 52a$
 Total money he borrowed, = Rs. $(100a + 200a) =$ Rs. $300a$
 Total interest he paid = Rs. $(13a + 52a) =$ Rs. $65a$

According to question,
 He then added Rsd. 82500 with the total amount he borrowed from Shyam and Mohan together and lend to Sohan at the rate of 10% simple interest

$(300a + 82500)$ at 10% SI for 1 year
 The total interest he will receive in this process = Rs. $(30a + 8250)$

According to question,
 The total profit he received was Rs. 1725
 So, $[(30a + 8250) - 65a] = 1725$
 $6525 = 35a, a = 186.4285$
 So, $x = 100a = 100 \times 186.4285 = 18642.85$

Hence, option A is correct.

5. Let total distance = $100x$ km
 Total time taken by them = 10 hrs
 Speed of the train B = $\frac{100X}{10} = 10x$ km/hr(i)

Let the original speed of the train A = $3s$ km/hr

Then according to question, he travels, $50x$ km at the speed of $3s$ km/hr and $50x$ km at the speed of $2s$ km/hr

Total time he will take = $\frac{50x}{2s} + \frac{50x}{3s}$ hr = 10 hr

$$5x \times \frac{5}{6s} = 1, 6s = 25x$$

$$s = \frac{25x}{6}$$

So, his original speed

$$= 3s = \frac{25x}{6} \times 3 = \frac{25x}{2} \text{ km/hr} \text{(ii)}$$

Ratio of their speed = $\frac{25x}{2} : 10x = 5 : 4$

Hence, option D is correct.

- 6.** Let length = breadth = height = 10 units
 Then volume of the cuboid = $10 \times 10 \times 10 = 1000$ units
 Then according to question new length = 110% of 10 = 11 units
 New breadth = 90% of 10 = 9 units
 New height = 110% of 10 = 11 units
 So new volume = $11 \times 9 \times 11 = 1089$ units

$$\% \text{ change} = \frac{(1089 - 1000) \times 100}{1000} = \frac{89}{10} = 8.9\% \text{ increase}$$

Hence, option E is correct.

- 7.** CP = Rs. 1900
 MP = 119% of 1900 = Rs. 2261
 5% discount on the MP = 95% of 2261 = Rs. 2147.95

If customer pay by cash, then he again gives 8% discount on the discounted price then his selling price will become 92% of 2147.95 = Rs. 1976.11

So his profit = Rs. (1976.11 - 1900) = Rs. 76.11 and cost price is Rs. 1900

$$\text{Profit \%} = \frac{\text{profit}}{\text{cp}} \times 100 = \frac{76.11}{1900} \times 100 = \frac{76.11}{19} = 4\% \text{ (Approx.)}$$

Hence, option A is correct.

- 8.** Let the unit place digit = a, and the tenth-place digit is b
 Then the original number = $10b + a$
 On reversal it will become $10a + b$
 According to the question,
 $10a + b = 65\% \text{ of } (10b + a)$
 $(10a + b) 20 = 13 (10b + a)$
 $187a = 110b$

$$\frac{a}{b} = \frac{110}{187} = \frac{10}{17}$$

assume, $b = 17x$ and $a = 10x$

a is less than b by

$$\frac{17x - 10x}{17x} \times 100\% = \frac{7}{17} \times 100\% = 41.18\%$$

Hence, option B is correct.

9. In 4 days 4 students will leave the group but still there are exactly 8 boys are remaining in the group it means 1 boy and 3 girls left the group. Girls or boy can leave the group on any of the four days.

$$\text{Probability} = \frac{{}^9C_1 \times {}^6C_3}{{}^{15}C_4} = \frac{12}{91}$$

Hence, option A is correct.

10. Ratio of their profits = $(900 + 1500 + 1200) : (1200 + 1400 + 1000) : (1500 + 2000 + 1800) = 36 : 36 : 53$

$$\text{Share of B} = 250000 \times \frac{36}{36 + 36 + 53} = \text{Rs. } 72000$$

Cost price of bike = Rs.72000

Price of bike after 3 years

$$= 72000 \times \left(1 - \frac{10}{100}\right)^3 = \text{Rs. } 52488$$

Hence, option (C) is correct.



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