

### 1. Time and Work

*Question:* A man has to travel 50 km in two hours. He covers 20 km in the first hour and then stops for 10 minutes for refueling. By what factor should he increase his speed during the second hour to complete the journey on time?

*Options:*

- A) 1.2
- B) 1.8
- C) 2.4
- D) 1.5

*Answer: B) 1.8*

*Explanation:* He has 50 minutes left to cover 30 km, requiring a speed of 36 km/h. His initial speed was 20 km/h. So, the factor increase is  $36/20 = 1.8$ .

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### 2. Profit and Loss

*Question:* Alfred buys an old scooter for Rs. 4700 and spends Rs. 800 on its repairs. If he sells the scooter for Rs. 5800, what is his gain percentage?

*Options:*

- A)  $4\frac{4}{7}\%$
- B)  $5\frac{5}{11}\%$
- C) 10%
- D) 12%

*Answer: B)  $5\frac{5}{11}\%$*

*Explanation:* Total cost =  $4700 + 800 = \text{Rs. } 5500$ ; Profit =  $5800 - 5500 = \text{Rs. } 300$ ; Gain% =  $(300/5500) \times 100 = 5\frac{5}{11}\%$ .

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### 3. Time, Speed, and Distance

*Question:* A train traveling at 60 km/h crosses a man in 6 seconds. What is the length of the train?

*Options:*

- A) 100 meters
- B) 150 meters
- C) 200 meters
- D) 250 meters

*Answer: A) 100 meters*

*Explanation:* Speed = 60 km/h = 16.67 m/s; Distance = Speed  $\times$  Time =  $16.67 \times 6 \approx 100$  meters.

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### 4. Percentages

*Question:* A student was asked to divide a number by 25. Instead, he divided it by 10 and got an answer 6 more than the correct answer. What was the original number?

*Options:*

- A) 90
- B) 100
- C) 50
- D) 80

**Answer: B) 100**

*Explanation:* Let the number be  $x$ ;  $x/10 - x/25 = 6 \Rightarrow (15x - 6x)/150 = 6 \Rightarrow 9x = 900 \Rightarrow x = 100$ .

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### 5. Ratios and Proportions

*Question:* If  $A:B = 2:3$  and  $B:C = 4:5$ , what is the ratio  $A:C$ ?

*Options:*

- A) 8:15
- B) 2:5
- C) 3:10
- D) 4:5

**Answer: A) 8:15**

*Explanation:*  $A:B = 2:3$ ;  $B:C = 4:5 \Rightarrow$  Multiply  $A:B$  by 4 and  $B:C$  by 3 to get common  $B$ :  $A:B = 8:12$ ;  $B:C = 12:15 \Rightarrow A:C = 8:15$ .

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### 6. Averages

*Question:* The average of 10 numbers is 20. If one number is removed and the average becomes 18, what is the value of the removed number?

*Options:*

- A) 38
- B) 36
- C) 40
- D) 42

**Answer: A) 38**

*Explanation:* Total sum =  $10 \times 20 = 200$ ; New sum =  $9 \times 18 = 162$ ; Removed number =  $200 - 162 = 38$ .

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### 7. Number Systems

*Question:* What is the HCF of  $3/16$ ,  $5/12$ , and  $7/8$ ?

*Options:*

- A)  $1/48$
- B)  $1/24$
- C)  $1/16$
- D)  $1/8$

**Answer: A)  $1/48$**

*Explanation:* Convert to like denominators and find the HCF of numerators; the highest common factor is  $1/48$ .

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### 8. Mixtures and Alligations

*Question:* In a mixture of 60 liters, the ratio of milk to water is 2:1. How much water should be added to make the ratio 1:2?

*Options:*

- A) 20 liters
- B) 30 liters
- C) 40 liters

D) 60 liters

**Answer: C) 40 liters**

*Explanation:* Milk = 40 liters, Water = 20 liters; Let x be the water added:  $(40)/(20 + x) = 1/2 \Rightarrow 40 = (20 + x)/2 \Rightarrow 80 = 20 + x \Rightarrow x = 60$ .

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### 9. Simple Interest

*Question:* What is the simple interest on Rs. 5000 at 10% per annum for 3 years?

*Options:*

A) Rs. 1500

B) Rs. 1600

C) Rs. 1700

D) Rs. 1800

**Answer: A) Rs. 1500**

*Explanation:*  $SI = (P \times R \times T)/100 = (5000 \times 10 \times 3)/100 = \text{Rs. } 1500$ .

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### 10. Algebra

*Question:* If  $x + 1/x = 5$ , what is the value of  $x^2 + 1/x^2$ ?

*Options:*

A) 23

B) 21

C) 25

D) 27

**Answer: A) 23**

*Explanation:*  $(x + 1/x)^2 = x^2 + 2 + 1/x^2 \Rightarrow 25 = x^2 + 2 + 1/x^2 \Rightarrow x^2 + 1/x^2 = 23$ .

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