

Aptitude :: Ratio and Proportion

1. A and B together have Rs. 1210. If $\frac{4}{15}$ of A's amount is equal to $\frac{2}{5}$ of B's amount, how much amount does B have?

- A. Rs. 460
- B. Rs. 484
- C. Rs. 550
- D. Rs. 664

Answer: Option B

Explanation:

$$\begin{aligned}\frac{4}{15} A &= \frac{2}{5} B \\ \Rightarrow A &= \left(\frac{2}{5} \times \frac{15}{4} \right) B \\ \Rightarrow A &= \frac{3}{2} B \\ \Rightarrow \frac{A}{B} &= \frac{3}{2} \\ \Rightarrow A : B &= 3 : 2.\end{aligned}$$

$$\therefore \text{B's share} = \text{Rs.} \left(1210 \times \frac{2}{5} \right) = \text{Rs. 484.}$$

2. Two numbers are respectively 20% and 50% more than a third number. The ratio of the two numbers is:

- A. 2 : 5
- B. 3 : 5
- C. 4 : 5
- D. 6 : 7

Answer: Option C

Explanation:

Let the third number be x .

$$\text{Then, first number} = 120\% \text{ of } x = \frac{120x}{100} = \frac{6x}{5}$$

$$\text{Second number} = 150\% \text{ of } x = \frac{150x}{100} = \frac{3x}{2}$$

$$\therefore \text{Ratio of first two numbers} = \left(\frac{6x}{5} : \frac{3x}{2} \right) = 12x : 15x = 4 : 5.$$

3. A sum of money is to be distributed among A, B, C, D in the proportion of 5 : 2 : 4 : 3. If C gets Rs. 1000 more than D, what is B's share?

- A. Rs. 500
- B. Rs. 1500
- C. Rs. 2000
- D. None of these

Answer: Option C

Explanation:

Let the shares of A, B, C and D be Rs. 5x, Rs. 2x, Rs. 4x and Rs. 3x respectively.

Then, $4x - 3x = 1000$

$\Rightarrow x = 1000.$

\therefore B's share = Rs. 2x = Rs. (2 x 1000) = Rs. 2000.

4. Seats for Mathematics, Physics and Biology in a school are in the ratio 5 : 7 : 8. There is a proposal to increase these seats by 40%, 50% and 75% respectively. What will be the ratio of increased seats?

- A. 2 : 3 : 4
- B. 6 : 7 : 8
- C. 6 : 8 : 9
- D. None of these

Answer: Option A

Explanation:

Originally, let the number of seats for Mathematics, Physics and Biology be 5x, 7x and 8x respectively.

Number of increased seats are (140% of 5x), (150% of 7x) and (175% of 8x).

$\Rightarrow \left(\frac{140}{100} \times 5x\right), \left(\frac{150}{100} \times 7x\right)$ and $\left(\frac{175}{100} \times 8x\right)$

$\Rightarrow 7x, \frac{21x}{2}$ and $14x.$

\therefore The required ratio = $7x : \frac{21x}{2} : 14x$

$\Rightarrow 14x : 21x : 28x$

$\Rightarrow 2 : 3 : 4.$

5. In a mixture 60 litres, the ratio of milk and water 2 : 1. If this ratio is to be 1 : 2, then the quantity of water to be further added is:

- A. 20 litres
- B. 30 litres

- C. 40 litres
- D. 60 litres

Answer: Option D

Explanation:

$$\text{Quantity of milk} = \left(60 \times \frac{2}{3} \right) \text{ litres} = 40 \text{ litres.}$$

Quantity of water in it = (60 - 40) litres = 20 litres.

New ratio = 1 : 2

Let quantity of water to be added further be x litres.

$$\text{Then, milk : water} = \left(\frac{40}{20 + x} \right).$$

$$\text{Now, } \left(\frac{40}{20 + x} \right) = \frac{1}{2}$$

$$\Rightarrow 20 + x = 80$$

$$\Rightarrow x = 60.$$

∴ Quantity of water to be added = 60 litres.

6. The ratio of the number of boys and girls in a college is 7 : 8. If the percentage increase in the number of boys and girls be 20% and 10% respectively, what will be the new ratio?

- A. 8 : 9
- B. 17 : 18
- C. 21 : 22
- D. Cannot be determined

Answer: Option C

Explanation:

Originally, let the number of boys and girls in the college be 7x and 8x respectively.

Their increased number is (120% of 7x) and (110% of 8x).

$$\Rightarrow \left(\frac{120}{100} \times 7x \right) \text{ and } \left(\frac{110}{100} \times 8x \right)$$

$$\Rightarrow \frac{42x}{5} \text{ and } \frac{44x}{5}$$

∴ The required ratio = $\left(\frac{42x}{5} : \frac{44x}{5} \right) = 21 : 22.$

7. Salaries of Ravi and Sumit are in the ratio 2 : 3. If the salary of each is increased by Rs. 4000, the new ratio becomes 40 : 57. What is Sumit's salary?

- A. Rs. 17,000
- B. Rs. 20,000

- C. Rs. 25,500
- D. Rs. 38,000

Answer: Option D

Explanation:

Let the original salaries of Ravi and Sumit be Rs. $2x$ and Rs. $3x$ respectively.

$$\begin{aligned}\text{Then, } \frac{2x + 4000}{3x + 4000} &= \frac{40}{57} \\ \Rightarrow 57(2x + 4000) &= 40(3x + 4000) \\ \Rightarrow 6x &= 68,000 \\ \Rightarrow 3x &= 34,000\end{aligned}$$

Sumit's present salary = $(3x + 4000) = \text{Rs.}(34000 + 4000) = \text{Rs. } 38,000$.

8. If $0.75 : x :: 5 : 8$, then x is equal to:

- A. 1.12
- B. 1.2
- C. 1.25
- D. 1.30

Answer: Option B

Explanation:

$$(x \times 5) = (0.75 \times 8) \Rightarrow x = \left(\frac{6}{5}\right) = 1.20$$

9. The sum of three numbers is 98. If the ratio of the first to second is $2 : 3$ and that of the second to the third is $5 : 8$, then the second number is:

- A. 20
- B. 30
- C. 48
- D. 58

Answer: Option B

Explanation:

Let the three parts be A, B, C. Then,

$$A : B = 2 : 3 \text{ and } B : C = 5 : 8 = \left(5 \times \frac{3}{5}\right) : \left(8 \times \frac{3}{5}\right) = 3 : \frac{24}{5}$$

$$\Rightarrow A : B : C = 2 : 3 : \frac{24}{5} = 10 : 15 : 24$$

$$\Rightarrow B = \left(98 \times \frac{15}{49}\right) = 30.$$

10. If Rs. 782 be divided into three parts, proportional to : : , then the first part is:

- A. Rs. 182
- B. Rs. 190
- C. Rs. 196
- D. Rs. 204

Answer: Option D

Explanation:

Given ratio = $\frac{1}{2} : \frac{2}{3} : \frac{3}{4} = 6 : 8 : 9$.

\therefore 1st part = Rs. $\left(782 \times \frac{6}{23}\right) = \text{Rs. } 204$

