

Arithmetic (Level 1)

MCQ Test, Set 09

Time: 30 minutes

Maximum marks: 25

Name: _____ Class: _____ Date: _____

- There are 25 questions. Each has exactly one correct answer: choose A, B, C or D.
- Each correct answer carries 1 mark. There is no negative marking.
- The key sheet and worked solutions are at the end of this test.

- A school team played 40 matches and won 25 of them. The ratio of the number of matches played to the number of matches lost is
A. 8 : 3 **B.** 3 : 8 **C.** 5 : 3 **D.** 8 : 5
- If ₹2925 is divided into two parts in the ratio 4 : 9, then the larger part is
A. ₹1125 **B.** ₹2025 **C.** ₹900 **D.** ₹225
- Metal P is 18 times as heavy as water and metal Q is 6 times as heavy as water. To get an alloy 14 times as heavy as water, P and Q must be mixed in the ratio
A. 1 : 2 **B.** 1 : 3 **C.** 2 : 3 **D.** 2 : 1
- If $15 : 25 :: x : 40$, then $x =$
A. 9.375 **B.** $66\frac{2}{3}$ **C.** 24 **D.** 30
- The third proportional to 25 and 15 is
A. $5\sqrt{15}$ **B.** $41\frac{2}{3}$ **C.** 375 **D.** 9
- If $\frac{x+y}{x-y} = \frac{11}{7}$, then $x : y =$
A. 9 : 2 **B.** 18 : 7 **C.** 11 : 7 **D.** 2 : 9
- If x and y are in direct proportion, then
A. $x + y$ is a constant **B.** xy is a constant
C. $x - y$ is a constant **D.** $\frac{x}{y}$ is a constant
- There is food for 500 men for 24 days. After 4 days, the number of extra men who must join so that the remaining food lasts 16 more days is
A. 100 **B.** 625 **C.** 250 **D.** 125
- $\frac{6}{7}$ expressed as a percentage is
A. $116\frac{2}{3}\%$ **B.** $\frac{6}{7}\%$ **C.** $85\frac{5}{7}\%$ **D.** $71\frac{3}{7}\%$
- What percentage of 2 kg is 250 g?
A. 8% **B.** 125% **C.** 1.25% **D.** 12.5%

11. The population of a village is 15000. If it decreases by 6%, the new population is
A. 14,100 B. 900 C. 15,900 D. 14,400
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12. The price of oil decreases by 25%. The increase in consumption so as not to decrease the expenditure is
A. 75% B. $33\frac{1}{3}\%$ C. 25% D. 20%
-
13. The population of a town is 90000 and it decreases at 10% per annum. After 2 years it will be
A. 81,000 B. 72,900 C. 1,08,900 D. 72,000
-
14. An article costing ₹840 is sold at a loss of 5%. Its selling price is
A. ₹798 B. ₹882 C. ₹42 D. ₹835
-
15. An article marked at ₹1200 is sold at a 20% discount, still giving a 20% profit. Its cost price is
A. ₹800 B. ₹1152 C. ₹960 D. ₹768
-
16. A trader claims to sell tea at cost price but gives only 980 g for every kg. His gain percent is
A. 98% B. $2\frac{2}{49}\%$ C. $102\frac{2}{49}\%$ D. 2%
-
17. If the cost price of 14 articles equals the selling price of 12 articles, then there is a
A. $14\frac{2}{7}\%$ gain B. $16\frac{2}{3}\%$ loss
C. $16\frac{2}{3}\%$ gain D. 2% gain
-
18. The average of four consecutive even numbers is 25. The largest of them is
A. 26 B. 31 C. 28 D. 22
-
19. The average age of 30 students is 15 years. When the teacher's age is included, the average increases by 1. The teacher's age (in years) is
A. 46 B. 31 C. 16 D. 45
-
20. If a man travels at 36 km/h, he reaches his destination 10 minutes late, and at 45 km/h he reaches 5 minutes early. The distance travelled is
A. 36 km B. 45 km C. 54 km D. 40 km
-
21. A man goes to a place at 70 km/h and returns by the same route at 30 km/h. His average speed for the whole journey is
A. 50 km/h B. 42 km/h C. 21 km/h D. 100 km/h
-
22. The speeds of two trains are 72 km/h and 48 km/h. The ratio of the times taken by them for the same distance is
A. 5 : 3 B. 2 : 5 C. 2 : 3 D. 3 : 2
-
23. A train 120 m long running at 54 km/h crosses a bridge in 30 seconds. The length of the bridge is
A. 300 m B. 450 m C. 330 m D. 570 m
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24. The formula for simple interest is

A. $S.I = \frac{P \times T \times R}{100}$

B. $S.I = \frac{P \times T}{100 \times R}$

C. $S.I = 100 \times P \times T \times R$

D. $S.I = P \left(1 + \frac{R}{100}\right)^T$

25. A trader invests ₹40000. He loses 10% in the first year and gains 20% in the second year. His net profit is

A. ₹4000

B. ₹2800

C. ₹3600

D. ₹3200

Key sheet

1. A	2. B	3. D	4. C	5. D
6. A	7. D	8. D	9. C	10. D
11. A	12. B	13. B	14. A	15. A
16. B	17. C	18. C	19. A	20. B
21. B	22. C	23. C	24. A	25. D

Solutions

1. A school team played 40 matches and won 25 of them. The ratio of the number of matches played to the number of matches lost is

$$\text{Matches lost} = 40 - 25 = 15$$

$$\text{Required ratio} = \frac{40}{15} = \frac{8}{3} = 8 : 3$$

Ans: (A) 8 : 3

2. If ₹2925 is divided into two parts in the ratio 4 : 9, then the larger part is

$$\text{Larger part} = \frac{9}{4+9} \times 2925 = \frac{9}{13} \times 2925 = 2025$$

Ans: (B) ₹2025

3. Metal P is 18 times as heavy as water and metal Q is 6 times as heavy as water. To get an alloy 14 times as heavy as water, P and Q must be mixed in the ratio

$$\text{Take 1 g of P and } x \text{ g of Q: } 18 + 6x = 14(1 + x)$$

$$\Rightarrow 4 = 8x \Rightarrow x = \frac{1}{2}$$

$$\text{Ratio} = 1 : \frac{1}{2} = 2 : 1$$

Ans: (D) 2 : 1

4. If $15 : 25 :: x : 40$, then $x =$

Product of means = product of extremes.

$$25x = 15 \times 40 \Rightarrow x = 24$$

Ans: (C) 24

5. The third proportional to 25 and 15 is

$$25 : 15 :: 15 : c \Rightarrow 25c = 15 \times 15$$

$$c = \frac{225}{25} = 9$$

Ans: (D) 9

6. If $\frac{x+y}{x-y} = \frac{11}{7}$, then $x : y =$

By componendo and dividendo:

$$\frac{2x}{2y} = \frac{11+7}{11-7} = \frac{18}{4} = \frac{9}{2}$$

$$\text{So } x : y = 9 : 2$$

Ans: (A) 9 : 2

7. If x and y are in direct proportion, then

$$x \propto y \Rightarrow x = ky \Rightarrow \frac{x}{y} = k, \text{ a constant.}$$

Ans: (D) $\frac{x}{y}$ is a constant

8. There is food for 500 men for 24 days. After 4 days, the number of extra men who must join so that the remaining food lasts 16 more days is

$$\text{Remaining food} = 500 \times 20 = 10000 \text{ man-days}$$

$$\frac{10000}{16} = 625 \text{ men, so } 625 - 500 = 125 \text{ more}$$

Ans: (D) 125

9. $\frac{6}{7}$ expressed as a percentage is

$$\frac{6}{7} = \frac{600}{7}\% = 85\frac{5}{7}\% \approx 85.71\%$$

Ans: (C) $85\frac{5}{7}\%$

10. What percentage of 2 kg is 250 g?

$$2 \text{ kg} = 2000 \text{ g}$$

$$\left(\frac{250}{2000} \times 100\right)\% = 12.5\%$$

Ans: (D) 12.5%

11. The population of a village is 15000. If it decreases by 6%, the new population is

$$\frac{100-6}{100} \times 15000 = \frac{94}{100} \times 15000 = 14100$$

Ans: (A) 14,100

12. The price of oil decreases by 25%. The increase in consumption so as not to decrease the expenditure is

$$\left(\frac{25}{75} \times 100\right)\% = 33\frac{1}{3}\%$$

Ans: (B) $33\frac{1}{3}\%$

13. The population of a town is 90000 and it decreases at 10% per annum. After 2 years it will be

$$90000 \left(1 - \frac{10}{100}\right)^2 = 90000 \times \frac{81}{100} = 72900$$

Ans: (B) 72,900

14. An article costing ₹840 is sold at a loss of 5%. Its selling price is

$$\text{S.P} = \frac{100-5}{100} \times 840 = 798$$

Ans: (A) ₹798

15. An article marked at ₹1200 is sold at a 20% discount, still giving a 20% profit. Its cost price is

$$\text{S.P} = \frac{80}{100} \times 1200 = 960$$

$$\text{C.P} = \frac{100}{120} \times 960 = 800$$

Ans: (A) ₹800

16. A trader claims to sell tea at cost price but gives only 980 g for every kg. His gain percent is

$$\text{Gain \%} = \frac{\text{Error}}{\text{True value} - \text{Error}} \times 100$$

$$= \frac{20}{980} \times 100 = 2\frac{2}{49}\%$$

Ans: (B) $2\frac{2}{49}\%$

17. If the cost price of 14 articles equals the selling price of 12 articles, then there is a

$$14x = 12y \Rightarrow \frac{y}{x} = \frac{7}{6}$$

$$\left(\frac{y}{x} - 1\right) \times 100 = 16\frac{2}{3}\% \text{ (a gain)}$$

Ans: (C) $16\frac{2}{3}\%$ gain

18. The average of four consecutive even numbers is 25. The largest of them is

$$\frac{x+(x+2)+(x+4)+(x+6)}{4} = 25 \Rightarrow x + 3 = 25 \Rightarrow x = 22$$

$$\text{Largest} = 22 + 6 = 28$$

Ans: (C) 28

19. The average age of 30 students is 15 years. When the teacher's age is included, the average increases by 1. The teacher's age (in years) is

$$31(16) - 30(15) = 496 - 450 = 46$$

Ans: (A) 46

20. If a man travels at 36 km/h, he reaches his destination 10 minutes late, and at 45 km/h he reaches 5 minutes early. The distance travelled is

$$\text{Let } T \text{ be the correct time (hours): } D = 36 \left(T + \frac{10}{60}\right) = 45 \left(T - \frac{5}{60}\right)$$

$$\Rightarrow T = \frac{13}{12} \text{ h, } D = 36 \times \frac{5}{4} = 45 \text{ km}$$

Ans: (B) 45 km

21. A man goes to a place at 70 km/h and returns by the same route at 30 km/h. His average speed for the whole journey is

$$\frac{2 \times 70 \times 30}{70 + 30} = \frac{4200}{100} = 42 \text{ km/h}$$

(Not the simple average of the two speeds.)

Ans: (B) 42 km/h

22. The speeds of two trains are 72 km/h and 48 km/h. The ratio of the times taken by them for the same distance is

$$T_1 : T_2 = s_2 : s_1 = 48 : 72 = 2 : 3$$

Ans: (C) 2 : 3

23. A train 120 m long running at 54 km/h crosses a bridge in 30 seconds. The length of the bridge is

$$\text{Distance} = 15 \times 30 = 450 \text{ m (speed} = 15 \text{ m/s)}$$

$$\text{Bridge} = 450 - 120 = 330 \text{ m}$$

Ans: (C) 330 m

24. The formula for simple interest is

$$\text{S.I} = \frac{PTR}{100}, \text{ where } P \text{ is the principal, } R \text{ the rate and } T \text{ the time.}$$

$$\text{Ans: (A) S.I} = \frac{P \times T \times R}{100}$$

25. A trader invests ₹40000. He loses 10% in the first year and gains 20% in the second year. His net profit is

$$40000 \times \frac{90}{100} \times \frac{120}{100} = 43200$$

$$\text{Net profit} = 43200 - 40000 = 3200$$

Ans: (D) ₹3200
