

Arithmetic (Level 1)

MCQ Test, Set 04

Time: 30 minutes

Maximum marks: 25

Name: _____ Class: _____ Date: _____

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

1. The ratio of 300 g to 1.5 kg is
A. 5 : 1 **B.** 1 : 50 **C.** 1 : 5 **D.** 2 : 1
2. ₹4800 is divided among three persons in the ratio 1 : 2 : 5. The third share is
A. ₹1200 **B.** ₹3000 **C.** ₹960 **D.** ₹600
3. Metal P is 15 times as heavy as water and metal Q is 5 times as heavy as water. To get an alloy 9 times as heavy as water, P and Q must be mixed in the ratio
A. 2 : 5 **B.** 3 : 5 **C.** 3 : 2 **D.** 2 : 3
4. The ratio of the length to the width of a rectangular sheet is 9 : 5. If its width is 35 cm, its length is
A. 63 cm **B.** 49 cm **C.** $19\frac{4}{9}$ cm **D.** 315 cm
5. The mean proportional between 27 and 48 is
A. 1296 **B.** 37.5 **C.** 36 **D.** 21
6. If $\frac{a+b}{a-b} = \frac{5}{3}$, then $a : b =$
A. 5 : 3 **B.** 4 : 1 **C.** 8 : 3 **D.** 1 : 4
7. The cost of 5 dozen bananas is ₹150. The number of bananas that can be bought for ₹45 is
A. 15 **B.** 18 **C.** 20 **D.** 200
8. A man has money to buy 40 cycles at ₹600 each. If each cycle costs ₹200 more, the number of cycles he can buy is
A. 32 **B.** 120 **C.** 36 **D.** 30
9. The ratio 9 : 20 expressed as a percentage is
A. 90% **B.** 4.5% **C.** 45% **D.** $222\frac{2}{9}\%$
10. If 30% of a number is 24 less than 50% of that number, then the number is
A. 120 **B.** 80 **C.** 30 **D.** 48

Key sheet

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

Solutions

1. The ratio of 300 g to 1.5 kg is

$$1.5 \text{ kg} = 1.5 \times 1000 \text{ g} = 1500 \text{ g}$$

$$\text{Ratio} = \frac{300}{1500} = \frac{1}{5} = 1 : 5$$

Ans: (C) 1 : 5

2. ₹4800 is divided among three persons in the ratio 1 : 2 : 5. The third share is

$$\text{Sum of the terms} = 1 + 2 + 5 = 8$$

$$\text{Third share} = \frac{5}{8} \times 4800 = 3000$$

Ans: (B) ₹3000

3. Metal P is 15 times as heavy as water and metal Q is 5 times as heavy as water. To get an alloy 9 times as heavy as water, P and Q must be mixed in the ratio

$$\text{Take 1 g of P and } x \text{ g of Q: } 15 + 5x = 9(1 + x)$$

$$\Rightarrow 6 = 4x \Rightarrow x = \frac{3}{2}$$

$$\text{Ratio} = 1 : \frac{3}{2} = 2 : 3$$

Ans: (D) 2 : 3

4. The ratio of the length to the width of a rectangular sheet is 9 : 5. If its width is 35 cm, its length is

$$\frac{l}{35} = \frac{9}{5} \Rightarrow l = \frac{9 \times 35}{5} = 63$$

Ans: (A) 63 cm

5. The mean proportional between 27 and 48 is

$$\text{Mean proportional} = \sqrt{27 \times 48} = \sqrt{1296} = 36$$

Ans: (C) 36

6. If $\frac{a+b}{a-b} = \frac{5}{3}$, then $a : b =$

By componendo and dividendo:

$$\frac{2a}{2b} = \frac{5+3}{5-3} = \frac{8}{2} = 4$$

$$\text{So } a : b = 4 : 1$$

Ans: (B) 4 : 1

7. The cost of 5 dozen bananas is ₹150. The number of bananas that can be bought for ₹45 is

$$\text{Direct proportion: } x_1 y_2 = x_2 y_1$$

$$y = \frac{45 \times 60}{150} = 18$$

Ans: (B) 18

8. A man has money to buy 40 cycles at ₹600 each. If each cycle costs ₹200 more, the number of cycles he can buy is

$$\text{Inverse proportion: } x_1 y_1 = x_2 y_2$$

$$600 \times 40 = 800 \times y \Rightarrow y = 30$$

Ans: (D) 30

9. The ratio 9 : 20 expressed as a percentage is

$$9 : 20 = \left(\frac{9}{20} \times 100\right) \% = 45\%$$

Ans: (C) 45%

10. If 30% of a number is 24 less than 50% of that number, then the number is

$$\frac{50x}{100} - \frac{30x}{100} = 24 \Rightarrow \frac{20x}{100} = 24$$

$$x = \frac{24 \times 100}{20} = 120$$

Ans: (A) 120

11. If a quantity P is increased by $R\%$, the final quantity is

$$\text{Increase} = \frac{R}{100}P, \text{ so final} = P + \frac{R}{100}P = \frac{100+R}{100}P$$

$$\text{Ans: (D)} \frac{100+R}{100} \times P$$

12. The price of milk falls by 10%. Without changing the expenditure, consumption can be increased by

$$\left(\frac{10}{100-10} \times 100\right) \% = \frac{100}{9} \% = 11\frac{1}{9} \%$$

Ans: (C) $11\frac{1}{9} \%$

13. The population of a village 2 years ago was 80000. It decreases at 5% per annum. Its present population is

$$80000 \left(1 - \frac{5}{100}\right)^2 = 80000 \times \frac{19}{20} \times \frac{19}{20} = 72200$$

Ans: (B) 72,200

14. An article bought for ₹1500 is sold for ₹1800. The profit percent is

$$\text{Profit} = 300$$

$$\text{Profit \%} = \frac{300}{1500} \times 100 = 20\% \text{ (always on C.P)}$$

Ans: (A) 20%

15. An article is marked at ₹1035 with a markup of 15%. Its cost price is

$$x + \frac{15}{100}x = 1035 \Rightarrow \frac{115}{100}x = 1035 \Rightarrow x = 900$$

Ans: (D) ₹900

16. A trader who professes to sell at cost price but uses false weights gains

He pays for (true value – error) but is paid for the true value, so the gain f is on cost $(p - f)$: $\frac{f}{p-f} \times 100$.

$$\text{Ans: (D)} \frac{\text{Error}}{\text{True value} - \text{Error}} \times 100\%$$

17. If the cost price of 22 articles equals the selling price of 20 articles, then there is a

$$22x = 20y \Rightarrow \frac{y}{x} = \frac{11}{10}$$

$$\left(\frac{y}{x} - 1\right) \times 100 = 10\% \text{ (a gain)}$$

Ans: (A) 10% gain

18. The average age of 40 students is 15 years. The average age of the first 24 is 14 years. The average age of the remaining 16 is

$$\text{Remaining sum} = 40(15) - 24(14) = 600 - 336 = 264$$

$$\text{Average} = \frac{264}{16} = 16.5 \text{ years}$$

Ans: (A) 16.5

19. The average weight of 35 students is 45 kg. When the teacher's weight is included, the average rises by 0.5 kg. The teacher's weight (in kg) is

$$T = 36(45.5) - 35(45) = 1638 - 1575 = 63 \text{ kg}$$

Ans: (D) 63

20. A car moving at 48 km/h travels for 2 hours 15 minutes. The distance covered (in km) is

$$T = 2\frac{15}{60} = \frac{9}{4} \text{ h}$$

$$D = 48 \times \frac{9}{4} = 108 \text{ km}$$

Ans: (A) 108

21. A traveller covers half of his journey by train at 100 km/h and the other half by car at 150 km/h. His average speed is

$$\frac{2 \times 100 \times 150}{100 + 150} = \frac{30,000}{250} = 120 \text{ km/h}$$

(Not the simple average of the two speeds.)

Ans: (B) 120 km/h

22. For the same distance, if speeds s_1 and s_2 take times T_1 and T_2 , then $s_1 : s_2 =$

$$s_1 = \frac{d}{T_1}, s_2 = \frac{d}{T_2}, \text{ so } \frac{s_1}{s_2} = \frac{T_2}{T_1}$$

Ans: (C) $T_2 : T_1$

23. When a train crosses a pole, the distance it covers is equal to

A pole has no length, so the train only has to move its own length past it.

Ans: (D) its own length

24. The simple interest on ₹800 at 8% per annum is ₹192. The time (in years) is

$$T = \frac{192 \times 100}{800 \times 8} = 3 \text{ years}$$

Ans: (C) 3

25. The amount on ₹20000 at 12% per annum for 6 months, compounded quarterly, is

$$k = 4, nk = \frac{1}{2} \times 4 = 2: A = 20000 \left(1 + \frac{12}{400}\right)^2 = 20000 \times (1.03)^2 = 21218$$

Ans: (B) ₹21,218
