

Arithmetic (Level 1)**MCQ Test, Set 02**

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. A box contains 48 bulbs, out of which 18 are defective. If the ratio of defective bulbs to good bulbs is $x : y$ in simplest form, then $x + y =$
A. 8 **B.** 13 **C.** 11 **D.** 48
2. ₹2700 is divided among three persons in the ratio 2 : 3 : 4. The second share is
A. ₹1200 **B.** ₹600 **C.** ₹300 **D.** ₹900
3. In a school library, the ratio of comic books to story books is the same as the ratio of story books to Hindi books. If there are 480 story books and 320 Hindi books, then the number of comic books is
A. 640 **B.** 320 **C.** 720 **D.** 800
4. If $x : 18 :: 10 : 45$, then $x =$
A. 25 **B.** 8 **C.** 81 **D.** 4
5. The third proportional to 9 and 12 is
A. 16 **B.** 108 **C.** 6.75 **D.** $6\sqrt{3}$
6. If $\frac{x}{y} = \frac{6}{5}$, then $\frac{x+y}{y} =$
A. $\frac{1}{5}$ **B.** $\frac{6}{5}$ **C.** $\frac{11}{5}$ **D.** $\frac{11}{6}$
7. A pole 12 m high casts a shadow of 8 m. Under similar conditions, a tree that casts a shadow of 14 m is
A. $6\frac{6}{7}$ m high **B.** 18 m high
C. $9\frac{1}{3}$ m high **D.** 21 m high
8. Working 9 hours a day, a man completes a job in 8 days. To complete it in 12 days he must work, per day,
A. $10\frac{2}{3}$ hours **B.** 5 hours
C. 6 hours **D.** 13.5 hours
9. 24% as a fraction in its simplest form is
A. $\frac{3}{125}$ **B.** $\frac{12}{5}$ **C.** $\frac{3}{25}$ **D.** $\frac{6}{25}$

10. 0.04 is what percent of 0.8?
A. 5% B. 0.5% C. 20% D. 50%
-
11. The price of a book rises from ₹360 to ₹450. The percentage increase is
A. 90% B. 20% C. 25% D. 125%
-
12. If x is 4 times y , then y is less than x by
A. 25% B. 75% C. 300% D. 400%
-
13. The present population of a town is 17280. If it increased at 20% per annum, its population 2 years ago was
A. 12,000 B. 10,368 C. 14,400 D. 11059.2
-
14. The profit made by selling an article for ₹845 is equal to the loss made by selling it for ₹715. The cost price is
A. ₹780 B. ₹65 C. ₹1560 D. ₹130
-
15. An article marked at ₹1250 is sold for ₹1000. The discount percent is
A. 25% B. 12.5% C. 80% D. 20%
-
16. A trader claims to sell sugar at cost price but gives only 875 g for every kg. His gain percent is
A. 12.5% B. $14\frac{2}{7}\%$ C. $114\frac{2}{7}\%$ D. 87.5%
-
17. If the cost price of 12 articles equals the selling price of 16 articles, then there is a
A. 25% gain B. $33\frac{1}{3}\%$ gain
C. 25% loss D. $33\frac{1}{3}\%$ loss
-
18. The average score of a cricketer in 3 matches is 40 and in 2 other matches is 25. His average in all 5 matches is
A. 170 B. 34 C. 30 D. 32.5
-
19. The average of 8 numbers is 14. If each number is multiplied by 3, the new average is
A. 14 B. 42 C. 17 D. 336
-
20. 22 m/s in km/h is
A. 79.2 B. $6\frac{1}{9}$ C. 7.92 D. 220
-
21. A man goes to a place at 36 km/h and returns by the same route at 45 km/h. His average speed for the whole journey is
A. 40.5 km/h B. 81 km/h C. 40 km/h D. 42 km/h
-
22. A car takes half the time taken by a truck for the same journey. The truck takes 24 hours. If the car's speed is 110 km/h, the speed of the truck is
A. 220 km/h B. 55 km/h C. 165 km/h D. 110 km/h
-

Key sheet

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

Solutions

1. A box contains 48 bulbs, out of which 18 are defective. If the ratio of defective bulbs to good bulbs is $x : y$ in simplest form, then $x + y =$

$$\text{Good bulbs} = 48 - 18 = 30$$

$$\frac{\text{Defective}}{\text{Good}} = \frac{18}{30} = \frac{3}{5} \Rightarrow x : y = 3 : 5$$

$$x + y = 3 + 5 = 8$$

Ans: (A) 8

2. ₹2700 is divided among three persons in the ratio 2 : 3 : 4. The second share is

$$\text{Sum of the terms} = 2 + 3 + 4 = 9$$

$$\text{Second share} = \frac{3}{9} \times 2700 = 900$$

Ans: (D) ₹900

3. In a school library, the ratio of comic books to story books is the same as the ratio of story books to Hindi books. If there are 480 story books and 320 Hindi books, then the number of comic books is

$$\frac{\text{Comic}}{\text{Story}} = \frac{\text{Story}}{\text{Hindi}} = \frac{480}{320} = \frac{3}{2}$$

$$\text{Comic books} = 480 \times \frac{3}{2} = 720$$

Ans: (C) 720

4. If $x : 18 :: 10 : 45$, then $x =$

Product of means = product of extremes.

$$45x = 18 \times 10 \Rightarrow x = 4$$

Ans: (D) 4

5. The third proportional to 9 and 12 is

$$9 : 12 :: 12 : c \Rightarrow 9c = 12 \times 12$$

$$c = \frac{144}{9} = 16$$

Ans: (A) 16

6. If $\frac{x}{y} = \frac{6}{5}$, then $\frac{x+y}{y} =$

$$\text{By componendo, } \frac{x+y}{y} = \frac{6+5}{5} = \frac{11}{5}$$

Ans: (C) $\frac{11}{5}$

7. A pole 12 m high casts a shadow of 8 m. Under similar conditions, a tree that casts a shadow of 14 m is

Direct proportion: $x_1 y_2 = x_2 y_1$

$$y = \frac{14 \times 12}{8} = 21$$

Ans: (D) 21 m high

8. Working 9 hours a day, a man completes a job in 8 days. To complete it in 12 days he must work, per day,

Inverse proportion: $x_1y_1 = x_2y_2$

$$8 \times 9 = 12 \times y \Rightarrow y = 6$$

Ans: (C) 6 hours

9. 24% as a fraction in its simplest form is

$$24\% = \frac{24}{100} = \frac{6}{25}$$

Ans: (D) $\frac{6}{25}$

10. 0.04 is what percent of 0.8?

$$\left(\frac{0.04}{0.8} \times 100\right)\% = \left(\frac{4}{80} \times 100\right)\% = 5\%$$

Ans: (A) 5%

11. The price of a book rises from ₹360 to ₹450. The percentage increase is

$$\text{Change} = 90$$

$$\left(\frac{90}{360} \times 100\right)\% = 25\%$$

Always divide by the original value.

Ans: (C) 25%

12. If x is 4 times y , then y is less than x by

$$y = k, x = 4k: \left(\frac{3k}{4k} \times 100\right)\% = 75\%$$

Ans: (B) 75%

13. The present population of a town is 17280. If it increased at 20% per annum, its population 2 years ago was

$$\frac{17280}{\left(1 + \frac{20}{100}\right)^2} = 17280 \times \frac{5}{6} \times \frac{5}{6} = 12000$$

Ans: (A) 12,000

14. The profit made by selling an article for ₹845 is equal to the loss made by selling it for ₹715. The cost price is

$$845 - x = x - 715 \Rightarrow 2x = 1560 \Rightarrow x = 780$$

Ans: (A) ₹780

15. An article marked at ₹1250 is sold for ₹1000. The discount percent is

$$\text{Discount} = 250$$

$$\text{Discount \%} = \frac{250}{1250} \times 100 = 20\% \text{ (always on M.P.)}$$

Ans: (D) 20%

16. A trader claims to sell sugar at cost price but gives only 875 g for every kg. His gain percent is

$$\begin{aligned} \text{Gain \%} &= \frac{\text{Error}}{\text{True value} - \text{Error}} \times 100 \\ &= \frac{125}{875} \times 100 = 14\frac{2}{7}\% \end{aligned}$$

Ans: (B) $14\frac{2}{7}\%$

17. If the cost price of 12 articles equals the selling price of 16 articles, then there is a

$$12x = 16y \Rightarrow \frac{y}{x} = \frac{3}{4}$$

$$\left(\frac{y}{x} - 1\right) \times 100 = -25\% \text{ (negative, so a loss)}$$

Ans: (C) 25% loss

18. The average score of a cricketer in 3 matches is 40 and in 2 other matches is 25. His average in all 5 matches is

$$\text{Total} = 3(40) + 2(25) = 120 + 50 = 170$$

$$\text{Average} = \frac{170}{5} = 34$$

Ans: (B) 34

19. The average of 8 numbers is 14. If each number is multiplied by 3, the new average is

$$\text{Average of } ax_i \text{ is } a\bar{x}: 3 \times 14 = 42$$

Ans: (B) 42

20. 22 m/s in km/h is

$$22 \times \frac{18}{5} = \frac{396}{5} = 79.2 \text{ km/h}$$

Ans: (A) 79.2

21. A man goes to a place at 36 km/h and returns by the same route at 45 km/h. His average speed for the whole journey is

$$\frac{2 \times 36 \times 45}{36 + 45} = \frac{3240}{81} = 40 \text{ km/h}$$

(Not the simple average of the two speeds.)

Ans: (C) 40 km/h

22. A car takes half the time taken by a truck for the same journey. The truck takes 24 hours. If the car's speed is 110 km/h, the speed of the truck is

$$s_{car} : s_{truck} = T_{truck} : T_{car} = 2 : 1$$

$$\text{Truck speed} = \frac{110}{2} = 55 \text{ km/h}$$

Ans: (B) 55 km/h

23. A train 150 m long running at 72 km/h crosses a platform 250 m long in

$$\text{Distance} = 150 + 250 = 400 \text{ m; speed} = 72 \times \frac{5}{18} = 20 \text{ m/s}$$

$$T = \frac{400}{20} = 20 \text{ s}$$

Ans: (D) 20 seconds

24. The amount on ₹2000 at 7.5% per annum simple interest for 2 years is

$$\text{S.I} = \frac{2000 \times 2 \times 7.5}{100} = 300$$

$$\text{Amount} = 2000 + 300 = 2300$$

Ans: (B) ₹2300

25. The compound interest on ₹5000 at 6% per annum for 2 years, compounded annually, is

$$A = 5000 \left(\frac{53}{50}\right)^2 = 5618$$

$$\text{C.I} = 5618 - 5000 = 618$$

Ans: (B) ₹618
