

Arithmetic (Level 1)

MCQ Test, Set 10

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 25 minutes to 1.5 hours is
A. 1 : 6 **B.** 50 : 3 **C.** 18 : 5 **D.** 5 : 18
2. ₹8400 is divided among three persons in the ratio 5 : 6 : 9. The third share is
A. ₹2520 **B.** ₹420 **C.** ₹3780 **D.** ₹2100
3. Three numbers are in the ratio 2 : 3 : 6 and the sum of their squares is 441. The sum of the numbers is
A. 18 **B.** 33 **C.** 99 **D.** 9
4. The ratio of the length to the width of a rectangular sheet is 8 : 3. If its width is 27 cm, its length is
A. 32 cm **B.** 216 cm **C.** 72 cm **D.** 10.125 cm
5. The mean proportional between 28 and 63 is
A. 35 **B.** 42 **C.** 45.5 **D.** 1764
6. If $a : b = c : d$, then $\frac{a}{b} = \frac{c}{d} = \frac{a+c}{b+d}$. This property is called
A. Subtrahendo **B.** Addendo **C.** Dividendo **D.** Componendo
7. If $x \propto y$ and $x = 8$ when $y = 20$, then the value of x when $y = 35$ is
A. $4\frac{4}{7}$ **B.** 87.5 **C.** 14 **D.** 23
8. A town of 1500 people has food for 36 days. After 6 days, 300 more people arrive. The remaining food will last for
A. 30 days **B.** 25 days **C.** 19 days **D.** 31 days
9. 0.4 expressed as a percentage is
A. 40% **B.** 0.4% **C.** 400% **D.** 4%
10. If 25% of 80 is greater than 40% of a number by 4, then the number is
A. 10 **B.** 16 **C.** 40 **D.** 60

11. Percentage of decrease is

- A. $\left(\frac{\text{decrease}}{\text{new value}} \times 100\right) \%$
B. $\left(\frac{\text{new value}}{\text{original value}} \times 100\right) \%$
C. $\left(\frac{\text{decrease}}{\text{original value}} \times 100\right) \%$
D. $\left(\frac{\text{original value}}{\text{decrease}} \times 100\right) \%$
-

12. If A is $R\%$ more than B , then B is less than A by

- A. $R\%$
B. $\left[\frac{R}{100+R} \times 100\right] \%$
C. $\left[\frac{R}{100-R} \times 100\right] \%$
D. $\left[\frac{100+R}{R} \times 100\right] \%$
-

13. The present population of a town is 34560. It has grown at 20% per annum. Its population 3 years ago was

- A. 24,000
B. 28,800
C. 20,000
D. 21,600
-

14. A dealer sells 50 quintals of wheat at 8% profit. If a quintal cost him ₹2000, his total profit is

- A. ₹1,08,000
B. ₹800
C. ₹160
D. ₹8000
-

15. A lamp marked at ₹500 is sold at a 28% discount and at a loss of 10%. Its cost price is

- A. ₹400
B. ₹360
C. ₹396
D. ₹324
-

16. Two tables are sold at ₹1242 each, one at 8% profit and the other at 8% loss. On the whole there is a

- A. loss of 0.64%
B. neither profit nor loss
C. gain of 0.64%
D. loss of 0.8%
-

17. A shopkeeper buys oranges at 6 for ₹5 and sells them at 5 for ₹6. His profit percent is

- A. $30\frac{5}{9}\%$
B. 36%
C. 20%
D. 44%
-

18. The average of seven consecutive natural numbers is 33. The smallest of them is

- A. 36
B. 33
C. 30
D. 27
-

19. The average of 20 numbers is 50. If 5 is subtracted from each number, the new average is

- A. 45
B. 50
C. 55
D. 49.75
-

20. 1 km/h is equal to

- A. $\frac{1000}{60}$ m/s
B. $\frac{18}{5}$ m/s
C. $\frac{1}{36}$ m/s
D. $\frac{5}{18}$ m/s
-

21. A cyclist covers three equal distances at 10 km/h, 15 km/h and 30 km/h. His average speed is

- A. $18\frac{1}{3}$ km/h
B. 18 km/h
C. 12 km/h
D. 15 km/h
-

22. The speeds of A and B are in the ratio 2 : 3. If B takes 4 hours for a journey, A takes

- A. 6 hours
B. $2\frac{2}{3}$ hours
C. 5 hours
D. 7 hours
-

23. A train running at 108 km/h crosses a signal post in 8 seconds. The length of the train is
- A. 240 m B. 300 m C. 225 m D. 864 m
-
24. The difference between the compound interest (year by year) and the simple interest on ₹5000 for 2 years at 10% per annum is
- A. ₹100 B. ₹0 C. ₹1050 D. ₹50
-
25. The population of a village rose from 6400 to 8100 in 2 years. The rate of growth per annum (compound) is
- A. 25% B. 12.5% C. $13\frac{9}{32}\%$ D. 15%
-

Key sheet

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

Solutions

1. The ratio of 25 minutes to 1.5 hours is

$$1.5 \text{ hours} = 1.5 \times 60 \text{ minutes} = 90 \text{ minutes}$$

$$\text{Ratio} = \frac{25}{90} = \frac{5}{18} = 5 : 18$$

Ans: (D) 5 : 18

2. ₹8400 is divided among three persons in the ratio 5 : 6 : 9. The third share is

$$\text{Sum of the terms} = 5 + 6 + 9 = 20$$

$$\text{Third share} = \frac{9}{20} \times 8400 = 3780$$

Ans: (C) ₹3780

3. Three numbers are in the ratio 2 : 3 : 6 and the sum of their squares is 441. The sum of the numbers is

$$\text{Numbers: } 2k, 3k, 6k; 49k^2 = 441 \Rightarrow k^2 = 9 \Rightarrow k = 3$$

$$\text{Sum} = 11k = 33$$

Ans: (B) 33

4. The ratio of the length to the width of a rectangular sheet is 8 : 3. If its width is 27 cm, its length is

$$\frac{l}{27} = \frac{8}{3} \Rightarrow l = \frac{8 \times 27}{3} = 72$$

Ans: (C) 72 cm

5. The mean proportional between 28 and 63 is

$$\text{Mean proportional} = \sqrt{28 \times 63} = \sqrt{1764} = 42$$

Ans: (B) 42

6. If $a : b = c : d$, then $\frac{a}{b} = \frac{c}{d} = \frac{a+c}{b+d}$. This property is called

Adding the numerators and the denominators, $\frac{a+c}{b+d}$, is addendo.

Ans: (B) Addendo

7. If $x \propto y$ and $x = 8$ when $y = 20$, then the value of x when $y = 35$ is

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

$$y = \frac{35 \times 8}{20} = 14$$

Ans: (C) 14

8. A town of 1500 people has food for 36 days. After 6 days, 300 more people arrive. The remaining food will last for

$$\text{Food left} = 1500 \times 30 \text{ person-days}$$

$$y = \frac{1500 \times 30}{1800} = 25 \text{ days}$$

Ans: (B) 25 days

9. 0.4 expressed as a percentage is

$$0.4 = (0.4 \times 100)\% = 40\%$$

Ans: (A) 40%

10. If 25% of 80 is greater than 40% of a number by 4, then the number is

$$\frac{25}{100} \times 80 = \frac{40}{100}x + 4 \Rightarrow 20 - 4 = \frac{40x}{100}$$
$$x = \frac{16 \times 100}{40} = 40$$

Ans: (C) 40

11. Percentage of decrease is

The change is always compared with the original value: % of decrease = $\left(\frac{\text{decrease}}{\text{original value}} \times 100 \right) \%$

Ans: (C) $\left(\frac{\text{decrease}}{\text{original value}} \times 100 \right) \%$

12. If A is $R\%$ more than B , then B is less than A by

Take $B = x$, $A = \frac{100+R}{100}x$; the difference $\frac{R}{100}x$ is compared with A .

$$\text{Required} = \left[\frac{R}{100+R} \times 100 \right] \%$$

Ans: (B) $\left[\frac{R}{100+R} \times 100 \right] \%$

13. The present population of a town is 34560. It has grown at 20% per annum. Its population 3 years ago was

$$\frac{34560}{\left(\frac{6}{5}\right)^3} = 34560 \times \frac{125}{216} = 20000$$

Ans: (C) 20,000

14. A dealer sells 50 quintals of wheat at 8% profit. If a quintal cost him ₹2000, his total profit is

$$\text{C.P} = 50 \times 2000 = 100000$$

$$\text{Profit} = \frac{8}{100} \times 100000 = 8000$$

Ans: (D) ₹8000

15. A lamp marked at ₹500 is sold at a 28% discount and at a loss of 10%. Its cost price is

$$\text{S.P} = \frac{72}{100} \times 500 = 360$$

$$\text{C.P} = \frac{100}{90} \times 360 = 400$$

Ans: (A) ₹400

16. Two tables are sold at ₹1242 each, one at 8% profit and the other at 8% loss. On the whole there is a

Same S.P, $a\%$ profit and $a\%$ loss: always a loss of $\left(\frac{a}{10}\right)^2 \%$.

$$\left(\frac{8}{10}\right)^2 = 0.64\%$$

Ans: (A) loss of 0.64%

17. A shopkeeper buys oranges at 6 for ₹5 and sells them at 5 for ₹6. His profit percent is

$$\text{C.P of one} = \frac{5}{6}, \quad \text{S.P of one} = \frac{6}{5}$$

$$\text{Profit \%} = \frac{\frac{6}{5} - \frac{5}{6}}{\frac{5}{6}} \times 100 = 44\%$$

Ans: (D) 44%

18. The average of seven consecutive natural numbers is 33. The smallest of them is

$$\frac{7x+21}{7} = 33 \Rightarrow x + 3 = 33 \Rightarrow x = 30$$

Ans: (C) 30

19. The average of 20 numbers is 50. If 5 is subtracted from each number, the new average is

$$\text{Average of } x_i - 5 \text{ is } \bar{x} - 5 = 45$$

Ans: (A) 45

20. 1 km/h is equal to

$$1 \text{ km/h} = \frac{1000 \text{ m}}{60 \times 60 \text{ s}} = \frac{5}{18} \text{ m/s}$$

Ans: (D) $\frac{5}{18}$ m/s

21. A cyclist covers three equal distances at 10 km/h, 15 km/h and 30 km/h. His average speed is

$$\frac{3 \times 10 \times 15 \times 30}{150 + 450 + 300} = \frac{13,500}{900} = 15$$

Ans: (D) 15 km/h

22. The speeds of A and B are in the ratio 2 : 3. If B takes 4 hours for a journey, A takes

$$s_A : s_B = T_B : T_A \Rightarrow 2 : 3 = 4 : T_A$$

$$T_A = \frac{3 \times 4}{2} = 6 \text{ hours}$$

Ans: (A) 6 hours

23. A train running at 108 km/h crosses a signal post in 8 seconds. The length of the train is

$$\text{Speed} = 108 \times \frac{5}{18} = 30 \text{ m/s}$$

$$\text{Length} = 30 \times 8 = 240 \text{ m}$$

Ans: (A) 240 m

24. The difference between the compound interest (year by year) and the simple interest on ₹5000 for 2 years at 10% per annum is

$$\text{S.I} = 500 + 500 = 1000$$

$$\text{C.I} = 500 + 550 = 1050 \text{ (2nd year on ₹5500)}$$

$$\text{Difference} = 50$$

Ans: (D) ₹50

25. The population of a village rose from 6400 to 8100 in 2 years. The rate of growth per annum (compound) is

$$\left(1 + \frac{R}{100}\right)^2 = \frac{8100}{6400} = \left(\frac{90}{80}\right)^2$$

$$1 + \frac{R}{100} = \frac{9}{8} \Rightarrow R = 12.5\%$$

Ans: (B) 12.5%
