

Arithmetic (Level 1)**MCQ Test, Set 08**

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. Find the ratio of the price of cashew nuts to that of almonds, when cashew nuts costs ₹96 per 100 g and almonds costs ₹1200 per kg.
A. 8 : 1 **B.** 5 : 4 **C.** 2 : 25 **D.** 4 : 5
2. ₹5400 is divided among three persons in the ratio 4 : 5 : 9. The second share is
A. ₹2700 **B.** ₹1200 **C.** ₹300 **D.** ₹1500
3. The ratio of boys to girls in a school with 640 students is 9 : 7. If 30 more boys are admitted, the new ratio of boys to girls is
A. 9 : 7 **B.** 36 : 31 **C.** 39 : 28 **D.** 10 : 7
4. The fourth proportional to 9, 6 and 15 is
A. 3.6 **B.** 12 **C.** 22.5 **D.** 10
5. If 49, x , x , 81 are in proportion, then $x =$
A. 63 **B.** 32 **C.** 3969 **D.** 65
6. If $x : y = 11 : 4$, then $\frac{x-y}{x+y} =$
A. $\frac{15}{7}$ **B.** $\frac{7}{15}$ **C.** $\frac{11}{4}$ **D.** $\frac{7}{4}$
7. A car covers 156 km on 12 litres of petrol. On 20 litres it will cover
A. 93.6 km **B.** 260 km **C.** 164 km **D.** 13 km
8. If x is inversely proportional to y , then
A. $\frac{x}{y} = k$ (a constant) **B.** $x = ky$
C. $xy = k$ (a constant) **D.** $x + y = k$ (a constant)
9. $2\frac{1}{2}\%$ as a fraction is
A. $\frac{5}{2}$ **B.** $\frac{1}{40}$ **C.** $\frac{1}{400}$ **D.** $\frac{1}{4}$
10. What percent of 2 hours is 18 minutes?
A. 9% **B.** 30% **C.** 900% **D.** 15%

11. A number increased by 20% becomes 168. The number is
A. 148 B. 134.4 C. 140 D. 201.6
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12. The price of rice increases by 25%. The reduction in consumption so as not to increase the expenditure is
A. $33\frac{1}{3}\%$ B. 25% C. 80% D. 20%
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13. A population of 12500 grows at 20% per annum. After 3 years it will be
A. 21,600 B. 20,000 C. 18,000 D. 25,920
-
14. A shopkeeper buys 50 eggs at ₹5 each. 2 eggs break. He sells the rest at ₹66 a dozen. His profit is
A. ₹25 B. ₹264 C. ₹14 D. ₹250
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15. A shopkeeper marks his goods 25% above the cost price and allows a discount of 10%. His profit percent is
A. 35% B. 12.5% C. 10% D. 15%
-
16. Two articles have the same selling price; one is sold at $a\%$ profit and the other at $a\%$ loss. Taking a gain as positive, the overall gain percent is
A. $-\left(\frac{a}{10}\right)^2\%$ B. $-a\%$
C. $\left(\frac{a}{10}\right)^2\%$ D. 0%
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17. If the cost price of 9 articles equals the selling price of 10 articles, then there is a
A. 1% loss B. $11\frac{1}{9}\%$ loss
C. 10% loss D. 10% gain
-
18. The average of 11 observations is 20. The average of the first 6 is 18 and that of the last 6 is 23. The 6th observation is
A. 23 B. 18 C. 26 D. 20
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19. The average age of a family of 6 members is 26 years. The youngest member is 6 years old. The average age of the family at the birth of the youngest member was (in years)
A. 24 B. 25 C. 30 D. 20
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20. A man sees the flash of a gun fired 1.36 km away and hears the sound 4 seconds later. The speed of sound is
A. 0.34 m/s B. 340 m/s C. 34 m/s D. 3400 m/s
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21. A man goes to a place at 15 km/h and returns by the same route at 10 km/h. His average speed for the whole journey is
A. 12.5 km/h B. 6 km/h C. 12 km/h D. 25 km/h
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22. A truck takes 9 hours for a journey at 40 km/h. A car at 60 km/h will take
A. 5 hours B. 6 hours C. 7 hours D. 13.5 hours
-

23. A man crosses a 720 m long bridge in 4 minutes. His speed is
- A. 10.8 km/h B. 3 km/h C. 18 km/h D. 180 km/h
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24. The amount is ₹1380 and the simple interest is ₹180 at 5% per annum. The time (in years) is
- A. 3 B. 2.6 C. 4 D. 2
-
25. When interest is compounded half-yearly, the amount on P at $R\%$ per annum for n years is
- A. $P \left(1 + \frac{R}{200}\right)^n$ B. $P \left(1 + \frac{R}{100}\right)^{2n}$
C. $P \left(1 + \frac{R}{100}\right)^{n/2}$ D. $P \left(1 + \frac{R}{200}\right)^{2n}$
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Key sheet

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

Solutions

1. Find the ratio of the price of cashew nuts to that of almonds, when cashew nuts costs ₹96 per 100 g and almonds costs ₹1200 per kg.

100 g of cashew nuts costs ₹96, so 1000 g (1 kg) costs ₹960.

$$\text{Required ratio} = \frac{960}{1200} = \frac{4}{5} = 4 : 5$$

Ans: (D) 4 : 5

2. ₹5400 is divided among three persons in the ratio 4 : 5 : 9. The second share is

$$\text{Sum of the terms} = 4 + 5 + 9 = 18$$

$$\text{Second share} = \frac{5}{18} \times 5400 = 1500$$

Ans: (D) ₹1500

3. The ratio of boys to girls in a school with 640 students is 9 : 7. If 30 more boys are admitted, the new ratio of boys to girls is

$$\text{Boys} = \frac{9}{16} \times 640 = 360, \quad \text{Girls} = 640 - 360 = 280$$

$$\text{New ratio} = \frac{390}{280} = 39 : 28$$

Ans: (C) 39 : 28

4. The fourth proportional to 9, 6 and 15 is

$$9 : 6 :: 15 : x \Rightarrow 9x = 6 \times 15$$

$$x = \frac{90}{9} = 10$$

Ans: (D) 10

5. If 49, x , x , 81 are in proportion, then $x =$

$$\frac{49}{x} = \frac{x}{81} \Rightarrow x^2 = 3969 \Rightarrow x = 63$$

Ans: (A) 63

6. If $x : y = 11 : 4$, then $\frac{x-y}{x+y} =$

By componendo and dividendo:

$$\frac{x-y}{x+y} = \frac{11-4}{11+4} = \frac{7}{15}$$

Ans: (B) $\frac{7}{15}$

7. A car covers 156 km on 12 litres of petrol. On 20 litres it will cover

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

$$y = \frac{20 \times 156}{12} = 260$$

Ans: (B) 260 km

8. If x is inversely proportional to y , then

$$x \propto \frac{1}{y} \Rightarrow x = \frac{k}{y} \Rightarrow xy = k$$

Ans: (C) $xy = k$ (a constant)

9. $2\frac{1}{2}\%$ as a fraction is

$$2\frac{1}{2}\% = \frac{5}{2}\% = \frac{5}{2 \times 100} = \frac{1}{40}$$

Ans: (B) $\frac{1}{40}$

10. What percent of 2 hours is 18 minutes?

$$2 \text{ hours} = 120 \text{ minutes}$$

$$\left(\frac{18}{120} \times 100\right)\% = 15\%$$

Ans: (D) 15%

11. A number increased by 20% becomes 168. The number is

$$\frac{120}{100} \times x = 168$$

$$x = \frac{168 \times 100}{120} = 140$$

Ans: (C) 140

12. The price of rice increases by 25%. The reduction in consumption so as not to increase the expenditure is

$$\left(\frac{25}{125} \times 100\right)\% = 20\%$$

Ans: (D) 20%

13. A population of 12500 grows at 20% per annum. After 3 years it will be

$$12500 \left(\frac{6}{5}\right)^3 = 12500 \times \frac{216}{125} = 21600$$

Ans: (A) 21,600

14. A shopkeeper buys 50 eggs at ₹5 each. 2 eggs break. He sells the rest at ₹66 a dozen. His profit is

$$\text{C.P} = 50 \times 5 = 250; 1 \text{ egg sells for } \frac{66}{12} = 5.5$$

$$\text{S.P of 48 eggs} = 48 \times 5.5 = 264; \text{Profit} = 264 - 250 = 14$$

Ans: (C) ₹14

15. A shopkeeper marks his goods 25% above the cost price and allows a discount of 10%. His profit percent is

$$\text{Let C.P} = 100; \text{M.P} = 125, \text{S.P} = \frac{90}{100} \times 125 = 112.5$$

$$\text{Profit} = 12.5\%$$

Ans: (B) 12.5%

16. Two articles have the same selling price; one is sold at $a\%$ profit and the other at $a\%$ loss. Taking a gain as positive, the overall gain percent is

$$\text{There is always a loss, of } \left(\frac{a}{10}\right)^2\% = \frac{a^2}{100}\%, \text{ so the gain is } -\left(\frac{a}{10}\right)^2\%.$$

Ans: (A) $-\left(\frac{a}{10}\right)^2\%$

17. If the cost price of 9 articles equals the selling price of 10 articles, then there is a

$$9x = 10y \Rightarrow \frac{y}{x} = \frac{9}{10}$$

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

Ans: (C) 10% loss

18. The average of 11 observations is 20. The average of the first 6 is 18 and that of the last 6 is 23. The 6th observation is

$$\text{First 6} = 108, \text{ last 6} = 138, \text{ all 11} = 220$$

$$x_6 \text{ is counted twice: } 108 + 138 - 220 = 26$$

Ans: (C) 26

19. The average age of a family of 6 members is 26 years. The youngest member is 6 years old. The average age of the family at the birth of the youngest member was (in years)

$$\text{Other 5 members: } 6(26) - 6 = 150$$

$$6 \text{ years ago: } \frac{150 - 5(6)}{5} = \frac{120}{5} = 24$$

Ans: (A) 24

20. A man sees the flash of a gun fired 1.36 km away and hears the sound 4 seconds later. The speed of sound is

$$S = \frac{1.36 \times 1000}{4} = \frac{1360}{4} = 340 \text{ m/s}$$

Ans: (B) 340 m/s

21. A man goes to a place at 15 km/h and returns by the same route at 10 km/h. His average speed for the whole journey is

$$\frac{2 \times 15 \times 10}{15 + 10} = \frac{300}{25} = 12 \text{ km/h}$$

(Not the simple average of the two speeds.)

Ans: (C) 12 km/h

22. A truck takes 9 hours for a journey at 40 km/h. A car at 60 km/h will take

$$T_2 = \frac{40 \times 9}{60} = 6 \text{ hours}$$

Ans: (B) 6 hours

23. A man crosses a 720 m long bridge in 4 minutes. His speed is

$$S = \frac{720}{4 \times 60} = 3 \text{ m/s}$$

$$= 3 \times \frac{18}{5} = 10.8 \text{ km/h}$$

Ans: (A) 10.8 km/h

24. The amount is ₹1380 and the simple interest is ₹180 at 5% per annum. The time (in years) is

$$P = 1380 - 180 = 1200$$

$$T = \frac{180 \times 100}{1200 \times 5} = 3 \text{ years}$$

Ans: (A) 3

25. When interest is compounded half-yearly, the amount on P at $R\%$ per annum for n years is

$$A = P \left(1 + \frac{R}{100k}\right)^{nk} \text{ with } k = 2 \text{ gives } P \left(1 + \frac{R}{200}\right)^{2n}$$

Ans: (D) $P \left(1 + \frac{R}{200}\right)^{2n}$
