

(Olympiad Excellence Question)

QUESTIONS

1. The equality of two ratio is called_____
 (a) Ratio (b) percentage (c) Proportion (d) Triangle
2. Express the ratio 45 : 108 in its simplest form.
 (a) 5 : 12 (b) 3 : 12 (c) 4 : 5 (d) 6 : 7
3. If 6 pens cost Rs. 96. What will be the cost of 15 such pens?
 (a) Rs. 200 (b) Rs. 210 (c) Rs. 240 (d) Rs. 250
4. Find a number whose 4% is 72
 (a) 1200 (b) 1500 (c) 1600 (d) 1800
5. Find the loss or Gain percent if C.P. = Rs. 500 and S.P. = Rs. 565
 (a) 13% (b) 15% (c) 17% (d) 18%
6. Amount=Principle + _____
 (a) Loss (b) Gain (c) Interest (d) C.I.
7. What percent of 750 meters is 125 meters?
 (a) $6\frac{2}{3}\%$ (b) 24% (c) $1\frac{1}{2}\%$ (d) $15\frac{1}{2}\%$
8. Divide 108 in two parts in the ratio 4:5
 (a) 48 and 60 (b) 12 and 50 (c) 20 and 50 (d) 60 and 70
9. IF 3: x ::12 : 20, find the value of x.
 (a) 10 (b) 5 (c) 15 (d) 8
10. Express 18 hours as a percent of 3 days.
 (a) 15% (b) 20% (c) 25% (d) 50%
11. A sum of Rs. 4000 is lent for 5 years at the rate of 15 % simple interest per annum. Find the interest
 (a) Rs. 3000 (b) Rs. 4000 (c) Rs. 5000 (d) Rs. 6000
12. If $x : y = 3 : 1$ then find $(x^3 - y^3) : (x^3 + y^3) = ?$
 (a) 13 : 14 (b) 14 : 13 (c) 10 : 11 (d) 11 : 10
13. Fill in the following blanks $\frac{12}{20} = \frac{(\quad)}{5} = \frac{9}{(\quad)}$
 (a) 12, 13 (b) 3, 15 (c) 15, 4 (d) 16, 17
14. 25 workers earn Rs. 300 per day. What will be the earnings of 20 workers per day at the same rate?
 (a) Rs. 230 (b) Rs. 200 (c) Rs. 160 (d) Rs. 240
15. Find 20% less than Rs.70.
 (a) Rs. 52 (b) Rs. 56 (c) Rs. 72 (d) Rs. 79
16. The selling price of 10 article is the same as the cost price of 11 articles, Find gain percent.
 (a) 15% (b) 5% (c) 10% (d) 20%

17. Find the interest on Rs. 1200 at 6% per annum for 146 days.
 (a) Rs. 28 (b) Rs. 28.80 (c) Rs. 36.8 (d) Rs. 25.80
18. Ratio of the number of male and female workers in a factory is 5 : 3. If there are 115 male workers, determine the number of female workers in the factory.
 (a) 69 (b) 63 (c) 61 (d) 64
19. If 25 meters of cloth cost Rs. 1575, how many meters of it can be bought for Rs. 2016?
 (a) 33 m (b) 36 m (c) 30 m (d) 32 m
20. If $p : q = r : s = t : u = 2 : 3$, then $(mp + nr + ot) : (mq + ns + ou) = ?$
 (a) 1 : 3 (b) 1 : 2 (c) 2 : 3 (d) 2 : 1
21. In an examination, one requires 40% marks to pass. Rahul gets 185 marks and fails by 15 marks. What is the maximum marks?
 (a) 500 (b) 600 (c) 700 (d) 800
22. On selling a fan for Rs. 810, Sunil gains 8%. For how much did he purchase it?
 (a) Rs. 720 (b) Rs. 730 (c) Rs. 750 (d) Rs. 800
23. If $A : B = 5 : 6$ and $B : C = 8 : 9$, then $A : B : C =$
 (a) 20 : 27 : 24 (b) 24 : 20 : 27 (c) 27 : 24 : 20 (d) 20 : 24 : 27
24. The Scale of a map is 1: 2500000. What is the actual distances between two towns if they are 3 cm apart on the map?
 (a) 72 km (b) 75 km (c) 50 km (d) 79 km
25. Find the S.P. of a table whose CP is Rs 3300 and sold at a loss of 10%
 (a) Rs. 2970 (b) Rs. 3000 (c) Rs. 2976 (d) Rs. 2786
26. A man covers a certain distances by car, driving at a speed of 70 km/hr and he returns back to the starting point riding on a scooter at 55 km/hr. Find his average speed for the whole journey.
 (a) 61.0 km (b) 61.6 km (c) 67.4 km (d) 69.7 km
27. A boy walking at a speed of 10 km/hr reaches his school 15 minutes late. Next time his speed increase by 2 km/hr, but still he is late by 5 minutes. Find the distance of his school from his house.
 (a) 20 km (b) 30 km (c) 10 km (d) 5 km
28. A man covers a certain distances between his house and office on scooter. With an average speed of 30 km/hr, he is late by 10 min., however, with a speed 40 km/hr, he reaches his office 5 min earlier. Find the distance between his house and the office.
 (a) 20 km (b) 10 km (c) 15 km (d) 30 km
29. If 36 men can finish a piece of work in 25 days, how many days will 15 men take to do it?
 (a) 60 (b) 70 (c) 80 (d) 90
30. Find the percentage of pure gold in 22-carat gold. If 22-carat gold is 100% pure gold.
 (a) $1\frac{1}{2}\%$ (b) $91\frac{2}{3}\%$ (c) $6\frac{1}{3}\%$ (d) $7\frac{1}{2}\%$

ANSWER - KEY

1. C	2. A	3. C	4. D	5. A
6. C	7. A	8. A	9. B	10. C
11. A	12. A	13. B	14. D	15. B
16. C	17. B	18. A	19. D	20. C
21. A	22. C	23. D	24. B	25. A
26. B	27. C	28. D	29. A	30. B

Answers with Solutions

1. (c) Proportion
2. (a) $\frac{45 \div 9}{108 \div 9} = \frac{5}{12}$
3. (c) Cost of 6 pens = Rs. 96
Cost of 1 pen = $\frac{96}{6}$ = Rs. 16
 \therefore Cost of 15 pens = 16×15 = Rs. 240
4. (d) $x \times 4\% = 72$
 $x \times \frac{4}{100} = 72$
 $x = \frac{72 \times 100}{4} = 1800$
5. (a) $SP > CP$, then
Gain = $565 - 500 = 65$
Gain % = $\frac{65 \times 100}{500} = 13\%$
6. (c) Interest
7. (a) $\left(\frac{125}{750} \times 100\right)\% = \frac{50}{3}\% = 16\frac{2}{3}\%$
8. (a) Sum = $(4 + 5) = 9$
 \therefore First part $\frac{4}{9} \times 108 = 60$
Second Part = $\frac{5}{9} \times 108 = 60$
9. (b) Product of means = Product of Extremes
 $x \times 12 = 3 \times 20$
 $x = \frac{3 \times 20}{12} = 5$
10. (c) 3 days = 72 Hours
 \therefore Required percent = $\left(\frac{18}{72} \times 100\right)\% = 25\%$
11. (a) $P = \text{Rs. } 4000, R = 15\%, T = 5 \text{ years}$
 $\therefore I = \frac{PRT}{100} = \text{Rs.} \left(\frac{4000 \times 15 \times 5}{100}\right)$
 $= \text{Rs.}(40 \times 15 \times 5) = 3000$
12. (a) $(3^3 - 1) : (3^3 + 1)$

$$(27 - 1) : (27 + 1) = 26 : 28 = 13 : 14$$

13. (b) $\frac{12}{20} = \frac{3}{5} = \frac{9}{15}$

14. (d) per day earning of 25 workers = Rs. 300

$$\therefore \text{Per day earning of 1 worker} = \frac{300}{25}$$

$$\therefore \text{Per day earning of 20 workers}$$

$$= \left(\frac{300}{25} \times 20 \right) = \text{Rs. } 240$$

15. (b) $20\% \text{ of } 70 = 70 \times \frac{20}{100} = 14$

$$\therefore 20\% \text{ less than Rs. } 70 = (70 - 14) = \text{Rs. } 56$$

16. (c) Let Cost price of each article be Rs. x

We have

$$\text{S.P of 10 article} = \text{C.P. of 11 article} = \text{Rs. } 11x$$

$$\therefore \text{Gain} = 11x - 10x = x$$

$$\text{Gain \%} = \left(\frac{x}{10x} \times 100 \right) = 10\%$$

17. (b) $P = \text{Rs } 1200, R = 6\%, T = 146 \text{ days} = \frac{146}{365} \text{ years} = \frac{2}{5} \text{ year}$

$$\therefore I = \left(\frac{1200 \times 6 \times \frac{2}{5}}{100} \right) = \frac{144}{5} = \text{Rs. } 28.80$$

18. (a) Let male = $5x$ and female = $3x$

$$\therefore 5x = 115$$

$$x = \frac{115}{5} = 23$$

$$\text{Hence No. of female workers} = 3x = 3 \times 23 = 69$$

19. (d) For 1575, Cloth bought = 25 m

$$\text{For 1, Cloth bought} = \frac{25}{1575} m$$

$$\text{For 2016, Cloth bought}$$

$$= \left(\frac{25}{1575} \times 2016 \right) m = 32 m$$

20. (c) $\frac{p}{q} = \frac{r}{s} = \frac{t}{u} = \frac{2}{3}$

$$\text{Let } \frac{p}{q} = \frac{2}{3} = \frac{2K_1}{3K_1}; \frac{r}{s} = \frac{2K_2}{3K_1}; \frac{r}{s} = \frac{2K_2}{3K_2}; \frac{t}{u} = \frac{2K_3}{3K_3}$$

$$\therefore p = 2K_1; r = 2K_2; t = 2K_3$$

$$\text{and } q = 3K_1; s = 3K_2; u = 3K_3$$

$$\therefore (mp + nr + ot) : (mq + ns + ou)$$

$$= (m \times 2K_1 + n \times 2K_2 + o \times 2K_3) : (m \times 3K_1 + n \times 3K_2 + o \times 3K_3)$$

$$= (mK_1 + nK_2 + oK_3) : (mK_1 + nK_2 + oK_3)$$

$$= 2 : 3$$

- 21.** (a) Let maximum marks be x .

$$\text{Pass marks} = 185 + 15 = 200$$

$$\therefore 40\% \text{ of } x = 200$$

$$40 \times \frac{1}{100} \times x = 200$$

$$x = \frac{200 \times 100}{40} = 500$$

- 22.** (c) SP = Rs. 810, gain % = 8%

$$\text{CP of the fan} = \left\{ \frac{100}{100 + \text{Gain}\%} \times SP \right\} = \left\{ \frac{100}{100 + 8} \times 810 \right\}$$

$$= \text{Rs. } 750$$

- 23.** (d) $A : B = 5 : 6$, $B : C = 8 : 9$

$$A : B : C = A : B$$

$$B : C$$

$$\mathbf{AB : B^2 : BC}$$

$$A : B : C = 5 : 6$$

$$B : C = 8 : 9$$

$$40 : 48 : 54$$

$$\text{Hence } A : B : C = 20 : 24 : 27$$

- 24.** (b) 1 cm on the map shows the distance = 2500000 cm

$$\frac{2500000}{100 \times 1000} \text{ km} = 25 \text{ km}$$

$$3 \text{ cm on the map shows the distance} = (25 \times 3) \text{ km}$$

$$= 75 \text{ km}$$

$$\therefore \text{Actual distance between the two towns is } 75 \text{ km}$$

- 25.** (a) CP of the table = Rs. 3300 and loss % = 10 %

$$SP = \left\{ \frac{100 - \text{loss}\%}{100} \times CP \right\}$$

$$= \left\{ \frac{100-10}{100} \times 3300 \right\}$$

$$= \left\{ \frac{90}{100} \times 3300 \right\} = \text{Rs. } 2970$$

Hence, the required selling price is Rs. 2970

26. (b) Average speed $= \frac{2 \times 70 \times 55}{70+55} \text{ km/hr} = 61.6 \text{ km/hr}$

27. (c) Here, the difference in time $= 15 - 5 = 10$ minutes $= \frac{1}{6}$ hours

His speed during next journey $= 10 + 2 = 12$ km/hr.

$$\therefore \text{Required distance} = \frac{12 \times 10}{12 - 10} \times \frac{1}{6} = 10 \text{ km}$$

28. (d) Let distance be x km.

$$\text{Time taken to cover } x \text{ km at } 30 \text{ km/hr.} = \frac{x}{30} \text{ hrs}$$

$$\text{Time taken to cover } x \text{ km at } 40 \text{ km/hr.} = \frac{x}{40} \text{ hrs}$$

$$\text{Difference between the time taken} = 15 \text{ min} = \frac{1}{4} \text{ hr}$$

$$\therefore \frac{x}{30} - \frac{x}{40} = \frac{1}{4}$$

$$\frac{40x - 30x}{1200} = \frac{1}{4}$$

$$\frac{10x}{1200} = \frac{1}{4}$$

$$x = \frac{1200}{4 \times 10} = 30$$

29. (a) 36 men can finish the work in 25 days

1 men can finish the work in (25×36) days. (Less men, more days)

$$15 \text{ men can finish it in } \frac{(25 \times 36)}{15} \text{ days} = 60 \text{ days.}$$

Hence, the required number of days = 60 .

30. (b) In 22- carat gold, pure gold is 22 parts out of 24 parts.

$$\therefore \text{Percentage of pure gold in it} = \left(\frac{22}{24} \times 100 \right) \%$$

$$= \frac{275}{3} \% = 91\frac{2}{3} \%$$