

## RATIO AND PROPORTION

Direction: Read the following questions carefully and choose the right answer.

1. An alloy A is formed by mixing gold and silver in the ratio 2 : 1. Another alloy B is formed by mixing silver and platinum in the ratio 3 : 4. An alloy C is obtained by mixing alloys A and B in a certain ratio such that the ratio of gold and platinum in alloy C is 5 : 6. Which of the following correctly represents the share of silver in alloy C.  
A.  $\frac{29}{51}$                       B.  $\frac{37}{13}$                       C.  $\frac{17}{31}$                       D.  $\frac{49}{126}$                       E.  $\frac{19}{35}$
2. In the income statement of Asha and Ravenna, the ratio of their income in the year 2017 was 5 : 4. The ratio of Asha's income in the year 2018 to that in 2017 is 3 : 5 and the ratio of Ravenna's income in the year 2018 to that in 2017 is 3 : 2. If Rs. 10242 is the sum of the income of Asha and Ravenna in the year 2018, then find the income of Ravenna in the year 2017?  
A. Rs. 1024                      B. Rs. 1138                      C. Rs. 2776                      D. Rs. 2420                      E. Rs. 4552
3. Three friends Aravind, Bharat and Chandu are about to have their breakfast. Aravind has 7 apples, Bharat has 5 apples and Chandu has no apples but has 12 coins. He offers to pay for some apples. They agree to share the 12 apples equally among themselves and agree that Chandu would pay 12 coins for his share. Bharat suggests that he be paid 5 coins and Aravind be paid 7 coins. Aravind says that he should get more than 7 coins. How much should Aravind get?  
A. 11 coins                      B. 10 coins                      C. 12 coins                      D. 8 coins                      E. 9 coins
4. The average score in an examination taken by 52 students of a class is 85. If the scores of the best 5 performers are not considered, the average score of the remaining students falls by 2. If, none of the first five highest scorers is not below 80 and if each of the 5 top scorers had distinct integral scores, find the maximum possible score of the topper.  
A. 108                      B. 109                      C. 177                      D. 193                      E. 183
5. A bag contains certain number of coins of different denominations. The ratio of the number of Rs. 1 coins to Rs. 2 coins is 5 : 7, respectively and the ratio of number of Rs. 2 coins to Rs. 5 coins is 7 : 6 respectively. Find the total value of the Rs. 5 coins, if the total value of the Rs. 1 coins in the bag is Rs. 15.  
A. Rs. 180                      B. Rs. 90                      C. Rs. 45                      D. Rs. 115                      E. None of these
6. A father distributed some chocolates among his four children and kept some with him. The eldest three children got chocolates in the ratio 3 : 11 : 7. The total number of chocolates with father and youngest child is three times the total chocolates with the three eldest children. The ratio of chocolates with father and that with all the children is 3 : 4. Find the total number of chocolates if the youngest child has 81 chocolates with him?  
A. 273                      B. 252                      C. 276                      D. 303                      E. None of these

7. Sumit hired a travelling car for a tour. If the car is rented for 8 hours or less the charge is Rs. 100 per hour or Rs. 8 per km whichever is more. On the other hand, if the car is rented for more than 8 hours, the charge is Rs. 80 per hour or Rs. 6 per km whichever is more. Sumit used the car for 120 km and paid Rs. 800. For how many hours did he took the car for rent?
- A. 12 hours                      B. 9 hours                      C. 10 hours                      D. 8 hours                      E. 11 hours
8. In class X of a school there are two sections A and B with strength ratio 2 : 1. The ratio of boys and girls in section A is 3 : 1 and that in section B is 3 : 5. Students of both the sections are made to stand in the ground in rows of boys and girls, with each row having equal number of students. If the maximum number of students possible in a row is 96 what is the difference between the number of boys in section A and B?
- A. 218                      B. 286                      C. 372                      D. 288                      E. None of these
9. The ratio of marks obtained by Shubham in theory to the total marks which can be obtained in theory is 7 : 10. Total marks which can be obtained in practicals were 20% of the total marks of theory. If Shubham got full marks in practical then find the ratio of total marks obtained by Shubham to the total marks which can be obtained in the subject (theory + practical)
- A. 4 : 5                      B. 3 : 5                      C. 5 : 6                      D. 3 : 4                      E. 2 : 3
10. The ratio of salary of A and B is 5 : 7 and that of B and C is 3 : 5. The salary of A is Rs. 165000 and C spends 28.56% of his salary on rent. How much money is left with C after expenditure on rent?
- A. Rs. 296000                      B. Rs. 268000                      C. Rs. 282000                      D. Rs. 275000                      E. None of these
11. Incomes of John and Kelvin are in the ratio 4 : 7 and their spending are in the ratio 6 : 11. If John saves one third of his income, then what will be the ratio of their savings.
- A. 12 : 13                      B. 13 : 12                      C. 18 : 19                      D. 12 : 19                      E. None of these
12. The monthly expenditure of Irfan is 40% less than that of Imran. If at the end of the month Imran and Irfan save Rs. 12,000 and Rs. 10,000 respectively and the ratio of monthly income of Imran and Irfan is 8 : 5 respectively, then the yearly income of Imran is how much more than yearly income of Irfan?
- A. Rs. 42000                      B. Rs. 504000                      C. Rs. 504200                      D. Rs. 50400                      E. Rs. 50800
13. A person invested some amount in two schemes A and B in the ratio of X : Y respectively and received equal interest from both the schemes after three years. If the rate of simple interest in both the schemes A and B are in the ratio of 7 : 5, then find the value of X : Y.
- A. 4 : 7                      B. 5 : 6                      C. 5 : 7                      D. 5 : 4                      E. None of these
14. In a race of 300 m P beats Q by 25 m and Q beats R by 15 m. If P and R should finish the race at same time, what head start should P give to R ?
- A. 36.25 m                      B. 37.55 m                      C. 38.90 m                      D. 21.25 m                      E. None of these

15. The monthly income of A and B are in the ratio of 3: 4 respectively and the monthly saving of A, B, and C are in the ratio of 4: 5: 6 respectively. The monthly expenditure of A is Rs. 2500 less than that of C and the monthly expenditures of B is Rs. 1000 more than that of A. Every month, C spends Rs. 5000 then how much money does he save?  
A. Rs. 4500      B. Rs. 3000      C. Rs. 35000      D. rs. 2500      E. None of these
16. In a school, the ratio of the number of boys to the number girls is 7 : 5. When some number of boys and some number of girls left the school, then the ratio of remaining number of boys to the remaining number of girls become 7 : 5. The number of boys, who left the school was what percentage of the number of girls who left the school?  
A. 150%      B. 140%      C. 58.33%      D. 112.5%      E. Can't be determined
17. In a head office of RRB, 250 persons are employed in which some are male and some are female. 33.33% of the number of male is equal to half of the number of female. Find the difference between the number of male and the number of female working in that head office?  
A. 50      B. 100      C. 150      D. 75      E. None of these
18. Five years before, the age of father was 5 times of the age of son. Ten years hence, the age of father will become 2.5 times of the age of son. At present, what is the ratio of the sum of their ages and the difference of their ages?  
A. 5 : 3      B. 16: 9      C. 3 : 5      D. 9 : 16      E. None of these
19.  $\frac{1}{8}$ <sup>th</sup> part of an electric stick is black,  $\frac{2}{7}$ <sup>th</sup> part of the remaining is blue and the remaining part is white. If the length of the white part is 15 cm then find the length of the electric stick?  
A. 28 meters      B. 30 meters      C. 24 meters      D. 20 meters      E. None of these
20. If the incomes of Arun and Varun are in the ratio 5 : 7 and their expenditure are in the ratio 3 : 4, then find the ratio of their savings.  
A. 3 : 5      B. 2 : 5      C. 5 : 7      D. Can't be determined      E. None of these
21. The number of employees in a company is reduced in the ratio 3 : 2 and the salary of each employee is increased in the ratio 4 : 5. By doing so, company saves Rs. 12,000. So, find the initial expenditure of the company on salary.  
A. Rs. 72000      B. Rs. 62000      C. Rs. 82000      D. Rs. 52000      E. None of these
22. Annual incomes of Amit and Veeru are in the ratio 3 : 2, while the ratio of their expenditure is 5 : 3. If at the end of the year each saves ₹ 1,000, the annual income of Amit is  
A. Rs. 9000      B. Rs 8000      C. Rs. 7000      D. Rs. 6000      E. None of these
23. The average age of four friends Reena, Sandhya, Yamini and Sujata is 21 years. The sum of the age of Reena and Sandhya is 14 years more than the age of Sujata. The difference between the age of Sujata and Sandhya is 4 years the difference between the age of Sujata and Reena is 6 years. Find the average age of Reena, Sandhya and

**Yamini after 3 years.**

- A. 22 years      B. 25 years      C. 21 years      D. 23 years      E. 26 years

- 24. Rs.99,000 is to be divided between A, B and C. The ratio of share of A and B is 3 : 7. The share of B is  $\frac{5}{7}$ th the share of C. What is the difference between shares of A and C?**

- A.Rs. 34000      B. Rs. 15000      C. Rs. 35000      D. Rs. 49000      E. None of these

- 25. Marks obtained by Mohan in Hindi and English are in the ratio of 4 : 5, respectively, while ratio of marks obtained by Mohan in Maths and Science is 5 : 6, respectively. He scored 36 marks more in Science than in English, and 32 marks more in Maths than in Hindi. Find the ratio of marks obtained by Mohan in Hindi and Science.**

- A. 5 : 6      B. 6 : 7      C. 2 : 3      D. 1 : 2      E. 4 : 5

- 26. The income of Suresh and Rakesh are in the ratio 5 : 4 and their expenditure are in the ratio 3 : 2. If each saves Rs. 6000, then Suresh's income can be:**

- A. Rs. 12000      B. Rs. 15000      C. Rs. 16000      D. Rs. 10000      E. None of these

- 27. The cost price of 2 shirts and 3 jeans is Rs. 2200 and the cost price of 2 jeans and 4 shirts is Rs. 2400. Find the ratio between the cost price of the jeans and the shirt.**

- A. 8 : 9      B. 10 : 7      C. 6 : 5      D. 11 : 10      E. None of these

- 28. A shopkeeper has a number of apples and oranges in the ratio 11 : 17. He has to pack both the fruits in a certain number of boxes such that each box contains equal number of apples and equal number of oranges. If the difference between the numbers of fruits of two varieties in a box is 72, and the number of boxes is 16, what is the total number of fruits?**

- A. 5440      B. 5376      C. 5200      D. 2240      E. None of these

- 29. A child paints a sphere with two colors yellow and blue making the ratio of yellow and blue area 1 : 3. If the ratio of yellow and blue area in the upper hemisphere is 4 : 9, the yellow area in lower hemisphere is what percent of the blue area in lower hemisphere?**

- A. 17.89%      B. 24.45%      C. 21.17%      D. 23.81%      E. None of these

- 30. The monthly incomes of two persons are in the ratio of 4 : 5 and their monthly expenditures are in the ratio of 7 : 9. If each saves 50 a month, then what are their monthly incomes?**

- A. Rs. 400, Rs 500      B. Rs 200, Rs 250      C. Rs 100, Rs 125      D. Rs 300, Rs 375      E. None of these

- 31. Madhu has three friends; Sonam, Divya and Radha. Ratio of monthly income of Sonam and Divya is 5 : 6 respectively and the ratio of monthly income of Radha and Divya is 4 : 3 respectively. Monthly income of Madhu is twice that of total monthly income of all her three friends. If monthly income of Madhu is Rs 26600 then what is the highest monthly income of any of her friends?**

- A. Rs. 5500      B. Rs. 5600      C. Rs. 4600      D. Rs. 5400      E. Rs. 5800

- 32. Gajodhar and Manohar's salary ratio was 3 : 4 one year ago. The ratio of their individual salaries between last year's and this year's salaries are 4 : 5 and 2 : 3 respectively. At present the total of their salary is 4160. The present salary of Gajodhar is?**
- A. 1200      B. 1400      C. 1600      D. 1800      E. None of these
- 33. A certain sum of money was divided among P, Q and R in a certain way. Q received one third of what P and R together did and P got one fourth of what Q and R together did. Find the ratio of shares of P, Q and R respectively.**
- A. 5 : 4 : 11      B. 4 : 5 : 11      C. 5 : 11 : 4      D. 11 : 4 : 5      E. None of these
- 34. Sweeta is 10 years younger than her sister Seema who was 14 years old when her mother was 34 years old. The ratio of the ages of the mother and Sweeta after 6 years will be 2 : 1. After how many years the average of their ages will be 39.33 years?**
- A. 3 years      B. 2 years      C. 4 years      D. 1 year      E. 5 years
- 35. A man divides Rs. 125000 among his 4 wives. 2 times the share of the first wife, 3 times the share of the second wife, 4 times the share of third wife and 6 times the share of the fourth wife are equal. Find the amount received by the third wife?**
- A. Rs. 20000      B. Rs. 30000      C. Rs. 35000      D. Rs. 40000      E. Rs. 25000
- 36. 4 years ago, the ratio of the age of two friends Virat and Dinesh was 3 : 1. Their present age differ by 4 years. Find the average of their ages, after 2 years?**
- A. 12 years      B. 14 years      C. 11 years      D. 13 years      E. 10 years
- 37. The present age of Arjun and Radhika is in the ratio 3 : 2 respectively. 9 years ago, the ratio of age of Arjun and Shyam was 4 : 5 respectively and Radhika was 10 years younger than Shyam. What will be the ratio of age of Arjun and Shyam after 3 years.**
- A. 5 : 8      B. 4 : 5      C. 8 : 9      D. 3 : 4      E. 7 : 9
- 38. 5 years hence, the age of Deepika will be 5 years more than the age of Alia. The ratio of the present age of Deepika to that of Alia is 7:6. What will the age of Deepika and Alia after 6 years?**
- A. 44, 39      B. 42, 37      C. 41, 36      D. 38, 33      E. 40, 35
- 39. The ratio between percentage value of X part of Revati's daily wages which is Rs 300 and 22.5% of Janki's daily wages is 2:1. If X% of Janki's daily wages is equal to Rs. 60, then find the value of X.**
- A. 25      B. 30      C. 300      D. 250      E. 40
- 40. In a company there are 78000 employees out of which males and females are in the ratio 7 : 6. Out of the males 35% are working as HR and out of females 25% are working as HR. Find the total number of employees working as HR in the company.**
- A. 25700      B. 27700      C. 23500      D. 23700      E. None of these

41. The income of Suresh and Rakesh are in the ratio 5 : 4 and their expenditure are in the ratio 3 : 2. If each saves Rs. 6000, then Suresh's income can be:  
 A. Rs. 12000      B. Rs. 15000      C. Rs. 16000      D. Rs. 10000      E. None of these
42. Given that 24 carat gold is pure gold, 18 carat gold is  $\frac{3}{4}$ <sup>th</sup> of pure gold and 20 carat gold is  $\frac{5}{6}$ <sup>th</sup> of pure gold, the ratio of the pure gold in 18 carat gold to the pure gold in 20 carat gold is  
 A. 5 : 8      B. 9 : 10      C. 10 : 9      D. 8 : 5      E. None of these
43. The average of salary of all 35 employees is Rs.22000. If the average salary of all regular employees is Rs.25000 and average salary of all part time employees is Rs.18000, then find the ratio of total regular employees to the part time employees of the company.  
 A. 4 : 3      B. 5 : 3      C. 4 : 5      D. 5 : 4      E. None of these
44. The ratio of the income of A and B is 7 : 8 respectively while the ratio of the income of B and C is 5 : 4. Find the difference between the incomes of A and C if the average of the income of A, B and C together is Rs. 10700.  
 A. Rs. 1050      B. Rs. 700      C. Rs. 800      D. Rs. 600      E. Rs. 900
45. The number of students in school A, B and C are in a ratio of 5 : 4 : 8 respectively. If the number of students is increased by 40%, 75% and 25% respectively in next year and the total students after increment is 1200, what was the total number of students initially?  
 A. 900      B. 800      C. 850      D. 750      E. None of these
46. Monthly salaries of A and B are in the ratio 8: 9 respectively. Monthly expenditure of A is 140% more than the monthly savings of B. Monthly expenditure of B is Rs. 2000 more than the monthly expenditure of A. Find the difference in the yearly salaries of A and B if the monthly savings of A and B are in the ratio 4: 5 respectively.  
 A. Rs. 4000      B. Rs. 18000      C. Rs. 36000      D. Rs. 45000      E. None of these
47. In a town with population of 4500, the ratio of males to females is 3 : 2 and the ratio of females to children is 4 : x. In election of Nagar – Palika, two candidates are there, children aren't allowed to vote and 10% of the eligible population didn't cast their vote. If the winner candidate won by 400 votes and the runner up candidate got 1150 votes, then find the value of 'x'.  
 [Note: Total population of village = Male + Female + Children]  
 A. 1      B. 2      C. 3      D. 4      E. 5
48. Shubhash's age 4 years hence is (x+4) years, Poonam's age 6 years ago was (y – 6) years. The present age of Poonam is 10 less than twice the present age of Shubhash. Shubhash's age 5 years hence, will be 5 years less than the present age of Poonam. Find the ratio of the present age of Shubhash to the present age of Poonam.  
 A. 3 : 5      B. 4 : 5      C. 1 : 3      D. 3 : 4      E. 2 : 3

**49.** 5 years ago, the age of father was 2.25 times the age of his son. 2 years hence, the age of father becomes 2.6 times the age of his daughter. If the son is 7 years elder to daughter, find the present age of Father.

- A. 45 years                      B. 60 years                      C. 55 years                      D. 50 years                      E. 70 years

**50.** The expenses on food, rent and electricity of a family are in the ratio 5 : 15 : 3. The expenditure on food, rent and electricity is increased by 20%, 10% and 30% respectively. The total expenses of family thus increased by how much percent.

- A.  $12\frac{18}{23}\%$                       B.  $11\frac{17}{21}\%$                       C.  $14\frac{18}{23}\%$                       D.  $24\frac{11}{21}\%$                       E.  $15\frac{17}{23}\%$

## ANSWERS

<b>1</b>	D	<b>11</b>	D	<b>21</b>	A	<b>31</b>	B	<b>41</b>	B
<b>2</b>	E	<b>12</b>	B	<b>22</b>	D	<b>32</b>	C	<b>42</b>	B
<b>3</b>	E	<b>13</b>	C	<b>23</b>	D	<b>33</b>	B	<b>43</b>	A
<b>4</b>	D	<b>14</b>	E	<b>24</b>	A	<b>34</b>	B	<b>44</b>	E
<b>5</b>	B	<b>15</b>	B	<b>25</b>	D	<b>35</b>	E	<b>45</b>	C
<b>6</b>	B	<b>16</b>	B	<b>26</b>	B	<b>36</b>	E	<b>46</b>	E
<b>7</b>	C	<b>17</b>	A	<b>27</b>	B	<b>37</b>	C	<b>47</b>	E
<b>8</b>	D	<b>18</b>	B	<b>28</b>	B	<b>38</b>	C	<b>48</b>	E
<b>9</b>	D	<b>19</b>	C	<b>29</b>	D	<b>39</b>	B	<b>49</b>	D
<b>10</b>	D	<b>20</b>	D	<b>30</b>	A	<b>40</b>	D	<b>50</b>	C