# CHAPTER

# RATIO & PROPORTION

# EXERCISE

# **YEAR: 1999**

- If a : b = 7 : 9 and b : c = 5 : 7, then what is a : c?
  - (a) 5:9
- (b) 3:5
- (c) 7:21
- (d) 7:15
- If  $x = \frac{1}{3}y$  and  $y = \frac{1}{2}z$ , then x:
  - y:z, is equal to
  - (a) 3:2:1
- (b) 1:2:6
- (c) 1:3:6
- (d) 2:4:6
- The ratio of two numbers is 3:8 and their difference is 115. The smaller of the two numbers is:
  - (a) 184
- (b) 194
- (c) 69
- (d) 59
- 4. Four numbers are in the ratio 1: 2:3:4. Their sum is 16. The sum of the first and fourth number is equal to:
  - (a) 5
- (b) 8
- (c) 10
- (d) 80
- A and B have money in the ratio 2:1. If A gives ₹ 2 to B, The money will be in the ratio 1:1. What were the initial amounts they had?
  - (a) ₹ 12 and ₹ 6 (b) ₹ 16 and ₹ 8
  - (c) ₹8 and ₹4 (d) ₹6 and ₹3
- 6. ₹ 180 contained in a box consists of one rupee, 50 paise and 25 paise coins in the ratio 2:3:4. What is the number of 50 paise coins?
  - (a) 60
- (b) 120
- (c) 150
- (d) 180
- 7. By mistake instead of dividing ₹ 117 among A, B and C in the
  - ratio  $\frac{1}{2}:\frac{1}{3}:\frac{1}{4}$  it was divided in
  - the ratio of 2:3:4. Who gains the most and by how much?
  - (a) A, ₹ 28
- (b) B, ₹ 3
- (c) C, ₹ 20
- (d) C, ₹ 25

- Divide ₹ 1250 among A, B, C so
  - that A gets  $\frac{2}{9}$  of B's share and
  - C gets  $\frac{1}{4}$  of A's share,
  - (a) ₹ 200,₹ 800,₹ 250
  - (b) ₹ 200,₹ 900,₹ 150
  - (c) ₹ 150,₹ 800,₹ 300
  - (d) ₹ 200,₹ 900,₹ 75

# **YEAR: 2000**

- If p: q = r: s = t: u = 2: 3, then (mp + nr + ot) : (mq + ns + ou) is equal to:
  - (a) 1:3
- (b) 1:2
- (c) 2:3
- (d) 3:2
- 10. If x: y = 3: 1, then  $x^3 y^3: x^3 + y^3 = ?$ (a) 13:14 (b) 14:13
  - (c) 10:11
- (d) 11:10
- 11. The fourth proportional to 12,21,8 is:
  - (a) 8.9 (b) 56 (c) 14 (d) 17
- The ratio  $2^{1.5}$ :  $2^{0.5}$  is the same as: (a) 2:1 (b) 3:1
  - (c) 6:1
- (d) 3:2
- 13. If m : n = 3 : 2, then (4m + 5n) : (4m + 5n)-5n) is equal to:
  - (a) 4:9
- (b) 9:4
- (c) 11:1
- (d) 9:1
- 14. The sum of two numbers is 40 and their difference is 4. The ratio of the numbers is:
  - (a) 21:19
- (b) 22:9
- (c) 11:9
- (d) 11:18
- 15. How many sides does a regular polygon have whose interior and exterior angle are in the ratio 2 : 1 ?
  - (a) 3
- (b) 5
- (c) 6
- (d) 12
- 16. The smallest integer, which subtracted from both the terms of 6: 7 gives a ratio less than 16:21 is:
  - (a) 5
- (b) 4
- (c) 3
- (d) 2

- 17. A man leaves ₹ 8,600 to be divided among 5 sons, 4 daughters and 2 nephews, If each daughter receives four times as much as each nephew and each son receives five times as much as each nephew, how much does each daughter receive?
  - (a) ₹ 100
- (b) ₹ 600
- (c) ₹ 800
- (d) ₹ 1000
- 18. Harsha is 40 years old and Ritu is 60 years old. How many years ago was the ratio of their ages 3:5?
  - (a) 10 years
- (b) 20 years
- (c) 37 years (d) 5 years
- 19. Four years ago, the ratio of the age of A and B was 2:3 and after four years it will become 5:7. Find their present age.
  - (a) 36 years and 40 years
  - (b) 32 years and 48 years
  - (c) 40 years and 56 years
  - (d) 36 years and 52 years
- 20. The ratio of two numbers is 10: 7 and their difference is 105. The sum of these numbers is
  - (a) 595 (c) 1190
- (b) 805 (d) 1610

- 21. Two numbers are in the ratio 5: 7. On diminishing each of them by 40. they become in the ratio 17: 27. The difference of the numbers is :
  - (a) 18 (c) 137
- (b) 52 (d) 50
- Two numbers are in the ratio
  - $1\frac{1}{2}:2\frac{2}{3}$ . When each of these is increased by 15, they become in
  - the ratio  $1\frac{2}{3}:2\frac{1}{2}$ . The greater of the numbers is:
  - (a) 27 (b) 36 (c) 48 (d) 64

23.	The students in three classes are
	in the ratio 2:3:5. If 20 students
	are increased in each class, the
	ratio changes to 4:5:7.
	originally the total number of
	students was:
	(a) 50 (b) 00

(a) 50

(b) 90

(c) 100 (d) 150

24. Zinc and Copper are in the ratio of 5:3 in 200 gm of an alloy. How much grams of copper be added to make the ratio as 3:5?

(a)  $133\frac{1}{3}$ 

(b) 72

(d) 66

25. The ratio of copper and zinc in brass is 13:7. How much zinc will be there in 100 kg of brass?

(a) 20 kg.

(b) 55 kg.

(c) 35 kg.

(d) 40 kg.

26. Divide ₹ 7,500 among A, B and C such that A's share to B's share is in the ratio 5: 2 and B's share to C's share is in the ratio 7:13. how much will B receive?

(a) ₹ 1,400

(b) ₹ 3,500

(c) ₹ 2,600

(d) ₹ 7,000

27. A sum of ₹ 1240 is distributed among A, B and C such that the ratio of amount received by A and B is 6:5 and that of B and C is 10: 9 repectively. Find the share of C.

(a) ₹ 480

(b) ₹ 360

(c) ₹ 400

(d) ₹ 630

28. A and B together have ₹ 158, C has ₹ 101 less than what A and B together have, and B has ₹ 23 more than C. The amount of A is:

(a) ₹ 80

(b) ₹ 78

(b) ₹ 57

(d) ₹ 88

# **YEAR: 2003**

29. Three numbers are in the ratio of 3:2:5 and the sum of their squares is 1862. The smallest of these numbers is

(a) 24

(b) 21

(c) 14

(d) 35

30. The sum of three numbers is 98. If the ratio of the first to the second is 2:3 and that of the second to the third is 5 : 8, then the second number is

(a) 49

(b) 48

(c) 30

(d) 20

31. In an alloy, the ratio of copper and zinc is 5 : 2. If 1.250 kg. of zinc is mixed in 17 kg 500 g of alloy, then the ratio of copper and zinc will be

(a) 2:1

(b) 2:3

(d) 1:2

(c) 3:2

32. A mixture contains spirit and water in the ratio 3: 2. If it contains 3 litres more spirit than water. the quantity of spirit in

(a) 10 litres

the mixture is

(b) 12 litres

(c) 8 litres

(d) 9 litres

33. The income of A, B and C are in the ratio 7:9:12 and their spendings are in the ratio 8:9

: 15. If A saves  $\frac{1}{4}$ th of his

income then the saving of A, B and C are in the ratio of:

(a) 56:99:69 (b) 69:56:99

(c) 99:56:69 (d) 99:69:56

34. If 378 coins consist of 1 rupee, 50 paise and 25 paise coins, whose values are in the ratio of 13:11:7. The number of 50 paise coins will be:

(a) 132

(b) 128

(d) 133 (c) 136

35. ₹ 3400 is divided among A, B, C, D in such a way that the share of A and B, B and C, C and D may be as 2:3, 4:3 and 2: 3 respectively. The sum of shares of B and D is.

(a) ₹ 2040 (b) ₹ 1680

(c) ₹ 2000

(d) ₹ 1720

36. A sum of ₹ 370 is to be divided among A, B and C such that

$$\frac{A's \ share}{B's \ share} = \frac{B's \ share}{C's \ share} = \frac{3}{4}$$
A's share (in rupees) is

(a) 240 (c) 100

(b) 120 (d) 90

Two numbers are in the ratio 17:45. One-third of the smaller is less than

 $\frac{1}{5}$  of the bigger by 15. The smaller number is

(a)  $25\frac{1}{2}$  (b)  $67\frac{1}{2}$ 

(c)  $76\frac{1}{2}$  (d)  $86\frac{1}{2}$ 

# YEAR: 2004

In a 45 litres mixture of milk and water, the ratio of the milk to water is 2:1. When some quantity of water is added to the mixture, this ratio becomes 1:2. The quantity of water added is

(a) 10 litres

(b) 21 litres

(c) 35 litres

(d) 45 litres

A barrel contains a mixture of wine and water in the ratio 3:1. How much fraction of the mixture must be drawn off and substituted by water so that the ratio of wine and water in the resultant mixture becomes 1:1?

A man spends a part of his monthly income and saves a part of it. the ratio of his expenditure to his saving is 26: 3. If his monthly income is ₹ 7250. what is the amount of his monthly savings?

(a) ₹ 350

(b) ₹ 290

(c) ₹ 750

(d) ₹ 780

41. There are ₹ 225 consisting of one rupee, 50 paise and 25 paise coins, the ratio of their numbers in that order is 8:5: 3. The number of one-rupee coins is:

> (a) 80 (c) 160

(b) 112 (d) 172

An amount of money is to be distributed among P,Q and R in the ratio of 2:7:9. The total of P's and Q's share is equal to R's share. What is the difference between the shares of P and Q?

(a) ₹ 5000

(b) ₹ 7500

(c) ₹ 9000

(d) Information inadequate

#### YEAR: 2005

43. If A: B = 3: 4, B: C = 5: 7 and C: D = 8 : 9 then A : D is equal to

(a) 3:7

(b) 7:3

(c) 21:10

(d) 10:21

- 44. 94 is divided into two parts in such a way that the fifth part of the first and the eighth part of the second are in the ratio 3:4. The first part is:
  - (a) 30
- (b) 36
- (c) 40
- (d) 28
- 45. If a:b=5:7 and c:d=2a:3bthen ac : bd is:
  - (a) 20:38
- (b) 50: 147
- (c) 10:21
- (d) 50:151
- 46. If a: b = b : c, then  $a^4$  :  $b^4$  is equal to (b)  $a^2 : c^2$ (a) ac : b<sup>2</sup>
- (c)  $c^2 : a^2$
- (d) b2: ac
- 47. If A : B =  $\frac{1}{2} : \frac{3}{8}$ , B : C =  $\frac{1}{3} : \frac{5}{9}$ 
  - and C: D =  $\frac{5}{6}$ :  $\frac{3}{4}$ , then the ra- 55. In 80 litres mixture of milk and
  - tio A:B:C:Dis
  - (a) 6:4:8:10 (b) 6:8:9:10
  - (c) 8:6:10:9 (d) 4:6:8:10
- 48. If A : B : C = 2 : 3 : 4, then ratio

$$\frac{A}{B}: \frac{B}{C}: \frac{C}{A}$$
 is equal to

- (a) 8:9:16
- (b) 8:9:12
- (c) 8:9:24
- (d) 4:9:12
- 49. If a:b=c:d=e:f=1:2, then (3a + 5c + 7e) : (3b + 5d + 7f) is
  - (a) 8:7
- (b) 2:1

(d) 1:2

- (c) 1:4
- 50. The ratio of the present age of 57. Puneet and Appu is 2:3. After 3 years the ratio of their age will be 3: 4. The present age of Puneet is:
  - (a) 3 years
- (b) 6 years
- (c) 9 years
- (d) 4 years
- 51. Of the three numbers, the ratio of the first and the second is 8:9 and that of the second and third is 3:4. If the product of the first and third number is 2400, then the second number is:
  - (a) 45
- (b) 40
- (c) 24
- (d) 10
- 52. Two numbers are in the ratio 2:3. If 2 is subtracted from the first and 2 is added to the second. the ratio becomes 1:2. The sum of the numbers is:
  - (a) 30
- (b) 28
- (c) 24
- (d) 10

- 53. Three numbers are in the ra
  - tio  $\frac{1}{2}:\frac{2}{3}:\frac{3}{4}$ . The difference between the greatest and the smallest number is 36. The
  - (a) 72,84,108
    - (b) 60,72,96
  - (c) 72,84,96

numbers are

- (d) 72,96,108
- 54. There is 81 litres pure milk in a container. One-third of milk is replaced by water in the container. Again one-third of mixture is extracted and equal amount of water is added. What is the ratio of milk to water in the new mixture?
  - (a) 1:2
- (b) 1:1
- (c) 2:1
- (d) 4:5
- water the ratio of amount of milk to that of amount of water is 7:3. In order to make this ratio 2: 1, how many litres of water should be added?
  - (a) 5
- (b) 6

(d)4

- (c) 8
- 56. The annual income of A and B are in the ratio 4: 3 and the ratio of their expenditures is 3:2. If each of them saves ₹ 600 in the year, the annual income of A is (a) ₹ 4800
- (b) ₹ 1800 (d) ₹ 2400
- (c) ₹ 1200
- The ratio of income of two persons is 5:3 and that of their expenditures is 9:5. If they save ₹ 2600 and ₹ 1800 respectively. Their incomes are:
  - (a) ₹ 8000 : ₹ 4800
  - (b) ₹ 6000 : ₹ 3600
  - (c) ₹ 10000 : ₹ 6000
  - (d) ₹ 9000 : ₹ 5400
- 58. The monthly income of two persons are in the ratio 2:3 and their monthly expenses are in the ratio 5:9. If each of them saves ₹ 600 per month, then their monthly incomes are
  - (a) ₹ 1,500 : ₹ 2,2250
  - (b) ₹ 1,200 : ₹ 1,800
  - (c) ₹ 1,600 : ₹ 2,400
  - (d) ₹ 1,400 : ₹ 2,100
- The ratio of the first and second class train fares between two stations is 3:1 and that of the numbers of passengers travelling

- between the two stations by first and second classes is 1:50. If on a particular day. ₹ 1,325 are collected from passengers travelling between the two stations. Then the amount collected from the second class passengers is
- (a) ₹ 1,250
- (b) ₹ 1,000
- (c) ₹ 850
- (d) ₹ 750

# **YEAR: 2006**

60. If p:q:r=1:2:4, then

$$\sqrt{5p^2+q^2+r^2}$$
 is equal to

- (a) 5
- (b) 2q
- (c) 5p
- (d) 4r
- 61. The mean proportion between

$$(3+\sqrt{2})$$
 and  $(12-\sqrt{32})$  is

- (a)  $\sqrt{7}$
- (c) 6
- (d)  $\frac{15 3\sqrt{2}}{1}$
- The ratio of the number of boys and that of girls in a school having 504 students is 13:11. What will be the new ratio if 3 more girls are admitted?
  - (a) 7:6
- (b) 6:7
- (c) 10:11
- (d) 13:14
- 63. The ratio of the number of ladies to that of gents at a party was 3: 2. When 20 more gents joined the party, the ratio was reversed. The number of ladies present at the party was
  - (a) 36
- (b) 32
- (c) 24
- (d) 16
- 64. Vessels A and B contain mixtures of milk and water in the ratio 4:5 and 5:1 respectively. In what ratio should quantities of mixture be taken from A and B to form a mixture in which milk to water is in the ratio 5:4?
  - (a) 2:5
- (b) 4:3
- (c) 5:2
- (d) 2:3
- 65. A man has in all ₹ 640 in the denominations of one-rupee, five-rupee and ten-rupee notes. The number of each type of notes are equal. What is the total number of notes he has?
  - (a) 150
- (b) 120
- (c) 100
- (d) 90

- 66. A bag contains three types of coins 1 rupee-coins, 50p-coins and 25 p-coins totaling 175 coins. If the total value of the coins of each kind be the same, the total amount in the bag is (a) ₹ 75 (b) ₹ 175
  - (c) ₹ 300

# (d) ₹ 126

#### **YEAR: 2007**

- 67. If a:b:c=2:3:4 and 2a-3b+4c = 33, then the value of c is (a) 6 (b) 9
  - (c) 12
- (d)  $\frac{66}{7}$
- 68. If a: b = c: d, then  $\frac{ma + nc}{mb + nd}$  is equal to
  - (a)  $\frac{1}{b}$
- (b)  $\frac{c}{d}$

- 69. If a:b:c=7:3:5, then (a+b)+ c): (2a + b – c) is equal to
  - (a) 1: 2
- (b) 2:3
- (c) 3:4
- (d) 5:4
- 70. If two times of A is equal to three times of B and also equal to four times of C, then A: B: C is (a) 2:3:4 (b) 3:4:2
  - (c) 4:6:3(d) 6:4:3
- 71. ₹ 33,630 are divided among A, B and C in such a manner that the ratio of the amount of A to that of B is 3: 7 and the ratio of the amount of B to that of C is 6: 5. The amount of money received by B is
  - (a) ₹ 14,868 (b) ₹ 16,257
  - (c) ₹ 13,290 (d) ₹ 12,390
- 72. Two numbers are in the ratio 4:5 and their L. C. M. is 180. The smaller number is
  - (a) 9
- (b) 15
- (c) 36
- (d) 45
- 73. 200 litres of a mixture contains milk and water in the ratio 17: 3. After the addition of some more milk to it, the ratio of milk to water in the resulting mixture becomes 7:1. The quantity of milk added to it was
  - (a) 20 litres
- (b) 40 litres
- (c) 60 litres
- (d) 80 litres

- 74. The milk and water in a mixture are in the ratio 7:5. When 15 litres of water are added to it, the ratio of milk and water in the new mixture becomes 7: 8. The total quantity of water in the new mixture is (b) 40 litres (a) 35 litres

  - (d) 96 litres (c) 60 litres
- 75. The ratio of incomes of A and B is 5 : 6. If A gets ₹ 11,100 less than B, then their total income (in rupees) is
  - (a) 9,900
- (b) 1,22,100
- (c) 14,400
- (d) 10,000
- 76. A box contains 1-rupee, 50paise and 25-paise coins in the ratio 8:5:3. If the total amount of money in the box is ₹ 112.50, the number of 50 -paise coins is
  - (a) 80
- (b) 50
- (c) 30 (d) 42
- 77. In an innings of a cricket match, three players A, B and C scored a total of 361 runs. If the ratio of the number of runs scored by A to that scored by B and also number of runs scored by B to that scored by C be 3:2, the number of runs scored by A was
  - (a) 171 (b) 181 (c) 185 (d) 161
- 78. In an examination, the number of those who passed and the number of those who failed were in the ratio 25: 4. If five more had appeared and the number of failures was 2 less than eariler, the ratio of passers to failures would have been 22: 3. Total number who appeared at the examination is
  - (a) 145
- (b) 150
- (c) 155
- (d) 1180

#### **YEAR: 2008**

- 79. If a : b : c = 3 : 4 : 7, then the ratio (a + b + c): c is equal to (a) 2:1 (b) 14:3
  - (c) 7:2
- (d) 1:2
- 80. If A and B are in the ratio 3: 4, and B and C in the ratio 12:13. Then A and C will be in the ratio (b) 9:13 (a) 3:13 (c) 36:13 (d) 13:9
- 81. If  $\frac{2}{3}$  of A = 75% of B = 0.6 of C,
  - then A : B : C is
  - (a) 2:3:3
- (b) 3:4:5
- (c) 4:5:6
- (d) 9:8:10

- 82. A jar contains a mixture of two liquids A and B in the ratio 4:1. When 10 litres of the mixture was taken out and 10 litres of liquid B was poured into the jar, this ratio became 2:3. The quantity of liquid A contained in the jar initially was
  - (b) 8 litres (a) 4 litres (c) 16 litres (d) 40 litres
- 83. A and B are two alloys of gold and copper prepared by mixing metals in the ratio 5:3 and 5 :11 respectively. Equal quantities of these alloys are melted to form a third alloy C, The ratio of gold and copper in alloy C is.
  - (a) 25:33 (c) 15:17
- (b) 33:25 (d) 17:15
- Two types of alloy possess gold and silver in the ratio of 7:22 and 21: 37. In what ratio should these alloys be mixed so as to have a new alloy in which gold and silver would exist in the ratio 25: 62?
  - (a) 13:8
- (b) 8:13
- (c) 13:12
- (d) 6:9
- 85. The salaries of A, B and C are in the ratio 1:3:4. If the salaries are increased by 5%, 10% and 15% respectively, then the increased salaries will be in the ratio
  - (a) 20:66:95 (b) 21:66:95 (c) 21:66:92 (d) 19:66:92
- The total marks obtained by Arun in english and Mathematics are 170. If the difference between his marks in these two subjects is 10. Then the ratio of his marks in these subjects is
  - (b) 8:7(a) 7:8 (c) 9:8
    - (d) 9:7

# **YEAR: 2009**

- There are three numbers A, B, C such that twice A is equal to thrice B and four times B is equal to five times C, Then the ratio between A and C is (a) 3:4 (b) 8:15
  - (c) 15:8
- (d) 4:3
- 88. The two numbers are in the ratio 2: 3 and their product is 96. The sum of the numbers is (a)5(b) 20
- (c) 101
- (d) 102

- 89. The ratio between two numbers is 3: 4. If each number is increased by 6, the ratio becomes 4:5. The difference between the numbers is
  - (a) 1
- (b) 3
- (c) 6
- (d) 8
- 90. Three numbers are in the ratio 5:6:7. If the product of the numbers is 5670, then the greatest number is
  - (a) 15
- (b) 18

(d) 28

- (c) 21
- 91. Which number when added to each of the numbers 6,7,15,17 will make the resulting num
  - bers proportional? (a) 6
    - (b) 5
  - (c) 4
- (d) 3
- 92. In a glass, milk and water are mixed in the ratio 3:5 and in another glass they are mixed in the ratio 6: 1. In what ratio should the contents of the two glasses be mixed together so that the new mixture contains milk and water in the ratio 1:1?
  - (a) 20:7
- (b) 8:3
- (c) 27:4
- (d) 25:9
- 93. Incomes of A and B are in the ratio 4:3 and their annual expenses are in the ratio 3:2. If each save ₹ 60,000 at the end of the year, the annual income of A is
  - (a)  $\neq$  1,20,000 (b)  $\neq$  1,50,000
  - (c) ₹ 2,40,000 (d) ₹ 3,60,000
- 94. The weight of Mr. Gupta and Mrs. Gupta are in the ratio 7:8 and their total weight is 120 kg. After taking a dieting course Mr. Gupta reduces by 6 kg and the ratio between their weights changes to 5: 6, So Mrs. Gupta has reduced by
  - (a) 2 kg
- (b) 4 kg
- (c) 3 kg
- (d) 5 kg
- 95. The ratio of the first and second class fares between two railway stations is 4:1 and that of the number of passengers travelling by first and second classes is 1: 40. If on a day ₹ 1,100 are collected as total fare, the amount collected from the first class passengers is
  - (a) ₹ 315
- (b) ₹ 275
- (c) ₹ 137.50
- (d) ₹ 100

# **YEAR: 2010**

- 96. If 3x = 5y = 4z, then x : y : z is equal to
  - (a) 9:12:16
- (b) 20:12:15
- (c) 15:10:9 (d) 8:5:3
- 97. If a and b are rational numbers

and 
$$a + b \sqrt{3} = \frac{1}{2 - \sqrt{3}}$$
, then a:

- b is equal to
- (a) 2:1
- (b) 2:3
- (c)  $\sqrt{3}$ : 1 (d)  $-\sqrt{3}$ : 1
- 98. If A : B = 3 : 4 and B : C = 8 : 9, then A:B:C is
  - (a) 8:6:9
- (b) 9:8 :6
- (c) 6:8:9
- (d) 3:32:9
- 99. If 2A = 3B = 4C, then A : B : C is :
  - (a) 2:3:4
- (b) 4:3:2
- (c) 6:4:3 (d) 3:4:6 100. The ratio  $4^{3.5}$ :  $2^5$  is the same as
  - (a) 4:1
- (b) 2:1
- (c) 1:2
- (d) 1:4
- 101. If A : B = 1 : 2, B : C = 3 : 4, C : D= 6:9 and D:E = 12:16 then A : B : C : D : E is equal to
  - (a) 1:3:6:12:16
  - (b) 2:4:6:9:16
  - (c) 3:4:8:12:16
  - (d) 3:6:8:12:16
- 102. The ratio of the age of a father to that of his son is 5: 2. If the product of their age in years is 1000, then the father's age (in years) after 10 years will be:
  - (a) 50
- (b) 60
- (c) 80
- (d) 100
- 103. What number should be added to each of 6,14,18 and 38, so that the resulting numbers make a proportion?
  - (a) 1
- (b) 2
- (c) 3
- (d) 4
- 104. Two numbers are in the ratio 3:5 and their LCM is 225. The smaller number is
  - (a) 45
- (b) 60
- (c)75
- (d) 90
- 105. The ratio of two numbers is 3: 4 and their LCM is 48. The sum of the two numbers is:
  - (a) 32
- (b) 28
- (c) 26
- (d) 24

- 106. What must be added to each term of the ratio 7:11, so as to make it equal to 3:4?
  - (a) 8 (c) 6.5
- (b) 7.5 (d) 5
- 107. Two numbers are in the ratio 3: 5. If each number is increased by 10. the ratio becomes 5: 7, The smaller number is
  - (a) 9
- (b) 12
- (c) 15
- (d) 25
- 108. A mixture contains wine and water in the ratio 3: 2 and another mixture contains them in the ratio 4:5. How many litres of the latter must be mixed with 3 litres of the former so that the resulting mixture may contain equal quantities of wine and water?
  - (a)  $5\frac{2}{5}$  litres (b)  $5\frac{2}{3}$  litres
  - (c)  $4\frac{1}{2}$  litres (d)  $3\frac{3}{4}$  litres
- 109. The monthly salaries of A, B and C are in the ratio 2:3:5. If C's monthly salary is ₹ 12,000 more than that of A, then B's annual salary is
  - (a) ₹ 1,20,000 (b) ₹ 1,44,000
- (c) ₹ 1,80,000 (d) ₹ 2,40,000 110. The ratio of income and expenditure of a person is 11:10. If he saves ₹ 9,000 per annum. his monthly income is
  - (a) ₹ 8,000
- (b) ₹ 8,800
- (c) ₹ 8,500
- (d) ₹ 8,250
- 111. The ratio of the numbers of boys and girls in a school was 5 : 3. Some new boys and girls were admitted to the school, in the ratio 5:7. At this, the total number of students in the school became 1200, and the ratio of boys to girls changed to 7:5. The number of students in the school before new admissions was
  - (a) 700 (b) 720 (c) 900 (d) 960
- 112. Three persons walk from place A to place B. Their speeds are in the ratio 4:3:5. The ratio of the time taken by them to reach B will be:
  - (a) 10:15:13 (b) 2:3:4
  - (c) 15:20:12 (d) 16:18:15

#### **YEAR: 2011**

- 113. Marks of two candidates P and Q are in the ratio 2:5 if the marks of P are 120, marks of Q are
  - (a) 120
- (b) 240
- (c) 300
- (d)360
- 114. If A : B = 4 : 9 and A : C = 2 : 3then (A + B) : (B + C) is
  - (a) 15:13
- (b) 10:13
- (c) 13:10
- (d) 13:15
- 115. If x : y = 3 : 4, then the value of

$$\frac{5x - 2y}{7x + 2y} =$$

- 116. If x : y = 3 : 4, then the value of (4x - y) : (2x + 3y) is
  - (a) 4 : 9
- (b) 8:9
- (c) 4 : 3
- (d) 8:3
- 117. The ratio of the age of Ram and Rahim 10 years ago was 1: 3. The ratio of their age five years hence will be 2:3. Then the ratio of their present age is
  - (a) 1:2
- (b) 3:5

(d) 2:5

- (c) 3 : 4
- 118. If the sum of two quantities is equal to three times of their difference, then the ratio of the
  - two quantities is (a) 1:3
    - (b) 3:1
  - (c) 2:1
- (d) 2:3
- 119. Three numbers are in the ratio 3:4:5. The sum of the largest and the smallest equals to the sum of the second number and 52. The smallest number is
  - (a) 20
- (b) 27
- (c) 39
- (d) 52
- 120. A container contains two liquids A and B in the ratio 7:5. When 9 litres of mixture are drawn off and the container is filled with B, the ratio of A and B becomes 1: 1. How many litres of liquid A was in the container initially?
  - (a) 26
- (b)  $16\frac{1}{2}$
- (c)  $36\frac{3}{4}$

- 121. The ratio of the volume of water and glycerine in 240cc of mixture is 1:3. The quantity of water (in cc) that should be added to the mixture so that the new ratio of the volumes of water and glycerine becomes 2:3 is
  - (a) 55 cc
- (b) 60 cc
- (c) 62.5 cc
- (d) 64 cc
- 122. In a mixture of 25 litres the ratio of acid to water is 4:1. another 3 litres of water is added to the mixture. The ratio of acid to water in the new mixture is
  - (a) 5:2
- (b) 2:5
- (c) 3:5
- (d) 5:3
- 123. Two equal vessels are filled with the mixtures of water and milk in the ratio of 3:4 and 5:3respectively. If the mixtures are poured into a third vessel, the ratio of water and milk in the third vessel will be
  - (a) 15:12
- (b) 53:59
- (c) 20:9
- (d) 59:53
- 124. Acid and water are mixed in a vessel A in the ratio of 5: 2 and If the vessel B in the ratio 8:5. In what proportion should quantities be taken out from the two vessels so as to form a mixture in which the acid and water will be in the ratio of 9:4?
  - (a) 7:2
- (b) 2:7
- (c) 7:4
- (d) 2:3
- 125. The ratio of spirit and water in two mixtures of 20 litres and 36 litres is 3:7 and 7:5 respectively. Both the mixtures are mixed together. Now the ratio of the spirit and water in the new mixture is
  - (a) 25:29
- (b) 9:10
- (c) 27:29
- (d) 27:31
- 126. An alloy contains copper, zinc and nickel in the ratio of 5:3: 2. The quantity of nickel (in kg) that must be added to 100 kg of this alloy to have the new ratio 5:3:3 is
  - (a) 8
- (b) 10
- (c) 12
- (d) 15
- 127. The ratio of the income to the expenditure of a family is 10:7. If the family's expenses are ₹ 10,500, then savings of the family is
  - (a) ₹ 4,500
- (b) ₹ 10,000
- (c) ₹ 4,000
- (d) ₹ 5,000

- 128. The ratio of weekly income of A and B is 9: 7 and the ratio of their expenditures is 4:3. If each saves ₹ 200 per week, then the sum of their weekly income is
  - (a) ₹ 3,600
- (b) ₹ 3,200
- (c) ₹ 4,800
- (d) ₹ 5,600
- 129. The income of A and B are in the ratio 2:3 and their expenditures are in the ratio 1:2, If each saves ₹ 24,000, find A's income.
  - (a) ₹ 24,000
- (b) ₹ 72,000
- (c) ₹ 19,200
- (d) ₹ 48,000
- 130. From each of the two given unequal numbers. half of the smaller number is subtracted. Then, of the resulting numbers the larger one is five times of the smaller one. Then the ratio of the larger to the smaller one is
  - (a) 2:1
- (b) 3:2
- (c) 3:1
- (d) 1:4

# **YEAR: 2012**

- 131.94 is divided into two parts in such a way that the fifth part of the first and the eighth part of the second are in the ratio 3:4. The first part is:
  - (a) 30
- (b) 36
- (c) 40
  - (SSC CHSL LDC & DEO 21.10.2012)

(d) 28

- 132. The third proportional of 0.8 and 0.2 is:
  - (a) 0.05 (d) 0.032
- (b) 0.8 (c) 0.4
- (SSC CHSL LDC & DEO 21.10.2012)
- 133.On mixing two classes A and B of students having average marks 25 and 40 respectively. The over all average obtained is 30. Find the ratio of the students in the class A and B.
  - (a) 2:1 (c) 5:6
- (b) 5:8
- (d) 3:4
- (SSC CHSL LDC 21.10.2012)
- 134. A fruit seller sold big, medium and small sized apples for ₹ 15, ₹ 10 and ₹ 5 respectively. The total number of apples sold were in the ratio 3:2:5. Find the average cost of an apple.
  - (a)₹8
- (b) ₹ 10
- (c) ₹ 9
- (d) ₹ 7

(SSC CHSL LDC 21.10.2012)

- 135. In a school, the ratio of boys to girls is 4:3 and the ratio of girls, to teachers is 8: 1. The ratio of students to teachers is:
  - (a) 56:3
- (b) 55:1
- (c) 49 : 3
- (d) 56:1

#### (SSC CHSL LDC 24.11.2012)

- 136. If  $\frac{3x+5}{5x-2} = \frac{2}{3}$ , then the value of
  - x is
  - (a) 11
- (b) 19
- (c) 23(d) 7

#### (SSC CHSL LDC & DEO 04.11.2012)

- 137. A milkman makes 20% profit by selling milk mixed with water at ₹ 9 per litre. If the cost price of 1 litre pure milk is ₹ 10, then the ratio of milk and water in the mixture is
  - (a) 3:1
- (b) 4:1
- (c) 3:2
- (d) 4:3

#### (SSC CHSL LDC & DEO 28.10.2012)

- 138. The ratio between Sumit's and Prakash's age at present is 2: 3. Sumit is 6 years younger than Prakash. The ratio of Sumit's age to Prakash's age after 6 years will be
  - (a) 2:3
- (b) 1:2
- (c) 4:3
- (d) 3:4

#### (SSC CHSL LDC & DEO 28.10.2012)

- 139. The number to be added to each of the numbers 7, 16,43,79 to make the numbers in proportion is
  - (a) 2
- (b) 3
- (c) 5
- (d) 1

#### (SSC CGL Tier I 11.11.2012)

- 140. Two numbers are such that the ratio between them is 4:7. If each is increased by 4, the ratio becomes 3:5. The larger number is
  - (a) 36
- (b) 48
- (c) 56
- (d) 64

#### (SSC GD 22.04.2012)

- 141. The students in three classes are in the ratio 4:6:9. If 12 students are increased in each class the ratio changes to 7:9:12. Then the total number of students in the three classes before the increase is
  - (a) 95
- (b) 76
- (c) 100
- (d) 114

# (SSC CGL Tier II 16.09.2012)

142. If there is a reduction in the number of workers in a factory in the ratio 15: 11 and an

- increment in their wages in the ratio 22: 25, then the ratio by which the total wage of the workers should be decreased is
- (a) 6:5
- (b) 5:6
- (c) 3:7
  - (d) 3:5 (SSC CHSL DEO & LDC 04.11.2012)
- 143. Two numbers are in the ratio of 3:5. If 9 be subtracted from each, then they are in the ratio of 12:23. Find the numbers.
  - (a) 15,28
- (b) 36,115
- (c) 33,55
- (c) 60,69

#### (SSC DP (SI) 19.8.2012)

- 144. A and B are two alloys of gold and copper prepared by mixing metals in ratios 7:2 and 7:11respectively. If equal quantities of the alloys are melted to form a third alloy C, the ratio of gold and copper in C will be:
  - (a) 7:5
- (b) 5:9
- (c) 9:5 (d) 5:7

#### (SSC CHSL 04.11.2012)

- 145. A container contains 60 litre of milk. From this container 6 litre of milk was taken out and replaced by water. This process was repeated further two times. The quantity of milk left in the container is
  - (a) 34.24 litre (b) 39.64 litre (c) 43.74 litre (d) 47.6 litre

#### (SSC CHSL LDC & DEO 28.10.2012)

- 146. Two vessels A and B contain milk and water mixed in the ratio 8:5 and 5:2 respectively. The ratio in which these two mixtures be mixed to get a new mixture containing 69—% milk is:
  - (a) 3:5
- <sup>1</sup>%b) 5:2
- (c) 5:7
- (d) 2:7

#### (SSC CGL Tier I 11.11.2012)

- 147. In two types of stainless steel the ratio of chromium and steel are 2:11 and 5:21 respectively. In what proportion should the two types be mixed so that the ratio of chromium to steel in the mixed type becomes 7:32?
  - (a) 2:3
- (b) 3:4
- (c) 1:2
- (d) 1:3
- 148. If the annual income of A, B and C are in the ratio 1:3:7 and the total annual income of A and C is ₹ 8,00,000, then the monthly salary of B (in ₹) is
  - (a) ₹ 20,000
- (b) ₹ 25,000
- (c) ₹ 30,000
- (d) ₹ 15,000
- (SSC CHSL Exam 21.10.2012)

- 149. Annual incomes of Amit and Veer 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) ₹ 9,000 (c) ₹ 7,000
- (b) ₹ 8,000
- (d) ₹ 6,000
- (SSC CPO 19.08.2012)
- 150. The ratio of the income of A and B as well as of B and C is 3:2 If one third of A's income exceeds one fourth of C's income by ₹ 1000, what is B's income in ₹?
  - (a) 3000
- (b) 2500
- (c) 3500
- (d) 4000

#### (SSC CHSL LDC & DEO 28.10.2012)

- 151. The price of a refrigerator and a television set are in the ratio 5 : 3. If the refrigerator costs ₹ 5500 more than the television set, then the price of the refrigerator is:
  - (a) ₹ 27500
- (b) ₹ 8250
- (d) ₹ 16500 (c) ₹ 13750

#### (SSC CHSL LDC & DEO 28.10.2012)

- 152. The ratio of successful and unsuccessful examinees in an examination in a school is 6:1. The ratio would have been 9:1 if 6 more examinees had been successful. The total number of examinees are
  - (a) 140
- (b) 120

(d) 160

- (c) 200
- (SSC GD 22.04.2012)
- 153. A box filled with paper bundles weights 36 kg. If the weight of the box and paper bundles respectively are in the ratio of 3: 22 then the weight of the papers (in grams) is
  - (a) 30680 grams
  - (b) 30710 grams
  - (c) 31500 grams
  - (d) 31680 grams

#### (SSC Assistant Grade III 11.11.2012)

- 154. Two numbers are such that the square of one is 224 less than 8 times the square of the other. If the numbers are in the ratio of 3: 4, then their values are (b) 6,8
  - (a) 12, 16
  - (c) 9,12(d) 12,9
- (SSC Assistant Grade III 05.02.2012) 155. If two-third of A is four-fifth of B, then A : B = ?
  - (a) 5:6
- (b) 6:5
- (c) 10:9
- (d) 9:10

(FCI Assistant Grade III 05.02.2012)

- 156. If (a + b) : (b+c) : (c+a) = 6 : 7 : 8and (a+b+c) = 14, then the value of c is (a) 6 (b) 7 (d) 14 (c) 8 (SSC CHSL LDC & DEO 27.10.2013) 157. If 5.5 of a = 0.65 of b, then a : bis equal to: (a) 13:11 (b) 11:13 (c) 13:110 (d) 110:13 (SSC CHSL MTS 10.03.2013) 158. The ratio of boys and girls in a college is 5:3. If 50 boys leave the college and 50 girls join the college, the ratio becomes 9:7. The number of boys in the college is (a) 300 (b) 450 (c) 500 (d) 600 (SSC CHSL LDC & DEO 10.11.2013) 159. A person distributes his pens among four friends A, B, C, D in the ratio  $\frac{1}{3} : \frac{1}{4} : \frac{1}{5} : \frac{1}{6}$ . What is the minimum number of pens that the person should have? (a) 57 (b) 65 (c) 75 (d) 45 (SSC CGL Tier I 21.04.2013)
- 160. If A =  $\frac{2}{3}$  of B and B =  $\frac{4}{5}$  of C,

then A:B:C is.

(a) 12:8:10 (b) 15:10:8

(c) 10:15:12 (d) 8:12:15

#### (SSC GD 12.05.2013)

161. The ratio of 25<sup>2.5</sup>: 5<sup>3</sup> is same as (a) 5:3

(b) 5:6

(c) 1:25

(d) 25:1

#### (SSC CGL Tier I 19.05.2013)

162. The third proportional of 12 and 18 is

(a) 3

(b) 6

(c) 27

(d) 144

# (SSC CGL Tier II 29.09.2013)

163. If x runs scored by A, y runs by B and z runs by C, then x : y = yz = 3 : 2. If total number of runs scored by A, B and C is 342, the runs scored by each would be respectively

(a) 144,96,64 (b) 162,108,72

(c) 180,120,80 (d) 189,126,84

#### (SSC CGL Tier II 29.09.2013)

164. If A : B = 3 : 4 and B : C = 6: 5, then C: A is

(a) 10:9

(b) 9:10

(c) 8:9

(d) 9:8

(SSC CHSL LDC & DEO 10.11.2013)

165. Find two mean proportionals between 2 and 54,

> (b) 6 and 12 (a) 6 and 18

(d) 6 and 9 (c) 12 and 18

#### (SSC CGL Tier I 20.07.2013)

166. A man ordered 4 pairs of black socks and some pairs of brown socks. The price of a pair of black socks is double that of a brown pair. While preparing the bill the clerk interchanged the number of black and brown pairs by mistake which increased the bill by 50%. The ratio of the number of black and brown pairs of socks in the original order was:

(a) 2:1

(b) 1:4

(c) 1:2

(d) 4:1

#### (SSC CAPE CISF ASI 23.06.2013)

167. The ratio of age of two boys is 5 : 6. After two years the ratio will be 7:8. The ratio of their age after 12 years will be

#### (SSC CHSL LDC & DEO 07.09.2013) (SSC CPO SI 20.10.2013)

168. The present ages of two persons are 36 and 50 years respectively. If after n years the ratio of their age will be 3:4, then the value of n is

(a) 4

(b) 7

(c) 6

(d) 3

#### (SSC MTS 17.03.2013)

169. Of three positive numbers, the ratio of 1st and 2nd is 8:9, that of 2nd and 3rd is 3:4. The product of 1st and 3rd is 2400. The sum of the three numbers is

(a) 145

(b) 185

(c) 295

(d) 155

#### (SSC MTS 10.03.2013)

170. The ratio of number of balls in bags x,y is 2:3. Five balls are taken from bag y and are dropped in bag x, number of balls are equal in each bag now. Number of balls in each bag now is

(a) 45

(b) 20

(c) 30

(d) 25

#### (SSC CGL Tier I 19.05.2013)

171. If the square of the sum of two numbers is equal to 4 times of their product, then the ratio of these numbers is:

(a) 2 : 1

(b) 1:3

(d) 1:2 (c) 1:1

(SSC CAPF SI & CISF ASI 23.06.2013) 172. Three numbers are in the ratio 1:2:3. By adding 5 to each of them, the new numbers are in the ratio 2:3:4. The numbers are:

> (a) 10,20,30 (b) 15,30,45

(c) 1,2,3

(d) 5,10,15

#### (SSC CGL Tier I 21.04.2013)

173. Ram got twice as many marks in English as in Science. His total marks in English, Science and Maths are 180. If the ratio of his marks in English and Maths is 2:3, what is his marks in Science?

(a) 30

(b) 60

(c) 72

(d) 90

#### (SSC CGL Tier II 29.09.2013)

174. The ratio in which a man must mix rice at ₹ 10.20 per kg and ₹ 14.40 per kg so as to make a mixture worth ₹ 12.60 per kg, is

(a) 4:3

(b) 2:5

(c) 18:24

(d) 3:4

(SSC MTS 17.03.2013) 175. Two vessels A and B contain milk and water mixed in the ratio 4:3 and 2:3 respectively. The ratio in which these mixtures be mixed to form a new mixture containing half milk and half water is

(a) 7:5

(b) 6:5

(c) 5:6

(d) 4:3

# (SSC CHSL LDC & DEO 28.10.2013) (SSC MTS 17.03.2013)

176. The proportion of acid and water in three samples is 2:1,3:2 and 5: 3, A mixture containing equal quantities of all three samples is made. The ratio of acid and water in the mixture is:

(a) 12: 133

(b) 227:133

(c) 3:8

(d) 5:11

# (SSC CPO ASI 23.06.2013)

177. Two alloys both are made up of copper and tin. The ratio of copper and tin in the first alloy is 1:3 and in the second alloy is 2:5. In what ratio should the two alloys be mixed to obtain a new alloy in which the ratio of tin and copper be 8:3?

(a) 3:5

(b) 4:7

(c) 3:8

(d) 5:11

(SSC CHSL LDC & DEO 27.10.2013)

- 178. A mixture contains alcohol and water in the ratio 4:3. If 5 litres of water is added to the mixture the ratio becomes 4:5. The quantity of alcohol in the given mixture is
  - (a) 3 litres (b) 4 litres
  - (c) 15 litres (d) 10 litres

#### (SSC CHSL LDC & DEO 10.11.2013)

- 179. In two alloys A and B, the ratio of zinc to tin is 5:2 and 3:4 respectively. 7 kg of the alloy A and 21 kg of the alloy B are mixed together to form a new alloy. What will be the ratio of zinc and tin in the new alloy?
  - (a) 2:1
- (b) 1:2
- (c) 2 : 3
- (d) 1:1

#### (SSC CHSL LDC & DEO 10.11.2013)

- 180. Zinc and copper are in the ratio 5:3 in 400 gm of an alloy. How much of copper (in grams) should be added to make the ratio 5: 4?
  - (a) 50 gm
- (b) 66 gm
- (c) 72 gm
- (d) 200 gm

#### (SSC CHSL LDC 10.11.2013)

- 181. A person bought some rice and wheat for ₹ 380. The ratio of weight of rice and wheat is 4: 3 and the price of equal amount of rice and wheat is in the ratio 5:6. The rice was bought of worth
  - (a) ₹ 380
- (b) ₹ 300
- (c) ₹ 200
- (d) ₹ 180

#### (SSC MTS 17.03.2013)

- 182. The ratio of monthly incomes of A and B is 6:5 and their monthly expenditures are in the ratio of 4:3. If each of them saves ₹ 400 per month, find the sum of their monthly incomes.
  - (a) 2300
- (b) 2400
- (c) 2200
- (d) 2500

# (SSC CHSL LDC & DEO 10.11.2013)

- 183. There are 480 coins of half rupees, quarter rupees and 10 paise coins and their values are proportional to 5:3:1. The number of coins in each case are
  - (a) 100,200,180
  - (b) 50,30,400
  - (c) 150,180,150
  - (d) 300,90,90

(SSC MTS 17.03.2013)

- 184. A box contains 420 coins of 1 rupee, 50 paise and 20 paise coins. The ratio of their values is 13: 11:7. The number of 50 paise coins is
  - (a) 42
- (b) 78
- (c) 66
- (d) 132

#### (SSC MTS 24.03.2013)

- 185. A box contains ₹ 56 in the form of coins of one rupee, 50 paise and 25 paise. The number of 50 paise coins is double the number of 25 paise coins and four times the number of one rupee coins. How many 50 paise coins are there in the box?
  - (a) 52
- (b) 64
- (c) 32
- (d) 16

#### (SSC CAPF SI & CISF ASI 07.04.2013)

- 186.₹ 738 is divided among A, B, C so that their shares are in the ratio of 2:3:4. B's share is
  - (a) ₹ 328
- (b) ₹ 246
- (c) ₹ 264
- (d) ₹ 164

# (SSC MTS 10.03.2013)

- 187.₹1740 is divided among A, B, and C such that 0.5 of A = 0.6 of B = 0.75 of C. Then C will get
  - (a) ₹ 580
- (b) ₹ 696
- (c) ₹ 348
- (d) ₹ 464

#### (SSC MTS 17.03.2013)

- 188.A certain amount of money is divided among x, y and z. If x receives 25% more than y and y receives 25% less than z, then x : y : z is equal to
  - (a) 14:12:13 (b) 15:12:16
  - (c) 10:9:12 (d) 12:10:11

#### (SSC MTS 17.03.2013)

- 189. A sum of ₹ 53 is divided among A, B and C in such a way that A gets ₹ 7 more than what B gets and B gets ₹ 8 more than what C gets. The ratio of their share is

  - (a) 16:9:18 (b) 25:18:10
  - (c) 18:25:10 (d) 15:8:30

#### (SSC MTS 17.03.2013)

- 190. A sum of ₹ 300 is divided among P,Q and R in such a way that Q gets ₹ 30 more than P and R gets ₹ 60 more than Q. The ratio of their shares is
  - (a) 5:3:2
- (b) 2:3:5
- (c) 3:2:5
- (d) 2:5:3

(SSC CGL Tier I 19.05.2013)

- 191.₹900 is divided among A, B, C;
  - the division is such that  $\frac{1}{2}$  of
  - A's money =  $\frac{1}{3}$  of B's money
  - =  $\frac{1}{4}$  of C's money. Find the
  - amount(in ₹) received by A, B, C.
  - (a) 300,400,200
  - (b) 350,450,100
  - (c) 200,300,400
  - (d) 400, 150, 350

#### (SSC CGL Tier II 29.09.2013)

- 192. If ₹ 126.50 is divided among A, B and C in the ratio of 2:5:4, the share of B exceeds that of A by
  - (a) ₹ 36.50
- (b) ₹ 35.50
- (c) ₹ 34.50 (d) ₹ 33.50

#### (SSC CGL Tier II 29.09.2013)

193. A sum of ₹ 76 is divided among A, B and C in such a way that A gets ₹ 7 more than what B gets and B gets ₹ 6 more than what C gets. The ratio of their share is (a) 19:24:33 (b) 32:25:19

# (c) 32:24:20 (d) 19:25:33

- (SSC CGL Tier II 27.04.2014) 194. ₹ 3,000 is divided between A, B
  - and C so that A receives  $\frac{1}{3}$  as much as B and C together
  - receive and B receives  $\frac{1}{3}$  as
  - much as A and C together receive. Then the share of C is: (b) ₹ 525 (a) ₹ 600
  - (c) ₹ 1,625
- (d) ₹ 1,050
- (SSC CGL Tier I 20.05.2014)

#### **YEAR: 2014**

- 195. Which of the following represents a correct proportion?
  - (a) 12:9::16:12
  - (b) 13:11::5:4
  - (b) 30:45::13:24
  - (d) 3:5::2:5

# (SSC CGL Tier I 19.05.2014)

- 196. If 8, x and 50 are in continued proportion, then the value of x is
  - (a) 30
- (b) 20
- (c) 5 (d) 32

# (SSC CPO SI & DP 22.06.2014)

- 197. If A : B = 7 : 9 and B : C = 3 : 5then A: B: C is equal to
  - (a) 7:9:5 (b) 21:35:45
  - (c) 7:9:15 (d) 7:3:15

(SSC CHSL LDC & DEO 2.11.2014)

- 198. The ratio of the length of a school ground to its width is 5: 2. If the width is 40 m, then the length is
  - (a) 200 m
- (b) 100 m
- (c) 50 m
- (d) 80 m

#### (SSC CHSL LDC & DEO 02.11.2014)

- 199. The ratio of the ages of two persons is 4:7 and the age of one of them is greater than that of the other by 30 years. The sum of their ages (in years) is
  - (a) 110
- (b) 100
- (c) 70
- (d) 40

#### (SSC CGL Tier I 27.04.2014)

- 200. What number should be subtracted from both the terms of the ratio 11:15 so as to make it as 2:3?
  - (a) 2
- (b) 3 (d) 5
- (c) 4
- (SSC CGL Tier I 27.04.2014)
- 201. There are two containers of equal capacity. The ratio of milk to water in the first container is 3:1 and in the second container is 5:2. If they are mixed up, the ratio of milk to water in the mixture will be
  - (a) 28:41
- (b) 41:28
- (c) 15:41
- (d) 41:15

#### (SSC CGL Tier II 21.09.2014)

- 202. Two equal glasses filled with alcohol and water in the proportions 2:1 and 3:2 are emptied into a third glass. The proportion of alcohol and water in the third glass will be
  - (a) 13:17
- (b) 19:17
- (c) 13:11
- (d) 19:11

#### (SSC CAPF SI & CISF ASI 16.06.2014)

- 203. A box contains 280 coins of one rupee, 50-paise and 25- paise. The value of each kind of the coins are in the ratio of 8:4: 3. Then the number of 50 paise coins is
  - (a) 70
- (b) 60
- (c) 80
- (d) 90

#### (SSC CHSL LDC & DEO 04.12.2011)

- 204.₹ 555 was to be divided among A, B and C in the ratio of
  - -: -: -: But by mistake it was
  - divided in the ratio 4:5:6. The amount in excess received by C was
  - (a) ₹ 72
- (b) ₹ 75
- (c) ₹ 22
- (d) ₹ 52

(SSC CGL Tier I 26.10.2014)

- 205. A man divides his property so that his son's share to his wife's and wife's share to his daughter's are both as in the ratio 3: 1. If the daughter gets ₹ 10,000 less than son, the value (in rupees) of the whole property is
  - (a)  $\neq$  16,250
- (b) ₹ 16,000
- (c) ₹ 18,250
- (d) ₹ 17,000

#### (SSC CGL Tier II 21.09.2014)

- 206. A policeman starts to chase a thief. When the thief goes 10 steps the policeman moves 8 steps and 5 steps of the policeman are equal to 7 steps of the thief. The ratio of the speeds of the policeman and the thief is:
  - (a) 25:28
- (b) 25:26
- (c) 28:25
- (d) 56:25

#### (SSC CGL Tier II 19.10.2014)

- 207. Tom is chasing Jerry. In the same interval of time Tom jumps 8 times while Jerry jumps 6 times. But the distance covered by Tom in 7 jumps is equal to the distance covered by Jerry in 5 jumps. The ratio of speeds of Tom and Jerry is
  - (a) 48:35
- (b) 28:15
- (c) 24:20
- (d) 20:21

#### (SSC CHSL LDC & DEO 16.11.2014)

- 208. If A and B are in the ratio 4:5 and the difference of their squares is 81, what is the value of A?
  - (a) 36
- (b) 445
- (c) 15
- (d) 12

#### (SSC CGL 16-08-2015)

- 209. Two alloys contain tin and iron in the ratio of 1:2 and 2:3. If the two alloys are mixed in the proportion of 3: 4 respectively (by weight), the ratio of tin and iron in the newly formed alloy is:-
  - (a) 14:25
- (b) 10:21
- (c) 12:23
- (d) 13:22

#### (SSC CGL 16-08-2015, Evening)

- 210. If two numbers are in the ratio 2:3 and the ratio becomes 3: 4 when 8 is added to both the numbers, then the sum of the two numbers is:
  - (a) 90
- (b) 50
- (c) 60
  - (d) 40
    - (SSC CGL 16-08-2015, Evening)

- 211. If  $\frac{-}{y} = \frac{-}{4}$ , the ratio of (2x + 3y)
  - and (3y 2x) is:
  - (a) 2:1
    - (b) 3:2
  - (c) 3:1
- (d) 1:1

#### (SSC CGL 09-08-2015, Evening)

- 212. Incomes of x and y are in the ratio 4: 3. Their expenditures are in the ratio 12:7. Both save ₹ 3200 at the end of the month, then the income of x is ?
  - (a) ₹ 4000
- (b) ₹ 8000
- (c) ₹ 6000
- (d) ₹ 2000

# (CPO 21-06-2015, Morning)

- 213. A and B have their monthly incomes in the ratio 8:5 while their monthly expenditures are in the ratio 5:3, If they have saved ₹ 12,000 and ₹ 10,000 monthly respectively, then the difference in their monthly incomes is
  - (a)  $\neq$  42,000
- (b) ₹ 52,000
- (c) ₹ 46,000
- (d) ₹ 44,000

(CGL Mains 25-10-2015)

- 214. In a school there were 1554 students and the ratio of the number of the boys and girls was 4: 3. After few days, 30 girls joined the school but few boys left; as a result the ratio of the boys and girls became 7:6. The number of boys who left the school is
  - (a) 76
- (b) 84
- (c) 86
- (d) 74
- 215. If  $(x^3 y^3) : (x^2 + xy + y^2) = 5:1$  and  $(x^2 - y^2) : (x - y) = 7 : 1$ , then the ratio 2x: 3y equals
  - (a) 3:2 (c) 4:3
- (b) 2:3
- (d) 4:1
  - (CGL Mains 25-10-2015)
- 216. If A:B =  $\frac{1}{2}$ : $\frac{1}{3}$ , B:C= $\frac{1}{5}$ : $\frac{1}{3}$ , then
  - (A + B) : (B + C) is equal to (a) 5:8

(c) 9:10

- (b) 15:16
- (d) 6:15 (CGL Mains 12-04-2015)
- 217. In a library the ratio of story books and other books is 7:2
  - and there are 1512 story books. Due to collection of some more story books the ratio becomes 15: 4. The number of story books collected is
  - (a) 108
- (b) 205
- (c) 100
- (d) 97

(CGL Mains 12-04-2015)

- 218. In 2 kg mixture of copper and aluminium, 30% is copper. How much aluminium powder should be added to the mixture so that the quantity of copper becomes 20%?
  - (a) 900 gms (b) 800 gms
  - (d) 1200 gms (c) 1000 gms

#### (SSC LDC 01-11-2015, Morning)

- 219. A bag contains coins of ₹ 1, 50 paise and 25 paise in the ratio 2:3:5. If the total value of these coins is ₹ 228, then the number of 50 paise coins in that bag was
  - (a) 144
- (b) 124
- (c) 112
- (d) 96

#### (SSC LDC 01-11-2015, Morning)

- 220. Divide 27 into two part so that 5 times the first and 11 times the second together equals to 195. Then ratio of the first and second parts is
  - (a) 3:2
- (b)17:10
- (c) 2:7
- (d) 5:4

#### (SSC LDC 01-11-2015, Morning)

- 221.A mixture contains milk and water in the ratio 5: 1. On adding 5 litres of water, the ratio of milk and water becomes 5:2. The quantity of milk in the mixture is:
  - (a) 16 litres
- (b) 25 litres
- (c) 32.5 litres (d) 22.75 litres

#### (SSC LDC 06-12-2015, Morning)

- 222. The sides of a triangle are in the ratio of 7:9:12. The difference between the lenght of largest and smallest sides is 15 cm. The length of the largest sides would be:
  - (a) 36 cm
- (b) 12 cm
- (c) 60 cm
- (d) 24 cm

#### (SSC LDC 06-12-2015, Morning)

- 223. The three successive angles of a cyclic quadrilateral are in the ratio 1:3:4, find the measure of the fourth angle?
  - (a) 72°
- (b) 30°
- (c) 36°
- (d) 108°

#### (SSC LDC 06-12-2015, Morning)

- 224. The current ages of Sonali and Monali are in the ratio 5:3. Five years from now, their ages will be in the ratio 10: 7 Then, Monali's current age is:
  - (a) 3 years
- (b) 5 years
- (c) 9 years
- (d) 15 years

(SSC LDC 06-12-2015, Evening)

- 225. Two numbers are in ratio 5:8, If their difference is 48, then the smallest number is
  - (a) 64
- (b) 80
- (c)96
- (d) 128

#### (SSC LDC 20-12-2015, Morning)

- 226. If a:b = 4:5, b:c = 5:6, and c:d = 6:66:7, then *a:c* is:
  - (a) 5:6
- (b) 3:4
- (c) 2:3
- (d) 4:5

#### (SSC LDC 20-12-2015, Evening)

- 227. If  $\frac{a}{b} = \frac{c}{d} = 5$ , then  $\frac{3a + 4c}{3b + 4d}$  is equals to:
  - (a) 5
- (b) 20
- (c) 60
- (d) 15

#### (SSC LDC 20-12-2015, Evening)

- 228. If x: y = 3:5 and x-y = -2, then the value of x+y is:
  - (a) 8
- (b) 2
- (c) 3
  - (d) 5 (SSC LDC 20-12-2015, Evening)
- 229. If  $\frac{a}{b} = \frac{c}{d} = \frac{e}{f}$ , then each of them

is equal to

#### (SSC CPO 20-03-2016, Morning)

230. In a factory the salary of each worker is increased in the ratio 22: 25 but the number of

workers is decreased by  $26\frac{2}{3}\%$ 

The net effect on the salary is:

- (a)  $16\frac{2}{3}\%$  decrease
- (b)  $11\frac{1}{9}\%$  decrease
- (c) 10% decrease
- (d) 20% increase

#### (SSC CPO 20-03-2016, Evening)

- 231. Present ages of A and B are in the ratio 5: 6 respectively. After seven years this ratio becomes 6: 7. Then the present age of A in years is:
  - (a) 35 years
- (b) 33 years
- (c) 32 years
  - (d) 30 years (SSC CPO 20-03-2016, Evening)

- 232. Arrange the numbers  $a = \frac{7}{10}$ ,
  - $b = \frac{5}{8}$ ,  $C = \frac{2}{3}$  in descending order.
  - (a) a > b > c(b) a > c > b
  - (c) b > c > a(d) c > b > a

#### (SSC CPO(Re) 04-06-2016, Morning)

- 233. A man spends his two months' income in three months' time, if his monthly income is 6000, then his annual saving is:
  - (a) 18000
- (b) 24000
- (c) 12000
- (d) 36000

#### (SSC CPO(Re) 04-06-2016, Evening)

- 234. If the income of A is 10% more than that of B and the income of B is 20% less than that of C, then the incomes of A,B,C are in the ratio.
  - (a) 11:10:8 (b) 10:9:7
  - (c) 22:18:25 (d) 22:20:25

# (SSC CPO(Re) 06-06-2016, Morning)

- 235. A box has 1 rupee, 50 paise and 25 paise coins in the ratio 3:2: 5 worth Rs. 252. The number of 25 paise coins in the box is:
  - (a) 96
- (b) 144
- (d) 48 (c) 240

#### (SSC CPO(Re) 06-06-2016, Evening)

- 236. If 4 years ago the ratio between the ages of P and Q was 5:6 and the sum of their ages at present is 52, what is the ratio of their present ages?
  - (a) 5 : 6
- (b) 6:7
- (c) 7:8
- (d) 4:5

#### (SSC CPO(Re) 07-06-2016, Morning)

- 237. A canister holds 36 litres of mixture of milk and water in the ratio 3: 1. 15 litres of milk is added to the canister. The new ratio of the mixture is:
  - (a) 12:5
- (b) 14:3
- (c) 7 : 4
- (d) 9:4

(SSC CPO(Re) 07-06-2016, Evening)

- 238. The sum of 1/5th of the number and 25% of another number is equal to 40% of the first number. What is the ratio of the first number and the
  - (a) 4 : 3

second number?

- (b) 5:2
- (c) 5 : 4
- (d) 6:5

(SSC CPO(Re) 08-06-2016, Morning)

- 239. In a cricket match there are three types of tickets say A, B and C each costing Rs. 1000, Rs. 500 and Rs. 200 respectively. The ratio of three ticket sold of category A, B and C is 3:2:5. If the total collection from selling the tickets is Rs. 2.5 crores. Find the total number of tickets sold?
  - (a) 5000
- (b) 4800
- (c) 50000
- (d) 52000

#### (SSC CPO(Re) 08-06-2016, Evening)

- 240. If selling price of 80% books is equal to cost price of 40% books, then find ratio between cost price and selling price.
  - (a) 4 : 1
- (b) 1:4
- (c) 1:2
- (d) 2 : 1

#### (SSC CGL Pre Exam 2016)

- 241. Ratio of A's age to B's age is 4:3. 'A' will be 26 years old after 6 years. The age of B now is
  - (a) 11 years (b) 21 years
  - (c) 21 years (d) 15 years

# (SSC CGL Pre Exam 2016)

- 242. Two numbers are in the ratio 3:5. If 6 is added to both of them, the ratio becomes 2:3. The numbers are
  - (a) 21 and 35 (b) 30 and 50
  - (c) 24 and 40 (d) 18 and 30

#### (SSC CGL Pre Exam 2016)

- 243. A mixture contains spirit and water in the ratio of 3: 2. If it contains 3 litres more spirit than water, the quantity of spirit in the mixture is
  - (a) 12 litres
- (b) 10 litres
- (c) 9 litres
- (d) 8 litres

#### (SSC CGL Pre Exam 2016)

- 244. If 7 spiders make 7 webs in 7 days, then 1 spider will make 1 web in how many days?
  - (a) 1
- (b) 7/2
- (c) 7
- (d) 49

#### (SSC CGL Pre Exam 2016)

- 245. A profit of ₹960 is divided between A and B in the ratio 1/3: 1/5. The difference of their profit is:
  - (a)₹120
- (b) ₹ 160
- (c)₹ 180
- (d) ₹ 240

(SSC CGL Pre Exam 2016)

- 246.36 men together can build a wall 140 m long in 21 days; the number of men working at the same rate required to build the same wall in 14 days is.
  - (a) 54
- (b) 48
- (c) 36
- (d) 18

#### (SSC CGL Pre Exam 2016)

- 247. Three numbers are in the ratio 5:7:12. If the sum of the first and the third is greater than the second by 50. The sum of the three numbers is
  - (a) 125
- (b) 120
- (c) 95
- (d) 85

#### (SSC CGL Pre Exam 2016)

- 248. If 5 person together can make 5 mats in 5 hrs, then 10 person in 10 hours will make
  - (a) 20 mats (b) 10
    - (b) 10 mats
  - (c) 15 mats (d) 5 mats

# (SSC CGL Pre Exam 2016)

- 249. Visitors to a show were charged ₹ 15 each on the first day, ₹ 7.50 on the second day, ₹ 2.50 on the third day and total attendance on three days were in the ratio 2:5:13 respectively. The average charge per person for the entire three days is
  - (a)₹5
- (b) ₹ 5.50
- (c) ₹ 6
- (d) ₹ 7

#### (SSC CGL Pre Exam 2016)

- 250. ₹ 730 were divided among A, B, C in such a way that if A gets ₹ 3 then B gets ₹ 4 and if B gets ₹ 3.50 then C gets ₹ 3. The share of B exceeds that of C by
  - (a)₹30
- (b) ₹ 40
- (c) ₹ 70
- (d) ₹ 210

#### (SSC CGL Pre Exam 2016)

- 251. The compound ratio of the inverse ratios of the ratios x: yz, y: zx, z: xy is:
  - (a) 1 : xyz
- (b) xyz : 1
- (c) 1:1
- (d) x: yz

#### (SSC CGL Pre Exam 2016)

- 252. Rs. 2420 were divided among A, B, C, so that A: B = 5: 4 and B: C = 9: 10 then C gets
  - (a) 680
- (b) 800
- (c) 900
- (d) 950

#### (SSC CGL Mains Exam 2016)

- 253.49 kg of blended tea contain Assam and Darjeeling tea in the ratio 5 : 2 then the quantity of Darjeeling tea is to be added to the mixture to make the ratio of Assam to Darjeeling tea 2 :1 is
  - (a) 4.5 kg
- (b) 3.5 kg
- (c) 5 kg
- (d) 6 kg

#### (SSC CGL Mains Exam 2016)

- 254. Among 132 examinees of a certain school, the ratio of successful to unsuccessful students is 9:2, Had 4 more students passed, then the ratio of successful to unsuccessful students will be
  - (a) 14:3
- (b) 14:5
- (c) 28:3
- (d) 28:5

#### (SSC CGL Mains Exam 2016)

- 255. In a regiment the ratio between the number of officers to solddiers was 3:31 before. In a battle 6 officers and 22 soldiers were killed and the ratio became 1:13, the number of officers in the regiment before battle was
  - (a) 31
- (b) 38
- (c) 21
- (d) 28

#### (SSC CGL Mains Exam 2016)

- 256. Three containers have their volumes in the ratio 3:4:5. They are full of mixtures of milk and water. The mixtures contain milk and water in the ratio of (4:1), (3:1) and (5:2) respectively. The mixture of all these three containers are poured into a fourth container. The ratio of milk and water in the fourth container is
  - (a) 4:1
- (b) 151:48
- (c) 157:53
- (d) 5:2
  - (SSC CGL Mains Exam 2016)
- 257. In a college union, there are 48 students. The ratio of the number of boys to the number of girls is 5:3. The number of girls to be added in the union, so that the number of boys to girls in 6:5 is
  - (a) 6
- (b) 7
- (c) 12
- (d) 17

(SSC CGL Mains Exam 2016)

- 258. There are three bottles of mixture of syrup and water of ratio 2:3, 3:4, 7:5. 10 Litres of first and 21 Litres of second bottles are taken. How much quantity from third bottles is to be taken so that final mixture from three bottles will be of ratios 1:1.
  - (a) 25 Litres (b) 20 Litres
  - (c) 35 Litres (d) 30 Litres

#### (SSC CGL Mains Exam 2016)

- 269. In a colored picture of blue and Yellow color, blue and Yellow color is used in the ratio of 4: 3 respectively. If in upper half, half blue: Yellow is 2:3, then in the lower half blue: Yellow is
  - (a) 1:1
- (b) 2:1
- (c) 26:9
- (d) 9:26

#### (SSC CGL Mains Exam 2016)

- 260. A and B start an enterprise together, with A as active partner. A invests ₹ 4000 and ₹ 2000 more after 8 months. B invests ₹ 5000 and withdraws ₹ 2000 after 9 months. Being the active partner, A takes ₹ 100 per month as allowance, from the profit. What is the share of B if the profit for the year is 6700?
  - (a) ₹ 3350 (b) ₹ 3250
  - (c) ₹ 2700
- (d) ₹ 2800

#### (SSC CGL Mains Exam 2016)

261. A sum of ₹ 15525 is divided among Sunil, Anil and Jamil such that if ₹ 22, ₹ 35 and ₹ 48 be diminished from their shares respectively, their remaining sums shall be in the ratio 7: 10: 13. What would have been the ratio of their

- sums if ₹16, ₹77, ₹37 respectively were added to their original shares?
- (a) 9:13:17 (b) 18:26:25
- (c) 36:52:35 (d) None of these

#### (SSC CGL Mains Exam 2016)

- 262. A's income is ₹140 more than B's income and C's income is ₹80 more than D's. If the ratio of A's and C's income is 2:3 and the ratio of B's and D's income is 1:2, then the incomes of A, B,C and D are respectively.
  - (a)₹260, ₹120, ₹ 320 and ₹ 240
  - (b) ₹300, ₹160, ₹ 600 and ₹ 520
  - (c) ₹400, ₹260, ₹ 600and ₹ 520
  - (d) ₹320, ₹180, ₹ 480 and ₹ 360

# (SSC CGL Mains Exam 2016)

263. Find the fraction which bears

the same ratio to  $\frac{1}{27}$  that  $\frac{3}{7}$ 

does to  $\frac{5}{9}$ .

- (a)  $\frac{5}{9}$
- (b)  $\frac{1}{35}$
- (c)  $\frac{45}{7}$
- (d)  $\frac{7}{45}$

#### (SSC CGL Mains Exam 2016)

- 264. The ratio of number of boys to the number of girls in a school of 432 pupils is 5:4. When some new boys and girls are admitted, the number of boys increase by 12 and the ratio of the boys to girls changes to 7:6. The number of new girls admitted is
  - (a) 12
- (b) 14
- (c) 24
- (d) 20

(SSC CGL Mains Exam 2016)

- 265. If the three numbers in the ratio 3:2:5 be such that the sum of the squares is equal to 1862 then which number is the middle one.
  - (a) 16
- (b) 14
- (c) 13
- (d) 15

#### (SSC CGL Mains Exam 2016)

- 266. Two bottles contain acid and water in the ratio 2:3 and 1:2 respectively. These are mixed in the ratio 1:3. What is the ratio of acid and water in the new mixture?
  - (a)7:13
- (b) 11:57
- (c) 23:37
- (d) 1:3

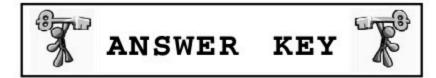
#### (SSC CGL Mains Exam 2016)

- 267. The ratio of the number of boys and girls in a school is 3:2. If 20% of the boys and 25% of the girls are scholarship holders, the percentage of the school students who are not scholarship holders is
  - (a) 56
- (b) 78

(SSC CGL Mains Exam 2016)

- (c) 70 (d) 80
- 268. In two types of brass, the ratio of Copper to zinc are 8:3 and 15:7 respectively. If the two types of brass be melted and mixed in the ratio 5:2 a new type of brass is obtained. The ratio of copper to zinc in this new type of brass is
  - (a) 3 : 2
- (b) 2:3
- (c) 3 : 4
- (d) 5:2

(SSC CGL Mains Exam 2016)



-					<u> </u>		<u> </u>	
	1. (a)	34. (a)	67. (c)	100.(a)	133. (a)	166. (b)	199. (a)	232. (b)
	2. (c)	35. (a)	68. (b)	101.(d)	134. (c)	167. (c)	200. (b)	233. (b)
	3. (c)	36. (d)	69. (d)	102.(b)	135. (a)	168. (c)	201. (d)	234. (d)
	4. (b)	37. (c)	70. (d)	103.(b)	136. (b)	169. (a)	202. (d)	235. (c)
	5. (c)	38. (d)	71. (a)	104.(a)	137. (a)	170. (d)	203. (c)	236. (b)
	6. (b)	39. (b)	72. (c)	105.(b)	138. (d)	171. (c)	204. (a)	237. (b)
	7. (d)	40. (c)	73. (b)	106.(d)	139. (c)	172. (d)	205. (a)	238. (c) 239. (c)
	8. (b)	41. (c)	74. (b)	107.(c)	140. (c)	173. (a)	206. (c)	240. (d)
	9. (c)	42. (d)	75. (b)	108.(a)	141. (b)	174. (d)	207. (d)	241. (d)
	10. (a)	43. (d)	76. (b)	109. (b)	142. (a)	175. (a)	208. (d)	242. (d)
	11. (c)	44. (a)	77. (a)	110. (d)	143. (c)	176. (b)	209. (d)	243. (c)
	12. (a)	45. (b)	78. (b)	111. (d)	144. (a)	177. (b)	210. (d)	244. (c)
	13. (c)	46. (b)	79. (a)	112. (c)	145. (c)	178. (d)	211. (c)	245. (d)
	14. (c)	47. (c)	80. (b)	113. (c)	146. (d)	179. (d)	212. (b)	246. (a) 247. (b)
	15. (c)	48. (c)	81. (d)	114. (d)	147. (c)	180. (a)	213. (a)	248. (a)
	16. (c)	49. (d)	82. (c)	115. (c)	148. (b)	181. (c)	214. (a)	
	17. (c)	50. (b)	83. (c)	116. (a)	149. (d)	182. (c)	215. (d)	250. (b)
	18. (a)	51. (a)	84. (a)	117. (b)	150. (a)	183. (c)	216. (b)	251. (b)
	19. (d)	52. (a)	85. (c)	118. (c)	151. (c)	184. (d)	217. (a)	252. (b)
	20. (a)	53. (d)	86. (c)	119. (c)	152. (a)	185. (b)	218. (c)	253. (b) 254. (d)
	21. (d)	54. (d)	87. (c)	120. (c)	153. (d)	186. (b)	219. (a)	255. (c)
	22. (c)	55. (d)	88. (b)	121. (b)	154. (b)	187. (d)	220. (b)	256. (c)
	23. (c)	56. (d)	89. (c)	122. (a)	155. (b)	188. (b)	221. (b)	257. (b)
	24. (a)	57. (a)	90. (c)	123. (d)	156. (a)	189. (b)	222. (a)	258. (d)
	25. (c)	58. (c)	91. (d)	124. (a)	157. (c)	190. (b)	223. (a)	259. (c)
	26. (a)	59. (a)	92. (a)	125. (c)	158. (c)	191. (c)	224. (c)	260. (c) 261. (c)
	27. (b)	60. (c)	93. (c)	126. (b)	159. (a)	192. (c)	225. (b)	262. (c)
7	28. (b)	61. (b)	94. (b)	127. (a)	160. (d)	193. (b)	226. (c)	263. (b)
	29. (c)	62. (a)	95. (d)	128. (b)	161. (d)	194. (d)	227. (a)	
	30. (c)	63. (c)	96. (b)	129. (d)	162. (c)	195. (a)	228. (a)	265. (b)
	31. (a)	64. (c)	97. (a)	130. (c)	163. (b)	196. (b)	229. (d)	266. (a)
	32. (d)	65. (b)	98. (c)	131. (a)	164. (a)	197. (c)	230. (a)	267. (b)
	33. (a)	66. (a)	99. (c)	132. (a)	165. (a)	198. (b)	231. (a)	268. (d)
d						le e		1.

# EXPLANATION

- 1. (a) a:b and b:c 7:9 5:7  $\Rightarrow a:b$  b:c  $\Rightarrow a:b$ : c 7:9 5:7 35:45:63  $\Rightarrow a:c$  35:63
- 2. (c)  $x = \frac{1}{3}y$  and  $y = \frac{1}{2}z$  3x = y and 2y = z x: y y: z 1: 3 1: 2 x: y: z 1: 3 1: 2 1: 3: 63 (c) A: B

5:9

3x : 8xGiven, 8x - 3x = 115 5x = 115 x = 23  $\therefore \text{ smaller number}$   $= 23 \times 3 = 69$ 

# Alternate

1 unit = 23 3 units =  $23 \times 3 = 6$ 

5 units = 115

3 units =  $23 \times 3 = 69$ (b) A: B: C: D

4 (b) A: B: C: D 1: 2: 3: 4 x + 2x + 3x + 4x = 1610x = 16

$$x = \frac{16}{10}$$

$$\Rightarrow A + D \Rightarrow x + 4x = 5x$$

$$= 5 \times \frac{16}{10} \Rightarrow 8$$

5. (c) A : B before 2 : 1 after 1 : 1  $\Rightarrow$  A gives B two rupees  $\Rightarrow \frac{2x-2}{x+2} = \frac{1}{1}$ 

$$\Rightarrow \frac{1}{x+2} = \frac{1}{1}$$

$$2x-2 = x+2$$

$$x \Rightarrow 4$$

$$\Rightarrow A = 2 \times 4 = 8$$

$$B = 1 \times 4 \Rightarrow 4$$

(b) 1 ₹ : 50 p : 25 p 2 : 3 : 4 $\Rightarrow 2x : 3x : 4x - coins$ 

 $1 \times 2x : \frac{3x}{2} : \frac{4x}{4}$ ] ratio of  $\mathfrak{T}$ 

$$\Rightarrow \frac{4x + 3x + 2x}{2} = 180$$

$$\Rightarrow \frac{9x}{2} = 180$$
$$x = 40$$

∴ number of coins of 50 p ⇒  $40 \times 3 = 120$ 

(d) A: B: C  $\frac{1}{2}$ :  $\frac{1}{3}$ :  $\frac{1}{4}$ 

original ratio

$$\Rightarrow \frac{1}{2} \times 12 : \frac{1}{3} \times 12 : \frac{1}{4} \times 12$$

 $\Rightarrow$  6:4:3

6x + 4x + 3x = 117

$$x \Rightarrow \frac{117}{13} = 9$$

 $A = 9 \times 6 = 54$   $B = 9 \times 4 = 36$   $C = 9 \times 3 = 27$  (original) But A : B : C

2:3:4 (Erroneous ratio) 2x + 3x + 4x = 117

9x = 117x = 13

$$\therefore A = 13 \times 2 = 26$$

$$B = 13 \times 3 = 39$$

$$C = 13 \times 4 = 52$$
(by mistake)
money
distributed

 $\therefore$  C gains most  $52 - 27 \Rightarrow 25$ 

8. (b)  $A = \frac{2}{9}B$  and  $C = \frac{3}{4}A$ 

 $\therefore 9A = 2B \qquad 4C = 3A$   $A: B \quad and \quad C: A$ 

2:9 3:4

B: A: C

 $\Rightarrow$  36:8:6 18:4:3

 $\Rightarrow 18x + 4x + 3x = 1250$ x = 50

 $\Rightarrow$  A = 4 × 50 = 200 B = 18 × 50 = 900 C = 3 × 50 = 150

9. (c) p:q r:s t:u 2:3 2:3 2:3

 $\Rightarrow \frac{p}{q} = \frac{r}{s} = \frac{t}{u} = \frac{2}{3}$ 

 $\Rightarrow \text{Let p} = 2x \qquad q = 3x$  r = 2x, s = 3x t = 2x, u = 3x

 $\therefore \frac{mp + nr + ot}{mq + ns + ou}$ 

 $\Rightarrow \frac{2xm + 2xn + 2xo}{3xm + 3xn + 3xo}$ 

 $= \frac{m.2x + n.2x + o.2x}{m.3x + n.3x + o.3x}$ 

 $= \frac{2x(m+n+o)}{3x(m+n+o)} = \frac{2}{3}$ 

10. (a) x : y = 3 : 1

$$\therefore \frac{x}{y} = \frac{3}{1}$$

$$\therefore \frac{x^3 - y^3}{x^3 + y^3} \Rightarrow \frac{y^3 \left(\frac{x^3}{y^3} - 1\right)}{y^3 \left(\frac{x^3}{y^3} + 1\right)}$$

taking y³ common

$$= \frac{\frac{x^3}{y^3} - 1}{\frac{x^3}{y^3} + 1}$$

$$\Rightarrow \frac{27-1}{27+1} \Rightarrow \frac{26}{28} = \frac{13}{14}$$

- 11. (c) 12, 21, 8, x 12:21::8:*x* 
  - fourth proportional
  - $= 12 \times x = 21 \times 8$

$$x = \frac{21 \times 8}{12} \Rightarrow 14$$

- 12. (a)  $2^{1.5}$ :  $2^{0.5} \Rightarrow \frac{2^{\frac{3}{2}}}{2^{\frac{1}{2}}} \Rightarrow \frac{2^{1}}{1} = \frac{2}{1}$
- 13. (c) m : n = 3 : 2

$$\frac{m}{n} = \frac{3}{2} \implies \frac{4m+5n}{4m-5n} \implies \frac{n\left(4\frac{m}{n}+5\right)}{n\left(4\frac{m}{n}-5\right)}$$

$$\Rightarrow \frac{4 \times \frac{3}{2} + 5}{4 \times \frac{3}{2} - 5} \Rightarrow \frac{6 + 5}{6 - 5} \Rightarrow \frac{11}{1}$$

- $\Rightarrow 11:1$
- 14. (c) A + B = 40

$$A - B = 4$$

- :. A = 22
  - B = 18

$$A:B = 22:18 = 11:9$$

(c) each exterior angle of a n 15.

sided polygon is = 
$$\left(\frac{360}{n}\right)$$

and each interior angle of n sided polygon

$$\frac{(n-2)\times180}{n} = \frac{(n-2)\times180}{n}$$

$$\frac{\frac{(n-2)\times180}{n}}{\frac{360}{n}} = \frac{2}{1}$$

$$\frac{(n-2)}{2} = 2$$

- (c)  $\frac{6-x}{7-x} < \frac{16}{21}$ 16.

126 *-*21*x* <112*-*16*x* 

126-112 < 21x - 16x

14 < 5x

$$\frac{14}{5} < x$$

2.8 < x

x = 3(From option)

17. (c) son: Daughter: nephew

D : N

S : N

4:1

5 : 1

: S

: 5*x* 

∴ D : N

4x: 1x

- $\therefore$  5 son =  $5x \times 5 = 25x$ 
  - 4 Daughter =  $4x \times 4 = 16x$
  - $= x \times 2 = 2x$ 2 nephew
- $\Rightarrow$  25x + 16x + 2x = 43x

(total money)

43x = 8600

= 200

- : each daugther = 200 × 4
- = ₹800
- Harsha= 40 18. (a)

Ritu = 60

$$\frac{Harsha}{Ritu} = \frac{40}{60}$$

: let x years ago their ages ratio was 3:5

$$\Rightarrow \frac{40-x}{60-x} = \frac{3}{5}$$

$$200 - 5x = 180 - 3x$$

$$2x = 20$$

$$x = 10$$

#### Alternate:

19.

Harsha: Ritu

Now 
$$\rightarrow$$
 40 : 60  
Before  $\rightarrow$  3<sub>×10</sub> : 5<sub>×10</sub>

The difference between ages always remains same, so multiply by 10 in the before ratio.

now

before

4 years after

60-50=10years

(d)4 years ago

The difference between ages always remains same, so multiply by 2 in 4 years ago ratio.

4 years ago → 4

1 unit = 8 years

4 years after  $\longrightarrow$  5

Ages of A and B after 4 years are:-

 $A = 5 \times 8 = 40 \text{ years}$ 

 $B = 7 \times 8 = 56 \text{ years}$ 

Hence, Present ages of A & B = 36, 52

- 20. (a) A : B = 10 : 710x - 7x = 1053x = 105x = 35
  - $\therefore$  sum  $\Rightarrow$  A + B 10x + 7x = 17x $17 \times 35 \Rightarrow 595$

#### Alternate

Ratio = 
$$10 : 7$$
  
3 units  $\rightarrow$  105  
1 unit  $\rightarrow$  35

Sum of numbers

$$= 10 + 7 = 17$$
 units

$$= 17 \times 35 = 595$$

21. (d) a:b=5:7

Now reducing 40 from each

$$\frac{5x - 40}{7x - 40} = \frac{17}{27}$$

on cross multiplication

$$= 135x - 1080 = 119x - 680$$

$$\Rightarrow 135x - 119x = -680 + 1080$$

$$\Rightarrow 16x \Rightarrow 400$$

$$x = \frac{400}{16} \Rightarrow 25$$

Difference = 
$$A - B \Rightarrow 7x - 5x$$

$$= 2x = 2 \times 25 = 50$$

22. (c) A : B

 $\frac{3}{2}$ :  $\frac{8}{3}$  (take L.C.M of de nominator and multiply)

$$\Rightarrow \frac{3}{2} \times 6 : \frac{8}{3} \times 6 = 9x : 16x$$

After adding 15 in each we get

$$\therefore \quad \frac{9x+15}{16x+15} \implies \frac{5}{3} \times \frac{2}{5} = \frac{2}{3}$$

= cross multiply

$$27x + 45 = 32x + 30$$

$$\Rightarrow 5x = 15$$

$$x = 3$$

: smaller number

$$= 9 \times 3 = 27$$

greater number

$$= 16 \times 3 = 48$$

20 student in each class

2 unit = 20

1 unit = 10

: originally

$$2 \times 10 + 3 \times 10 + 5 \times 10$$

$$20 + 30 + 50 = 100$$

- 24. (a) Zinc: Copper
  - 5 : 3
  - 5x : 3x
  - 8x = 200

$$x = \frac{200}{8} = 25$$

Zinc =  $5x = 5 \times 25 = 125$  gm. Copper =  $3x = 3 \times 25 = 75$  gm.  $\Rightarrow$  after adding x gram copper ratio becomes 3:5

$$\therefore \frac{125}{75+x} \times \frac{3}{5}$$

625 = 225 + 3x, 400 = 3x

$$x = \frac{400}{3} = 133\frac{1}{3}$$
 gm.

- 25. (c) Copper : Zinc
  - 13 : 7
  - 13x + 7x = 100 kg
    - 20x = 100
      - x = 5 kg

 $Zinc = 7 \times 5 = 35 \text{ kg}$ 

- : Zinc is 35 kg
- 26. (a) A:B B:C

5:2 7:13

A : B : C

5:2

35:14:26

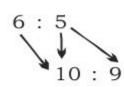
 $\Rightarrow 35x + 14x + 26x \Rightarrow 75x$ 

75x = 7500

x = 100

- 27. (b) A:B B:C
  - 6:5 10:9

A : B : C



60:50:45

12:10:9

 $\Rightarrow$  12x + 10x + 9x  $\Rightarrow$  31x

- 31x = 1240
  - x = 40

$$\therefore$$
 Share of C = 9 × 40 = 360

28. (b) A + B = 158

 $C = 158 - 101 = 57 \neq (given)$ 

 $B = 57 + 23 = 80 \$ ₹

∴ A = 158 - 80 = 78 ₹

- 29. (c) A:B:C
  - 3:2:5

3x : 2x : 5x

 $A^2 + B^2 + C^2 = (3x)^2 + C^2 = ($ 

$$(2x)^2 + (5x)^2$$

$$9x^2 + 4x^2 + 25x^2 = 38x^2$$

 $\Rightarrow$  38x<sup>2</sup> = 1862

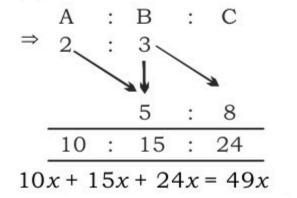
$$x^2 = \frac{1862}{38} \Rightarrow \frac{931}{19} \Rightarrow 49$$

$$x = 7$$

- $A = 3 \times 7 = 21$ 
  - $B = 2 \times 7 = 14$
  - $C = 5 \times 7 = 35$

Hence, smallest is 14

30. (c) A + B + C = 98



49x = 98

x = 2

 $\therefore$  2 nd number (B) = 2 × 15 = 30

31. (a) copper : zinc

$$5 : 2$$

$$5x : 2x$$

 $5x + 2x = 17\frac{1}{2}kg \Rightarrow 7x = \frac{35}{2}kg$ 

- $\Rightarrow x = \frac{5}{2}kg$
- : copper

$$\Rightarrow 5x = \frac{5}{2} \times 5 = \frac{25}{2} kg$$

zinc 
$$\Rightarrow 2x = \frac{5}{2} \times 2 = 5kg$$

Now after adding 1.250 kg of zinc

- ⇒ zinc becomes
- $\Rightarrow$  5 + 1.250 = 6.250 kg
- $= 6\frac{1}{4} = \frac{25}{4}$
- .. New ratio becomes

copper: zinc = 
$$\frac{25}{2}$$
:  $\frac{25}{4}$ 

- = 2 : 1
- 32. (d) spirit: water

$$(3x – 2x = x)$$

- x = 3 litre
- $\therefore$  Spirit = 3 × 3 = 9 litres

- 33. (a) let income of A,B and C are 7x, 9x and 12x respectively
- ⇒ and expenditure of A,B and C are 8y,9y and 15y respectively
- ⇒ income of

$$A \times \frac{1}{4} =$$
saving of  $A$  (given)

- $\Rightarrow 7x 8y = 7x \times \frac{1}{4}$
- $\Rightarrow$  28x 32y = 7x
- $\Rightarrow 21x = 32y$ 
  - x : y
- ⇒ 32: 21
- .. The ratio of savings of A,B and C

$$\Rightarrow (7x-8y):(9x-9y):(12x-15y)$$

 $\Rightarrow (7 \times 32 - 8 \times 21) : (9 \times 32 - 9 \times 21)$  $: (12 \times 32 - 15 \times 21)$ 

$$\Rightarrow (224 - 168):(288 - 189):$$

$$(384 - 315)$$

- 56:99:69
- 34.(a) Total coins = 378

Ratio of values  $\rightarrow 13:11:7$ 

In  $\gtrless 1$ , no. of  $\gtrless 1$  coins = 1

In ₹ 1, no. of 50 P coins = 2

In  $\ge 1$ , no. of 25 P coins = 4

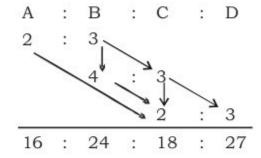
Ratio of ₹ 1, 50 P, 25 P coins

- $= 13 \times 1 : 11 \times 2 : 7 \times 4$
- = 13 : 22 : 28

No. of 50 P coins

$$= \frac{22}{13+22+28} \times 378 = 132$$

35. (a) A + B + C + D = 3400



 $\Rightarrow$  16:24:18:27

$$16x + 24x + 18x + 27x = 3400$$

85x = 3400

$$x = \frac{3400}{85} \Rightarrow 40$$

- $\therefore \text{ Share of B + D is = } 24x + 27x$
- = 51x
- = 51 × 40 = ₹ 2040

36. (d) 
$$\frac{A}{B} = \frac{B}{C} = \frac{3}{4}$$
A: B: C
 $3 : 4$ 
 $3 : 4$ 

$$9: 12: 16$$

$$9x + 12x + 16x = 370$$

$$= 37x = 370$$

$$x = 10$$
  
A's share is

 $= 9 \times 10 = 90$ 

$$\Rightarrow 17x \times \frac{1}{3} + 15 = 45x \times \frac{1}{5}$$

$$\Rightarrow \frac{17x + 45}{3} \Rightarrow 9x$$
$$17x + 45 = 27x$$

$$10x = 45$$

$$x = \frac{45}{10}$$

: smaller number is

$$\frac{45}{10} \times 17 = \frac{765}{10} = 76\frac{1}{2}$$

$$2x + x = 45$$

$$x = 15$$

 $\therefore$  Milk = 2 × 15 = 30 litres Water =  $1 \times 15 = 15$  litres

$$\Rightarrow \frac{30}{15+x} \times \frac{1}{2}$$

$$60 = 15+x$$

# x = 45 litres

# Alternate:-

New ratio 1: 2

M : W Old ratio 2: 1

> Because quantity of milk is same in both cases. So, we multiplied by 2 to make quantity of milk same in both ratio.

 $1_{*2}: 2_{*2} 2: 4'$ 

Previous quantity

$$= 2 + 1 = 3$$
 units  $= 45$  ltr.

1 unit = 15 ltr.

quantity of water added = 3 units, From above diagram : quantity of water added  $= 3 \times 15 = 45 \text{ ltr.}$ 

Finally 1 : 1

Now we have to substitute the mixture with water so, the quantity of mixture remains same

.. Wine: Water
Initially 
$$3:1=4$$
Finally  $(1:1)_{x_2}=4$ 

Now we have to add water so, we have to equalise wine proportion

Required Part = 
$$\frac{4}{12}$$
 =  $\frac{1}{3}$ 

40. (c) Income

⇒ expenditure + saving Now given

expenditure : saving 
$$26x : 3x$$

:. Income = 
$$26x + 3x = 29x$$
  
 $29x = 7250$ 

$$x \Rightarrow \frac{7250}{29} \Rightarrow 250$$

:. Savings = 
$$250 \times 3 = 750$$

41. (c) ₹ 1 : 50 paise : 25 paise no. of coins 8x:5x:3x

Value of coins  $\frac{8x}{1}:\frac{5x}{2}:\frac{3x}{4}$ 

$$∴ 8x + \frac{5x}{2} + \frac{3x}{4} = ₹225,$$

Given 
$$\frac{32x+10x+3x}{4} = 225$$

$$45x = 225 \times 4$$

$$x \Rightarrow \frac{225 \times 4}{45} = 5 \times 4 = 20$$

: no. of one rupees coins  $= 20 \times 8 = 160$ 

2. (d) 
$$P:Q:R = 2:7:9$$
  
  $P+Q=R$  (given)

2x + 7x = 9x

Here we don't have sufficient data to insure the values of A, B & C

3. (d) A:B B:C C:D
$$3:4, 5:7, 8:9$$

$$\frac{A}{B} = \frac{3}{4}, \frac{B}{C} = \frac{5}{7}, \frac{C}{D} = \frac{8}{9}$$

$$\frac{A}{B} \times \frac{B}{C} \times \frac{C}{D} \Rightarrow \frac{3}{4} \times \frac{5}{7} \times \frac{8}{9}$$

$$\Rightarrow \frac{10}{21}$$

$$A:D = 10:21$$

14. (a) 
$$A + B = 94$$

given 
$$\frac{A}{5}$$
 :  $\frac{B}{8} = 3 : 4$ 

$$\Rightarrow \frac{A \times 8}{5 \times B} \Rightarrow \frac{3}{4}$$

$$\frac{A}{B} = \frac{3}{4} \times \frac{5}{8} = \frac{15}{32}$$

$$15x + 32x = 47x$$

$$47x = 94$$

$$x = 2$$

$$A = 15 \times 2 = 30$$

$$B = 32 \times 2 = 64$$

$$\frac{a}{b} = \frac{5}{7} \frac{c}{d} = \frac{2a}{3b} = \frac{2}{3} \times \frac{5}{7} = \frac{10}{21}$$

$$\therefore ac: bd = \frac{ac}{bd} = \frac{5}{7} \times \frac{10}{21}$$

$$= \frac{50}{147} = 50:147$$

46. (b) 
$$a:b=b:c$$

$$\frac{a}{b} = \frac{b}{c}$$

$$b^2 = ac$$

$$b^4 = a^2c^2$$

$$\therefore a^4: b^4 = \frac{a^4}{b^4} = \frac{a^4}{a^2c^2} = \frac{a^2}{c^2}$$

$$= a^2 : c^2$$

47. (c) A: B = 
$$\frac{1}{2}$$
:  $\frac{3}{8}$ ,  $\frac{A}{B}$  =  $\frac{4}{3}$ 

B: C = 
$$\frac{1}{3}$$
:  $\frac{5}{9}$ 

$$\frac{B}{C} = \frac{1}{3} \times \frac{9}{5} = \frac{3}{5}$$

C: D = 
$$\frac{5}{6}$$
:  $\frac{3}{4}$ ,  $\frac{C}{D}$  =  $\frac{5 \times 4}{6 \times 3}$  =  $\frac{10}{9}$ 

$$\Rightarrow$$
 A: B: C: D  
8: 6: 10: 9

$$A = 2x$$
,  $B = 3x$ ,  $C = 4x$ 

$$\therefore \quad \frac{A}{B} : \frac{B}{C} : \frac{C}{A} = \frac{2x}{3x} : \frac{3x}{4x} : \frac{4x}{2x}$$

$$\Rightarrow \frac{2}{3}: \frac{3}{4}: \frac{2}{1}$$

mutliply by the L.C.M of denominator to remove fraction So, L.C.M of (3, 4, 1) = 12

$$\therefore \quad \frac{A}{B} \quad : \quad \frac{B}{C} \quad : \quad \frac{C}{A}$$

$$\frac{2}{3} \times 12 : \frac{3}{4} \times 12 : \frac{2}{1} \times 12$$

49. (d) 
$$a:b=1:2$$

$$c: d = 1:2$$

$$e: f = 1:2$$

$$\therefore a = x \qquad c = x \qquad e = x$$
$$b = 2x \qquad d = 2x \qquad f = 2x$$

$$\therefore \frac{3 \times x + 5 \times x + 7 \times x}{3 \times 2x + 5 \times 2x + 7 \times 2x} 1$$

$$\Rightarrow \frac{15x}{30x} = \frac{1}{2}$$

1 unit = 3 years

.. Present age of Puneet

 $= 2 \times 3 = 6$  years

Present age of Appu =  $3 \times 3$ = 9 years

**Alternate**: 
$$\frac{2x+3}{3x+3} = \frac{3}{4}$$

$$x \cdot 8x + 12 = 9x + 9$$

$$x = 3$$

 $\therefore$  Puneet =  $2x = 2 \times 3 = 6$ 

Appu = 
$$3x = 3 \times 3 = 9$$

$$\therefore 8x \times 12x = 2400$$

$$x^2 \Rightarrow \frac{2400}{12 \times 8}$$

$$x = 5$$

$$B \Rightarrow 9 \times 5 = 45$$

52. (a) 
$$A : B = 2x : 3x$$

Now, 
$$\frac{2x-2}{3x+2} = \frac{1}{2}$$

$$4x - 4 = 3x + 2$$

$$x \Rightarrow 6$$

$$A = 2 \times 6 = 12$$

$$B = 3 \times 6 = 18$$

Sum of no. = A + B

$$\frac{1}{2}:\frac{2}{3}:\frac{3}{4}$$

$$\frac{1}{2} \times 12 : \frac{2}{3} \times 12 : \frac{3}{4} \times 12$$

$$9x - 6x = 3x$$

$$3x = 36$$

$$x = 12$$

: Numbers are

$$\Rightarrow$$
 A = 6 × 12 = 72

$$\Rightarrow$$
 B = 8 × 12 = 96

$$\Rightarrow$$
 C = 9 × 12 = 108

54. (d) take ratio = 
$$\frac{1}{3} \rightarrow \text{water}$$

Finally milk Milk Initially

Water = 
$$81 - 36 = 45$$

#### 4: 5

#### Alternate:

Final milk = Initial milk

$$\left(1 - \frac{\text{milk taken out}}{\text{initial milk}}\right)^n$$

$$= 81 \left(1 - \frac{27}{81}\right)^2 = 81 \left(1 - \frac{1}{3}\right)^2$$

$$= 81 \times \frac{2}{3} \times \frac{2}{3} = 36$$

Final water

$$= 81 - 36 = 45$$

Required ratio

$$=\frac{36}{45}=\frac{4}{5}$$

⇒ Now water is added so, the milk proportion remains same For this

Initially 
$$(7 : 3)_{x_2}$$

→20 units = 80 litres (given)

$$\Rightarrow$$
 20 unit = 80 litres

$$= 1 \times 4 = 4$$
 litres

Income 
$$\left(1\right)\begin{pmatrix}4 & : & 3\\ (-) & & (-)\end{pmatrix}$$

Saving 
$$\otimes \begin{pmatrix} 1 & 1 \\ 600 & 600 \end{pmatrix} \otimes$$

$$= 600 \times 4 = 2400$$

$$B = 600 \times 3 = 1800$$

(a) Let Incomes of A and B are

Income 5x : 3x

Expenditure 9y : 5y

$$\frac{5x-2600}{3x-1800} \times \frac{9}{5}$$

$$\Rightarrow 25x - 13000 = 27x - 16200$$

$$2x = 16200 - 13000$$

$$2x = 3200$$

$$x = 1600$$

$$\therefore$$
 Income of A = 5x

B = 
$$3x$$
 =  $3 \times 1600$  = ₹ 4800

Income

Income 
$$2x : 3x$$
  
Expenditure 5y : 9y

$$\therefore \frac{2x-600}{3x-600} \times \frac{5}{9}$$

$$= 18x - 5400 = 15x - 3000$$

$$3x \Rightarrow 2400$$
$$x = 800$$

$$A = 2x = 2 \times 800 = 1600$$

$$B = 3x = 3 \times 800 = 2400$$

- 59. (a) Ist Class IInd Class

  Fare 3:150xPassenger 1:50xTotal fare 3x + 50x = 53x 53x = 1325  $x = \frac{1325}{53} = 25$ 
  - ∴ Amount collected from IInd Class = 50x
  - $\therefore 25 \times 50 = \text{Rs.} 1250$
- 61. (b)  $(3 + \sqrt{2}) : x : (12 \sqrt{32})$ a:b:c mean proportion b<sup>2</sup> = a × c  $x^2 = (3 + \sqrt{2}) \times (12 - \sqrt{32})$   $= (3 + \sqrt{2}) \times (12 - 4\sqrt{2}) = 28$  $x = \sqrt{28} = 2\sqrt{7}$
- 62. (a) Boys: girls 13 : 11  $\therefore 13 x + 11 x = 504$  24 x = 504 x = 21Boys =  $21 \times 13 = 273$ girls =  $21 \times 11 = 231$ Now,
  - 3 more girls admitted so,

No. of girls = 231+3 = 234

∴ new ratio

Boys: girls

273: 234

91: 78

7: 6

63. (c)

ladies: gents initially 3: 2 3x: 2x  $\frac{3x}{2x+20} \times \frac{2}{3}$  9x = 4x + 40 5x = 40 x = 8itially ladies =  $3 \times 8 = 24$ 

Initially ladies =  $3 \times 8 = 24$ gents =  $2 \times 8 = 16$ 

⇒ So, gents become=16 + 20 = 36 ladies remains same 24

64. (c) Milk: Water

A 4 : 5 9

B 5 : 1 6

A+B 5 : 4 9

Take L.C.M of quantity 9, 6, 9

 $L.C.M = 3 \times 3 \times 2 = 18$ 

: Equalise the amount of all mixtures

Milk: Water

A  $(4:5)_{x_2} = 8:10$ B  $(5:1)_{x_3} = 15:3$ after mixting  $(5:4)_{x_2} = 10:8$   $\Rightarrow$ A

B

8

15

10

#

5:2

or

- - so. values x : 5x : 10x = 16x value of notes  $x + 5x + 10x \Rightarrow 640$  16x = 640 x = 40no. of notes  $40 \times 3 \Rightarrow 120$
- .. no. of notes  $40 \times 3 \Rightarrow 120$ 66. (a) Let  $1 \neq : 50p : 25p$ value of coins x : x : xno. of coins x : 2x : 4x = 7x7x = 175

$$x = \frac{175}{7} = \boxed{25}$$

- ∴ Value of total amount  $= 3x = 25 \times 3 = ₹ 75$
- 67. (c) a : b : c 2 : 3 : 4 Let 2x : 3x : 4x 2a - 3b + 4c = 33  $2 \times 2x - 3 \times 3x + 4 \times 4x = 33$  4x - 9x + 16x = 33 11x = 33 x = 3 $\therefore C \Rightarrow 4 \times 3 = 12$
- 68. (b) a : b = c : d  $\frac{\frac{a}{b} = \frac{c}{d} \text{ and } \frac{\frac{a}{c} = \frac{b}{d}}{\frac{\frac{ma+nc}{mb+nd}}{\frac{mb+nd}}}$   $= \frac{c\left(\frac{a}{c} + n\right)}{d\left(\frac{a}{c} + n\right)} = \frac{c}{d} \frac{\left(\frac{m \times \frac{b}{d} + n}{d} + n\right)}{\left(\frac{mb}{d} + n\right)} = \frac{c}{d}$

- 69. (d) a:b:c 7:3:5  $= \frac{a+b+c}{2a+b-c} = \frac{7x+3x+5x}{14x+3x-5x}$   $= \frac{15x}{12x} = \frac{5}{4}$  = 5:4
- 70. (d) 2A = 3B = 4CDivide by LCM of 2,3,4 i.e=12  $\frac{2A}{12} = \frac{3B}{12} = \frac{4C}{12}$ A B C

 $\frac{A}{6} = \frac{B}{4} = \frac{C}{3}$ A : B : C

6:4:3

- 71. (a) A : B : C 3 : 7 6 : 5 18 : 42 : 35  $18x + 42x + 35x \Rightarrow 95x$  95x = 33630 x = 354
  - ∴ Money received by B = 42x=  $42 \times 354 = ₹ 14868$

**Note**: To save time check unit digit for example  $42 \times 354$  = unit digit is  $2 \times 4 = 8$  Check option with unit digit

8. There is only one Option 14868

- 72. (c) A: B 4:5 4x: 5xL C M =  $4 \times 5 \times x = 20x$  20x = 180 x = 9
  - ∴ Smallest number is  $4 \times 9 = 36$

Largest number is =  $5 \times 9 = 45$ 

73. (b) milk: water 17x: 3x 17x + 3x = 200 litre 20x = 200 x = 10 litre  $\therefore$  milk: water 170: 30

After adding x litre of milk the ratio becomes

7: 1  $\therefore \frac{170 + x}{30} = \frac{7}{1}$ = 170 + x = 210 x = 40

Milk : water

#### Alternate

W Μ Before 17 3 After

· Water is same in both conditions

.. Make water same in above ratio

M : W M : W Before 17 : 3 17 : 3 After  $7_{\times 3}$ :  $1_{\times 3}$  $17 + 3 = 20 \text{ units} \rightarrow 200 \text{ ltr.}$ 1 unit  $\rightarrow$  10 ltr. 4 unit  $\rightarrow$  40 ltr.

74. Milk (b) water Initial 5 7 final Adding 15 litre water

 $\frac{7x}{5x+15} = \frac{7}{8}$ 

8x = 5x + 15

 $x = \frac{15}{3}$ x = 5

:. At present = milk : water = 7x : 8x

water =  $8x = 8 \times 5 = 40 \text{ ltr.}$ 

(b) A : B 75.

5:6

5x : 6x

 $\therefore$  B – A = 6x - 5x

x = 11100

: Total income A + B

= 5x + 6x = 11x

 $11 \times 11100 = 1,22,100$ 

₹1:50p:25p 76. (b) no. of coins 8x: 5x: 3xvalue of coins  $8x : \frac{5x}{2} : \frac{3x}{4}$ 

 $8x + \frac{5x}{2} + \frac{3x}{4} = 112.50$ 

 $\frac{32x+10x+3x}{4} = \frac{11250}{100}$ 

x = 10 $\therefore$  50 paise coins are = 5x

 $= 5 \times 10 = 50$ 

(a) Given total runs of A, B, C (A + B + C = 361)

> $\Rightarrow$  A:B:C 3:2 3:2 9:6:4

9x + 6x + 4x = 36119x = 361

x = 19

 $\therefore$  Runs scored by A  $\Rightarrow$  9x

 $= 9 \times 19 = 171$ 

(b) Passed student: Failed student

:  $4x \Rightarrow 29x$  total student

After admitting 5 more students, Total students

 $\Rightarrow$  29 x + 5

New failure students

 $\Rightarrow 4x-2$ 

New ratio  $\Rightarrow$ 

failure · Total appeared

 $=\frac{4x-2}{29x+5}=\frac{3y}{25y}$ 

100x - 50 = 87x + 15

 $\Rightarrow 13x = 65$ x = 5

: Total student appeared in the exam was = 29x + 5 = 150

79. b : c

 $3x + 4x + 7x \Rightarrow 14x$ 

a + b + c = 14xc = 7x

(a + b + c) : c

14x:7x = 2:1

(b)

13 52 48 9 : 12A: C = 9:13

13

81. (d)  $\frac{2}{3}$  of A = 75% of B = 0.6 of C

 $\Rightarrow \frac{2}{3} A = \frac{75}{100} B = \frac{6}{10} C$ 

 $\Rightarrow \frac{2}{3} A = \frac{3}{4} B = \frac{3}{5} C$ 

Multiply by L.C.M. of (2, 3, 3) = 6: B : C ∴ A

 $\frac{3}{2} \times 6 : \frac{4}{3} \times 6 : \frac{5}{3} \times 6$ 

A: B: C9:8:10 (c) when any quantity of mixture is taken out from the mixture then the ratio of the remaining mixture remains the same = 4:1

Now mixture is taken out and liquid B is added. So, make A proportion equal.

 $\therefore$  5 units = 10 ltr.

1 unit = 2 ltr.

 $\therefore$  Quantity of solution = 4 + 6 10 units

 $= 10 \times 2 = 20$  litres

: Initial ratio of

A : B

4:1

4x + x = 20 ltr.

x = 4 ltr.

 $A = 4 \times 4 = 16 \text{ ltr.}$ 

 $B = 4 \times 1 = 4 \text{ ltr.}$ 

83. (c) Gold : Copper LCM  $A \rightarrow 5$  :  $3 = 8^{2} = 16 \Rightarrow 10 : 6$ 

 $B \to 5$  : 11 =  $16^{x_1}$  =  $16 \Rightarrow 5$  : 11 Gold : Copper = (10+5) : (6+11)= 15 : 17

(a)

Gold : Copper LCM

A 7 :  $22 = 29_{*6} = 174 \Rightarrow 42 : 132$ 

B 21 :  $37 = 58_{x3} = 174 \Rightarrow 63 : 111$ 

В

92

Mixture 25 :  $62 = 87_{*2} = 174 \Rightarrow 50 : 124$ apply alligation

132 Required ratio→ 13 85. (c) В C Let 100x: 300x: 400x +15% +5% Let 105x: 330x: 105 : 330 : 460

Marks in 86. (c)

Math + English = 170

21: 66:

Math - English = 10 $Math \Rightarrow \frac{180}{100} = 90$ 

English  $\Rightarrow$  80

Math: English

90: 80

9 8

- 87. (c) 2A = 3B and 4B = 5CA : B: B :
  - 15 A :
    - - 15 :
- (b) A : 88. 3

2x: Let 3x

$$\therefore A \times B \Rightarrow 2x \times 3x = 6x^2$$
$$6x^2 = 96$$

 $x^2 = 16$ Given x = 4

- .. Sum of numbers = (A + B) = 2x + 3x = 5x $= 5 \times 4 = 20$
- 89. A : (c) 3 Let 3x : 4x
  - : If each no. is increased by 6

Then, 
$$\frac{3x+6}{4x+6}$$
  $5$  (given)

$$15x + 30 = 16x + 24$$

$$x \Rightarrow 6$$

$$A = 6 \times 3 = 18$$
,  
 $B = 4 \times 6 = 24$ 

.. Difference between numbers

$$A - B = 24 - 18 = 6$$

# Alternate

$$\begin{array}{cccc}
A & : & B \\
3 & : & 4 \\
4 & : & 5
\end{array}$$

1 unit = 6

Difference = (4 - 3)

= 1 unit = 6

- 90. (c) A: B: C 5 : 6 : 7
  - Let 5x : 6x : 7xProduct of numbers

$$A \times B \times C = 5x \times 6x \times 7x = 210 \text{ x}^3$$

 $210x^3 = 5670$  (given)

$$\Rightarrow x^3 = \frac{567}{21} = 27$$
$$x^3 = 27$$

$$x = 3$$

$$A = 5 \times 3 = 15$$
  
 $B = 6 \times 3 = 18$ 

$$C = 7 \times 3 = 23$$

$$C = 7 \times 3 = 21$$

Greatest number is C = 21

- 91. (d) 6, 7, 15, 17
  - If a:b :: c : d are in proportion then

$$a \times d = b \times c$$

- Let x is added to each number
- (6+x): (7+x):: (15+x): (17+x) $(6+x)\times(17+x)$ 
  - $= (7+x)\times(15+x)$

  - $x^2 + 23x + 102 = x^2 + 22x + 105$
  - $\Rightarrow$  x = 3

Note: You can directly go through option to save your valuable time. (by puting value of x from options)

92. (a)

93.

Milk: Water

A 3: 
$$5 = 8_{\times (7 \times 2)}$$

B 6:  $1 = 7_{(2 \times 8)}$ 

C 1:  $1 = 2_{\times (8 \times 7)}$ 

- Milk Water
  - 42 70 A 96 16 В
  - 56 56
- ⇒ By alligation

- 14 Required ratio→20 :
  - A : B (c) Income 4x: 3xExpenses Зу: 2y

Saving 60000:60000

Expenses + sav-Income ⇒ ing

$$\therefore \quad \frac{4x - 60000}{3x - 60000} = \frac{3}{2}$$

$$8x - 120000 = 9x - 180000$$

$$x = 60000$$

- : income of A
- $= 4 \times 60000 = 240000$
- Mr. : (b) Mrs. 94. Before 7x: 8x
  - $\Rightarrow$  before 7x + 8x = 120

5y: 6y

$$15x = 120$$

$$x = 8$$

After

- $\therefore$  Mr. gupta =  $7 \times 8 = 56$
- Mrs. gupta =  $8 \times 8 = 64$
- : after lossing 6 kg by Mr. gupta the ratio be comes 5: 6.
  - ⇒ Let Mrs. gupta loss x kg

$$\therefore \quad \frac{56-6}{64-x} > \sqrt{\frac{5}{6}}$$

$$300 = 320 - 5x$$

$$5x = 20$$

- x = 4 kg.
- 95. (d) Ist : IInd
  - Fare 4x : x
    - Passengers 1 :

Total fare 4x : 40x = 44x44x = 1100

$$x = \frac{1100}{44} = 25$$

- : Fare = Ist class amount received per day
- $= 4x = 4 \times 25 = 100$
- 96. (b) 3x
  - 4×3: 5×3
  - 12: 20: 15
- 97. (a)  $a + b\sqrt{3} = \frac{1}{2 \sqrt{3}}$

$$\Rightarrow \frac{1}{2-\sqrt{3}} \times \frac{2+\sqrt{3}}{2+\sqrt{3}} = \frac{2+\sqrt{3}}{4-3}$$

 $2+\sqrt{3}$ 

rationalisation of denominator

- $\Rightarrow$  a +  $b\sqrt{3}$  = 2 +  $\sqrt{3}$
- ⇒ Now compare the rational & irrational parts

8:9

- 98. (c) 32 :
- 99. (c) 2A = 3B = 4C
  - B : C 3×4: 2×4 2×3 12: 6: 4
- 100. (a)  $4^{3.5}: 2^5 = (2^2)^{3.5}: 2^5 = 2^{2 \times 3.5}: 2^5$  $= 2^7 : 2^5 = 2^2 \cdot 2^5 : 2^5 = 2^2 : 1$ = 4 : 1

: Father's present age

5x

2x

 $5x \times 2x = 1000$ 

 $10x^2 = 1000$ 

 $x^2 = 100$ 

x = 10

 $10 \times 5 = 50$ 

Let

given,

- Son's present age
- $2 \times 10 = 20$
- .. After 10 years

Age of Father = 50 + 10= 60 years Age of Son = 20 + 10

= 30 years

103. (b) 6, 14, 18, 38

If a, b, c, d are in

 $\Rightarrow$  a:b :: c:d

then ad = bc

proportion

- : Let x is added in the sequence numbers as to make it in proportion
- (6+x): (14+x):: (18+x): (38+x)(6+x)(38+x) = (18+x)(14+x)

Now to save valuable time put value of x from options to make it proportion

(6+x)(38+x) = (14+x)(18+x)

$$\Rightarrow$$
  $x^2+44x+228 = x^2+32x+252$ 

 $12 \text{ x} \Rightarrow 252 - 228$ 12x ⇒ 24

 $x \Rightarrow 2$ Ans.

В 104. (a) Α 5

5x Let 3x

LCM of A & B is =  $3 \times 5 \times x = 15x$ 

15x = 225

Given

$$x = 15$$
  
 $A = 15 \times 3 = 45$   
 $B = 15 \times 5 = 75$ 

Smaller number is = 45

105. (b) В 4 3 3xLet 4xLCM of A & B is =  $3 \times 4 \times x = 12x$ 12x = 48Given

> x = 4 $A = 3 \times 4 = 12$

> $B = 4 \times 4 = 16$

: Sum of numbers A + B = 12 + 16 = 28

106. (d)  $\frac{A}{B} = \frac{7}{11}$  (Given)

Let x be added to both A & B

$$\Rightarrow \frac{7+x}{11+x} = \frac{3}{4}$$

Cross multiply the equation 28 + 4x = 33 + 3x

$$4x = 33 + 3x$$
$$x = 5$$

107. (c) B 5 3 5x 3x : Let

> Now after adding 10 to each number

$$\Rightarrow \frac{A}{B} = \frac{3x+10}{5x+10} = \frac{5}{7}$$

$$21x + 70 = 25x + 50$$

$$4x = 20$$

$$x = 5$$

 $\therefore A = 3 \times 5 = 15$  $\Rightarrow$  B = 5 × 5 = 25

Smaller number = 15

108. (a)

Wine: Water A 3 2 B 4 Resulting mixture A + B⇒ В A 3 5 10 18 9 5 5x9x

$$A \Rightarrow 5x = 3 \text{ litres}$$
 (given)

$$\therefore x = \frac{3}{5}$$

$$B = \frac{3}{5} \times 9 \Rightarrow \frac{27}{5} \Rightarrow 5\frac{2}{5} \text{ litres}$$

109. (b)

Let 2x : 3x : 5x

$$\Rightarrow$$
 C - A = 5x - 2x = 3x = 12000

$$x = \frac{12000}{3} = 4000$$

Monthly salary of B is = 3x = Rs. 12000

∴ Annual salary of B

 $= 12 \times 12000 = Rs. 1,44,000$ 

1unit = 9000

Annual income  $9000 \times 11 = Rs. 99000$ 

Monthly income

$$=\frac{99000}{12}$$
  $\Rightarrow$  Rs. 8250

111. (d) В A : 5 3

> 3x = 8xLet 5x:

⇒ New comers

$$5y : 7y = 12 y$$
  
 $\therefore 8x + 12y = 1200$   
 $\Rightarrow 2x + 3y = 300$  ...(i)

again, 
$$\frac{5x+5y}{3x+7y} = \frac{7}{5}$$

$$25x + 25y = 21x + 49y$$

$$\Rightarrow 4x - 24y = 0$$

$$4x = 24y$$
$$x = 6y$$

(ii)

:. From equation (i) 
$$12y + 3y = 300$$

$$y = \frac{300}{15} = 20$$

$$x = 120$$

The number of students initially  $8x = 8 \times 120$ = 960

- 112. (c)  $\Rightarrow x : y : z$  are three persons
  - Speed 4: 3: 5
  - Time  $\frac{1}{4}$  :  $\frac{1}{3}$  :  $\frac{1}{5}$
  - $\therefore$  Speed  $\propto \frac{1}{\text{Time}}$ ,

LCM of 4,3 and 5 = 60

- $\therefore \text{ time } \frac{1}{4} \times 60 : \frac{1}{3} \times 60 : \frac{1}{5} \times 60$ 
  - 15 : 20 : 12
- 113. (c) P : Q
  - 2 : 5

Let 2x : 5x

- P = 2x = 120 (given) x = 60
- $\therefore \text{ marks of } Q = 60 \times 5$ = 300
- 114. (d) A: B A: C 4: 9 2: 3
  - B : A : C
  - 9 : 4
  - 2 :
  - $\Rightarrow$  18: 8: 12
  - $\therefore \quad (A + B) : \quad (B + C)$
  - $\Rightarrow$  (18 + 8) : (18 + 12)
    - 26 : 30
    - 13: 15
- 115. (c) x : y 3 : 4
  - $\therefore \frac{5x 2y}{7x + 2y} \Rightarrow \frac{y\left(5\frac{x}{y} 2\right)}{y\left(7\frac{x}{y} + 2\right)}$ 
    - $\frac{5 \times \frac{3}{4} 2}{7 \times \frac{3}{4} + 2} \implies \frac{15 8}{21 + 8} \Rightarrow \frac{7}{29}$
- 116. (a) x:y = 3:4
  - $\frac{x}{v} = \frac{3}{4}$
  - $\Rightarrow \frac{4x y}{2x + 3y} \Rightarrow \frac{y\left(4\frac{x}{y} 1\right)}{y\left(2\frac{x}{y} + 3\right)}$
  - $\Rightarrow \frac{4 \times \frac{3}{4} 1}{2 \times \frac{3}{4} + 3} \Rightarrow \frac{(3 1) \times 2}{3 + 6} \Rightarrow \frac{4}{9}$

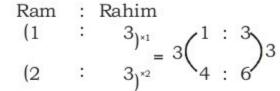
117. (b)

Ram : Rahim
10 years ago

1 : 3

5 years hence
2 : 3

15 years difference



- 3 units  $\rightarrow$  15 years
- 1 unit  $\rightarrow$  5 years
- ∴ 10 years ago ages of Ram and Rahim are
- $= 1 \times 5 = 5 \text{ years}$ 
  - $3 \times 5 = 15$  years

Present age of Ram = 5 + 10

- = 15 years
- Rahim = 15 + 10 = 25 years
- : Ratio of present ages are =

Ram: Rahim

- 15 : 25
- 3 : 5
- 118. (c) Let two quantities are A, and B

Given, 
$$A + B = 3(A - B)$$

- $\Rightarrow$  A + B = 3A 3B
- $\Rightarrow A 3A = -3B B$
- $\Rightarrow$  2A = -4B
  - A = 2B
- A: B = 2: 1
- 119. (c) A : B : C
  - Let 3x : 4x : 5
  - : Sum of (smallest + largest)
  - $A + C \Rightarrow = 8x$

According to question,

- 8x = 4x + 52
- 4x = 52
- x = 13
- ∴ Smallest numbers = A
- $\Rightarrow 13 \times 3 = 39$
- 120. (c) A: B
  Initially 7: 5
  - Finally 1: 1
  - ⇒ 9 litres of mixture is taken out and B is added So, part 'A' remains same for this multiply by 7 the new ratio
  - ⇒ But quantity of mixture remains same

- Before 7 :  $\begin{bmatrix} A & : & B \\ 5 & : & 5 \end{bmatrix}$ New 7 :  $\begin{bmatrix} 2 \text{ units} \end{bmatrix}$ 
  - 2 units = 9
  - 1 units =  $\frac{9}{2}$
- :. Quantity of mixture
- = 7 + 7 = 14 units
- =  $14 \times \frac{9}{2}$  = 63 litres
- $\Rightarrow$  initial ratio of A : B 7 : 5
- $A = \frac{7}{12} \times 63 = \frac{7 \times 21}{4} = \frac{147}{4}$ 
  - =  $36\frac{3}{4}$  litres
- 121. (b) Water: glycerine
  - 1:3 = 240 cc
  - 60:180

Let x litres of water added

- $\therefore \frac{60+x}{180} = \frac{2}{3}$ 
  - 180 + 3x = 360
    - 3x = 180
    - x = 60
- Alternate:
  - W : G
  - 1 : 3 = 4 units
  - $\binom{2}{2} : 3$
  - 4 units = 240 cc
  - 1 unit =  $\frac{240}{4}$  = 60cc
- 122. (a) Acid: Water
  - 4 : 1
  - Let 4x + x = 5x
    - 4x + x = 25
      - x = 5
  - $\therefore Acid = 5 \times 4 = 20$
  - Water =  $5 \times 1 = 5$
  - ∴ 3 litres water is added So, new quantity of water = 5 + 3 = 8
  - : Acid : Water
    - 20 : 8
      - 5 : 2

- 123. (d) Water: Milk
  - A 3 : 4 =  $I_{x8}$ B 5 : 3 =  $8_{x7}$
- ⇒ make quantites of A & B equal

59 : 53

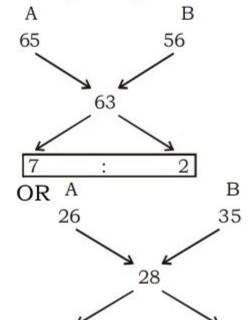
⇒ Water: Milk
 A 24 : 32
 B 35 : 21

so, ratio of water and milk in new mixture = 59 : 53

- 124. (a) Acid: Water
  - A 5 :  $2 = 7_{\times 13}$
  - B 8 :  $5 = 13_{x_7}$
  - New 9 :  $4 = 13_{x7}$

Make quantities equal

- Acid: Water
- A 65 : 26 = 91
- B 56 : 35 = 91
- New 63 : 28 = 91
- :. By alligation



- 125. (c) Spirit : Water
  A 3x : 7x 3x + 7x = 20
  - x = 2
- Spirit in A = 3 × 2 = 6 litres
  Water in A = 7 × 2 = 14 litres
  Spirit: Water
  - B 7x : 5x
    - 7x + 5x = 36
    - x = 3
- ∴ Spirit in B = 7 × 3 = 21 litres
   Water in B = 5 × 3 = 15 litres
   Spirit : Water
  - (6+21) : (14+15)
    - 27 : 29
- 126. (b) Copper: Zinc: Nickel 5: 3: 2

New 5 : 3 : 3 1 unit

- Now old ratio
- = 5x + 3x + 2x = 10x
- 10x = 100 kg.
- $\therefore$  1 unit = 10 kg.

Nickel added to mixture = 1 unit = 10 kg.

- 127. (a) Income : Expenditure
  - 10x : 7x

Savings = Income - expenditure

10x - 7x = 3x

Given, Expenditure

- $\Rightarrow$  7x = 10500
- x = 1500
- :. Saving =  $3x = 3 \times 1500 = 4500$
- 128. (b)
  - Income 9:
  - Expense 4: 3

Income - Saving = Expenditure

- $\frac{9x-200}{7x-200} = \frac{4}{3}$
- $\Rightarrow 27x 600 = 28x 800$
- x = 200

Sum of weekly income

- = 9x + 7x = 16x
- $16 \times 200 = Rs. 3200$
- 129. (d) Income  $\begin{pmatrix} A & : & B \\ 2 & : & 3 \\ 1 \begin{pmatrix} & & & \\ & & &$ 
  - 24000 24000 1 unit = 24000
  - $\therefore$  Income of A = 2 units
  - $= 24000 \times 2 = Rs. 48000$

#### Alternate

- $\frac{2x 24000}{3x 24000} = \frac{1}{2}$
- $\Rightarrow$  4x 48000 = 3x 24000
- $\Rightarrow x \Rightarrow 24000$
- : Income of A
- $= 24000 \times 2 = Rs. 48000$
- 130. (c) Let two number be x and y.

- $5\left(x \frac{x}{2}\right) = \left(y \frac{x}{2}\right)$
- $\Rightarrow 5\left(\frac{x}{2}\right) = y \frac{x}{2}$ 
  - $\frac{5x}{2} + \frac{x}{2} = y$
  - 3x = y
  - x:y
  - 1:3
- : Ratio of larger to smaller number is
  - y:x
  - 3:1

- 131. (a) A + B = 94
  - $\frac{A}{5} : \frac{B}{8} = 3 : 4$ 
    - $\frac{A \times 8}{5 \times B} = \frac{3}{4}$
    - $\frac{A}{B} = \frac{3}{4} \times \frac{5}{8} = \frac{15}{32}$
    - A : B
    - 15:32

Let 15x: 32x

- 15x + 32x = 47x
  - 47x = 94
  - x = 2
- $A = 2 \times 15 = 30$ 
  - $B = 32 \times 2 = 64$
- 132. (a) 0.8, 0.2, x

if a, b, c are three numbers

- then, a:b:c
  - $b^2 = a \times c$

c = third proportion

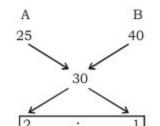
- Let, 0.8: 0.2:: 0.2: x
- x be the third proportion
- $\therefore 0.2 \times 0.2 = x \times 0.8$

$$\frac{2}{10} \times \frac{2}{10} = \mathbf{x} \times \frac{8}{10}$$

- $\Rightarrow \frac{4}{8 \times 10} = x \Rightarrow \frac{1}{20} = x$
- $\Rightarrow$  0.05 = x
- 133. (a) Let, no. of students in class A be x
  - class A be x no. of students in class B be y
  - ⇒ Total marks of class A = 25x
  - Total marks of class B = 40y
  - $\therefore$  Total marks of A + B = (25x +
  - 40y)  $\Rightarrow$  Now on mixing the two
  - classes no. of students become (x + y) and average = 30
  - Total marks = 30(x + y)
- $\Rightarrow \quad \therefore \quad 25x + 40y = 30(x + y)$ 
  - 25x + 40y = 30x + 30yx = 2y
  - x:y = 2:1

#### Alternate:

By alligation,



Total cost = 
$$45 + 20 + 25$$
  
= Rs. 90

∴ Average cost = 
$$\frac{90}{10}$$
 = Rs. 9

Total students = 
$$B + G$$
  
=  $32 + 24 = 56$ 

136. (b) 
$$\frac{3x+5}{5x-2} = \frac{2}{3}$$

$$\Rightarrow$$
 Cross multiply the equation  $9x + 15 = 10x - 4$ 

$$x = 19$$

137. (a) Profit = 
$$20\% = \frac{20}{100}$$

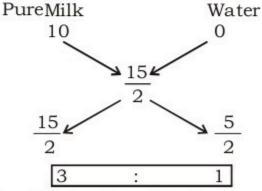
$$\therefore$$
 120  $\rightarrow$  Rs. 9

$$1 \rightarrow \frac{9}{120}$$

$$100 \to \frac{9}{120} \times 100$$

$$CP \rightarrow \frac{45}{6} \Rightarrow \frac{15}{2}$$

:. By alligation,



Note: Water is added so, price of water is taken as zero

S: P  
2: 3  
2x: 3x  

$$(-)$$
  
 $3x - 2x = x$   
given  $x = 6$ 

Present age of Prakash = 
$$3 \times 6 = 18$$

If a, b, c, d are in proportion 
$$\Rightarrow$$
 a : b :: c : d

then 
$$ad = bc$$

Let x is added to make it a proportion

$$\Rightarrow$$
 (7+x): (16+x):: (43+x): (79+x)

$$\Rightarrow (7+x)(79+x) = (16+x)(43+x)$$

$$x^2 + 86x + 553 = x^2 + 59x + 688$$
$$27x = 135$$

$$x = 5$$

.. Hence, it 5 is added to make it a proportion

Now 4 is added to each number

$$\frac{4x+4}{7x+4} \Rightarrow \frac{3}{5}$$

$$\Rightarrow 20x + 20 \Rightarrow 21x + 12$$

$$x \Rightarrow 8$$

 $\therefore$  Smaller number is 4 × 8 = 32 Larger number is  $7 \times 8 = 56$ 

141. (b)

A: B: C

No. of students 
$$4x$$
:  $6x$ :  $9x \rightarrow 19x$ 
initially

after admitting  $12 \quad 7x$ 
students more in each class

A: B: C

 $9x \rightarrow 19x$ 
 $4x \rightarrow 19$ 

$$\therefore$$
 3x = 12

$$x = 4$$

Initially the no. of student

$$= 19 \times 4 = 76$$

If 9 is subtracted from each number

$$\frac{3x-9}{5x-9} \Rightarrow \frac{12}{23}$$

$$69x - 207 \Rightarrow 60x - 108$$

$$9x \ \Rightarrow \ 99$$

$$x \Rightarrow 11$$

$$\therefore$$
 Numbers are =  $3 \times 11 = 33$ 

$$= 5 \times 11 = 55$$

# 144. (a) Gold: Copper

$$A(7:2)_{x_2} = 9_{x_2} \Rightarrow 14:4$$

$$B7:11 = 18 \Rightarrow 7:11$$

⇒ Equal quantities of A & B are mixed so, make quantity equal

145. (c) The proportion taken out

$$\Rightarrow \frac{6}{60} = \frac{1}{10}$$

Originally milk : After taken out

1000 units  $\rightarrow$  60 litres given

1 unit 
$$\rightarrow \frac{60}{1000}$$
 litres

729 units 
$$\to \frac{60}{1000} \times 729$$

$$\Rightarrow \frac{4374}{100} \Rightarrow 43.74 \text{ litres}$$

# Alternate:

Final quantity = 
$$60 \left(1 - \frac{6}{60}\right)^3$$

$$= 60 \times \frac{9}{10} \times \frac{9}{10} \times \frac{9}{10}$$

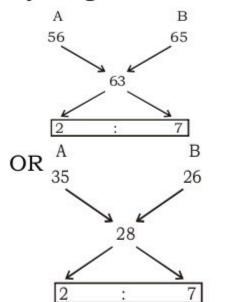
146. (d) 
$$69\frac{3}{13}\% = \frac{900}{1300}$$

$$= \frac{9}{13} \leftarrow \underset{\text{Mixture}}{\text{Milk}}$$

A 8 : 
$$5 = 13_{x7}$$

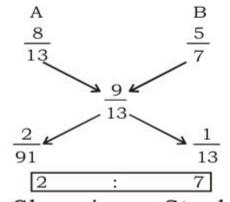
B 5 : 2 = 
$$7_{x_{13}}$$
  
C 9 : 4 =  $13_{x_7}$ 

- ⇒ Make quantities equal
- Milk : Water
  - 56 35
  - 65 В 26
  - 63 28
- By alligation method



# Alternate:

 $\Rightarrow$  we can directly do it  $\rightarrow$ 



- 147. (c) Chromium: Steel
  - :  $11 = 13_{(2\times3)}$
  - $: 21 = 26_{x_3}$

New mixture 7 : 32 =  $39_{\times 2}$ 

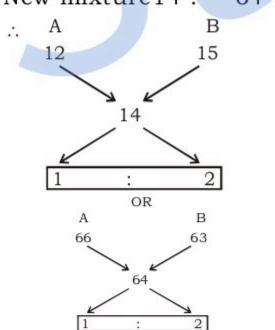
Make amount equal by taking LCM

 $= 13, 26, 39 = 13 \times 2 \times 3$ 

Chromium: Steel

- 12 66 A
- 15 63

New mixture 14:



148. (b)

A:B:C

Annual Income 1:3:7

x:3x:7xLet

given A + C  $\Rightarrow$  x + 7x = 8x

8x = 8,00,000

x = 1,00,000

- $\Rightarrow$  Annual salary of B = 3x
- $= 3 \times 1,00,000 = 300000$

Monthly salary

$$= \frac{300000}{12} = \text{Rs. } 25000$$

149. (d) Amit: Veer 3 : 2 Income

Expenses 5 : 3 Saving 1000: 1000

∴ Income ⇒ expenses + savings

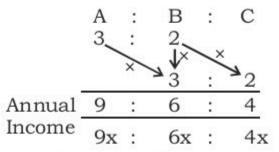
- $\frac{3x 1000}{2x 1000} = \frac{5}{3}$ 
  - 9x 3000 = 10x 5000

x = 2000

 $\therefore$  Annual income of Amit is = 3x $= 3 \times 2000$ 

= Rs. 6000

150. (a)



Given,  $\frac{A}{3} - 1000 = \frac{C}{4}$ 

- $\Rightarrow \frac{9x}{3} 1000 = \frac{4x}{4}$ 
  - 3x 1000 = x
  - 2x = 1000
  - x = 500
- : Income of B is

 $6x = 6 \times 500 = Rs. 3000$ 

151. (c) Refrigerator: Television

Price 5

Let 5x

Given, 5x - 3x = 2x

- 2x = 5500
- x = 2750
- .. Price of refrigerator
- $\Rightarrow$  5 × 2750 = Rs. 13750
- 152. (a) Passed: Failed = Total

: 1

Let, 6x : x= 7x

Now if passed students exceeds by 6 the ratio becomes : Passed: Failed ⇒ Total

> 9 : 1 ⇒ 10

Passed students  $\frac{1}{\text{Total students}} \Rightarrow \frac{1}{7x}$ 

- (initially) = if  $\frac{6x+6}{7x} = \frac{9}{10}$
- = 60x + 60 = 63x
- 3x = 60
- x = 20
- .. Total no. of examinees are
- $= 7 \times 20 = 140$

153. (d) box: paper bundle

weight 3: 22

3x : 22xlet

total weight = 3x + 22x

$$= 25x = 36 \text{ kg}.$$

$$x = \frac{36}{25} \times 1000 = 1440 \text{ grams}$$

- (: 1 kg = 1000 grams)
- : Weight of paper bundles
- $\Rightarrow 22x$
- $= 22 \times 1440 \text{ grams} = 31680 \text{ grams}$
- 154. (b) Let numbers be x & y

given x :

- 3
- 3a: 4a

Now, given that

- $\Rightarrow 8(3a)^2 \Rightarrow (4a)^2 + 224$ 
  - $72a^2 = 16a^2 + 224$
  - $56a^2 = 224$ 
    - $a^2 = 4$
    - a = 2

numbers are

- $x = 3 \times 2 = 6$
- $y = 4 \times 2 = 8$
- 155. (b)
  - $\Rightarrow$  10A = 12B
  - = A : B
    - 10
  - 5 6
- 156. (a) (a+b): (b+c) : (c+a)

7 : 8 6 :

7x : 8xLet 6x:

 $\therefore$  a+b+b+c+c+a  $\Rightarrow$  6x+7x+8x

 $2a + 2b + 2c \Rightarrow 21x$ 2(a + b + c) = 21x

- $\Rightarrow$  a + b + c =  $\frac{21}{2}x$
- $\Rightarrow$  a + b + c = 14 given
- $\Rightarrow \frac{21x}{2} = 14$ 
  - $x = \frac{28}{21} = \frac{4}{3}$
- $a + b = 6 \times \frac{4}{3} = 8$
- a + b + c = 14
- c = 14 8 = 6157. (c) 5.5a = 0.65b
  - $\frac{55}{10}a = \frac{65}{100}b$
  - $55a = \frac{65}{10}b$
  - 550a = 65 b
  - a: b = 65 : 550 = 13 : 110

158.	(c) Boys	:	girls
	5	:	3
	Lot Ex		2

Let 5x 3x

⇒ Now 50 boys leave the college and 50 girls join the college

$$\therefore \frac{5x - 50}{3x + 50} = \frac{9}{7}$$

$$\Rightarrow 35x - 350 = 27x + 450$$

$$8x = 800$$

$$x = 100$$

 $\therefore$  no of boys = 5x $= 5 \times 100 = 500$ 

159. (a) A : B : C : D 
$$\frac{1}{3} : \frac{1}{4} : \frac{1}{5} : \frac{1}{6}$$

Take L.C.M of 3, 4, 5, 6  $= 3 \times 2 \times 2 \times 5 = 60$ 

A : B : C : D
$$\frac{1}{3} \times 60 : \frac{1}{4} \times 60 : \frac{1}{5} \times 60 : \frac{1}{6} \times 60$$
20 : 15 : 12 : 10
Total pens

= 20+15+12+10 = 57

160. (d) A = 
$$\frac{2}{3}B$$

and 
$$B = \frac{4}{5}C$$
  
 $3A = 2B$   $5B = 4C$ 

A : BB : C 4:5 2:3

В : C

3 4 5 12 15

161. (d) 
$$(25)^{2.5}$$
:  $5^3$ 
 $(5)^{2.5 \times 2}$ :  $5^3$ 
 $5^5$ :  $5^3$ 
 $5^3$ .  $5^2$ :  $5^3$ 
 $5^2$ :  $1$ 
 $25$ :  $1$ 

25

162. (c) Three numbers are a : b : c then  $b^2 = ac$ third proportional

$$c = \frac{b^2}{a}$$

Let third proportion of 12, 18 is x

12:18 :: 18:*x* 

 $= 18 \times 18 = 12 \times x$ 

$$x = \frac{18 \times 18}{12} = 3 \times 9 = 27$$

 $\therefore$  runs scored by A + B + C = x + y + z = 9x + 6x + 4x = 19x $\Rightarrow$  A + B + C = 342 (given)

$$x = \frac{342}{19} = 18$$

runs scored by  $A = 9x = 9 \times 18$ = 162

runs scored by B =  $6x = 6 \times 18$ = 108

runs scored by  $C = 4x = 4 \times 18$ = 72

∴ (162, 108, 72)

165. (a) If there are four numbers a, b, c, d

then

Two mean propertions are, b and c

$$a \times d = b \times c$$

Now let mean proportion of 2 & 54 are x, y

$$= 2 : x : y : 54$$

$$xy = 54 \times 2 = 108$$

go through options option A satisfying

∴ (18, 6)

166. (b) Black: Brown pairs 4  $\mathbf{x}$ price 2 8  $\mathbf{x}$ 

Original bill = 8 + x

Black Brown pairs x price 2 2x4

new bill = 2x + 4

According to question,

$$3(8 + x) = 2(2x + 4)$$

$$\Rightarrow 24 + 3x = 4x + 8$$

$$x = 16$$

∴ Brown pairs = 16 Black pairs = 4 ratio = 1 : 4

167. (c) ratio of ages of Boys A & B

A : В

Present age 5x: 6x

: after two years

$$\frac{5x+2}{6x+2} = \frac{7}{8}$$

$$40x + 16 = 42x + 14$$

$$2x = 2$$

x = 1

.: Present age

$$A = 5 \times 1 = 5$$

$$B = 6 \times 1 = 6$$

After 12 years

$$A = 5 + 12 = 17$$

$$B = 6 + 12 = 18$$

$$\frac{A}{B} = \frac{17}{18}$$

168. (c) Present ages of A & B are 36, 50

After n years

$$\frac{A}{B} = \frac{36+n}{50+n} \Rightarrow \frac{3}{4}$$

$$144 + 4n = 150 + 3n$$

$$n = 6$$

169. (a) Ist: IInd :

Let 8x:9x:12x

: Ist × IIIrd

 $8x \times 12x = 2400$ 

 $96x^2 = 2400$ 

$$x^2 = \frac{2400}{96} = 25$$

x = 5

.. Sum of three numbers

Ist + IInd + IIIrd

8x + 9x + 12x $\Rightarrow 29x$ 

 $29 \times 5 = 145 \text{ Ans.}$ 

170. (d) No. of balls

2x: 3x

Now 5 balls are taken out of bag y and Put in bag x

$$\therefore \frac{2x+5}{3x-5} = \frac{1}{1}$$

$$\Rightarrow 2x+5 = 3x-5$$

$$x = 10$$

.. No. of balls in each bag is

$$x \Rightarrow 2 \times 10 + 5 = 25$$

$$y \Rightarrow 3 \times 10 - 5 = 25$$

171. (c) Let numbers are x and y  $(x + y)^2 = 4xy$ 

$$(x + y)^2 = 4xy$$

$$x^2 + y^2 + 2xy = 4xy$$

$$x^2 + y^2 - 2xy = 0$$

$$(x-y)^2=0$$

$$x = y$$

1 : 1

172. (d)

A : B : C
Original 1 : 2 : 3

After adding 5 in each number 
$$2 : 3 : 4$$
 $1 : 1 : 1$ 

1 unit = 5

 $\therefore$  numbers are = A = 1×5 = 5

$$B = 2 \times 5 = 10$$

$$C = 3 \times 5 = 15$$

173. (a) Let marks in english, math & science are E, M, S respectively

$$S : E = 1 : 2$$

$$E : M = 2 : 3$$

S : E : M

2:3

1:2:3

Let, x : 2x : 3x

$$x + 2x + 3x = 6x = 180$$

$$x = 30$$

.. Marks in Science

$$= 1 \times 30 = 30$$

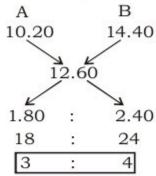
Marks in English

$$= 2 \times 30 = 60$$

Marks in Maths

$$= 3 \times 30 = 90$$

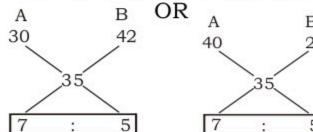
174. (d) By alligation,



175. (a) Milk: Water A 4 :  $3 = 7 \times (2 \times 5) = 70 \Rightarrow 40 : 30$ 

B 2 : 
$$3 = 5^{(7\times2)} = 70 \Rightarrow 28 : 42$$

C 1 : 
$$1 = 2^{x(5\times7)} = 70 \Rightarrow 35 : 35$$
  
: A B OR A B



176. (b)

A 2 : 
$$1 = 3_{(8 \times 5)} = 120 \Rightarrow 80 : 40$$

B 3 : 
$$2 = 5_{(3\times 8)} = 120 \Rightarrow 72 : 48$$

C 5 : 
$$3 = 8_{(5\times 3)} = 120 \Rightarrow 75 : 45$$

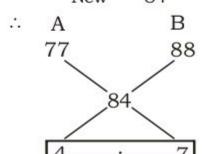
- Make quantity equal in all the three mixtures.
  - So, all three mixtures are mixed

	Acid	:	Water
Α	80		40
В	72		48
C	75		45
	227		133

Copper: Tin 177. (b) 1 :  $3 = 4_{(11\times7)}$ 

:  $8 = 11_{(7\times4)}$ New Mixture Tin Copper

231 77 A 220 В 88 84 224 New



OR A В 220

- 231
- 178. (d) Alcohol Water

3 3x

: 5 litres of water is added to the mixture

$$\Rightarrow \frac{4x}{3x+5} = \frac{4}{5}$$

Let 4x

$$\Rightarrow$$
 20x = 12x + 20

$$8x = 20$$

$$x = \frac{20}{8} = \frac{5}{2}$$

:. Quantity of alcohol

$$\Rightarrow 4 \times \frac{5}{2} = 10$$
 litres

179. (d) Zinc Tin

$$A 5x : 2x = 7x$$

B 3y : 
$$4y = 7y$$

$$\Rightarrow$$
 A  $\Rightarrow$  7x = 7 kg

$$x = 1 kg$$

 $\therefore$  Zinc in alloy A  $\Rightarrow$  5 kg.

Tin in alloy  $A \Rightarrow 2 \text{ kg}$ .

$$\Rightarrow$$
 B  $\Rightarrow$  7y = 21 kg.

$$y = 3 \text{ kg}.$$

Zinc in alloy B  $\Rightarrow$  3 × 3 = 9 kg.

Tin in alloy B  $\Rightarrow$  3 × 4 = 12 kg.

: after mix-up the ratio of zinc and tin in new alloy

180. (a) Zinc Copper

Given,
$$5x + 3x = 400 g$$

$$8x = 400 g$$

$$x = 50 g$$

- : Zinc : Copper
  - 250 g : 150 g

Let a gram of copper is added

$$\Rightarrow \frac{250}{150+a} = \frac{5}{4}$$

$$\Rightarrow$$
 1000 = 750 + 5a

$$\Rightarrow$$
 250 = 5a

$$a = 50 g$$

181. (c) Rice: Wheat Weight

Price 
$$\frac{5}{20}$$
 :  $\frac{6}{18}$  = 38

$$\therefore$$
 20 + 18 = 38 units

$$\Rightarrow$$
 20 × 10 = Rs. 200

Expense 
$$\frac{4}{400}$$
:  $\frac{3}{400}$ 

$$\therefore \quad \frac{6x - 400}{5x - 400} \longrightarrow \frac{4}{3}$$

$$18x - 1200 = 20x - 1600$$

$$2x = 400$$

$$x = 200$$

Income of A  $\rightarrow$  6 × 200 = 1200

Income of B 
$$\rightarrow$$
 5 × 200 = 1000

Total sum of (A + B)

= 1200 + 1000 = Rs. 2200

100.	(c) Half rupee = 50 paise	187.
	Quarter rupee = $\frac{100}{4}$ = 25 paise	
	∴ 50P : 25P : 10P Value of coins $5x : 3x : x$ ⇒ no. of coins $5x \times 2 : 3x \times 4 : x \times 10$ 10x : 12x : 10x ⇒ Given, $10x + 12x + 10x = 32x$ 32x = 480	
	$x = \frac{480}{32} = 15$	
	<ul> <li>∴ No. of coins in each case</li> <li>⇒ 50P : 25P : 10P</li> <li>10x : 12x : 10x</li> <li>10×15: 12×15 : 10×15</li> <li>150 180 150</li> </ul>	
184.	(d)	
	Rs. 1 : 50P : 20P  Values $13x$ : $11x$ : $7x$ No. of coins $13x \times 1$ : $11x \times 2$ : $7x \times 5$ $13x$ : $22x$ : $35x$	188.
	:. Given, Total coins = $13x + 22x + 35x = 70x$ $70x = 420 \Rightarrow x = 6$	
	No. of 50 paise coins are	189.
185.	= $22x = 22 \times 6 = 132$ (b)	
	No. 7	
	Rs. 1 : 50P : 25P $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	190.

$$\begin{array}{c} 187. \ (d) \ \Rightarrow 0.5A = 0.6B = 0.75C \\ \ \Rightarrow \frac{5}{10} \times A = \frac{6}{10} \times B = \frac{75}{100}C \\ \ \Rightarrow \frac{1}{2}A = \frac{3}{5}B = \frac{3}{4}C \\ \ \Rightarrow 10A = 12B = 15C \\ \ \Rightarrow A : B : C \\ 12 \times 15 : 10 \times 15 : 10 \times 12 \\ \ \Rightarrow 6x : 5x : 4x \\ \ 15x = 1740 \\ \ \Rightarrow x = \frac{1740}{15} = Rs. 116 \\ \ \Rightarrow x = \frac{1740}{15} = \frac{1}{3} Rs. 1150 \\ \ \Rightarrow x = \frac{1740}{15} = \frac{1}{3} Rs. 1150 \\ \ \Rightarrow x = \frac{1740}{15} = \frac{1}{3} Rs. 1150 \\ \ \Rightarrow x = \frac{1740}{15} = \frac{1}{3} Rs. 1150 \\ \ \Rightarrow x = \frac{1740}{15} = \frac{1}{3} Rs. 1150 \\ \ \Rightarrow x = \frac{1}{100} = \frac{1}{3} Rs. 1150 \\ \ \Rightarrow x = \frac{1}{100} = \frac{1}{3} Rs. 115$$

C = 3000 - 1950 = ₹ 1050

2 : 3 : 5

195. (a) a : b :: c : d 
$$a \times d = b \times c$$

So, go through options

(a)  $9 \times 16 = 12 \times 12 \checkmark \Rightarrow b$ 

(b)  $13 \times 4 = 11 \times 5 \times b$ 

(c)  $30 \times 24 = 45 \times 13 \times b$ 

(d)  $3 \times 5 = 5 \times 2 \times b$ 

So answer is  $12 : 9 :: 16 : 12$ 

196. (b)  $8 : x : 50$ 
 $x^2 = 50 \times 8$ 
 $x^2 = 400$ 
 $x = 20$ 

197. (c) A : B : C

 $7 = 9 : 15$ 

198. (b) Length: Width
 $5x : 2x$ 

Width  $\Rightarrow 2x \Rightarrow 40$  m

 $x \Rightarrow 20$  m

 $\therefore$  length  $\Rightarrow 5 \times 20 = 100$  m

199. (a) A : B

age  $4 : 7$ 
 $4x : 7x$ 
 $7x - 4x = 3x$ 
 $\Rightarrow 3x = 30$  years (Given)

 $x = 10$  years

 $\therefore$  Age of  $A = 4 \times 10 = 40$  years

age of  $B = 7 \times 10 = 70$  years

sum of ages of  $A + B$ 
 $= 40 + 70 = 110$  years

200. (b) A : B

 $11 : 15$ 
 $\Rightarrow$  Let  $x$  be subtracting from both numbers

 $11 - x = 2$ 

$$\Rightarrow \frac{11-x}{15-x} \Rightarrow \frac{2}{3}$$

$$= 33 - 3x = 30 - 2x$$

$$x = 3$$

201. (d) Milk: Water
A 3: 
$$1 = 4_{\times 7}$$
B 5:  $2 = 7_{\times 4}$ 

$$\Rightarrow$$
 Milk : Water

A 21 : 7

B 20 : 8

New mixture 41 : 15

202 . (d) Alcohol : Water

A 2 : 1 = 3,5

B 3 : 2 = 5,3

Alcohol : Water

A 10 : 5

B 9 : 6

New mixture 19 : 11

203. (c) ₹1:50P:25P

Value of coins 8x : 4x : 3x

No. of coins 8x\*1:4x\*2:3x\*4

8x : 8x : 12x

∴ Total coins

⇒ 8x + 8x + 12x = 28x

28x = 280 (Given)

$$x = \frac{280}{28} = 10$$
∴ No. of 50P coins are = 8x
$$= 8 \times 10 = 80$$
204. (a) A + B + C = 555

A : B : C

Original ratio

$$= \frac{1}{4} : \frac{1}{5} : \frac{1}{6} \text{ (LCM} = 60)$$

$$= \frac{1}{4} \times 60 : \frac{1}{5} \times 60 : \frac{1}{6} \times 60$$

$$= 15:12 : 10$$

$$15x + 12x + 10x = 37x$$

$$37x = 555$$

$$x = \frac{555}{37} = 15$$
∴ C get ⇒  $10 \times 15 = ₹150$ 

⇒ By mistake the ratio of

$$x = \overline{37} = 15$$

$$\therefore C \text{ get } \Rightarrow 10 \times 15 = ₹ 150$$

$$\Rightarrow \text{ By mistake the ratio of}$$

$$A : B : C \qquad \text{(Taken)}$$

$$4 : 5 : 6$$

$$4x + 5x + 6x = 15x$$

$$15x = 555$$

$$x = \frac{555}{15} = 37$$

C get 
$$\Rightarrow$$
 6x = 37 × 6 = ₹ 222  
∴ Amount of C exceeds  
= 222 - 150  
= ₹ 72

Total 
$$\Rightarrow$$
 9x + 3x + x = 13x

= Share of son = 9x
Share of daughter = x

= Difference between share of son and share of daughter

9x - x = 8x = 10000

x = Rs. 1250

Total property = 13x

= 13 × 1250 = Rs. 16250

206. (c) The distance covered by policeman in 5 steps is equal to that of thief in 7 steps

 $\Rightarrow$  5 P = 7 T

P: T

7: 5 (distance covered in each step)

 $\Rightarrow$  and policeman goes 8 steps while thief moves 10 steps

Policeman: Thief
Steps 8: 10

Distance in each step 7: 5

Speed = 28: 25

207. (d)

Tom: Jerry
Jumps 8: 6

Distance in each Jump 5: 7

Speed = 40: 42

20: 21

208. (d) Let number be 4x and 5x
According to question

 $(5x)^2 - (4x)^2 = 81$ 
 $9x^2 = 81$ 
 $x^2 = 9$ 
 $x = 3$ 

Value of A = 4 × 3 = 12

209. (d) According to the question,

Sn Fe
A  $\longrightarrow$  1: 2 = 3)×5
B  $\longrightarrow$  2: 3 = 5)×3

Making quantity equal,
Sn Fe

 $A \longrightarrow 5 : 10 = 15) \times 3$ 

 $B \longrightarrow 6 : 9 = 15) \times 4$ 

39 : 66

Sn : Fe = 39 : 66

Fe

= 13 : 22

Sn

 $A \longrightarrow 15 : 30$ 

 $B \longrightarrow \underline{24} : \underline{36}$ 

In final mixture

210. (d)Let the 2 numbers be (2x, 3x), According to the question,

$$\Rightarrow \frac{2x+8}{3x+8} = \frac{3}{4}$$

$$\Rightarrow 8x+32 = 9x+24$$

$$\Rightarrow x = 8$$

Therefore, the sum of the two numbers is

$$= 2x + 3x = 5x$$
  
 $= 5 \times 8 = 40$ 

211. (c) Given:

$$\frac{x}{y} = \frac{3}{4}$$

$$\Rightarrow \frac{2x+3y}{3y-2x} = \frac{2\times 3+3\times 4}{3\times 4-2\times 3}$$

$$= \frac{6+12}{12-6} = \frac{18}{6} = 3:1$$

This is the required ratio 3:1

212. (b) Let their income be 4x and 3xTheir savings = ₹ 3200 each According to the questions,

$$\Rightarrow \frac{4x - 3200}{3x - 3200} = \frac{12}{7}$$

$$\Rightarrow \frac{x - 800}{3x - 3200} = \frac{3}{7}$$

$$\Rightarrow 7x - 5600 = 9x - 9600$$

$$\Rightarrow 2x = 9600 - 5600$$

$$\Rightarrow 2x = 4000$$

$$A = 2000$$

⇒ Income of A = 
$$4x$$
  
=  $4 \times 2000 = ₹8000$ 

213. (a) Let their monthly income be 8x and 5x

According to the question

$$\frac{8x - 12000}{5x - 10000} = \frac{5}{3}$$

[Income - saving = Expenditure]

$$\Rightarrow 24x - 36000$$
  
=  $25x - 50000$ 

$$x = 14000$$

$$x = 14000$$

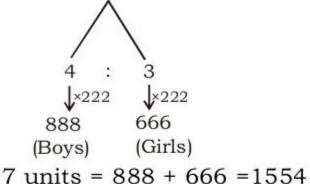
Diff. in monthly income

$$= 8x - 5x = 3x$$

$$x = 14000$$

$$3x = 14000 \times 3$$
  
= ₹ 42000

214. (a) 1554 (Total student)



1 unit = 222

ATQ

$$\frac{888 - x}{666 + 30} = \frac{7}{6}$$
 [x number of boys left]  

$$6 \times 888 - 6x = 7 \times 696$$
  

$$5328 - 6x = 4872$$
  

$$6x = 456 \Rightarrow x = 76$$

215. (d) According to the question,

$$\frac{x^{3} - y^{3}}{x^{2} + xy + y^{2}} = \frac{5}{1}$$

$$\frac{(x - y)(x^{2} + xy + y^{2})}{x^{2} + xy + y^{2}} = \frac{5}{1}$$

$$x - y = 5 \qquad \dots (i)$$

$$\frac{x^{2} - y^{2}}{x - y} = \frac{7}{1}$$

$$\frac{(x + y)(x - y)}{x - y} = \frac{7}{1}$$

x + y = 7 .....(ii) Solve equations (i) and (ii)

$$x = 6$$

$$y = 1$$

$$2x \quad 2 \times 6 \quad 12 \quad 4$$

$$\therefore \frac{3y}{3y} = \frac{2x}{3 \times 1} = \frac{12}{3} = \frac{1}{1}$$

216. (b) A : B = 
$$\frac{1}{2}$$
 :  $\frac{1}{3}$  =  $(3:2)_{x_3}$ 

B: 
$$C = \frac{1}{5} : \frac{1}{3} = (3 : 5)_{\times 2}$$

$$A : B : C = 9 : 6 : 10$$

$$(A+B) : (B+C) = (9+6) : (6+10)$$
  
= 15 : 16

217. (a) According to the question,

$$\frac{\text{Story books}}{\text{other books}} = \frac{7}{2}$$

$$\text{Story books} = 1512$$

$$7 \text{ units} \rightarrow 1512$$

$$1 \text{ unit} \rightarrow \frac{1512}{7} = 216$$

$$2 \text{ units} \rightarrow 216 \times 2 = 432$$

$$\text{Other books} = 432$$

New ratio of  $\frac{\text{story books}}{\text{other books}} = \frac{15}{4}$ 

As we know that only story books are added

4 units  $\rightarrow$  432

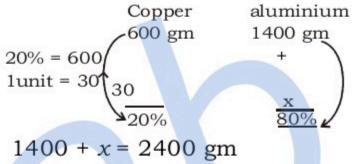
1 unit 
$$\rightarrow \frac{432}{4} = 108$$

15 units  $\rightarrow$  108×15 = 1620 New collection of story books = 1620

.. Number of story books are added = 1620 - 1512 = 108

218. (c) According to the question, Mixture of copper and aluminium = 2000 gm30% is copper means

$$=\frac{30}{100} \times 2000 = 600 \text{ gm copper}$$



x = 1000 gms

219. (a) According to the question, Rs1 50paise 25paise

5 Number of 2 3 coins

1.5 value in 1.25 Rupees

Total value in rupees = Rs. 4.75 4.75 unit—— 288

1 unit 
$$\frac{288}{4.75}$$
 = 48

3 unit — 48×3=144

∴ 50 paise coins = 144 coins

220. (b) Let the first part is = xsecond part is = y

According to the question,

$$5x + 11y = 195 \dots (i)$$

$$x + y = 27$$
 .....(ii)

Solve equation (i) and (ii)

$$x = 17$$

$$y = 10$$

$$\therefore \frac{x}{y} = \frac{17}{10}$$

221. (b)

Milk : water

5 : 1 lunit increase

5 : 2 lunit increase

5 : 2 lunit 
$$\rightarrow$$
 5 ltr

5 unit  $\rightarrow$  25 ltr

The quantity of milk in mixture = 25 1tr

222. (a) Ratio of sides

7: 9: 
$$12 \xrightarrow{\times 3} 36 \text{ cm}$$

$$\text{diff= 5unit} \xrightarrow{\times 3} 15 \text{ cm}$$
1 unit = 3 cm
12 units =  $12 \times 3 = 36 \text{ cm}$ 

thus, largest side = 36 cm 223. (a)
$$\frac{d}{dx} = \frac{4x}{3x} = \frac{1}{b}$$

(sum of opposite angles in cyclic quadrilateral is 180°)

$$\Rightarrow x + 4x = 180^{\circ}$$

$$\Rightarrow 5x = 180^{\circ}$$

$$\Rightarrow x = 36^{\circ}$$

$$\angle b = 3x \Rightarrow 3 \times 36 \Rightarrow 108^{\circ}$$

$$\angle b = 180^{\circ} - 108^{\circ} \Rightarrow 72^{\circ}$$

The fourth angle = 
$$72^{\circ}$$

224. (c) Let,

 $\Rightarrow$  Sonali's age = 5x

 $\Rightarrow$  Monali's age = 3x

According to the question,

$$\Rightarrow \frac{5x+5}{3x+5} = \frac{10}{7}$$

$$\Rightarrow \frac{x+1}{3x+5} = \frac{2}{7}$$

$$\Rightarrow 7x+7 = 6x+10$$

$$\Rightarrow x = 3$$

$$\Rightarrow \text{ So Monali's present age } = 3x$$

=  $3 \times 3 = 9$  years 225. (b) Assume no. = 5x, 8x

According to the question,

$$8x - 5x = 48$$
$$3x = 48$$
$$x = 16$$

Smallest no. =  $5x = 5 \times 16 = 80$ 

vater
$$227. (a) \frac{a}{b} = \frac{c}{d} = \frac{5}{1}$$

$$a = c = 5$$

$$b = d = 1$$

$$\begin{bmatrix}
1 & \text{unit} & \rightarrow 5 & \text{ltr} \\
5 & \text{unit} & \rightarrow 25 & \text{ltr}
\end{bmatrix}$$

$$\therefore \frac{3a + 4c}{3b + 4d} = \frac{3 \times 5 + 4 \times 5}{3 \times 1 + 4 \times 1}$$

$$\therefore \text{in mixture} = 25 & \text{ltr}$$

$$= \frac{15 + 20}{3 + 4} = \frac{35}{7} = 5$$
228. (a)  $x : y = 3 : 5$ 

$$x - y = -2$$
Let number be 3A and 5A
$$3A - 5A = -2$$

$$-2A = -2$$

$$A = 1$$

$$x + y = 8A$$

 $= 8 \times 1 = 8$ 

229. (d) Let 
$$\frac{a}{b} = \frac{c}{d} = \frac{e}{f} = \frac{1}{2}$$

Now check from option to save your valuable time.

option:- (d)

$$\frac{a+3c-5e}{b+3d-5f} \Rightarrow \frac{c}{d} \left[ \frac{\frac{a}{c}+3-\frac{5e}{c}}{\frac{b}{d}+3-\frac{5f}{d}} \right]$$

$$\Rightarrow \frac{c}{d} = \frac{1}{2}$$
 (Satisfy)

230. (a) 
$$26\frac{2}{3}\% = \frac{80}{3 \times 100} = \frac{4}{15}$$

Decrease 
$$\% = \frac{55}{330} \times 100$$
$$= \frac{100}{6} = 16\frac{2}{3}\%$$

231.(a) Let the age of A & B = 5x and 6x years

$$\frac{5x+7}{6x+7} = \frac{6}{7}$$

$$35x + 49 = 36x + 42$$

$$x = 7$$
A's Present age =  $5x$ 

$$= 5 \times 7 = 35 \text{ years}$$

232. (b) 
$$a = \frac{7 \times 24}{10 \times 24} = \frac{168}{240}$$
,  
 $b = \frac{5 \times 30}{8 \times 30} = \frac{150}{240}$   
 $c = \frac{2 \times 80}{3 \times 80} = \frac{160}{240}$ 

The descending order = a > c > b 233. (b) If he spends two months income in 3 months. It means he saves the 3rd month income in 3 months.

He saves Rs. 6,000 in every 3 months.

So in 1 year he saves Rs. 4 × 6000 = Rs. 24000

234. (d) 
$$10\% = \frac{1}{10}$$

A B C

11 10

4 5

44 40 50

22 20 25

Ratio = 22 : 20 : 25 235. (c) Let the ratio of no. of coins be 3x : 2x : 5x.

then at 
$$x = 1$$

Rs.1 50p 25p

at  $x = 1$  3 2 5

sum 3 1 /1.25 = Rs.5.25

240 Rs. 252

So number of coins of 25p. = 240

236. (b) Let age of 
$$P = 5x$$
  
and age of  $Q = 6x$   
According to question,  
 $(5x + 4) + (6x + 4) = 52$   
 $11x = 44$   
 $x = 4$   
Present age of  $P = 5x + 4 = 24$ 

Present age of Q = 6x + 4 = 28

Required ratio = 
$$\frac{24}{28} = \frac{6}{7} = 6 : 7$$

237. (b) Milk: water

3:1

Quantity of milk = 
$$36 \times \frac{3}{4}$$

= 27 litres

Quantity of water =  $36 \times \frac{1}{4}$ 

= 9 litres

When 15 litres of milk is added Then,

238. (c) Let the numbers be 100A & 100 B. then 20A + 25B = 40 A 25B = 20A  $\frac{A}{B} = \frac{5}{4}$ 

100A : 100B 500 : 400 5 : 4

239. (c) Number A : B : C = 3 : 2 : 5 let A = 3x, B = 2x, C = 5xthen  $(1000 \times 3x) + (500 \times 2x) + (200 \times 5x)$ = 25000000 5000x = 25000000x = 5000

Total tickets = 3x + 2x + 5x = 10x=  $10 \times 5000 = 50000$ 

240. (d) SP of 80% = CP of 40%

$$\frac{80}{100} \text{SP} = \frac{40}{100} CP$$

$$2\text{SP} = 1 \text{ CP}$$

$$\frac{\text{CP}}{\text{SP}} = \frac{2}{1}$$

241. (d) Ratio of A's and B's Age = 4:3 = 4x:3x

After 6 years A's age = 4x + 6According to question 4x + 6 = 26

#### x = 5

:. B's Age =  $3x = 3 \times 5 = 15$ 

242. (d) Let no. are = 3x and 5x
∴ According to question

$$\frac{3x+6}{5x+6} = \frac{2}{3}$$
9x + 18 = 10x + 12
x = 6
So numbers are
3x = 3 × 6 = 18

 $5x = 5 \times 6 = 30$ 243. (c) Spirit Water 3 2 1 unit = 3

Spirit =  $3 \times 3 = 9$  liters

244. (c) 
$$\frac{m_1 d_1}{w_1} = \frac{m_2 d_2}{w_2}$$
  
 $\frac{7 \times 7}{7} = \frac{1 \times D_2}{1}$   
 $D_2 = 7$ 

245. (d) A: B = 
$$\frac{1}{3}$$
:  $\frac{1}{5}$  = 5:3 = 8
$$\begin{array}{c}
960 \\
\hline
5 \\
3 = 8 \\
|\times 120 \\
\hline
600 \\
360 \\
\hline
Difference = 600 - 360 = 240
\end{array}$$

246. (a) Using formula =  $\frac{m_1 d_1 h_1}{w_1}$ 

$$= \frac{m_2 d_2 h_2}{w_2} = \frac{36 \times 21}{140} = \frac{14 \times m_2}{140}$$

 $m_2 = 54 \text{ men}$ 

247. (b) Let the no. are 5x, 7x and 12xAccording to question, 5x + 12x = 7x + 50

17x - 7x = 5010x = 50

x = 5Sum of all three no.

= 5x + 12x + 7x  $= 24x = 24 \times 5$  = 120

248. (a) 
$$\frac{m_1 \times h_1}{w_1} = \frac{m_2 \times h_2}{w_2}$$
$$\frac{5 \times 5}{5} = \frac{10 \times 10}{w_2}$$
$$w_2 = 20$$
249. (a)

Days I II III people

₹ 15 7.50 2.50

Attendance 2 5 13 = 20

30: 37.5: 32.5 = 100.0

Average charge = 
$$\frac{100}{20}$$
 = ₹ 5

250. (b) A: B = 3: 4, B: C = 3.50: 3 B: C = 7: 6 A B C 3 4  $\frac{7}{21:28:24}$ A + B + C  $\rightarrow$  21 + 28 + 24  $73 \rightarrow 730$   $1 \rightarrow 10$ Then share of B Exceeds that

Then share of B Exceeds that of C by  $(28 - 24) \rightarrow 4$ =  $4 \times 10 = 40$ 

251. (b) Compound ratio of inverse

ratio = 
$$\frac{yz}{x} \times \frac{zx}{y} \times \frac{xy}{z}$$
  
=  $xyz : 1$ 

252. (b) A: B: C  $5_{\times 9}$ :  $4_{\times 9}$ :  $9_{\times 4}$ :  $10_{\times 4}$ 45: 36: 40 = 121 unit ∴ 121 unit = ₹2420 1 unit = ₹20 ∴ C will get = 40 unit = 40 × 20 = ₹800

253. (b) Assam: Darjeeling  $5 : 2 = 7 \text{unit} \times 7 \times 7$  49 kg  $\downarrow \times 7 \qquad \downarrow \times 7$   $35 \qquad 14$ Now required ratio 2: 1

Now required ratio 2: 1
×17.5
×17.5
35 17.5

So, required Darjeeling Tea = 17.5 – 14 = 3.5 kg

254. (d) Fail : Pass  
9 : 2 = 11unit 
$$\times 12$$
  $\rightarrow 132$   
 $\downarrow \times 12$   $\downarrow \times 12$   
108 24  
but new ratio = 108 + 4 : 24 - 4

0 = 108 + 4 : 24 - 112 : 20 28 : 5

255.(c) Let the no. of officers and soliders = 3x, 31x

According to the questions

$$\frac{3x-6}{31x-22} = \frac{1}{13}$$

$$39x-78 = 31x-22$$

$$8x = 56$$

$$x = 7$$

So, No. of officer before  $= 3x = 3 \times 7 = 21$ 

256. (c) Milk: Water  $4_{\times 28 \times 3} : 1_{\times 28 \times 3} = 5_{\times 28 \times 3}$   $3_{\times 35 \times 4} : 1_{\times 35 \times 4} = 4_{\times 35 \times 4}$   $5_{\times 20 \times 5} : 2_{\times 20 \times 5} = 7_{\times 20 \times 5}$  1256 : 424 157 : 53

257. (b) Total student = 48

And ratio of Number of boys to the number of girls is 5x : 3x

According to question,

5x + 3x = 48

$$\boxed{x=6}$$
Boys = 30

8x = 48

Girl = 18

Now, 
$$\frac{30}{18+y} = \frac{6}{5}$$
  
25 = 18 + y  
y = 7

258. (d) A: B

2:3

3:4

7:5

let third bottel have x litre mixture.

Now,

According to question,

$$\frac{10 \times \frac{2}{5} + 21 \times \frac{3}{7} + x \times \frac{7}{12}}{10 \times \frac{3}{5} + 21 \times \frac{4}{7} + x \times \frac{5}{12}} = \frac{1}{1}$$

$$\frac{4+9+\frac{7x}{12}}{6+12+\frac{5x}{12}} = \frac{1}{1}$$

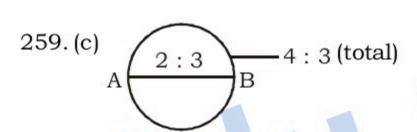
$$13 + \frac{7x}{12} = 18 + \frac{5x}{12}$$

$$\frac{7x}{12} - \frac{5x}{12} = 18 - 13$$

$$\frac{2x}{12}$$
 = 18 – 13

$$\frac{2x}{12} = 5$$

$$x = 30$$



AB divide the figure in two equal part.

$$4:3=7_{x_5}$$

$$2:3=5_{x_7}$$

 $20:15=35_{\times 2}$ 

 $14:21=35_{*1}$ 

$$40:30=70$$

$$14:21=35$$

26:9 → required ratio

260. (c) A

8×4000 +  $4 \times 6000$ 

: 9 × 5000 +

 $\mathbf{B}$ 

3×3000

56

54 Total profit is ₹ 6700 but ₹100 per month is withdrawn by A, So ₹1200 is taken by A in one year. Remaining profit will be distributed between A and B. According to question,

$$56x + 54x = 6700 - 1200$$

$$110x = 5500$$

x = 50

B's share =  $54 \times 50 = ₹2700$ 

261. (c) Let they divide the Amount 263. (b) Let the fraction is x in the ratio of x, y, and z.

Now,

According to question,

We know that when ₹ 22, ₹12 and ₹48 is diminshed the ratio become 7:10:13

$$x - 22 = 7a \Rightarrow x = 7a + 22$$

$$y - 35 = 10a \Rightarrow y = 10 + 35$$

$$z - 48 = 13a \Rightarrow z = 13a + 48$$

$$30a = 15525 - 105$$

$$a = \frac{15420}{30}$$

# a = 514

Hence,

$$x = 7a + 22 = 7 \times 514 + 22 = 3620$$

$$y = 10a + 35 = 7 \times 514 + 35 = 5175$$

$$z = 13a + 48 = 13 + 114 + 48 = 6730$$
  
New after adding \$16, \$77, and

Now, after adding ₹16, ₹77 and ₹37 in x, y and z respectively. The ratio is

3620 + 16 : 5175 + 77 : 6730 + 37

262.(c) A : C = 2 : 3 or 2x : 3x

$$B: D = 1: 2 \text{ or } y: 2y$$

According to question,

$$2x - 140 = y$$
 ..... (i)

$$3x - 80 = 2y$$
 ..... (ii)

multiply equation (i) by 2 and solved

$$4x - 280 = 2y$$
  
 $3x - 80 = 2y$ 

$$x - 200 = 0$$

$$x = 200$$

Now put value of x in equation ... (i)

$$2 \times 200 - 140 = y$$

#### |y = 260|

A's salary = 
$$2x = 200 \times 2 = ₹400$$

B's salary = y = 260 × 1 = ₹ 260  
C's salary = 
$$3x = 3 \times 200 = ₹ 600$$

D's salary = 
$$2y = 2 \times 260 = ₹520$$

$$x: \frac{1}{27} :: \frac{3}{7} : \frac{5}{9}$$

$$\frac{x}{\frac{1}{27}} = \frac{\frac{3}{7}}{\frac{5}{9}}$$

$$27x = \frac{3 \times 9}{7 \times 5}$$

$$x = \frac{1}{35}$$

$$9 \rightarrow 432$$

Boys = 
$$5 \times 48 = 240$$

Girls = 
$$48 \times 4 = 192$$

Now Total No. of boys

$$= 240 + 12 = 252$$

$$\frac{B}{C}$$
 = let the no. of girls be added is

$$\frac{B}{G} = \frac{7}{6}$$

$$\frac{252}{192+x} = \frac{7}{6}$$

$$216 = 192 + x$$

$$x = 24$$

265. (b) Let the no. is a, b, c

$$a = 3x$$

$$b = 2x$$

$$c = 5x$$

$$a^2 + b^2 + c^2 = 1862$$

$$9x^2 + 4x^2 + 25x^2 = 1862$$

$$38x^2 = 1862$$

$$x = 7$$

$$b = 2x = 7 \times 2 = 14$$

266. (a)

Acid Water  
A 
$$2_{x_3} + 3_{x_3} = 5_{x_3x_1}$$
  
= 6 = 9

B 
$$1_{x5x3} + 2_{x5x3} = 3_{x5x3}$$
  
= 15 = 30 | make

267.(b) Boys Girls

3 : 2

Boys
300
20%
scholarship
holder
60
240

Girls 200 = 500 = 
$$\frac{390}{500} \times 100 = 78\%$$

Scholarship holder 268. (d)

=  $\frac{390}{500} \times 100 = 78\%$ 

Copper Zinc Type-I  $\rightarrow 8_{\times 10}$   $3_{\times 10} = 11_{\times 2\times 5}$ 

% student not take Type-II  $\rightarrow 15_{\times 2}$   $7_{\times 2} = 22_{\times 2}$ 

scholarship =  $\frac{150 + 240}{500} \times 100$   $5 : 2$ 

