PERCENTAGE

E X E R C I S E

TYPE-A

1. If 80% of A = 50% of B and B = x% of A, then the value of x is :
   (a) 400   (b) 300
   (c) 160   (d) 150

2. If x is 80% of y, what percent of x is y?
   (a) 75%   (b) 80%
   (c) 100%   (d) 125%

3. If 8% of x is the same as 4% of y, then 20% of x is the same as:
   (a) 10% of y (b) 16% of y
   (c) 80% of y (d) 50% of y

4. If 120 is 20% of a number, then 120% of that number will be :
   (a) 20   (b) 120
   (c) 480   (d) 720

5. If x is less than y by 25% then y exceeds x by :
   (a) $33\frac{1}{3}$%   (b) 25%
   (c) 75%   (d) $66\frac{2}{3}$

6. If P % of P is 36, then P is equal to:
   (a) 3600   (b) 600
   (c) 60   (d) 15

7. 2 is what percent of 50 ?
   (a) 2%   (b) 2.5%   (c) 4%   (d) 5%

8. If 10% of m is the same as 20% of n, then m :n is equal to :
   (a) 2 : 1   (b) 1 : 2
   (c) 1 : 10   (d) 1 : 20

9. The ratio 5 : 4 expressed as a percent equals :
   (a) 125%   (b) 80%
   (c) 40%   (d) 12.5%

10. If the income of Mohan is 150% higher than Mahesh, then by what percent the income of Mahesh is less than Mohan?
    (a) 40%   (b) 50%
    (c) 60%   (d) 45%

11. 0.15% of $33\frac{1}{3}$% of ₹ 10000 is :
    (a) Rs. 5   (b) Rs.150
    (c) Rs. 0.05   (d) Rs.105

12. 30% of x is 72. The value of x is:
    (a) 216   (b) 240
    (c) 480   (d) 640

13. If 15% of (A+B) = 25% of (A−B), then what per cent of B is equal to A?
    (a) 10%   (b) 60%
    (c) 200%   (d) 400%

14. What is 20% of 25% of 300 ?
    (a) 150   (b) 60
    (c) 45   (d) 15

15. If x% of $\frac{25}{2}$ is 150, then the value of x is:
    (a) 1000   (b) 1200
    (c) 1400   (d) 1500

16. If 20% of A = 50% of B, then what percent of A is B ?
    (a) 30%   (b) 40%
    (c) 25%   (d) 15%

17. 18% of which number is equal to 12% of 75 ?
    (a) 50   (b) 100
    (c) 2   (d) $\frac{3}{2}$

18. If the income of Ram is $12\frac{1}{2}$% more than that of Shyam, the income of Shyam is less than that of Ram by
    (a) $11\frac{1}{9}$%   (b) $12\frac{1}{8}$%
    (c) $9\frac{1}{11}$%   (d) $11\frac{1}{11}$%

19. X's income is 20% more than that of Y. What per cent is Y's income less than X ?

20. The time duration of 1 hour 45 minutes is what percent of a day?
    (a) 7.218   (b) 7.291
    (c) 8.3   (d) 8.24

21. Which number is 40% less than 90% of 100?
    (a) 36   (b) 54
    (c) 50   (d) 60

22. If 30% of A = 0.25 of B = $\frac{1}{5}$ of C, then A : B : C is equal to :
    (a) 5 : 6 : 4   (b) 5 : 24 : 5
    (c) 6 : 5 : 4   (d) 10 : 12 : 15

23. 0.01 is what per cent of 0.1 ?
    (a) 10%   (b) $\frac{1}{10}$%
    (c) 100%   (d) $\frac{1}{100}$%

24. The difference of two numbers is 15% of their sum. the ratio of the larger number to the smaller number is:
    (a) 23 : 17   (b) 11 : 9
    (c) 17 : 11   (d) 23 : 11

25. P is six times as large as Q. The percent that Q is less than P, is :
    (a) $83\frac{1}{3}$%   (b) 70%
    (c) $63\frac{1}{3}$%   (d) 50%

26. 65g is what per cent of 2 kg ?
    (a) $\frac{13}{4}$%   (b) $\frac{65}{2}$%
    (c) $\frac{15}{8}$%   (d) $\frac{13}{8}$%

(a) $83\frac{1}{3}$%   (b) $16\frac{2}{3}$%
(c) $83\frac{2}{3}$%   (d) $16\frac{1}{3}$%

27. Half of 1 percent, written as a decimal, is:
    (a) 0.2   (b) 0.02
    (c) 0.005   (d) 0.05

28. 1.14 expressed as a percent of 1.9 is:
    (a) 6%   (b) 10%
    (c) 60%   (d) 90%

29. 0.001 is equivalent to:
    (a) 10%   (b) 1%
    (c) 0.01%   (d) 0.1%

30. If 60% of A = $\frac{3}{4}$ of B, then A : B is
    (a) 9 : 20   (b) 20 : 9
    (c) 4 : 5   (d) 5 : 4

31. If "basis points" are defined so that 1 percent is equal to 100 basis points, then by how many basis points is 82.5 percent greater than 62.5 percent.
    (a) 0.2   (b) 20
    (c) 200   (d) 2000

32. There is a 4% increase in volume when a liquid freezes to its solid state. The percentage decrease when solid melts to liquid again, is
    (a) $3\frac{3}{13}$ %   (b) 4%
    (c) $4\frac{1}{13}$ %   (d) $3\frac{11}{13}$ %

33. What will be the percentage of increase in the area of a square when each of the its sides is increased by 10%?
    (a) 20   (b) 11
    (c) 121   (d) 21

34. If 90% of A = 30% of B and B = 2x% of A, then the value of x is
    (a) 450   (b) 400
    (c) 300   (d) 150

35. One- third of 1206 is what per cent of 134?
    (a) 100%   (b) 150%
    (c) 200%   (d) 300%

36. If 120% of a is equal to 80% of b, then $\frac{b+a}{b-a}$ is equal to
    (a) 5   (b) 6
    (c) 7   (d) 8

37. If 20% of (A + B) = 50% of B,then value of $\frac{2A-B}{2A+B}$ is
    (a) $\frac{1}{2}$ (b) $\frac{1}{3}$
    (c) $\frac{1}{4}$ (d) 1

38. What percent of 3.6 kg is 72 gms.?
    (a) 32%   (b) 22%
    (c) 12%   (d) 2%

39. If 125% of x is 100, then x is :
    (a) 80   (b) 180
    (c) 400   (d) 125

40. If 50% of (P – Q) = 30% of (P +Q) and Q = x% of P, then the value of x is :
    (a) 30   (b) 25
    (c) 20   (d) 50

41. 25% of 120 + 40% of 380 = ? of 637
    (a) $\frac{2}{7}$ (b) $\frac{1}{7}$
    (c) $\frac{4}{7}$ (d) $\frac{3}{7}$

42. What is 27% of 36% of $\frac{5}{9}$ of 4500?
    (a) 239   (b) 241
    (c) 243   (d) 245

43. 1% of 1% of 25% of 1000 is:
    (a) 0.025   (b) 0.0025
    (c) 0.25   (d) 0.000025

44. If 60% of A = 30% of B, B = 40% of C and C = x% of A, then value of x is
    (a) 800   (b) 200
    (c) 300   (d) 500

45. If 20% of A = 30% of B = $\frac{1}{6}$ of C, then A : B : C is:
    (a) 2 : 3 : 16   (b) 3 : 2 : 16
    (c) 10 : 15 : 18   (d) 15 : 10 : 18

TYPE B

46. If 80% of a number added to 80 gives the result as the number itself, then the number is:
    (a) 200   (b) 300
    (c) 400   (d) 500

47. A person who spends $66\frac{2}{3}$% of his income is able to save ₹ 1200 per month. His monthly expenses (in ₹) is:

48. The income of C is 20% more than B's and the income of B is 25% more than A's. Find by how much percent is C's income more than A's?
    (a) 150%   (b) 50%
    (c) 25%   (d) 35%

49. If A exceeds B by 40%, B is less than C by 20%, then A : C is :
    (a) 28 : 25   (b) 26 : 25
    (c) 14: 27   (d) 27 : 14

50. In a school 70% of the students are girls. The number of boys are 510. Then the total number of students in the school is:
    (a) 850   (b) 1700
    (c) 1830   (d) 1900

51. When 60 is subtracted from 60% of a number, the result is 60. The number is:
    (a) 120   (b) 150
    (c) 180   (d) 200

52. The difference of two numbers is 20% of the larger number. If the smaller number is 20, the larger number is:
    (a) 25   (b) 45
    (c) 50   (d) 80

53. If A's income is 40% less than that of B, how much percent B's income is more than that of A?
    (a) 60%   (b) 40%
    (c) 66.66%   (d) 33.33%

54. Two numbers are respectively 20% and 50% of a third number. What percent is the first number of the second?
    (a) 10%   (b) 20%
    (c) 30%   (d) 40%

55. If a number x is 10% less than another number y and y is 10% more than 125, then x is equal to:
    (a) 150   (b) 143
    (c) 140.55   (d) 123.75

56. Two numbers are more than the third number by 20% and 50% respectively . Find the first number is what percent of the second number?
    (a) 100%   (b) 150%
    (c) 80%   (d) 120%

57. If 60% of A's income is equal to 75% of B's income, then B's income is equal to x% of A's income. The value of x is :
    (a) 70   (b) 60
    (c) 80   (d) 90

(a) 1,200   (b) 2,400
(c) 3,000   (d) 3,200

58. Two numbers are in the ratio 2 : 3. If 20% of the smaller number added to 20, is equal to the sum of 10% of the larger number and 25, then the smaller number is:
(a) 100   (b) 160
(c) 180   (d) 200

59. Two number are respectively 20% and 50% more than a third number. Then the ratio of the two numbers is:
(a) 2 : 5   (b) 3 : 5
(c) 4 : 5   (d) 6 : 7

60. 15% of 45% of a number is 105.3. What is 24% of that number.
(a) 385.5   (b) 374.4
(c) 390   (d) 375

61. The monthly income of a person was ₹ 13,500 and his monthly expenditure was ₹ 9,000. Next year his income increased by 14% and his expenditure increased by 7%. The percentage increase in his savings was:
(a) 7%   (b) 21%
(c) 28%   (d) 35%

62. A number if reduced by 25% becomes 225. By what percent should it be increased so that it becomes 375 ?
(a) 25%   (b) 30%
(c) 35%   (d) 75%

63. Out of two numbers, 40% of the greater number is equal to 60% of the smaller, If the sum of the numbers is 150, then the greater number is
(a) 70   (b) 80   (c) 90   (d) 60

64. If A's height is 10% more than B's height, by how much per cent is B's height less than that of A ?
(a) 10%   (b) $10\frac{1}{9}\%$
(c) $10\frac{1}{11}\%$ (d) $9\frac{1}{11}\%$

65. Given that, 10% of A's income = 15% of B's income = 20% of C's income. If sum of their incomes is ₹ 7800, then B's income is :
(a) ₹ 3600   (b) ₹ 3000
(c) ₹ 2400   (d) ₹ 1800

66. If three-fifth of sixty percent of a number is 36, the number is:
(a) 100   (b) 80
(c) 75   (d) 90

67. If Nita's salary is 25 percent more than Papiya's salary, then the percentage by which Papiya's salary is less than Nita's salary is:
(a) 15%   (b) 20%
(c) 25%   (d) 32%

68. X has twice as much money as that of Y and Y has 50% more money than that of Z. If the average money of all of them is ₹ 110, then the money, which X has is:
(a) ₹ 55   (b) ₹ 60
(c) ₹ 90   (d) ₹180

69. Tulsiram's salary is 20% more than that of Kashyap. If tulsiram saves ₹ 720 which is 4% of his salary, then Kashyap's salary is
(a) ₹ 15,000   (b) ₹ 12,000
(c) ₹ 10,000   (d) ₹ 22,000

70. Two numbers are less than a third number by 30% and 37% respectively. The percent by which the second number is less than the first is:
(a) 10% (b) 7% (c) 4% (d) 3%

71. If A's income is 25% less than B's income then by what percent is B's income more than that of A ?
(a) 25%   (b) 30%
(c) $33\frac{1}{3}\%$ (d) $66\frac{2}{3}\%$

72. A's salary is 40% of B's salary and B's salary is 25% more than C's salary then C's salary is how much percentage more than A?
(a) 50%   (b) 100%
(c) 150%   (d) 200%

73. If A exceeds B by 60% and B is less than C by 20%, then A : C is
(a) 32 : 25   (b) 25 : 32
(c) 8 : 5   (d) 4 : 5

74. In an examination, 93% of students passed and 259 failed. The total number of students appearing at the examination was:
(a) 3700   (b) 3850
(c) 3950   (d) 4200

75. If 24-carat gold is considered to be hundred per cent pure gold, then the percentage of pure gold in 22-carat gold is :
(a) $91\frac{3}{4}\%$ (b) $91\frac{2}{3}\%$
(c) $91\frac{1}{3}\%$ (d) $90\frac{2}{3}\%$

76. If 30% of A is added to 40% of B, the answer is 80% of B. What percentage of A is B ?
(a) 30%   (b) 40%
(c) 70%   (d) 75%

77. First and second numbers are less than a third number by 20% and 40% respectively. The second number is less than the first by:
(a) 7%   (b) 4%
(c) 3%   (d) 25%

78. One-third of a number is 96. What will 67% of that number be?
(a) 192.96   (b) 181.44
(c) 169.92   (d) 204.48

79. If $x\%$ of a is the same as $y\%$ of b, then $z\%$ of b will be
(a) $\frac{yz}{x}\%$ of a (b) $\frac{zx}{y}\%$ of a
(c) $\frac{xy}{z}\%$ of a (d) $\frac{y}{z}\%$ of a

80. If y% of one hour is, 1 minute 12 seconds, then y is equal to
(a) 2   (b) 1
(c) $\frac{1}{2}$ (d) $\frac{1}{4}$

81. A team played 40 games in a season and won 24 of them. What percent of winning?
(a) 70%   (b) 40%
(c) 60%   (d) 35%

82. A number is divided into two parts in such a way that 80% of 1st part is 3 more than 60% of 2nd part and 80% of 2nd part is 6 more than 90% of the 1st part. Then the number is:
(a) 125   (b) 130
(c) 135   (d) 145

83. A number, on subtracting 15 from it reduces to its 80%. What is 40% of the number ?
(a) 75   (b) 60   (c) 30   (d) 90

84. 498 is 17% less than a number then the number is:
(a) 610   (b) 580
(c) 600   (d) 620

85. Given A is 50% larger than C and B is 25% larger than C, then A is what percent larger than B?
    (a) 25% (b) 50%
    (c) 75% (d) 20%

86. What is to be added to 15% of 160 so that the sum may be equal to 25% of 240?
    (a) 24 (b) 84
    (c) 60 (d) 36

87. A number when reduced by 10% gives 30 as result. The number is:
    (a) $33\frac{1}{2}$ (b) $33\frac{1}{3}$
    (c) 40 (d) 35

88. In an examination A got 25% marks more than B, B got 10% less than C and C got 25% more than D. If D got 320 marks out of 500, the marks obtained by A were
    (a) 405 (b) 450
    (c) 360 (d) 400

89. A number increased by $22\frac{1}{2}$% gives 98 as result. The number is:
    (a) 45 (b) 18
    (c) 80 (d) 81

90. When 75 is added to 75% of a number, the answer is the number. Find 40% of that number.
    (a) 100 (b) 80
    (c) 120 (d) 160

91. The number that is to be added to 10% of 320 to have the sum as 30% of 230 is:
    (a) 37 (b) 32
    (c) 23 (d) 73

92. If X is 20% less than Y, then find the value of $\frac{Y-X}{Y}$ and $\frac{X}{X-Y}$:
    (a) $\frac{1}{5}, -4$ (b) $5, -\frac{1}{4}$
    (c) $\frac{2}{5}, -\frac{5}{2}$ (d) $\frac{3}{5}, -\frac{3}{5}$

93. In a village 30% of the population is literate. If the total population of the village is 6,600, then the number of literate is:

    (a) 1980 (b) 4620
    (c) 2200 (d) 3280

94. Two numbers A and B are such that the sum of 5% of A and 4% of B is $\frac{2}{3}$rd of the sum of 6% of A and 8% of B. The ratio A : B is:
    (a) 4 : 3 (b) 3 : 4
    (c) 1 : 1 (d) 2 : 3

95. A number is increased by x%; to get back to the original number, it is to be reduced by?
    (a) $\frac{10x}{10+x}$% (b) $\frac{100x}{100+x}$%
    (c) x% (d) $\frac{x}{100+x}$%

96. One-fifth of half of a number is 20. Then 20% of that number is
    (a) 80 (b) 60
    (c) 20 (d) 40

97. $83\frac{1}{3}$% of ₹ 90 is equal to 60% of ?
    (a) ₹ 122 (b) ₹125
    (c) ₹ 123 (d) ₹124

98. 51% of a whole number is 714. 25% of that number is
    (a) 250 (b) 350
    (c) 450 (d) 550

TYPE C

99. Price of sugar rises by 20%. By how much percent should the consumption of sugar be reduced so that the expenditure does not change?
    (a) 20% (b) 10%
    (c) $16\frac{2}{3}$% (d) 15%

100. What percent decrease in salary would exactly cancel out the 20 percent increase?
    (a) 20% (b) $16\frac{2}{3}$%
    (c) $33\frac{1}{3}$% (d) 18%

101. If food prices go up by 10%, by how much should a man reduce his consumption so as not to increase his expenditure?
    (a) $9\frac{1}{11}$% (b) 10%
    (c) $9\frac{2}{11}$%
    (d) The data is not sufficient

102. The price of an article is decreased by 10%. To restore its former value the new price must be increased by:
    (a) 10% (b) 11%
    (c) $11\frac{1}{8}$% (d) $11\frac{1}{9}$%

103. Salary of a person is first increased by 20%, then it is decreased by 20%. Then the percentage change in his salary is:
    (a) 4% decreased
    (b) 8% increased
    (c) 8% decreased
    (d) 20% increased

104. A number is increased by 20% and then it is decreased by 10%. Find the net increase or decrease percent.
    (a) 10% increase
    (b) 10% decrease
    (c) 8% increase
    (d) 8% decrease

105. The tax imposed on an article is decreased by 10% and its consumption is increased by 10%. Find the percentage change in revenue from it.
    (a) 10% increase
    (b) 2% decrease
    (c) 1% decrease
    (d) 11% increase

106. The price of an article was increased two times successively by 10% each time. By what percent should the new price be reduced so as to restore the original price.
    (a) 15% (b) 17.36%
    (c) 17% (d) 16.36%

107. If price of a book is first decreased by 25% and then increased by 20%, the net change in the price of the book will be :
    (a) 10% decrease
    (b) 5% decrease
    (c) no change
    (d) 5% increase

108. A worker suffers a 20% cut in his wage. He may regain his original wages by obtaining a rise of how much % ?
    (a) 27.5% (b) 25.0%
    (c) 22.5% (d) 20.0%

109. A number is increased by 20% and then again by 20%. By what per cent should the increased number be reduced so as to get back the original number ?

(a) $30\frac{5}{9}\%$ (b) $19\frac{11}{31}\%$

(c) 40% (d) 44%

110. The number of employees working in a farm is increased by 25% and the wages per head are decreased by 25%. If it result in $x\%$ decrease in total wages, then the value of x is:

(a) 0% (b) 25%

(c) 20% (d) $\frac{25}{4}\%$

111. The price of an article was increased by r%. Later the new price was decreased by r%. If the latest price was ₹ 1, then the original price was :

(a) ₹ 1 (b) ₹ $\frac{1-r^2}{100}$

(c) ₹ $\frac{\sqrt{1-r^2}}{100}$ (d) ₹ $\left(\frac{10000}{10000-r^2}\right)$

112. The price of petrol is increased by 25%. By how much percent a car owner should reduce his consumption of petrol so that the expenditure on petrol would not be increased?

(a) 25% (b) 30%

(c) 50% (d) 20%

113. A number is first decreased by 10% and then increased by 10%. The number so obtained is 50 less than the original number. The original number is:

(a) 5900 (b) 5000

(c) 5500 (d) 5050

114. The Government reduced the price of sugar by 10 per cent. By this a consumer can buy 6.2 kg more sugar for ₹ 837. The reduced price per kg of sugar is:

(a) ₹ 12.50 (b) ₹ 13.00

(c) ₹ 13.50 (d) ₹ 14.00

115. The price of sugar is increased by 20%. If the expenditure on sugar has to be kept the same as earlier, the ratio between the reduction in consumption and the original consumption is:

(a) 1 : 3 (b) 1 : 4

(c) 1 : 6 (d) 1 : 5

116. If the price of a commodity is decreased by 20% and its consumption is increased by 20%, what will be the increase or decrease in the expenditure on the commodity?

(a) 4% increase (b) 4% decrease

(c) 8% decrease (d) 8% increase

117. A number is first increased by 10% and then it is further increased by 20%. The original number is increased altogether by:

(a) 30% (b) 15%

(c) 32% (d) 36%

118. The length of a rectangle is increased by 10% and breadth decreased by 10%. Then the area of the new rectangle is:

(a) neither decreased nor increased

(b) increased by 1%

(c) decreased by 1%

(d) decreased 10%

119. B got 20% marks less than A. What per cent marks did A got more than B ?

(a) 20% (b) 25%

(c) 12% (d) 80%

120. Priyanshu's salary was reduced by 10% and then the reduced salary was increased by 10%. His new salary in comparison with his original salary is :

(a) the same (b) 1% more

(c) 1% less (d) 5% less

121. If the duty on an article is reduced by 40% of its present rate by how much per cent must its consumption increase in order that the revenue remains unaltered?

(a) 60% (b) $62\frac{1}{3}\%$

(c) 72% (d) $66\frac{2}{3}\%$

122. The price of an article is reduced by 25% but the daily sale of the article is increased by 30%. The net effect on the daily sale receipts is:

(a) $2\frac{1}{2}\%$ increase

(b) $2\frac{1}{2}\%$ decrease

(c) 2% increase

(d) 2% decrease

123. The price of sugar is reduced by 20%. Now a person can buy 500g more sugar for ₹ 36. The original price of the sugar per kilogram was:

(a) ₹ 14.40 (b) ₹ 18

(c) ₹ 15.60 (d) ₹ 16.50

124. The salary of a person is decreased by 25% and then the decreased salary is increased by 25%. His new salary in comparison with his original salary is:

(a) the same (b) 6.25% more

(c) 6.25% less (d) 0.625% less

125. Two successive price increases of 10% and 10% on an article are equivalent to a single price increase of:

(a) 19% (b) 20 %

(c) 21% (d) 22%

126. The price of an article was first increased by 10% and then again by 20%. If the last increased price was ₹ 33, the original price was:

(a) ₹ 30 (b) ₹ 27.50

(c) ₹ 26.50 (d) ₹ 25

127. If a number is increased by 20% and the resulting number is again increased by 20%, what percent is the total increase:

(a) 48% (b) 44%

(c) 41% (d) 40%

128. A reduction of 20% in the price of wheat enables Bhuvnesh to buy 5 kg more wheat for ₹ 320. The original rate (in rupees per kg) of wheat was:

(a) 16 (b) 18

(c) 20 (d) 21

129. The cost of an article was Rs. 75. The cost was first increased by 20% and later on it was reduced by 20%. The present cost of the article is

(a) ₹ 72 (b) ₹ 60

(c) ₹ 75 (d) ₹ 90

130. The price of a commodity rises from ₹ 6 per kg to ₹ 7.50 per kg. If the expenditure cannot increase, the percentage of reduction in consumption is:

(a) 15% (b) 20%

(c) 25% (d) 30%

131. The price of a commodity has increased by 60%. By what percent must a consumer reduce the consumption of the commodity so as not to increase the expenditure ?
(a) 37%   (b) 37.5%
(c) 40.5%   (d) 60%

132. When the price of an article was reduced by 20%, its sale increased by 80%. What was the net effect on the sale?
(a) 44% increase
(b) 44% decrease
(c) 66% increase
(c) 75% increase

133. When the price of cloth was reduced by 25%, the quantity of cloth sold increased by 20%. What was the effect on gross receipt of the shop?
(a) 5% increase
(b) 5% decrease
(c) 10% increase
(d) 10% decrease

134. The cost of an article worth ₹ 100 is increased by 10% first and again increased by 10%. The total increase in rupees is
(a) 20   (b) 21
(c) 110   (d) 121

135. When the price of sugar decreased by 10%, a man could buy 1 kg more for ₹ 270. Then the original price of sugar per kg is:
(a) ₹ 25   (b) ₹ 30
(c) ₹ 27   (d) ₹ 32

136. A reduction of 10% in the price of an apple enable a man to buy 10 apples more for ₹ 54. The reduced price of apples per dozen is
(a) ₹ 6.48   (b) ₹ 12.96
(c) ₹ 10.80   (d) ₹ 14.40

137. If the height of a cylinder is increased by 15% and the radius of its base is decreased by 10% then the percentage change in its curved surface area is :
(a) 2.5% increased
(b) 3.5% increased
(c) 2.5% decreased
(d) 3.5% decreased

138. Price of milk has increased by 20%. To keep the expenditure unchanged, the present consumption is to be reduced by :

(a) 20%   (b) 18%
(c) 10%   (d) $16\frac{2}{3}\%$

139. If a number is increased by 25% and the resulting number is decreased by 25%, then the percentage increase or decrease finally is
(a) no change
(b) decreased by $6\frac{1}{4}\%$
(c) increased by $6\frac{1}{4}\%$
(d) increased by 6%

140. If each side of a cube is increased by 10% the volume of the cube will increase by:
(a) 40%   (b) 30%
(c) 33.1%   (d) 25%

141. The difference between the value of the number increased by 20% and the value of the number decreased by 25% is 36. Find the number.
(a) 7.2   (b) 0.8
(c) 720   (d) 80

142. A number is first decreased by 20%. The decreased number is then increased by 20%. The resulting number is less than the original number by 20. Then the original number is
(a) 200   (b) 400
(c) 500   (d) 600

143. A reduction of 21% in the price of an item enables a person to buy 3 kg more for ₹ 100. The reduced price of item per kg is:
(a) ₹ 5.50   (b) ₹ 7.50
(c) ₹ 10.50   (d) ₹ 7.00

144. The percentage increase in the surface area of a cube when each side is doubled is:
(a) 200%   (b) 300%
(c) 150%   (d) 50%

145. In a factory, the production of cycles rose to 48,400 from 40,000 in 2 years. The rate of growth per annum is?
(a) 10.5%   (b) 9%
(c) 8%   (d) 10%

146. Water tax is increased by 20% but its consumption is decreased by 20%. Then the increase or decrease in the expenditure of the money is
(a) 4% increase
(b) 4% decrease
(c) No change
(d) 5% decrease

147. If radius of a circle is increased by 5%, then the increase in it's area is
(a) 10.25%   (b) 5.75%
(c) 10%   (d) 5%

148. The price of an antique is reduced by 20% and then this price is again reduced by 10%. The total reduction of the price is
(a) 25%   (b) 23%
(c) 30%   (d) 28%

TYPE D

149. In an examination, there were 1000 boys and 800 girls. If 60% of the boys and 50% of the girls passed. Find the percentage of the failed candidates?
(a) 46.4%   (b) 48.4%
(c) 44.4%   (d) 49.6%

150. In an examination a candidate must secure 40% marks to pass. A candidate, who gets 220 marks, fails by 20 marks. Find the maximum marks for the examination?
(a) 1200   (b) 300
(c) 600   (d) 450

151. In a class 60% of the students pass in Hindi and 45% pass in Sanskrit. If 25% of them pass in both subjects, what percentage of the students fail in both the subjects?
(a) 80%   (b) 75%
(c) 20%   (d) 25%

152. In an examination 70% of the candidates passed in English, 80% passed in Mathematics. 10% failed in both the subjects if 144 candidates pased in both, the total number of candidtes was:
(a) 125   (b) 200
(c) 240   (d) 375

153. The ratio of the number of boys and girls in a college is 3 : 2. If 20% of boys and 25% of girls are adults, the percentage of those students who are not adults is:
(a) 58% (b) 67.5%
(c) 78% (d) 82.5%

154. The ratio of the number of boys to that of girls in a school is 4 : 1. If 75% of boys and 70% of the girls are scholarship-holders, then the percentage of students who do not get scholarship is:
(a) 50% (b) 28%
(c) 75% (d) 26%

155. A student has to obtain 33% of total marks to pass. He got 25% of total marks and failed by 40 marks. The number of total marks is:
(a) 800 (b) 300
(c) 500 (d) 600

156. A candidate who gets 20% marks in an examination fails by 30 marks but another candidate who gets 32% gets 42 marks more than the pass marks. Then the percentage of pass marks is:
(a) 52% (b) 50%
(c) 33% (d) 25%

157. In an examination there were 640 boys and 360 girls, 60% of boys and 80% of girls were successful. The percentage of failure was:
(a) 20% (b) 60%
(c) 30.5% (d) 32.8%

158. In an examination, 34% failed in Mathematics and 42% failed in English. If 20% failed in both the subjects, the percentage of students who passed in both subjects was:
(a) 54% (b) 50%
(c) 44% (d) 56%

159. Two students appeared at an examination. One of them secured 9 marks more than the other and his marks were 56% of the sum of their marks. The marks obtained by them are:
(a) 42,33 (b) 43,34
(c) 41,32 (d) 39,30

160. In an examination, 52% students failed in Hindi and 42% in English. If 17% failed in both the subjects, what percentage of students passed in both the subjects ?
(a) 38% (b) 33%
(c) 23% (d) 18%

161. In a group of students, 70% can speak English and 65% can speak Hindi. If 27% of the students can speak none of the the two languages, then what percent of the group can speak both the languages ?
(a) 38% (b) 62%
(c) 28% (d) 23%

162. 25% of the candidates who appeared in an examination failed and only 450 students qualify the exam. The number of students who appeared in the examination was:
(a) 700 (b) 600
(c) 550 (d) 500

163. In a school 40% of the students play football and 50% play cricket. If 18% of the students neither play football nor cricket, the percentage of the students playing both is:
(a) 40% (b) 32%
(c) 22% (d) 8%

164. In a class, the number of girls is 20% more than that of the boys. The strength of the class is 66. If 4 more girls are admitted to the class, the ratio of the number of boys to that of the girls is:
(a) 1 : 2 (b) 3 : 4
(c) 1 : 4 (d) 3 : 5

165. In two successive years 100 and 75 students of a school appeared at the final examination. Respectively 75% and 60% of them passed. The average rate of pass is:
(a) $68\frac{4}{7}\%$ (b) 78%
(c) $80\frac{1}{2}\%$ (d) 80%

166. In an examination, 65% of the students passed in Mathematics, 48% passed in Physics and 30% passed in both. How much per cent of students failed in both the subjects ?
(a) 17% (b) 43%
(c) 13% (d) 47%

167. 72% of the students of a certain class took Biology and 44% took Mathematics. If each student took at least one subject from Biology or Mathematics and 40 took both then the total number of students in the class is :
(a) 200 (b) 240
(c) 250 (d) 320

168. In an examination, 60% of the candidates passed in English and 70% of the candidates passed in Mathematics, but 20% failed in both of these subjects. If 2500 candidates passed in both the subjects, the number of candidates who appeared at the examination was:
(a) 3000 (b) 3500
(c) 4000 (d) 5000

169. In a test a student got 30% marks and failed by 25 marks. In the same test another student got 40% marks and secured 25% marks more than the essential minimum pass marks. The maximum pass marks for the test were?
(a) 400 (b) 480
(c) 500 (d) 580

170. In a village, each of the 60% of families has a cow; each of the 30% of families has a buffalo and each of the 15% of families has both a cow and a buffalo. In all there are 96 families in the village. How many families do not have a cow or a buffalo?
(a) 20 (b) 24
(c) 26 (d) 28

171. In an examination, 35% of the candidates failed in Mathematics and 25% in English. If 10% failed in both mathematics and English, then how much percent of candidates passed in both the subjects ?
(a) 50 % (b) 55%
(c) 57% (d) 60%

172. A student scored 32% marks in science subjects out of 300. How much should he score in language papers out of 200 if he is to get overall 46% marks?
(a) 72% (b) 67%
(c) 66% (d) 60%

173. 90% of the students in school passed in English, 85% passed in Mathematics and 150 students passed in both the subjects. If no student failed in both the subjects, find the total number of students.
(a) 120   (b) 220
(c) 200   (d) 300

174. In a college, 40% of the students were allotted group A, 75% of the remaining were given group B and the remaining 12 students were given group C . Then the number of students who applied for the group is:
(a) 100   (b) 60
(c) 80   (d) 92

175. In the annual examination Ankita got 10% less marks than Eakta in Mathematics. Ankita got 81 marks. The marks of Eakta are:
(a) 90   (b) 87
(c) 88   (d) 89

176. The ratio of the number of boys to that of girls in a village is 3 : 2. If 30% of boys and 70% of girls appeared in an examination, the ratio of the number of students, appeared in the examination to that not appeared in the same examination is
(a) 1 : 1   (b) 27 : 23
(c) 9 : 14   (d) 23 : 27

177. In an examination there are three subjects of 100 marks each. A student scores 60% in the first subject and 80% in the second subject. He scored 70% in aggregate. His percentage of marks in the third subject is
(a) 80   (b) 60
(c) 65   (d) 70

178. A person gave 20% of his income to his elder son, 30% of the remaining to the younger son and 10% of the balance, he donted to a trust. He is left with ₹ 10080. His income was;
(a) ₹ 50000   (b) ₹ 40000
(c) ₹ 30000   (d) ₹ 20000

179. Ram spends 40% of his salary on food, 20% on house rent, 10% on entertainment and 10% on conveyance. If his savings at the end of a month are ₹ 1500, then his salary per month (in ₹) is:
(a) ₹ 8000   (b) ₹ 7500
(c) ₹ 6000   (d) ₹ 10000

180. Out of 2500 people, Only 60% have the saving habit. If 30% save with bank, 32% with post office and the rest with shares, the number of shareholders are:
(a) 450   (b) 570
(c) 950   (d) 1250

181. Bhuvnesh spends 30% of his salary on food and donates 3% in a Charitable Trust. He spends ₹ 2,310 on these two items, then total salary for that month is:
(a) ₹ 6,000   (b) ₹ 8,000
(c) ₹ 9,000   (d) ₹ 7,000

182. A man had a certain amount with him. He spent 20% of that to buy an article and 5% of the remaining on transport. Then he gifted ₹ 120. If he is left with ₹ 1,400, the amount he spent on transport is:
(a) ₹ 76   (b) ₹ 61
(c) ₹ 95   (d) ₹ 80

183. In a big garden 60% of the trees are coconut trees. 25% of the number of coconut trees are mango trees and 20% of the number of mango trees are apple trees. If the number of apple trees in the garden is 1440 then find the total number of trees in the garden:
(a) 48000   (b) 50000
(c) 51000   (d) 45000

184. Out of his total income, Mr. Kapur spends 20% on house rent and 70% of the rest on house- hold expenses. If he saves ₹ 1,800 what is his total income (in rupees)?
(a) ₹ 7,800   (b) ₹ 7,000
(c) ₹ 8,000   (d) ₹ 7,500

185. Bhuvnesh spends 75% of his income and saves the rest. His income is increased by 20% and he increases his expenditure by 10%. Then the increase in savings (in percentage) is:
(a) 50%   (b) 52%
(c) 45%   (d) 48%

186. A man gives 50% of his money to his son and 30% to his daughter. 80% of the rest is donated to a trust. If he is left with 16,000 now, how much money did he have in the beginning?
(a) ₹ 4,00,000   (b) ₹ 40,000
(c) ₹ 90,000   (d) ₹ 80,000

TYPE E

187. 8% of the voters in an election did not cast their votes. In this election, there were only two candidates. The winner by obtaining 48% of the total votes, defeated his contestant by 1100 votes. The total number of voters in the election was:
(a) 21000   (b) 23500
(c) 22000   (d) 27500

188. In an election between two candidates, 75% of the voters cast their votes, out of which 2% votes were declared invalid. A candidate got 9261 votes which were 75% of the valid votes. The total number of voters enrolled in that election was:
(a) 16000   (b) 16400
(c) 16800   (d) 18000

189. In an election between two candidates, the candidate getting 60% of the votes polled, is elected by a majority of 14,000 votes. The number of votes obtained by the winning candidates is
(a) 28,000   (b) 32,000
(c) 42,000   (d) 46,000

190. A man spends 40% of his monthly salary on food and one-third of the remaining on transport. If he saves ₹ 4,500 per month which is equal to half the balance after spending on food and transport, his monthly salary is:
(a) ₹ 11,250   (b) ₹ 22,500
(c) ₹ 25,000   (d) ₹ 45,000

191. In an election there were only two candidates. One of the candidates secured 40% of votes and is defeated by the other candidate by 298 votes. The total number of votes polled is:
(a) 745   (b) 1460
(c) 1490   (d) 1500

192. In an assembly election, a candidate got 55% of the total valid votes. 2% of the total votes were declared invalid. If the total number of voters is 104000, then the number of valid votes polled in favour of the candidate is:
(a) 56506   (b) 56650
(c) 56560   (d) 56056

193. In an election, there are three candidates contested. The first candidates got 40% votes and the second got 36% votes. If total number of votes polled were 36000, find the number of votes got by the 3rd candidate.
(a) 8040   (b) 8640
(c) 9360   (d) 9640

194. Two persons contested an election of Parliament. The winning candidate secured 57% of the total votes polled and won by a majority of 42,000 votes. The number of total votes polled is:
(a) 5,00,000   (b) 6,00,000
(c) 3,00,000   (d) 4,00,000

195. At an election there were two candidates. A candidate got 38% of votes and lost by 7200 votes. The total number of valid votes were:
(a) 13000   (b) 13800
(c) 16200   (d) 30000

TYPE F

196. A district has 64000 inhabitants. If the population increases at the rate of $2\frac{1}{2}\%$ per annum, the number of inhabitants at the end of 3 years will be:
(a) 70000   (b) 69200
(c) 68921   (d) 68911

197. The value of a property depreciates every year by 10% of its value at the beginning of the year. The present value of the property is ₹ 8100. What was its value 2 years ago ?
(a) ₹10,000   (b) ₹$\left(\frac{90}{11}\right)^{2}\times100$
(c) ₹$\left(\frac{100}{101}\right)^{2}\times8100$ (d) ₹ 9801

198. The population of a village has increased annually at the rate of 25%. If at the end of 3 years it is 10,000, the population in the beginning of the first year was:
(a) 5120   (b) 5000
(c) 4900   (d) 4500

199. The population of a town 2 years ago was 62,500. Due to migration to big cities, it decreases every year at the rate of 4%. The present population of the town is:
(a) 57,600   (b) 56,700
(c) 76,000   (d) 75,000

200. The population of a town increases every year by 4%. If population was 5,0000 in starting , then after 2 years it will be :
(a) 53,900   (b) 54,000
(c) 54,080   (d) 54,900

201. A man received ₹ 8,80,000 as his annual salary of the year 2007 which was 10% more than his annual salary in 2006. His annual salary in the year 2006 was:
(a) ₹ 4,80,000   (b) ₹ 8,00,000
(c) ₹ 4,00,000   (d) ₹ 8,40,000

202. The value of an equipment depreciates by 20% each year. How much less will the value of the equipment be after 3 years?
(a) 48.8%   (b) 51.2%
(c) 54%   (d) 60%

203. Present population of a village is 67600, It has been increasing annually at the rate of 4%. What was the population of the village two years ago ?
(a) 62500   (b) 63000
(c) 64756   (d) 65200

204. The value of a machine depreciates by 5% every year. If its present value is ₹ 2,00,000, its value after 2 years will be:
(a) ₹ 1,80,500   (b) ₹ 1,99,000
(c) ₹ 1,80,000   (d) ₹ 2,10,000

205. If the population of a town is 64000 and its annual increase is 10%, then its population at the end of 3 years will be :
(a) 80000   (b) 85184
(c) 85000   (d) 85100

206. A clerk received an annual salary of ₹ 3,660 in the year 1975. This was 20% more than his salary in 1974. What was his salary in 1974?
(a) ₹ 3,005   (b) ₹ 3,000
(c) ₹ 3,500   (d) ₹ 3,050

207. The enhanced salary of a man becomes ₹ 24,000 after 20% increment. His previous salary was:
(a) ₹ 2,0000   (b) ₹ 21,000
(c) ₹ 16,000   (d) ₹ 18,000

208. The value of a machine is ₹ 6,250. It decreases by 10% during the first year, 20% during the second year and 30% during the third year. What will be the value of the machine after 3 years?
(a) ₹ 2,650   (b) ₹ 3,050
(c) ₹ 3,150   (d) ₹ 3,510

209. Raman's salary is increased by 5% this year. If his present salary is ₹ 1,806, the last year's salary was
(a) ₹ 1720   (b) ₹ 1620
(c) ₹ 1520   (d) ₹ 1801

210. The strength of a school increases and decreases in every alternate year by 10%. It started with increase in 2000, then the strength of the school in 2003 as compared to that in 2000 was:
(a) increased by 8.9%
(b) decreased by 8.9%
(c) increased by 9.8%
(d) decreased by 9.8%

211. The pouplation of a town increases each year by 4% of its total at the beginning of the year. If the population on 1st january 2001 was 500000, what was it on 1st January, 2004?
(a) 562432   (b) 652432
(c) 465223   (d) 564232

212. The income of a company increases 20% per annum. If its income is ₹ 26,64,000 in the year 2012. Then its income in the year 2010 was:
(a) ₹ 21,20,000   (b) ₹ 18,50,000
(c) ₹ 28,20,000   (d) ₹ 28,55,000

TYPE G

213. In an alloy, there is 12% of copper, to get 69 kg of copper, how much alloy will be required?
(a) 424 kg   (b) 575 kg
(c) 828 kg   (b) $1736\frac{2}{3}$ kg

214. 40 litres of a mixture of milk and water contains 10% of water, the water to be added, to make the water content 20% in the new mixture is:
(a) 6 litres (b) 6.5 litres
(c) 5.5 litres (d) 5 litres

215. A sample of 50 litres of glycerine is found to be adulterated to the extent of 20%. How much pure glycerine should be added to it so as to bring down the percentage of impurity to 5% ?
(a) 155 litres (b) 150 litres
(c) 150.4 litres (d) 140 litres

216. Fresh fruit contains 68% water and dry fruit contains 20% water. How much dry fruit can be obtained from 100 kgs of fresh fruits?
(a) 32 kgs (b) 40 kgs
(c) 52 kgs (d) 80 kgs

217. 1 litre of water is added to 5 litres of alcohol-water solution containing 40% alcohol strength. The strength of alcohol in the new soultion will be:
(a) 30% (b) 33%
(c) $33\frac{2}{3}\%$ (d) $33\frac{1}{3}\%$

218. 200 litres of a mixture contains 15% water and the rest is milk. The amount of milk that must be added so that the resulting mixture contains 87.5% milk is:
(a) 30 litres (b) 35 litres
(c) 40 litres (d) 45 litres

219. In what ratio must a mixture of 30% alcohol strength be mixed with that of 50% alcohol strength so as to get a mixture of 45% alcohol strength?
(a) 1 : 2 (b) 1 : 3
(c) 2 : 1 (d) 3 : 1

220. 75 gm of sugar solution has 30% sugar in it. Then the quantity of sugar that should be added to the solution to make the quantity of the sugar 70% in the solution is :
(a) 125gm (b) 100 gm
(c) 120 gm (d) 130 gm

221. One type of liquid contains 20% water and the second type of liquid contains 35% of water. A glass is filled with 10 part of first liquid and 4 parts of second liquid. The water in the new mixture in the glass is:

(a) 37% (b) 46%
(c) $12\frac{1}{7}\%$ (d) $24\frac{2}{7}\%$

222. 15 litres of a mixture contains alcohol and water in the ratio 1 : 4, If 3 litres of Water is mixed in it, the percentage of alochol in the new mixture will be:
(a) 15% (b) $16\frac{2}{3}\%$
(c) 17% (d) $18\frac{1}{2}\%$

223. The percentage of metals in a mine of lead ore is 60%. Now the percentage of silver is $\frac{3}{4}\%$ of metals and the rest is lead. If the mass of ore extracted from this mine is 8000 kg, the mass (in kg.) of lead is:
(a) 4763 (b) 4764
(c) 4762 (d) 4761

224. 300 grams of sugar solution has 40% of sugar in it. How much sugar should be added to make it 50% in the solution?
(a) 10 gms (b) 60 gms
(c) 40 gms (d) 80 gms

225. 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
(c) 1000 gms (d) 1200 gms

TYPE H

226. Due to an increase of 50% in the price of eggs, 4 eggs less are available for ₹ 24. The present rate of eggs per dozen is :
(a) ₹ 24 (b) ₹ 27
(c) ₹ 36 (d) ₹ 42

227. If a man receives on one-fourth of his capital 3% interest, on two third 5% and on the remaining 11%, the percentage interest he receives on the whole is:
(a) 4.5% (b) 5% (c) 5.5% (d) 5.2%

228. A reduction in the price of apples enables a person to purchase 3 apples for ₹ 1 instead of ₹ 1.25. What is the % of reduction in price ?
(a) 20% (b) 25%
(c) 30% (d) $33\frac{1}{3}\%$

TYPE I

229. The expenses on rice, fish and oil of a family are in the ratio 12 : 17 : 3. The price of these articles are increased by 20%, 30% and 50% respectively. The total expenses of family on these articles are increased by:
(a) $14\frac{1}{8}\%$ (b) $7\frac{1}{8}\%$
(c) $28\frac{1}{8}\%$ (d) None of these

230. The bus fare and train fare of a place from Kolkata were ₹ 20 and ₹ 30 respectively. Train fare has been increased by 20% and the bus fare has been increased by 10%. The ratio of new train fare to new bus fare is:
(a) 11: 18 (b) 18 : 11
(c) 5 : 3 (d) 3 : 5

231. Ram's expenditure and savings are in the ratio 5 : 3. If his income increases by 12% and expenditure by 15%, then by how much percent does his savings increase?
(a) 12% (b) 7%
(c) 8% (d) 13%

232. The ratio of two numbers is 4 : 5, when the first is increased by 20% and the second is decreased by 20% , then the ratio of the resulting numbers is:
(a) 4 : 5 (b) 5 : 4
(c) 5 : 6 (d) 6 : 5

233. A man spends 75% of his income. His income increased by 20% and he increased his expenditure by 15%. His savings will then be increased by:
(a) 33% (b) $33\frac{1}{3}\%$
(c) 35% (d) 40%

MISCELLANEOUS

234. A student multiplied a number by $\frac{3}{5}$ instead of $\frac{5}{3}$. What is the percentage error in the calculation?
(a) 44%   (b) 34%
(c) 54%   (d) 64%

235. In a town, the population was 8000. In one year, male population increased by 10% and female population increased by 8% but the total population increased by 9%. The number of males in the town was:
(a) 4000   (b) 4500
(c) 5000   (d) 6000

236. The sum of the numbers of boys and girls in a school is 150. If the number of boys is x, the number of girls becomes x% of the total number of students. The number of boys is:
(a) 90   (b) 75
(c) 25   (d) 60

237. If the sales tax on a television set increases from $7\frac{1}{2}$% to 8%, what more amount will have to be paid for the television whose price (excluding sales taxes) is ₹ 19000?
(a) ₹ 190   (b) ₹ 95
(c) ₹ 180   (d) ₹ 90

238. A fruit seller had some apples. He sells 40% apples and still has 420 apples. Originally, he had :
(a) 588 apples   (b) 600 apples
(c) 672 apples   (d) 700 apples

239. If the monthly salary of a fan employee is increased by $2\frac{2}{3}$%, he gets 72 rupees more. His monthly salary (in rupees) is:
(a) ₹ 7200   (b) ₹ 3600
(c) ₹ 2700   (d) ₹ 2000

240. If the total monthly income of 16 persons is ₹ 80,800 and the income of one of them is 120% of the average income, then his income is:
(a) ₹ 5,050   (b) ₹ 6,060
(c) ₹ 6,160   (d) ₹ 6,600

241. A spider climbed $62\frac{1}{2}$% of the height of the pole in one hour and in the next hour it covered $12\frac{1}{2}$% of the remaining height. If pole's height is 192 m, then the distance climed in second hour is
(a) 3 m   (b) 5 m
(c) 7 m   (d) 9 m

242. An individual pays 30% income tax. On this tax he has to pay a surcharge of 10%. Thus , the net tax rate, he has to pay is
(a) 45%   (b) 40%
(c) 33%   (d) 27%

243. A batsman scored 110 runs which included 3 boundaries and 8 sixes. What per cent of his total score, did he make by running between the wickets?
(a) 45%   (b) $45\frac{5}{11}$%
(c) $54\frac{6}{11}$%   (d) 55%

244. If the numerator of a fraction is increased by 20% and the denominator is decreased by 5%, the value of the new fraction becomes $\frac{5}{2}$. The original fraction is:
(a) $\frac{24}{19}$ (b) $\frac{3}{18}$
(c) $\frac{95}{48}$ (d) $\frac{48}{95}$

245. An interval of 3 hours 40 minutes is wrongly estimated as 3 hours 45.5 minutes. The error percentage is:
(a) 5.5%   (b) 5.2%
(c) 5%   (d) 2.5%

246. If the income tax is increased by 19%, the net income is reduced by 1%. The rate of income tax is:
(a) 6%   (b) 4%
(c) 5%   (d) 7.2%

247. The population of a village was 9800. In a year with the increase in population of males by 8% and that of females by 5%, the population of the village became 10458. What was the number of males in the village before increase ?
(a) 4200   (b) 4410
(c) 5600   (d) 6048

248. In the expression xy^2, the values of both variables x and y are decreased by 20%. By this, the value of the expression is decreased by:
(a) 40%   (b) 80%
(c) 48.8%   (d) 51.2%

249. A and B are two fixed points 5 cm apart and C is a point on AB such that AC is 3 cm. If the length of AC is increased by 6%, the length of CB is decreased by:
(a) 6%   (b) 7%
(c) 8%   (d) 9%

250. A man invests a part of ₹ 10,000 at 5% and the remainder at 6%. The 5% investment yields annually ₹ 76.50 more than the 6% investment. The amount invested at 6% is:
(a) ₹ 3,600   (b) ₹ 3,550
(c) ₹ 3,850   (d) ₹ 4,000

251. Each side of a rectangular field is diminished by 40%. By how much percent is the area of the field diminished?
(a) 32   (b) 64
(c) 25   (d) 16

252. Ram saves 14% of his salary while Shyam saves 22%. If both get the same salary and Shyam saves ₹ 1540, what is the savings of Ram?
(a) ₹ 990   (b) ₹ 980
(c) ₹ 890   (d) ₹ 880

253. When 60% of a number is subtracted from another number, the second number reduces to its 52%, the ratio of the first number to the second number is:
(a) 6 : 5   (b) 5 : 3
(c) 5 : 4   (d) 4 : 5

254. In an examination in which full marks were 500. A got 25% more than C, C got 20% less than D. If A got 360 marks. What percentage of full marks was obtained by D?
(a) 72%   (b) 80%
(c) 50%   (d) 60%

255. In an examination, 1100 boys and 900 girls appeared, 50% of the boys and 40% of the girls passed the examination. The percentage of candidates who failed:

(a) 45%   (b) 45.5%

(c) 50%   (d) 54.5%

256. In a factory 60% of the workers are above 30 years and of these 75% are males and the rest are females. If there are 1350 male workers above 30 years, the total number of workers in the factory is:

(a) 3000   (b) 2000

(c) 1800   (d) 1500

257. In a class, the average score of girls in an examination is 73 and that of boys is 71. The average score for the whole class is 71.8. Find the percentage of girls.

(a) 40%   (b) 50%

(c) 55%   (d) 60%

258. Tickets for all but 100 seats in a 10,000 seat stadium were sold. Of the tickets sold, 20% were sold at half price and the remaining tickets were sold at the full price of ₹ 20. The total revenue from the ticket sales, (in ₹) was :

(a) 158400   (b) 178200

(c) 180000   (d) 198000

259. 31% of employees pay tax in the year 2008. Non-tax paying employees are 20,700. The total number of employees is:

(a) 31,160   (b) 64,750

(c) 30,000   (d) 66,775

260. The allowance of an employee constitutes 165% of his basic pay. If he receives ₹ 11925 as gross salary, then his basic pay is (in ₹):

(a) 4000   (b) 5000

(c) 4500   (d) 5500

261. A saves 20% of his monthly salary. If his monthly expenditure is ₹ 6000, then his monthly savings is:

(a) Rs. 1,500   (b) Rs. 1,800

(c) Rs. 1,200   (d) Rs. 4,800

262. The population of a town is 3,11,250. The ratio of women to men is 43 : 40. If there are 24%

literate among women and 10% illiterate, among men, the total number of literate persons in the town is:

(a) 1,70,700   (b) 1,73,700

(c) 1,75,700   (d) 1,73,200

263. The population of a village is 25,000. One-fifth are females and the rest are males, 5% of males and 40% of females are uneducated. What percentage on the whole are educated ?

(a) 75%   (b) 88%

(c) 55%   (d) 85%

264. A box has 100 blue, 50 red balls, 50 black balls, 25% of blue balls and 50% of red balls are taken away, Precentage of black balls at present is

(a) 50%   (b) 25%

(c) $33\frac{1}{3}$%   (d) 40%

265. A dozen pairs of socks quoted at ₹ 180 are available at discount of 20%. How many pairs of socks can be bought for ₹ 48?

(a) 3 pairs   (b) 4 pairs

(c) 2 pairs   (d) 5 pairs

266. The price of a school bag and a shoe are in the ratio 7 : 5. The price of the school bag is ₹ 200 more than the price of the shoe. Then the price of the shoe is:

(a) ₹ 200   (b) ₹ 700

(c) ₹ 500   (d) ₹ 1,200

267. Three sets of 40, 50 and 60 students appeared for an examination and the pass percentage was 100., 90 and 80 respectively. The pass percentage of the whole set is

(a) $88\frac{2}{3}$%   (b) $84\frac{2}{3}$%

(c) $88\frac{1}{3}$%   (d) $84\frac{1}{3}$%

268. The sum of two numbers is 520. If the bigger number is decreased by 4% and the smaller number is increased by 12% then the numbers obtained are equal. The smaller number is

(a) 280   (b) 240

(c) 210   (d) 300

269. In two successive years, 80 and 60 students of a school appeared at the final examination, of which 60% and 80% passed respectively. The average rate of students passed (in percent) is:

(a) 68%   (b) $68\frac{4}{7}$%

(c) 32%   (d) 36%

270. In an office, 40% of the staff is female. 70% of the female staff and 50% of the male staff are married. The percentage of the unmarried staff in the office is

(a) 65%   (b) 42%

(c) 60%   (d) 64%

271. From 1980-1990, the population of a country was increased by 20%.

From 1990-2000, the population of the country was increased by 20%.

From 2000-2010, the population of the country was increased by 20%.

Population (in percentage) of the country from 1980-2010 was increase by

(a) 72.2%   (b) 72.8%

(c) 60%   (d) 62.8%

272. A number is increased by 15% and then decreased by 25% and the number becomes 22 less than the original number. The original number is

(a) 140   (b) 160

(c) 120   (d) 100

273. If a person spends 40% of his income on food, 20% on house rent and 70% of the remaining on children's education, then the percentage of his income left is

(a) 6%   (b) 8%

(c) 10%   (d) 12%

274. What percentage of the whole week does Ajay spend in office, if his office hours are 9 am to 5 pm from Monday to Friday?

(a) 33.33%   (b) 23.81%

(c) 25.86%   (d) 42.23%

275. There is a ratio of 5 : 4 between two numbers. If 40% of the first number is 12, then what would be 50% of the second number?
(a) 12   (b) 24
(c) 18
(d) Data Inadequate

276. In an election 10% of the voters on the voter's list did not cast their votes and 60 voters cast their ballot paper blank. There were only two canditates. The winner was supported by 47% of all the voters in the list and he got 308 votes more than his rival. The number of voters on the list was
(a) 3600   (b) 6200
(c) 4575   (d) 6028

277. The price of an edible oil is increased by 25%. To maintain the budget, Sushma reduces the consumption of this oil by 20%. The increase in expenditure due to this edible oil is:
(a) 0%   (b) 1%
(c) 2%   (d) 3%

278. The ratio of the number of boys and girls in school is 8 : 12. If 50% of boys and 25% of girls are getting scholarships for their studies, what is the percentage of school students who are not getting any scholarships ?
(a) 65%   (b) 66%
(c) 67%   (d) 68%

279. Christy donated 10% of his income to an orphange and deposited 20% of the remainder in his bank. If he has now ₹ 7200 left, what is his income.
(a) ₹ 10000   (b) ₹ 8000
(c) ₹ 9000   (d) ₹ 8500

280. If Rajdhani is $16\frac{2}{3}$ % slower than shatabdi, then shatabdi is faster than Rajdhani by:
(a) 20%   (b) 25%
(c) 30%   (d) 33%

281. The red blood cells in a blood sample grows by 10% per hour in first two hours, decreases by 10% in next one hour, remains constant in next one hour and again increases by 5% per hour in next two hours. If the original count of the red blood cells in the sample is 40000, find the approximate red blood cell count at the end of 6 hours.
(a) 40000   (b) 45025
(c) 48025   (d) 50025

282. A number is decreased by 10% and the resulting number is again decreased by 20%. What is the final percentage of decrease?
(a) 25%   (b) 26%
(c) 27%   (d) 28%

283. The average of marks obtained by 100 candidates in a certain examination is 30. If the average marks of passed candidates is 35 and that of the failed candidates is 10, what is the number of candidates who passed the examinations?
(a) 60   (b) 70
(c) 80   (d) 90

284. In a motor of 120 machine parts, 5% parts were defective. In another motor of 80 machine parts, 10% parts were defective. For the two motors considered together, the percentage of defective machine parts were
(a) 7   (b) 6.5
(c) 7.5   (d) 8

285. A man spends a part of his monthly income and saves the rest. The ratio of his expenditure to the saving is 61 : 6. If his monthly income is Rs. 8710, the amount of his monthly saving is
(a) Rs. 870   (b) Rs. 690
(c) Rs. 980   (d) Rs. 780

286. A person loses 75% of his money in the first bet, 75% of the remaining in the second and 75% of the remaining in the third bet and returns home with Rs. 2 only. His initial money was
(a) Rs. 64   (b) Rs. 128
(c) Rs. 256   (d) Rs. 945

287. If A is equal to 20% of B and B is equal to 25% of C. Then what percentage of C is equal to A?
(a) 10   (b) 15
(c) 5   (d) 20

288. The price of an articale is decreased by 10% to restore it to its former value, the new price must be increased by:
(a) $9\frac{1}{11}$ %   (b) 10%

(c) 11%   (d) $11\frac{1}{9}$ %

289. In an examination, 35% of total students failed in Hindi, 45% failed in English and 20% failed in both. Find the percentage of those students who passed in both the subjects?
(a) 45%   (b) 35%
(c) 20%   (d) 40%

290. A's salary is 50% more than that of B. Then B's salary is less than that of A by
(a) 50%   (b) $33\frac{1}{3}$ %

(c) $33\frac{1}{4}$ %   (d) $44\frac{1}{2}$ %

291. Kamal has some apples. If he sold 40% apples more than he ate if he sold 70 apples then. How many he ate.
(a) 18   (b) 42
(c) 50   (d) 99

292. What is the difference between 0.6 and 0.6%?
(a) 5.94   (b) 0.594
(c) 60   (d) 54

293. A's salary was decreased by 50% and subsequently increased by 50%. How much percent does he lose?
(a) 25% (b) 30%
(c) 20% (d) No loss

294. The ratio of number of boys and girls in a school of 720 students is 7 : 5. How many more girls should be admitted to make the ratio 1 : 1?
(a) 90 (b) 120
(c) 220 (d) 240

295. A basket contains 300 mangoes. 75 mangoes were distributed among some students. Find the percentage of mangoes left in the basket
(a) 70% (b) 72%
(c) 76% (d) 75%

296. If 35% of A's income is equal to 25% of B's income, then the ratio of A's income to B's income is
(a) 7:5 (b) 5:7
(c) 4:7 (d) 4:3

297. A man spends 15% of his income. If his expenditure is ₹ 75, his income (in rupees) is:
(a) 400 (b) 300
(c) 750 (d) 500

298. The average marks obtained in a class of 50 students is 70%. The average of first 25 is 60% and that of 24 is 80%. What is the marks obtained by the last student?
(a) 90% (b) 60%
(c) 80% (d) 70%

299. In the last financial year, a car company sold 41,800 cars. In this year, the target is to sell 51,300 cars. By what percent must the sale be increased?
(a) $11\frac{9}{22}\%$ (b) $8\frac{9}{22}\%$
(c) $8\frac{11}{23}\%$ (d) $22\frac{8}{11}\%$

300. The price of rice has increased by 60%. In order to restore the original price, the new price must be reduced by
(a) $33\frac{1}{3}\%$ (b) $37\frac{1}{2}\%$
(c) 40% (d) 45%

301. The marked price of an article is ₹ 5000 but due to festive offer a certain percent of discount is declared. Mr. X availed this opportunity and bought the article at reduced price. He then sold it at ₹ 5000 and thereby made a profit of $11\frac{1}{9}\%$. The percentage of discount allowed was?
(a) 10 (b) $3\frac{1}{3}$
(c) $7\frac{1}{2}$ (d) $11\frac{1}{9}$

302. A number is increased by 20%. To get back the original number, the increased number is to be reduced by
(a) 20% (b) 21%
(c) $16\frac{2}{3}\%$ (d) $14\frac{1}{3}\%$

303. A village lost 12% of its goats in a flood and 5% of remainder died from diseases. If the number left now is 8360. What was the original number before the flood?
(a) 1000 (b) 10000
(c) 1,00,000 (d) 8360

304. A scored 72% in a paper with a maximum marks of 900 and 80% in another paper with a maximum marks of 700. If the result is based on the combined percentage of two papers, the combined percentage is
(a) 75.5% (b) 76%
(c) 76.5% (d) 77%

305. An army lost 10% of its men in war, 10% of the remaining died due to disease and 10% of the rest were declared disabled. Thus the strength of the army was reduced to 7,29,000 active men. The original strength of the army was
(a) 1500000 (b) 1000000
(c) 1200000 (d) 1100000

306. What % of a day is 30 minutes?
(a) 2.83 (b) 2.083
(c) 2.09 (d) 2.075

307. A businessman's earning by 25% in one year but decreases by 4% in the next . Going by this pattern, after 5 years, his total earnings would be Rs.72000. What is his present earning ?
(a) Rs. 10000 (b) Rs. 80000
(c) Rs. 40000 (d) Rs. 54000

308. In an exmination 73% of the candidates passed in quantitative aptitude test, 70% passed in General awareness and 64% passed in both. If 6300 failed in both subject the total number of examinees were
(a) 60000 (b) 50000
(c) 30000 (d) 25000

309. A man spends 75% of his income. His income increases by 20% and his expenditure also increases by 10% . Find the percentage incerase in his savings.
(a) 25% (b) 50%
(c) 15% (d) 10%

310. A line of length 1.5 metres was measured as 1.55 metres by mistakes. What will be the value of error percent?
(a) 0.05% (b) $3\frac{7}{31}\%$
(c) $3\frac{1}{3}\%$ (d) 0.08%

311. A businessman imported Laptop, worth ₹ 210000, Mobile phones worth ₹ 100000 and Television sets worth ₹ 150000. He had to pay 10% duty on Laptops, 8% on Phones and 5% on Television sets as special case. How much total duty (in rupees) he had to pay on all items as per above details?
(a) 36500 (b) 37000
(c) 37250 (d) 37500

312. A man spend $7\frac{1}{2}\%$ of his money and after spending 75% of the remaining he had ₹ 370 left. How much money did he have

(a) 1200   (b) 1600
(c) 1500   (d) 1400

(SSC CGL Mains Exam 2016)

313. On a certain date, Pakistan has a success rate of 60% against India in all the ODIs played between the two countries. The lost the next 30 ODIs. In a row to India and their success rate comes down to 30%. The total number of ODIs played between the two countries is

(a) 50   (b) 45
(c) 60   (d) 30

(SSC CGL Mains Exam 2016)

314. A boy found the answer for the question 'Subtract the sum $\frac{1}{4}$ and $\frac{1}{5}$ from unity and express the answer in decimals" as 0.45. The percentage of error in his answer has

(a) $\frac{100}{11}\%$

(b) 50%

(c) 10%

(d) $\frac{200}{11}\%$

(SSC CGL Mains Exam 2016)

🔑 ANSWER KEY 🔑

1. (c)	36. (a)	71. (c)	106. (b)	141. (d)	176. (d)	211. (a)	246. (c)	281. (c)
2. (d)	37. (a)	72. (b)	107. (a)	142. (c)	177. (d)	212. (b)	247. (c)	282. (d)
3. (a)	38. (d)	73. (a)	108. (b)	143. (d)	178. (d)	213. (b)	248. (c)	283. (c)
4. (d)	39. (a)	74. (a)	109. (a)	144. (b)	179. (b)	214. (d)	249. (d)	284. (a)
5. (a)	40. (b)	75. (b)	110. (d)	145. (d)	180. (b)	215. (b)	250. (c)	285. (d)
6. (c)	41. (a)	76. (d)	111. (d)	146. (b)	181. (d)	216. (b)	251. (b)	286. (b)
7. (c)	42. (c)	77. (d)	112. (d)	147. (a)	182. (d)	217. (d)	252. (b)	287. (c)
8. (a)	43. (a)	78. (a)	113. (b)	148. (d)	183. (a)	218. (c)	253. (d)	288. (d)
9. (a)	44. (d)	79. (b)	114. (c)	149. (c)	184. (d)	219. (b)	254. (a)	289. (d)
10. (c)	45. (d)	80. (a)	115. (c)	150. (c)	185. (a)	220. (b)	255. (d)	290. (b)
11. (a)	46. (c)	81. (c)	116. (b)	151. (c)	186. (a)	221. (d)	256. (a)	291. (c)
12. (b)	47. (b)	82. (c)	117. (c)	152. (c)	187. (d)	222. (b)	257. (a)	292. (b)
13. (d)	48. (b)	83. (c)	118. (c)	153. (c)	188. (c)	223. (b)	258. (b)	293. (a)
14. (d)	49. (a)	84. (c)	119. (b)	154. (d)	189. (c)	224. (b)	259. (c)	294. (b)
15. (b)	50. (b)	85. (d)	120. (c)	155. (c)	190. (b)	225. (c)	260. (c)	295. (d)
16. (b)	51. (d)	86. (d)	121. (d)	156. (d)	191. (c)	226. (c)	261. (a)	296. (b)
17. (a)	52. (a)	87. (b)	122. (b)	157. (d)	192. (d)	227. (b)	262. (b)	297. (d)
18. (a)	53. (c)	88. (b)	123. (b)	158. (c)	193. (b)	228. (a)	263. (b)	298. (c)
19. (b)	54. (d)	89. (c)	124. (c)	159. (a)	194. (c)	229. (c)	264. (c)	299. (d)
20. (b)	55. (d)	90. (c)	125. (c)	160. (c)	195. (d)	230. (b)	265. (b)	300. (b)
21. (b)	56. (c)	91. (a)	126. (d)	161. (b)	196. (c)	231. (b)	266. (c)	301. (a)
22. (d)	57. (c)	92. (a)	127. (b)	162. (b)	197. (a)	232. (d)	267. (a)	302. (c)
23. (a)	58. (a)	93. (a)	128. (a)	163. (d)	198. (a)	233. (c)	268. (b)	303. (b)
24. (a)	59. (a)	94. (a)	129. (a)	164. (b)	199. (a)	234. (d)	269. (b)	304. (a)
25. (a)	60. (b)	95. (b)	130. (b)	165. (a)	200. (c)	235. (a)	270. (b)	305. (b)
26. (a)	61. (c)	96. (d)	131. (b)	166. (a)	201. (b)	236. (d)	271. (b)	306. (b)
27. (c)	62. (a)	97. (b)	132. (a)	167. (c)	202. (a)	237. (b)	272. (b)	307. (c)
28. (c)	63. (c)	98. (b)	133. (d)	168. (d)	203. (a)	238. (d)	273. (d)	308. (c)
29. (d)	64. (d)	99. (c)	134. (b)	169. (a)	204. (a)	239. (c)	274. (b)	309. (b)
30. (d)	65. (c)	100. (b)	135. (b)	170. (b)	205. (b)	240. (b)	275. (a)	310. (c)
31. (d)	66. (a)	101. (a)	136. (a)	171. (a)	206. (d)	241. (d)	276. (b)	311. (a)
32. (d)	67. (b)	102. (d)	137. (b)	172. (b)	207. (a)	242. (c)	277. (a)	312. (b)
33. (d)	68. (d)	103. (a)	138. (d)	173. (c)	208. (c)	243. (b)	278. (a)	313. (c)
34. (d)	69. (a)	104. (c)	139. (b)	174. (c)	209. (a)	244. (c)	279. (a)	314. (d)
35. (d)	70. (a)	105. (c)	140. (c)	175. (a)	210. (a)	245. (d)	280. (a)	

EXPLANATION

1. (c) 80% of A = 50% of B

$$\Rightarrow \frac{80}{100}A = \frac{50}{100}B$$

$$\Rightarrow 8A = 5B \Rightarrow A = \frac{5}{8}B$$

Put value of A in given equation,

B = x% of A

$$\Rightarrow B = \frac{x}{100} \times \frac{5}{8}B$$

$$\Rightarrow x = \frac{100 \times 8}{5} \Rightarrow x = 160$$

2. (d) According to the question

$$\Rightarrow x = \frac{80}{100}y \Rightarrow x = \frac{4}{5}y$$

Required %

$$= \frac{y}{\frac{4}{5}y} \times 100 = \frac{5 \times 100}{4} = 125\%$$

3. (a) According to the question,

$$\Rightarrow \frac{8}{100}x = \frac{4}{100}y$$

$$\Rightarrow 2x = y$$

$$\Rightarrow x = \frac{y}{2}$$

$$\Rightarrow 20\% \text{ of } x = \frac{20}{100} \times \frac{y}{2} = \frac{y}{10}$$

Required % = $\frac{y}{10} \times 100$

= 10% of y.

4. (d) Let the number = x

According to the question

$$x \times \frac{20}{100} = 120$$

$$x = 600$$

Required answer

$$= 600 \times \frac{120}{100} = 720$$

Alternate

20% represents $\rightarrow$ 120

$$1\% \rightarrow \frac{120}{20}$$

So, 120% = $\frac{120}{20} \times 120 = 720$

5. (a) According to the question

Required % = $\frac{25}{75} \times 100$

= $33\frac{1}{3}\%$

6. (c) According to the question

$$P \times \frac{P}{100} = 36$$

$$\Rightarrow P^2 = 3600 \Rightarrow P = 60$$

7. (c) Required % = $\frac{2}{50} \times 100 = 4\%$

8. (a) Accoding to the question

$$\frac{10}{100} \times m = \frac{20}{100} \times n$$

$$\frac{m}{n} = \frac{20}{10} = \frac{2}{1}$$

m : n = 2 : 1

9. (a) Required % = $\frac{5}{4} \times 100 = 125\%$

Always write a : b in% $\Rightarrow \frac{a}{b} \times 100$

10. (c) Let mahesh income = 100

than, Mohan Income

$$= 100 + \frac{100 \times 150}{100} = 250$$

Required percentage

$$= \frac{250 - 100}{250} \times 100 = \frac{150}{250} \times 100$$

= 60%

11. (a) Required answer

$$= ₹ 10000 \times \frac{1}{3} \times \frac{15}{100 \times 100} = ₹ 5$$

12. (b) $\frac{30}{100} \times x = 72$

$$\Rightarrow x = \frac{72 \times 100}{30} = 240$$

13. (d) $\frac{15}{100}$ (A + B) = $\frac{25}{100}$ (A – B)

$$\Rightarrow 15A + 15B = 25A - 25B$$

$$\Rightarrow 10A = 40B \Rightarrow A = 4B$$

Required % = $\frac{A}{B} \times 100$

$$= \frac{4B}{B} \times 100 = 400\%$$

14. (d) Required answer

$$= 300 \times \frac{1}{4} \times \frac{1}{5} = 15$$

15. (b) $\frac{25}{2} \times \frac{x}{100} = 150$

$$\Rightarrow x = \frac{150 \times 200}{25} = 1200$$

16. (b) $\frac{20A}{100} = \frac{50B}{100}$

2A = 5B $\Rightarrow$ A = $\frac{5}{2}$B

Required % = $\frac{B}{A} \times 100$

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

17. (a) Let the number = x

According to the question

$$\Rightarrow x \times \frac{18}{100} = \frac{12}{100} \times 75$$

$$\Rightarrow 18x = 12 \times 75$$

$$\Rightarrow x = \frac{12 \times 75}{18} = 50$$

Hence, required number = 50

18. (a) $12\frac{1}{2}\% = \frac{1}{8} = \frac{9}{8} \rightarrow$ Income of Ram
$\rightarrow$ Income of Syam

According to the question
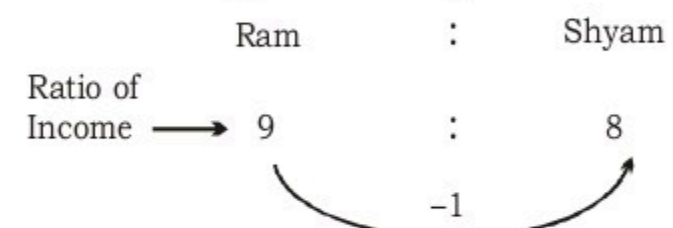
Required % = $\frac{1}{9} \times 100 = 11\frac{1}{9}\%$

19. (b) 20% = $\frac{1}{5}$
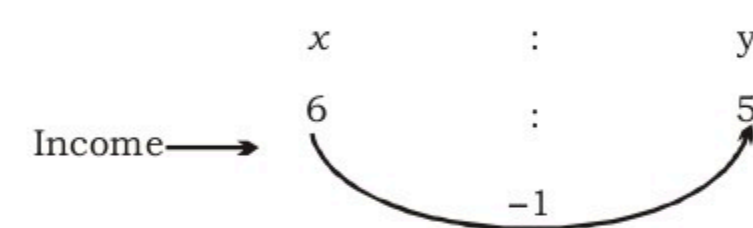
Required % = $\frac{1}{6} \times 100 = 16\frac{2}{3}\%$

Alternate

Required %

$= \frac{20}{(100+20)} \times 100 = 16\frac{2}{3}\%$

20. (b) 1 hour 45 min = $1+\frac{45}{60} = \frac{7}{4}$ hr.

Required % = $\frac{7}{4 \times 24} \times 100$

= 7.291%

21. (b) Required answer

$= 100 \times \frac{90}{100} \times \frac{(100-40)}{100}$

$= 90 \times \frac{60}{100} = 54$

22. (d) According to the question,

$\frac{30}{100}A = 0.25B = \frac{1}{5}C$

$\frac{3}{10}A = \frac{1}{4}B = \frac{1}{5}C$

$\frac{A}{10} = \frac{B}{4} = \frac{C}{5}$

Required ratio of A : B : C

$= \frac{10}{3} : 4 : 5$

A : B : C = 10 : 12 : 15

23. (a) Required percentage

$= \frac{0.01}{0.1} \times 100 = 10\%$

24. (a) Let the numbers are a and b where a > b.

According to the question,

$(a - b) = \frac{15}{100}(a+b)$

$(a - b) = \frac{3}{20}(a + b)$

20a – 20b = 3a + 3b

17a = 23b

$\frac{a}{b} = \frac{23}{17}$

Required ratio = 23 : 17

25. (a) According to the question,

P : Q
6 : 1
– 5

Required %

$= \frac{5}{6} \times 100 = \frac{250}{3} = 83\frac{1}{3}\%$

26. (a) Required percentage

$= \frac{65}{2000} \times 100 = \frac{13}{4}\%$

27. (c) $\frac{1\%}{2} = \frac{1}{100 \times 2} = 0.005$

28. (c) Required percentage

$= \frac{1.14}{1.9} \times 100 = \frac{1140}{19} = 60\%$

29. (d) Required percentage
= 0.001 × 100 = 0.1%

30. (d) 60% of A = $\frac{3}{4}$B

$\frac{3}{5}A = \frac{3}{4}B$

$\frac{A}{B} = \frac{5}{4} \Rightarrow$ A : B = 5 : 4

31. (d) % difference
= 82.5% – 62.5% = 20%
Now, 1% = 100 point
So, 20% = 20 × 100 = 2000 point

32. (d) Initial Volume = 100 ⟍ 4
New Volume = 104 ⟋

decrease % = $\frac{4 \times 100}{104} = 3\frac{11}{13}\%$

33. (d) 10% = $\frac{1}{10}$

Old   New
10   11
100   121

21

Increased in area = $\frac{21}{100} \times 100$

= 21%

34. (d) 90% of A = 30% of B
90A = 30B
$\Rightarrow$ B = 3A .....(i)

B = $\frac{2x}{100} \times A$

3A = $\frac{2x}{100} \times A$

$\Rightarrow$ x = 150

35. (d) Required percentage

$= \frac{(1206)}{3 \times 134} \times 100$

$= \frac{402}{134} \times 100 = 300\%$

36. (a) $\frac{120}{100}a = \frac{80}{100}b$

$\Rightarrow$ 3a = 2b

$a = \frac{2}{3}b$ put value of a in given equation

$\Rightarrow \frac{b+a}{b-a} = \frac{b+\frac{2}{3}b}{b-\frac{2}{3}b} = \frac{\frac{5b}{3}}{\frac{b}{3}} = 5$

$\Rightarrow \frac{b+a}{b-a} = 5$

37. (a) $\frac{20}{100}(A + B) = \frac{50}{100}(B)$

2A + 2B = 5B
2A = 3B

$A = \frac{3}{2}B$ Put value of A in given equation

$\frac{2A-B}{2A+B} = \frac{3B-B}{3B+B} = \frac{2B}{4B} = \frac{1}{2}$

38. (d) Required percentage

$= \frac{72}{3.6 \times 1000} \times 100 = 2\%$

39. (a) $x \times \frac{125}{100} = 100 \Rightarrow x = 80$

40. (b) $\frac{50}{100}(P - Q) = \frac{30}{100}(P + Q)$

5 P – 5 Q = 3P + 3Q

2 P = 8Q

P = 4Q

Put value of P in given equation

Q = P × $\frac{x}{100}$

Q = 4Q × $\frac{x}{100}$

x = 25

Hence required value of x = 25

41. (a) $120 \times \frac{25}{100} + 380 \times \frac{40}{100}$

$= x \times 637$

$\Rightarrow$ 30 + 152 = x × 637

$\Rightarrow \frac{182}{637} = x$

$\Rightarrow x = \frac{2}{7}$

$\Rightarrow$ required answer = $\frac{2}{7}$

42. (c) Required answer

$= \dfrac{27}{100} \times \dfrac{36}{100} \times \dfrac{5}{9} \times 4500$

$= 243$

43. (a) $1000 \times \dfrac{25}{100} \times \dfrac{1}{100} \times \dfrac{1}{100}$

Required answer = 0.025

44. (d) According to the question

A : B : C

1 : 2 : 5 (60A = 30B)

$\left(\dfrac{A}{B} = \dfrac{1}{2}\right)$

C = 5

A = 1

Required answer $= \dfrac{5}{1} \times 100$

= 500%

45. (d) According to the question,

$\dfrac{20A}{100} = \dfrac{30B}{100} = \dfrac{C}{6}$

A : B = 3 : 2

B : C = 5 : 9

A : B : C = 15 : 10 : 18

46. (c) 80% $= \dfrac{4}{5}$

Note: In such type of questions to make your calculation easier assume number which is multiple of 5.

Let the number = $5x$

According to the question,

$\left[5x \times \dfrac{80}{100} = 4x\right]$

$4x + 80 = 5x$

$x = 80$

Required number

= 5x = 80×5 = 400

47. (b) $66\dfrac{2}{3}\% = \dfrac{2}{3}$

Let the income of the person

= 3 units

Expenditure = 2 units

Savings = (3 – 2) = 1 unit

According to the question,

1 unit = ₹ 1200

2 units = 2 × 1200 = ₹ 2400

48. (b) 20% $= \dfrac{1}{5}$, 25% $= \dfrac{1}{4}$

Case (i)   B : C

Ratio of Salaries   5 : 6

Case (ii)   A : B

Ratio of Salaries   4 : 5

From, Case (i) & (ii)

Ratio of salaries   A : B : C
                    4   5   6
                    +2

Required answer

$= \dfrac{2}{4} \times 100 = 50\%$

49. (a) 40% $= \dfrac{2}{5}$, 20% $= \dfrac{1}{5}$

Case (i)   A : B
           7 : 5

Case (ii) B : C
           4 : 5

A : B = 7 : 5

B : C = 4 : 5

A : B : C = 28 : 20 : 25

Hence, Required ratio

A : C = 28 : 25

50. (b) Girls's % = 70%

∴ Boys's % = (100 – 70)% = 30%

According to the question,

30% of students = 510

Total number of students in

school $= \dfrac{510}{30} \times 100 = 1700$

51. (d) **Note**: In percentage always assume data. Which make your Calculation easier.

$60\% = \dfrac{3}{5}$

Let the number = $5x$

According to the question,

$\Rightarrow 5x \times \dfrac{3}{5} - 60 = 60$

$\Rightarrow x = \dfrac{120}{3} = 40$

Hence, Required number = $5x$

= 5 × 40 = 200

52. (a) Let the larger number = $5x$

Smaller number = 20 [Given]

According to the question,

$\Rightarrow 5x - 20 = \dfrac{20}{100} \times 5x$

$\Rightarrow 5x - 20 = x$

$\Rightarrow 4x = 20$

$x = 5$

Hence, Larger number = 5 × 5 = 25

53. (c) Required answer

$= \dfrac{40}{(100-40)} \times 100$

$= \dfrac{40}{60} \times 100$

= 66.66%

Note: For detailed solution follow the earlier given important note.

Alternate:

$40\% = \dfrac{2}{5}$

A : B
3   5
+2

Required % $= \dfrac{2}{3} \times 100 = 66.66\%$

54. (d) Let the IIIrd number is 100

According to the equation,

Ist : IInd : IIIrd
20 : 50 : 100

Required % $= \dfrac{20}{50} \times 100 = 40\%$

55. (d) According to the question,

$y = 125 + \dfrac{125 \times 10}{100} = 137.5$

$x = 137.5 - \dfrac{137.5 \times 10}{100}$

$x = 137.5 - 13.75$

$x = 123.75$

56. (c) Let the third number = 100

According to the question,

Ist : IInd : IIIrd
120   150   100
      + 50%
      + 20%

Required answer $= \dfrac{120}{150} \times 100$

= 80%

57. (c) According to the question,

$60 \times \dfrac{A}{100} = 75 \times \dfrac{B}{100}$

4A = 5B

$B = \dfrac{4}{5}A$

$A \times \dfrac{x}{100} = B$ [given]

$A \times \dfrac{x}{100} = \dfrac{4}{5}A$

$\Rightarrow x = 80$

58. (a) Let the numbers are $2x$ and $3x$ respectively

According to the question,

$$\left(2x \times \frac{20}{100} + 20\right) = \left(3x \times \frac{10}{100} + 25\right)$$

$$\frac{2}{5}x + 20 = \frac{3}{10}x + 25$$

$$\frac{3}{10}x - \frac{2}{5}x = -5$$

$$3x - 4x = -50 \Rightarrow x = 50$$

Hence, required smaller number
$$= 2x = 2 \times 50 = 100$$

59. (c) Let the third number = 100 units

I^{st} num	:	IInd num	:	IIIrd num
120		150		100

+ 50%

+ 20%
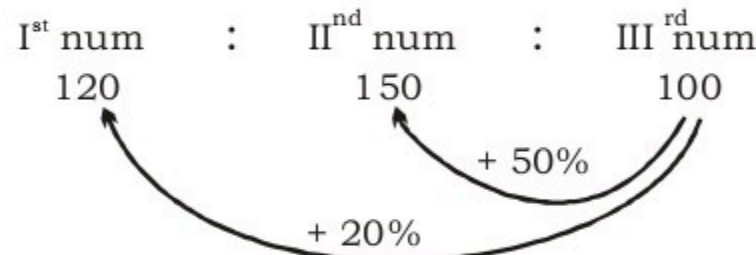
Required Ratio = 120 : 150
$$= 4 : 5$$

60. (b) Let the number be x

$$\Rightarrow x \times \frac{15}{100} \times \frac{45}{100} = 105.3$$

$$\Rightarrow x = 1560$$

$$\Rightarrow \text{Required answer} = \frac{24}{100} \times 1560$$

$$= 374.4$$

61. (c) Income of the person = ₹ 13,500

Expenditure of the person
$$= ₹ 9,000$$

Savings of the person
$$= ₹ (13,500 - 9000) = ₹ 4500$$

Expenditure 7% Savings x%

14%

Ratio of Expenditure 9000 : 4500
and savings → 2 : 1

$$\frac{7 \times 2 + x \times 1}{2 + 1} = 14$$

$$14 + x = 42$$

$$x = 28$$
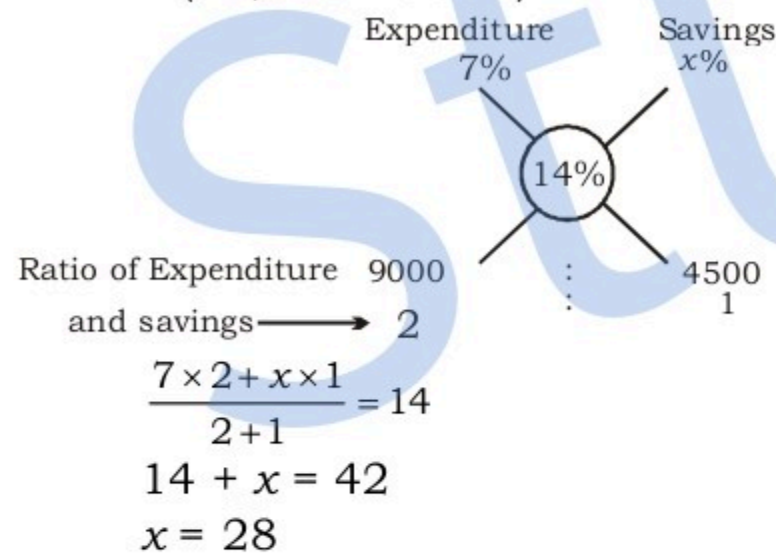
Hence, required increase in savings = 28%

Alternate

First of all find the ratio of income, expenditure and Savings

Income	:	Expenditure	:	Saving
13,500	:	9000	:	4500
3	:	2	:	1

Let the Income : Expenditure : Saving

300	−	200	=	100
+14%		+7%		+28
New → 342	−	214	=	128

% change in savings $= \dfrac{28}{100} \times 100$

$$= 28\%$$

62. (a) Let the number = x

According to the question,

$$\frac{x \times (100 - 25)}{100} = 225$$

$$x = \frac{225 \times 100}{75} = 300$$

Required percentage

$$= \frac{(375 - 300)}{300} \times 100 = 25\%$$

63. (c) Let the greater and smaller number is a and b respectively

According to the question,

Case (i) $a \times \dfrac{40}{100} = b \times \dfrac{60}{100}$

$$2a = 3b$$

$$a = \frac{3}{2} b \qquad \dots\dots (i)$$

Case (ii) a + b = 150 .... (ii)

From equation (i) and (ii)

$$\frac{3}{2} b + b = 150$$

$$5b = 300 \Rightarrow b = 60$$

Value of b = 60 put in equation (i)

$$a = \frac{3}{2} \times 60 = 90$$

Hence greater number = 90

64. (d)

	A	B	
Height →	11	10	$10\% = \frac{1}{10}$

− 1

Required percentage

$$= \frac{1}{11} \times 100 = 9\frac{1}{11}\%$$

Alternate

By using formula.

Required percentage

$$= \frac{10}{(100 + 10)} \times 100 = \frac{1000}{110}$$

$$= \frac{100}{11} = 9\frac{1}{11}\%$$

65. (c) According to the question,

$$10A = 15B = 20C$$

A : B	=	15 : 10
B : C	=	20 : 15

A : B : C = 300 : 200 : 150

A : B : C = 6 : 4 : 3

(6 + 4 + 3) units = ₹ 7800

13 units	= ₹ 7800
1 unit	= ₹ 600
4 units	= ₹ 600 × 4
	= ₹ 2400

66. (a) Let the number be x.

According to the question,

$$x \times \frac{60}{100} \times \frac{3}{5} = 36$$

$$\Rightarrow x = \frac{36 \times 25}{9} \Rightarrow x = 100$$

67. (b) Required percentage

$$= \frac{25}{(100 + 25)} \times 100$$

$$= \frac{25}{(100 + 25)} \times 100 = 20\%$$

Alternate:

$$25\% = \frac{1}{4}$$

Nita	:	Papiya
5	:	4

− 1

Required percentage

$$= \frac{1}{5} \times 100 = 20\%$$

68. (d) $50\% = \dfrac{1}{2}$

Let Z has 2 units of money

According to the question,

X	:	Y	:	Z
6	:	3	:	2

$$\frac{(6 + 3 + 2)}{3} \text{ units} = ₹ 110$$

$$\Rightarrow 11 \text{ units} = ₹ 330$$

$$1 \text{ unit} = ₹ 30$$

$$6 \text{ units} = 30 \times 6 = ₹ 180$$

Hence, X has ₹ 180.

69. (a) Salary of Tulsiram

$$= ₹ \frac{720}{4} \times 100 = ₹ 18,000$$

Salary of kashyap

$$= 18000 \times \frac{100}{120} = ₹ 15000$$

70. (a) Let the third number = 100

I^{st}	IInd	IIIrd
70	63	100

−7

Required percentage

$$= \frac{7}{70} \times 100 = 10\%$$

71. (c) Required percentage

$= \dfrac{25}{(100-25)} \times 100 = \dfrac{1}{3} \times 100$

$= 33\dfrac{1}{3}\%$

Alternate:

$25\% = \dfrac{1}{4}$

$\begin{array}{ccc} A & : & B \\ 3 & & 4 \end{array}$ $+1$

Required $\% = \dfrac{1}{3} \times 100 = 33\dfrac{1}{3}\%$

72. (b) $40\% = \dfrac{2}{5}, \qquad 25\% = \dfrac{1}{4}$

$\begin{array}{ccccc} A & : & B & = & 2 : 5 \\ B & : & C & = & 5 : 4 \end{array}$

$A : B : C = 10 : 25 : 20$ $+10$

Required $\% = \dfrac{10}{10} \times 100 = 100\%$

73. (a) $60\% = \dfrac{3}{5}, \quad 20\% = \dfrac{1}{5}$

$\begin{array}{ccccc} A & : & B & = & 8 : 5 \\ B & : & C & = & 4 : 5 \end{array}$

$A : B : C = 32 : 20 : 25$

$A : C = 32 : 25$

74. (a) Percentage of failed students

$= (100 - 93)\% = 7\%$

According to the question,

$7\% \rightarrow 259$

$1\% \rightarrow 37$

$100\% \rightarrow 3700$

Total students = 3700

75. (b) Required percentage

$= \dfrac{22}{24} \times 100 = \dfrac{275}{3} = 91\dfrac{2}{3}\%$

76. (d) According to the question,

$\dfrac{30A}{100} + \dfrac{40}{100}B = \dfrac{80}{100}B$

$30A = 40B \Rightarrow 3A = 4B \Rightarrow A = \dfrac{4}{3}B$

Required $\% = \dfrac{B}{A} \times 100$

$= \dfrac{B \times 3}{4B} \times 100 = 75\%$

77. (d) Let the third number = 100

$\begin{array}{ccc} I^{st} & II^{nd} & III^{rd} \\ 80 & 60 & 100 \end{array}$ -20

Required percentage $= \dfrac{20}{80} \times 100$

$= 25\%$

78. (a) Let the number $= x$

$\Rightarrow \dfrac{1}{3} \times x = 96$

$\Rightarrow x = 288$

$\Rightarrow$ Required answer $= \dfrac{67}{100} \times 288$

$= 192.96$

79. (b) According to the question,

$a \times \dfrac{x}{100} = b \times \dfrac{y}{100}$

$x a = yb \Rightarrow b = \dfrac{xa}{y}$

Put value of b in given equation,

$z\%$ of b $= z\%$ of $\dfrac{xa}{y} = \dfrac{zx}{y}\%$ of a

80. (a) 1 hour = 60 min.

$1 \text{ min} + 12 \text{ sec} = 1 + \dfrac{12}{60} = \dfrac{6}{5}$ min

According to the quesion,

$60 \times \dfrac{y}{100} = \dfrac{6}{5} \Rightarrow y = 2$

81. (c) Matches won by team = 24

Required percentage $= \dfrac{24}{40} \times 100$

$= 60\%$

82. (c) Let the first and second part of a number is a and b respectively.

According to the quesion,

Case : (i) $\dfrac{80}{100}a - \dfrac{60}{100}b = 3$

$8a - 6b = 30 \qquad ..... \text{ (i)}$

Case : (ii) $\dfrac{80}{100}b - \dfrac{90}{100}a = 6$

$8b - 9a = 60 \qquad ..... \text{ (ii)}$

From equation (i) & (ii)

$a = 60, \quad b = 75$

Hence required number

$= (a + b) = (60 + 75) = 135$

83. (c) Let the numbers $= x$

According to the questions,

$x - 15 = \dfrac{80x}{100}$

$x - 15 = \dfrac{4x}{5}$

$5x - 75 = 4x$

$x = 75$

Required answer $= 75 \times \dfrac{40}{100}$

$= 30$

84. (c) Let the number $= x$

According to the question,

$x - \dfrac{17x}{100} = 498$

$100x - 17x = 49800$

$83x = 49800$

$x = \dfrac{49800}{83} = 600$

85. (d) Let C = 100 units

According to the question,

$\begin{array}{ccccc} A & : & B & : & C \\ 150 & : & 125 & : & 100 \end{array}$

Ratio of numbers $\rightarrow$ $6 : 5 : 4$ $+1$

Required percentage

$= \dfrac{1}{5} \times 100 = 20\%$

86. (d) Let x to be added,

According to the question,

$160 \times \dfrac{15}{100} + x = 240 \times \dfrac{25}{100}$

$x = 36$

Hence required number = 36

87. (b) Let the number $= x$

$x \times \dfrac{90}{100} = 30$

$\Rightarrow x = \dfrac{100}{3} = 33\dfrac{1}{3}$

Hence required number $= 33\dfrac{1}{3}$

88. (b) Marks obtained by D = 320

Marks obtained by C

$= 320 \times \dfrac{125}{100} = 400$

Marks obtained by B

$= 400 \times \dfrac{(100-10)}{100} = 360$

Marks obtained by A

$= 360 \times \dfrac{125}{100} = 450$

Hence, required marks obtained by A = 450

89. (c) $22\frac{1}{2}\% = \frac{45}{200} = \frac{9}{40}$

Initial	Final
40	49
$\times 2$	$\times 2$
$\boxed{80}$	98

Hence required number = 80

90. (c) $75\% = \frac{3}{4}$

Let the number = $4x$

According to the question,

$4x \times \frac{3}{4} + 75 = 4x$

$x = 75$

Number $= 75 \times 4 = 300$

Required answer $= 300 \times \frac{40}{100} = 120$

Alternate: $75\% = \frac{3}{4}$

$$3 \quad + 1 \to 4$$
$$75\% \qquad 100\%$$

1 unit $\to$ 75

4 unit $\to$ 300

40% of no. $= \frac{300 \times 40}{100} = 120$

91. (a) Let the number = x

According to the question,

$x + 320 \times \frac{10}{100} = 230 \times \frac{30}{100}$

$x + 32 = 69$

$x = 37$

Hence, required number = 37

92. (a) $20\% = \frac{1}{5} = \frac{4}{5}$

$$X \; : \; Y$$
$$4 \; : \; 5$$

Let X = $4a$

Y = $5a$

Hence, $\frac{y-x}{y} = \frac{5a-4a}{5a} = \frac{a}{5a} = \frac{1}{5}$

$\frac{x}{x-y} = \frac{4a}{4a-5a} = \frac{4a}{-a} = -4$

Hence required answer = $\left(\frac{1}{5}, -4\right)$

93. (a) Required number of liter ate people

$= 6600 \times \frac{30}{100} = 1980$

94. (a) According to the question,

$\frac{5}{100}A + \frac{4}{100}B = \frac{2}{3}\left[\frac{6A}{100} + \frac{8B}{100}\right]$

$5A + 4B = \frac{2}{3}(6A + 8B)$

$15A + 12B = 12A + 16B$

$3A = 4B$

$\frac{A}{B} = \frac{4}{3} \Rightarrow A : B = 4 : 3$

95. (b) To get back to the original number it is to be reduced by,

$= \frac{x}{(100+x)} \times 100\%$

$= \frac{100x}{(100+x)}\%$

96. (d) Let the number is = x

According to the question,

$\frac{1}{5}$ of $\frac{1}{2}$ of $x = 20$

$\frac{1}{5} \times \frac{1}{2} x = 20$

$x = 200$

$\therefore 20\%$ of $200 = \frac{20}{100} \times 200 = 40$

97. (b) According to the question,

$\Rightarrow 90 \times 83\frac{1}{3}\% = x \times 60\%$

$\Rightarrow 90 \times \frac{250}{3}\% = x \times 60\%$

$\Rightarrow x = $ Rs. 125

98. (b) $x \times \frac{51}{100} = 714$

$x = 1400$

$\therefore 25\%$ of $x = 1400 \times \frac{25}{100} = 350$

99. (c) $20\% \quad \frac{1}{5} \frac{\text{Increase in price}}{\text{Initial Price}}$

Initial Price	Final Price
5	6

-1

Hence, Required reduction $= \left(\frac{1}{6} \times 100\right)$

$= 16\frac{2}{3}\%$

Alternate:

If the price of suger increased 20% and expenditure is not change then initial price of suger is 5 Rs. then new price is 6 Rs. then, We let the total expenditure which is divide by 5 and 6

So, LCM of 5 and 6 = 30 Rs.

```
              (Rs.30)
          /            \
    (6 Kg.)          (5 Kg.)  ← (Ratio of
      /                  \        consumption)
  5 Rs. Kg         6 Rs./Kg  ← (Ratio
                                 of Price)
```
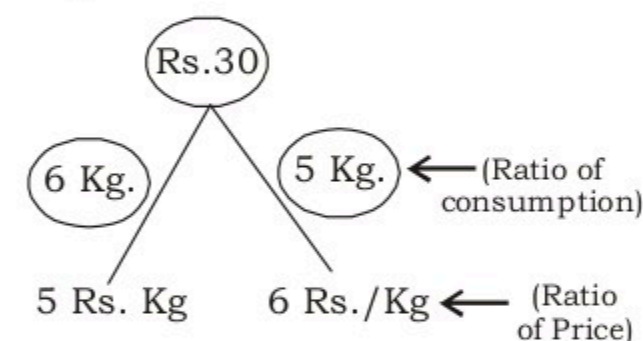
So, if the expenditure keep same then will be change in price of that ratio and change in consumption of its reciprocal ratio.

So, for doing such type of question we take initial price 100 Rs. and original cunsumption takes 1 kg. so who is exchange price also will become change in expenditure price.

So, Original Expenditure

```
   (100) ←
              ⌐ – 20
   (120) ⌐
```
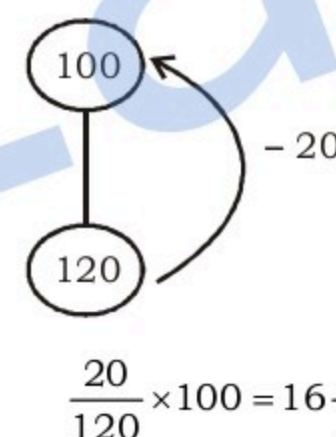
$\frac{20}{120} \times 100 = 16\frac{2}{3}\%$

Note:

(i) If the price of a commodity decrease by r%, then increase in consumption, so as not to decrease expenditure on this item

is $\left[\frac{r}{100-r} \times 100\right]\%$

(ii) If first value is r% more than the second value, then the second

is $\left[\frac{r}{100+r} \times 100\right]\%$ less than the first value.

Alternate:

Required answer

$= \frac{20}{(100+20)} \times 100 = 16\frac{2}{3}\%$

100. (b) Required answer

$= \frac{20}{(100+20)} \times 100 = 16\frac{2}{3}\%$

Alternate:

Initial Salary   Final Salary

5   6

-1

$(20\% = \frac{1}{5})$
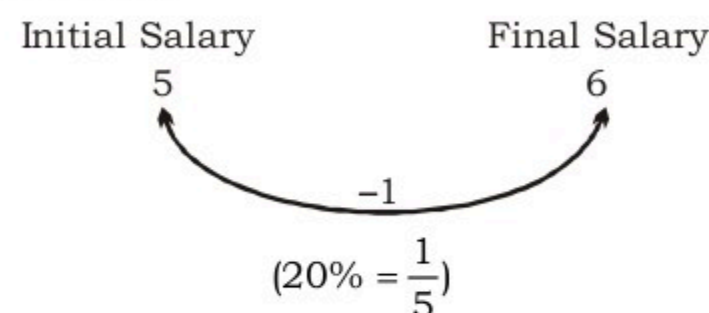
Required % $= \frac{1}{6} \times 10 = 16\frac{2}{3}\%$

101. (a) Required answer

$= \frac{10}{(100+10)} \times 100 = \frac{100}{11}\% = 9\frac{1}{11}\%$

102. (d) Required % $= \frac{10}{(100-10)} \times 100$

$= \frac{10}{90} \times 100 = 11\frac{1}{9}\%$

Alternate:

Initial Price   New Price

10   9

$+1$
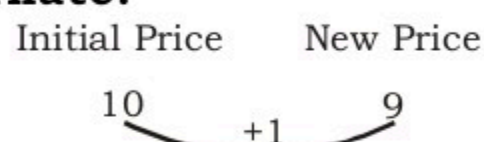
Required % $= \frac{1}{9} \times 100 = 11\frac{1}{9}\%$

103. (a)

Note: If the value of a number is first increased by $x\%$ and later decreased by $x\%$, then net change is always a decrease which is equal to $\frac{x^2}{100}\%$.

Hence, Required change in salary

$= \frac{(20)^2}{100} = 4\%$ Decrease

104. (c)

Note: In such type of questions to save your valuable time you can use below given formula.

$$\boxed{\text{Net effect\% = X + Y+ }\frac{XY}{100}}$$

Always use +ve sign for increment
         – ve sign for decrement

Required answer $= 20 - 10 - \frac{20 \times 10}{100}$

$= 10 - 2$

$= 8\%$

Hence, Net q% Increment = 8%

105. (c) Net % effect on revenue

$= -10 + 10 - \frac{10 \times 10}{100}$

$= -1\%$

Hence % reduction in Revenue = 1%

Alternate:

% Reduction $= \frac{x^2}{100} = \frac{(10)^2}{100} = 1\%$

106. (b) $10\% = \frac{1}{10}$

Initial Price   :   Final Price

10   11

10     $\times$ 11 $\times$

100   121

-21
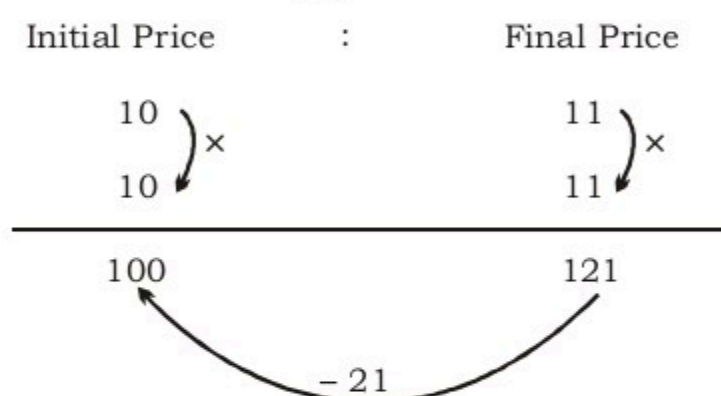
% Reduction $= \frac{21}{121} \times 100$

$= \frac{2100}{121} = 17.36\%$

107. (a) $25\% = \frac{1}{4}$, $20\% = \frac{1}{5}$

Initial Price   :   Final Price

4   :   3

5     $\times$:   6 $\times$

20   :   18

-2
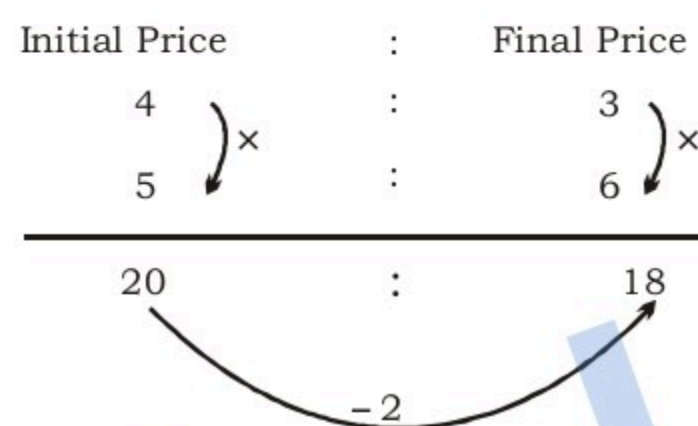
% decrement $= \frac{2}{20} \times 100 = 10\%$

Alternate:-

By using below given formula,

% Net effect $= x + y + \frac{xy}{100}$

% Change $= -25 + 20 - \frac{25 \times 20}{100}$

% Change $= -10\%$

Note:- Negative sign shows decrement.

Hence Required decrement = 10%

108. (b) $20\% = \frac{1}{5} = \frac{4 \rightarrow \text{Final}}{5 \rightarrow \text{Initial}}$

Initial wages   Final wages

5   4

$+1$
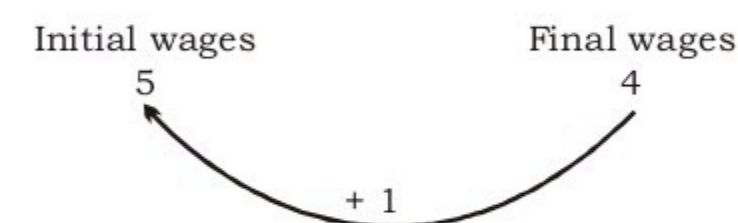
Required percentage

$= \frac{1}{4} \times 100 = 25\%$

Alternate:

Required answer

$= \frac{20}{(100-20)} \times 100$

$= \frac{20}{80} \times 100 = 25\%$

Note:- By using formula, $\left[\frac{r}{(100-r)} \times 100\right]$

109. (a) $20\% = \frac{1}{5}$

Initial   Final

5   6

5     $\times$ 6 $\times$

25   36

-11
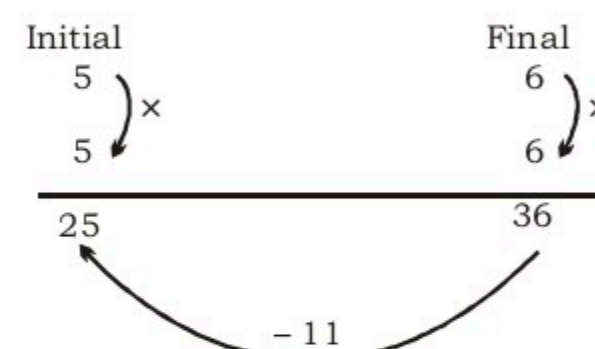
Required percentage of reduction

$= \frac{11}{36} \times 100 = \frac{275}{9} = 30\frac{5}{9}\%$

110. (d) $25\% = \frac{1}{4} = \frac{5 \rightarrow \text{Final employees}}{4 \rightarrow \text{Initial employees}}$

$25\% = \frac{1}{4} = \frac{3 \rightarrow \text{Final wages}}{4 \rightarrow \text{Initial wages}}$

            Initial   Final

Employees $\rightarrow$ 4   5

               $\times$ $\times$

Wages $\rightarrow$ 4   3

16   15

-1
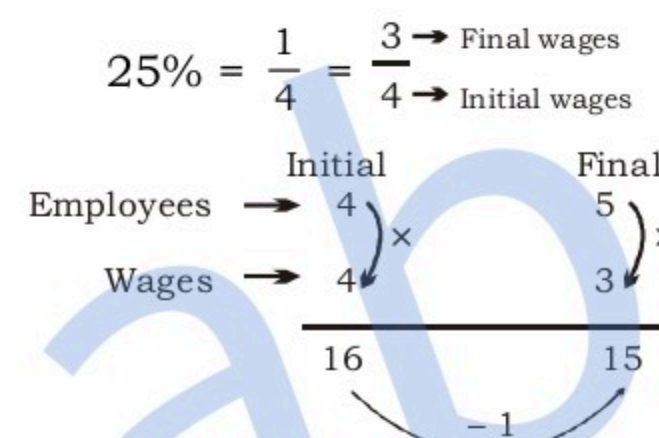
Required reduction

$= \frac{1}{16} \times 100 = \frac{25}{4}\%$

111. (d) $r\% = \frac{r}{100}$

Initial Price	Final
100	$(100 + r)$
100	$(100 - r)$
10000	$(100 + r)(100 - r)$

According to the question,
$(100 + r)(100 - r)$ units = ₹ 1
$(10000 - r^2)$ units   = ₹ 1

1 unit $= \left(\frac{1}{10000-r^2}\right)$

Original Price

$= \left(\frac{10000}{10000-r^2}\right)$

112. (d) Required percentage of reduction

$= \frac{25}{(100+25)} \times 100 = \frac{25}{125} \times 100$

$= 20\%$

Alternate:

$$25\% = \frac{1}{4}$$

Initial   Final

Price → 4   5

– 1

Required percentage reduction

$$= \frac{1}{5} \times 100 = 20\%$$

113. (b) Let the original number = x
According to the question,

$$x \times \frac{90}{110} \times \frac{110}{100} = (x - 50)$$

$$x \times \frac{99}{100} = x - 50$$

$$99x = 100x - 5000$$

$$x = 5000$$

Hence original number = 5000

Alternate:

Original   New
10   9
10   11
100   99

−1

According to the question,
1 unit = 50
100 unit = 50 × 100 = 5000
Original number = 5000

114. (c) Let the initial expenditure = 100 units

100
+10%   −10%
90

$$\frac{10}{90} = \frac{1}{9} = \frac{10}{9} \rightarrow \text{New Price} \atop \rightarrow \text{Original Price}$$

Reduced price = $\dfrac{}{\times}$ = $\dfrac{}{}$
= ₹13.50/kg.

115. (c) $20\% = \dfrac{1}{5}$

     Initial   Final
price   5   6
consumption ×6 —1 ×5
expenditure 30   30
Required Rate = 1:6

Alternate :

Let Initial expenditure = ₹ 100

100
−20%   +20%
120

Required ratio = 20:120 = 1:6

116. (b) By using formula,

% decrease $= \dfrac{x^2}{100}$

$x = 20\%$

% decrease $= \dfrac{20 \times 20}{100}$

= 4% decrease

117. (c) Required answer

$= 10 + 20 + \dfrac{10 \times 20}{100}$

= 10 + 20 + 2 = 32%

Alternate:

$10\% = \dfrac{1}{10}, 20\% \dfrac{1}{5}$

Initial   Final
10   11
5   6
50   66

+ 16

Required percentage increase

$= \dfrac{16}{50} \times 100 = 32\%$

118. (c) decrease in area

$= \dfrac{x^2}{100}\% = \dfrac{(10)^2}{100} = 1\%$

Alternate:

Initial   Final
10   11
10   9
100   99

– 1

% decrease in area

$= \dfrac{1}{100} \times 100 = 1\%$

119. (b) Required percentage

$= \dfrac{20}{(100-20)} \times 100 = 25\%$

Alternate:

$20\% = \dfrac{1}{5}$

A   :   B
5   :   4

+1

Required % $= \dfrac{1}{4} \times 100 = 25\%$

120. (c) $10\% = \dfrac{1}{10}$

Initial   Final
10   9
10   11
100   99

– 1

Required % reduction

$= \dfrac{1}{100} \times 100 = 1\%$

Alternate:Net Reduction

$= \dfrac{x^2}{100} = \dfrac{(10)^2}{100} = 1\%$

121. (d) % change $= \dfrac{R}{100 \pm R} \times 100\%$

Required answer $= \dfrac{40}{(100-40)} \times 100$

$= \dfrac{40}{60} \times 100 = \dfrac{200}{3} = 66\dfrac{2}{3}\%$

122. (b) $25\% = \dfrac{1}{4}, \quad 30\% = \dfrac{3}{10}$

Initial   Final
Price → 4)×   3)×
Sale → 10   13
40   39

– 1

% decrease $= \dfrac{1}{40} \times 100$

$= 2\dfrac{1}{2}\%$ decrease.

123. (b) Let the initial expenditure = 100 units

100
+20   – 20%
80

Increase in consumption

$= \dfrac{20}{80} = \dfrac{1}{4} = \dfrac{5 \rightarrow \text{New}}{4 \rightarrow \text{Original}}$

Original Price $= \dfrac{36 \times 1000}{4 \times 500}$

$\left[\therefore 500gm = \dfrac{500}{1000} kg\right]$

Original Price = ₹ 18/kg.

124. (c) By using formula

$\boxed{\text{Net decrease} = \dfrac{x^2}{100}\%}$

$x = 25\%$

Net decrease $= \dfrac{(25)^2}{100o} = \dfrac{625}{100} = 6.25\%$

Alternate:

$25\% = \dfrac{1}{4}$

Initial   Final
4   3
4   5
16   15

– 1

% decrease $= \dfrac{1}{16} \times 100 = \dfrac{100}{16} = 6.25\%$

125. (c) Required % increase

$$= 10 + 10 + \frac{10+10}{100} = 21\%$$

Alternate:

$$10\% = \frac{1}{10}$$

Initial	Final
10	11
10	11
100	121

$+21$

Required % increase

$$= \frac{21}{100} \times 100 = 21\%$$

126. (d) Let the original price = 100 units

100
|+10%
110
|+20%
132
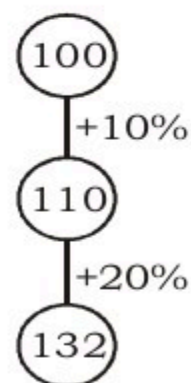
According to the question,

132 units $= ₹ 33$

$$1 \text{ unit} = ₹ \frac{33}{132}$$

$$100 \text{ units} = ₹ \frac{33}{132} \times 100 = 25$$

Hence original price = ₹ 25

Alternate:

Initial	Final
10	11
5	6
50	66
÷2	÷2
25	33

127. (b) Total % increase

$$= 20 + 20 + \frac{20 \times 20}{100} = 44\%$$

Alternate:

$$20\% = \frac{1}{5}$$

Initial	Final
5	6
5	6
25	36

$+ 11$

Required % increase $= \frac{11}{25} \times 100$

$$= 44\%$$

128. (a) Let the initial expenditure = 100 units

+20% 100 Initial −20%
80 New
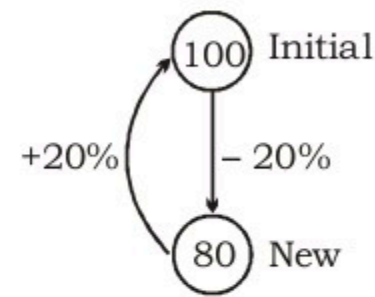
Increase in consumption

$$= \frac{20}{80} = \frac{1}{4}$$

1 unit = 5 kg.

Original consumption = 5 × 4 = 20 kg.

New consumption = 5 × 5 = 25 kg.

Original price $= \frac{320}{20} = ₹ 16/kg.$

Alternate:

Saved money due to reduction in price

$$= \frac{320 \times 20}{100} = \text{Rs. } 64$$

New price/kg.(80%) $= \frac{64}{5}$

Old price/kg.(100%)

= Rs. 16 /kg.

129. (a) Cost of the article = Rs. 75

Net decrease in price

$$= 20 - 20 - \frac{20 \times 20}{100} = 4\% \text{ (decrease)}$$

Hence present price $= 75 \times \frac{(100-4)}{100}$

$$= \text{Rs. } 72$$

Alternate:

$$20\% = \frac{1}{5}$$

Initial	Final
5	6
$\frac{5}{25}$	$\frac{4}{24}$
×3	×3
75	72
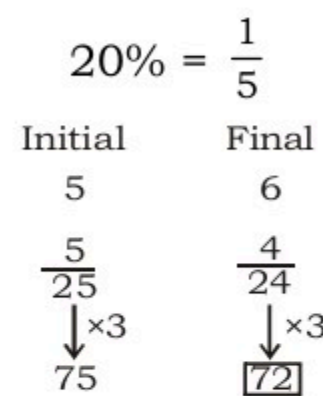
Hence present price = Rs. 72

130. (b)

Initial	Final
6	7.5

-1.5

Required percentage reduction

$$= \frac{1.5}{7.5} \times 100 = 20\%$$

131. (b) Required percentage of reduction

$$= \frac{60}{160} \times 100 = 37.5\%$$

132. (a) Price = 20% $= \frac{1}{5}$

sale = 80% $= \frac{4}{5}$

Price →	5	4
×		×
Sale →	5	9
Revenue →	25	36

$+11$
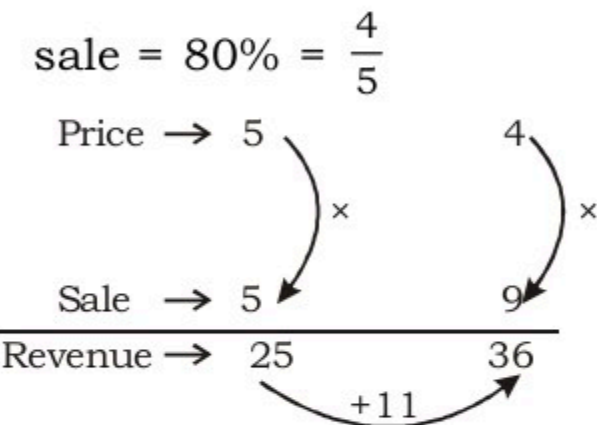
Required increase in sale

$$= \frac{11}{25} \times 100 = 44\%$$

Alternate:

Use successive method:

$$\% = -20 + 80 - \frac{20 \times 80}{100} = +44\%$$

133. (d) Price = − 25% $= \frac{1}{4}$

Sale = +20% $= \frac{1}{5}$

Price →	4	3
×		×
Sale →	5	6
Revenue →	20	18

-2
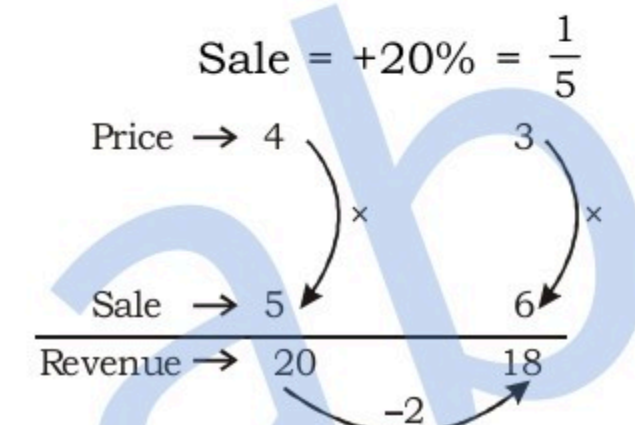
Required % decrease $= \frac{2}{20} \times 100$

= 10%

Alternate:

Use successive method:

$$\%\triangle = -25 + 20 - \frac{25 \times 20}{100} = -10\%$$

134. (b) % increase $= 10 + 10 + \frac{10 \times 10}{100}$

= 21%

Total increase $= \frac{100 \times 21}{100} = \text{Rs. } 21$

135. (b) Let initial expenditure

= 100 units

+10% 100 −10%
90
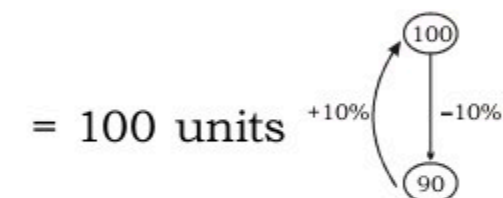
Required increment

$$= \frac{10}{90} = \frac{1}{9} = \frac{10}{9} \text{ — Final} \atop \text{— Initial}$$

1 unit = 1 kg

original consumption = 9 × 1 = 9 kg

Present consumption = (9 + 1)×1

= 10 kg

Required original price $= \frac{270}{9}$

= Rs. 30/kg

Alternate

Due to reduction, he will save

$= \dfrac{270 \times 10}{100} = $ Rs. 27

New price of rice/kg. $= \dfrac{27}{1} = $ Rs. 27

New price (90%) = 27
Old price (100%) = Rs. 30/kg

136. (a) Let initial expenditure
= 100 units
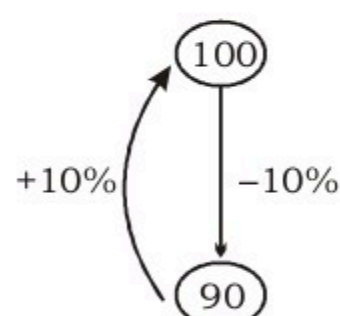
Required increment $= \dfrac{10}{90} = \dfrac{1}{9}$

1 unit = 10 apples
original consumption = 9 units
= 9 × 10 = 90 apples
New consumption = 10 units
= 10 × 10
= 100 apples

New price $= \dfrac{54}{100} \times 12$

= Rs. 6.48/dozen

Alternate: Due to reduction, he will save

$= \dfrac{54 \times 10}{100} = $ Rs. 5.4

New price/apple $= \dfrac{5.4}{10} = $ Rs. 0.54

New price/dozen = 12 × .54
= Rs. 6.48 dozen

137. (b) Increase in height=15% $= \dfrac{3}{20}$

Decrease in base radius

$= 10\% = \dfrac{1}{10}$

	Initial	Final
Radius ⟶	10	9
Height ⟶	20	23
Area ⟶	200	207

+7 units

Required % increase in area

$= \dfrac{7}{200} \times 100 = 3.5\%$

138. (d) Required % reduction

$= \dfrac{20}{(100+20)} \times 100 = 16\dfrac{2}{3}\%$

Alternate:

$20\% = \dfrac{1}{5}$

Initial	Final
5	6

−1

Required % reduction

$= \dfrac{1}{6} \times 100 = 16\dfrac{2}{3}\%$

139. (b) Required % decrement

$= \dfrac{x^2}{100}\% = \dfrac{(25)^2}{100} = 6\dfrac{1}{4}\%$

Alternate:

Initial	Final
4	5
4	3
16	15

−1

Required % decrease $= \dfrac{1}{16} \times 100$

$= \dfrac{25}{4} = 6\dfrac{1}{4}\%$

140. (c) $10\% = \dfrac{1}{10} = \dfrac{11 \to final}{10 \to Initial}$

Initial	Final
10	11
10	11
10	11
1000	1331

+331

Required % increment

$= \dfrac{331}{1000} \times 100 = 33.1\%$

141. (d) Let the number = x
According to the question,

$x \times \dfrac{120}{100} - X \times \dfrac{75}{100} = 36$

$120x - 75x = 3600$
$45x = 3600$

$x = \dfrac{3600}{45} = 80$

Hence required number = 80

142. (c) $20\% = \dfrac{1}{5}$

Original	New
5	4
5	6
25	24

− 1 unit

According to the question,
1 unit = 20
25 units = 20 × 25 = 500
Hence original number = 500

143. (d) Let the initial expenditure = 100
Increase in consumption

$= \dfrac{21}{(100-21)} = \dfrac{21}{79}$

Initial consumption = 79
New conumption = (79 + 21) = 100
According to the question,
21 units = 3 kg.

1 unit $= \dfrac{3}{21}$ kg $= \dfrac{1}{7}$ kg

Required reduced price

$= \dfrac{100}{100 \times \dfrac{1}{7}} = ₹\ 7/kg.$

Alternate:
Due to reduction in price saved money

$= \dfrac{100 \times 21}{100} = 21$

Quantity purchased from this money = 3 kg.

New price/kg. $= \dfrac{21}{3} = ₹\ 7/kg.$

144. (b) We know that
⟹ Total surface Area of a cube
= $6a^2$
⟹ If each side is doubled

T.S.A $\to 1\ \begin{matrix}1 \to 2 \\ 2 \\ 4\end{matrix}$ ←New T.S.A

3 →increase

∴ Surface area of cube will increase $\left(\dfrac{3}{1} \times 100\%\right)$

⟹ 300%

145. (d) The production of cycles rose to 48,400 from 40,000 in 2 years
⟹ Present production = 40,000
⟹ After two years = 48,000
⟹ Time = 2 years
⟹ Rate of increasement = ?
According to the question,
Production after 2 years

= Present producrtion $\left(1 + \dfrac{R}{100}\right)^t$

⟹ $48,400 = 40,000\left(1 + \dfrac{R}{100}\right)^2$

⟹ $\dfrac{484}{400} = \left(1 + \dfrac{R}{100}\right)^2$

$\Rightarrow \quad 1 + \dfrac{R}{100} = \dfrac{22}{20}$

$\Rightarrow \quad \dfrac{R}{100} = \dfrac{1}{10}$

$\Rightarrow \quad R = 10\%$

$\Rightarrow$ Rate of increasement $= 10\%$

146. (b) Shortcut method

$\Rightarrow +20\% - 20\% - \dfrac{20 \times 20}{100} = -4$

$\Rightarrow 4\%$ Decrease

147. (a) Quicker appraoch

$\uparrow$ in A $= a + b + \dfrac{ab}{100}$

Here $a = b = 5\%$

$\uparrow$ in A $= \left(5 + 5 + \dfrac{5 \times 5}{100}\right)\%$

$= 10.25\%$

148. (d) Here, Let $a = -20\%$
$b = -10\%$

Total reduction of the price

$= (a + b + \dfrac{ab}{100})\%$

$= \left(-20 - 10 + \dfrac{(-20)(-10)}{100}\right)\% = -28\%$

149. (c) Passed boys $= 60\%$

Failed boys
$= (100-60)\% = 40\%$

Failed girls
$= (100 - 50)\% = 50\%$

Failed boys

$= 1000 \times \dfrac{40}{100} = 400$

Failed girls

$= 800 \times \dfrac{50}{100} = 400$

Required % failed Candidates

$= \dfrac{400 + 400}{1000 + 800} \times 100 = \dfrac{800}{1800} \times 100$

$= 44.4\%$

150. (c) According to the question

Pass marks $= (220 + 20) = 240$

$40\% \rightarrow 240$

$\therefore$ Maximum marks \quad (100%)

$= \dfrac{240}{40} \times 100 = 600$

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151. (c) Percentage of students passed in Hindi $= 60\%$

Percentage of students passed in sanskrit $= 45\%$

Percentage of students passed in both subjects $= 25\%$

35% | 25% | 20%

Hindi \qquad Sanskrit
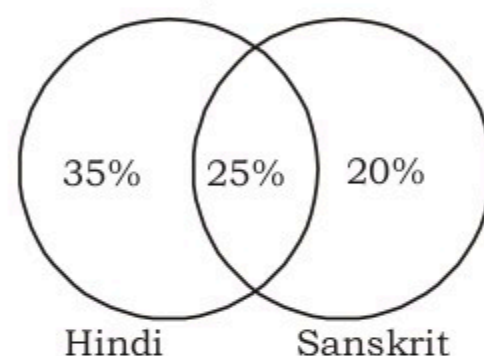
Venn diagram of passed students

Percentage of failed studets

$= 100 - (35 + 25 + 20)$

$= 100 - 80 = 20\%$

152. (c) Failed candidates in English
$= (100-70) = 30\%$

Failed candidates in Mathematics
$= (100-80) = 20\%$

20% | 10% | 10%

English \qquad Mathematics
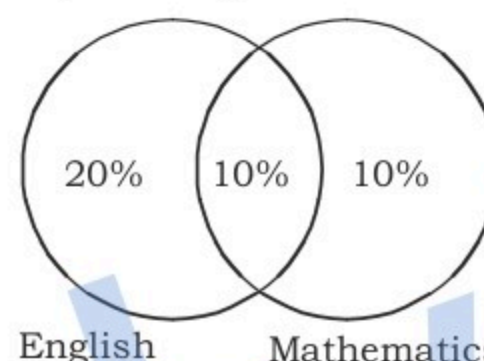
Venn diagram of failed students

Percentage of passed students in both subject

$= 100 - (20 + 10 + 10) = 60\%$

According to the question,

60% of students $= 144$

Total students $= \dfrac{144}{60} \times 100 = 240$

153. (c) **Note:-** In such type of questions assume the values of ratio as per your need or which make your calculation easier, but the ratio of values should not be changed.

Let number of boys $= 300$
Number of girls $= 200$

Boys \qquad : \qquad Girls

Ratio of Boys → 300 \qquad : \qquad 200
and Girls

80% \qquad\qquad 75%

Not adults → 240 \qquad 150 $\xrightarrow{+}$ 390

$+$

Required % $= \dfrac{390}{(300 + 200)} \times 100$

$= 78\%$

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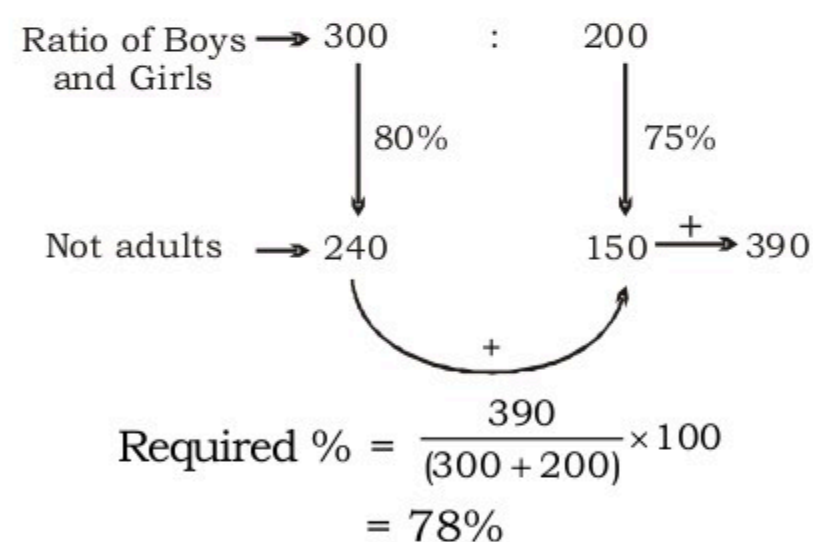
154. (d) Let the number of boys $= 400$

Let the number of girls $= 100$

Total number of students who do not get scholarship

$= 400 \times \dfrac{25}{100} + 100 \times \dfrac{30}{100}$

$= 100 + 30 = 130$

Required percentage

$= \dfrac{130}{500} \times 100 = 26\%$

155. (c) Let the total marks $= x$

According to the question,

$x \times \dfrac{33}{100} = x \times \dfrac{25}{100} + 40$

$\dfrac{1}{100}[33x - 25x] = 40$

$\Rightarrow 8x = 40 \times 100$

$\Rightarrow x = 500$

Alternate:

Pass percentage $= 33\%$

Marks obtained $= 25\%$

Required marks to be pass

$= (33-25)$

$= 8\%$

According to the question

8% of total marks $= 40$

Total marks (100%)

$= \dfrac{40}{8} \times 100 = 500$

156. (d) Let the maximum marks $= x$

According to the question,

Case (i) Pass marks $= \dfrac{20x}{100} + 30$

Case (ii) Pass marks $= \dfrac{32x}{100} - 42$

Note: Pass marks would be same in both cases.

$\dfrac{20x}{100} + 30 = \dfrac{32x}{100} - 42$

$\dfrac{12x}{100} = 72$

$x = 600$

Pass marks $= 600 \times \dfrac{20}{100} + 30 = 150$

Required percentage

$= \dfrac{150}{600} \times 100 = 25\%$

Alternate

Note: In such type of questions to save your valuable time follow the given below method.

$$\text{diif.}\begin{pmatrix} 20\% & = & -30 \\ 32\% & = & 42 \end{pmatrix}\text{diif.}$$

$$(32-20)=12\% \qquad (42+30)=72$$

From above figure,

12% = 72 marks

1% = 6 marks

Percentage of pass marks

$= 20\% + \dfrac{30}{6}\% = 25\%$

Hence required percentage of pass marks = 25%

157. (d) The number of failure boys

$= \dfrac{640 \times 40}{100} = 256$

The number of failure girls

$= \dfrac{360 \times 20}{100} = 72$

percentage of failure students

$= \dfrac{(72+256)}{640+360} \times 100 = 32.8\%$

158. (c) Failed students in Mathematics = 34%

failed students in English = 42%

14% 20% 22%

Mathematics   English
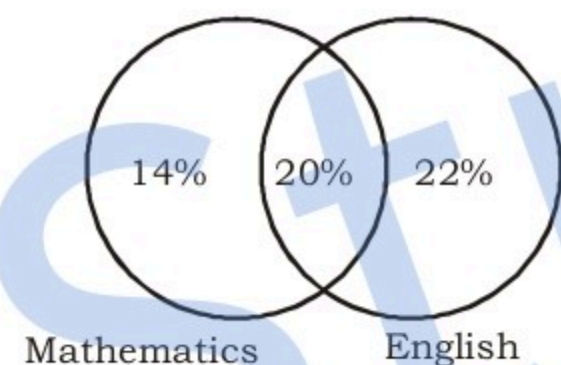
Venn diagram of failed students

Percentage of passed students in both subjects = [100 – (14 + 20 + 22)] = 44%

159. (a) Let the marks obtained by first student = a

then marks obtained by second student = (a + 9)

According to the question,

$a + 9 = \dfrac{56}{100}(a + a + 9)$

100 a + 900 = 112a + 504

12a = 396

a = 33

Marks of first student = 33

Marks of second student = 33 + 9 = 42

Alternate

Note: In such type of questions to save your valuable time take help from options.

Option (a) Marks of students be 42, 33

Case (i):- Difference = 44 – 33 = 9

Case (ii):- $42 = (33 + 42) \times \dfrac{56}{100}$

$42 = 75 \times \dfrac{56}{100}$

42 = 42

Option (a) satisfies both the conditions of the equation. Hence option (a) is correct.

160. (c) Students failed in Hindi = 52%

Student failed in English = 42%

Students failed in both subjects = 17%

35% 17% 25%
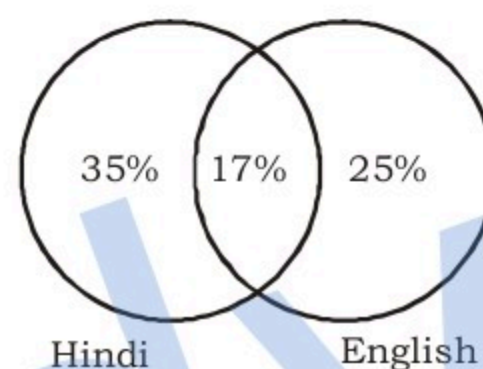
Hindi   English

Venn diagram of failed students

Total percentage of passed students in both subjects

= 100 – (35 + 17 + 25)

= 100 – 77 = 23%

Hence required percentage = 23%

161. (b) Students who cannot speak English = (100 – 70) = 30%

Students who cannot speak Hindi = (100 – 65) = 35%

3% 27% 8%

English   Hindi
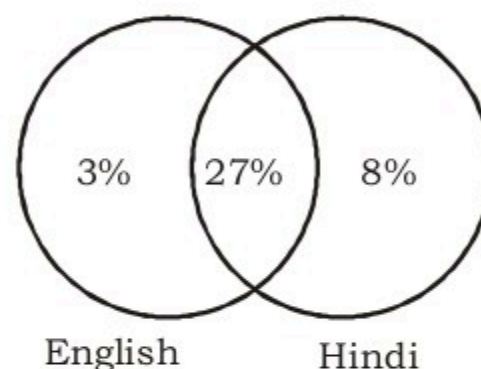
Venn diagram of students who can not speak these langauges

Percentage of students who can speak both the languages

= [100 – (3 + 27 + 8)]%

= (100 – 38%)

= 62%

162. (b) Percentage of failed students = 25%

∴ Percentage of passed students = (100 – 25)%

= 75%

According to the question,

Total students $= \dfrac{450}{75} \times 100 = 600$

163. (d) Percentage of students playing both

= (50 + 40 + 18) – 100 = 8%

164. (b) $20\% = \dfrac{1}{5} = \dfrac{6 \to \text{Girls}}{5 \to \text{Boys}}$

Boys : Girls

5 : 6

According to the question,

(5 + 6) units = 66

11 units = 66

1 unit = 6

Hence Boys = 6 × 5 = 30

girls = 6 × 6 = 36

The number of girls when 4 is admitted

= (36 + 4) = 40

Required ratio = 30 : 40 = 3 : 4

165. (a) Passed students in first year

$= 100 \times \dfrac{75}{100} = 75$

Passed students in second year

$= 75 \times \dfrac{60}{100} = 45$

Total passed students

= 75 + 45 = 120

Required percentage

$= \dfrac{120}{(100+75)} \times 100 = \dfrac{120}{175} \times 100$

$= 68\dfrac{4}{7}\%$

166. (a) Students passed in mathematics = 65%

Students passed in physics = 48%

Students passed in both subjects = 30%
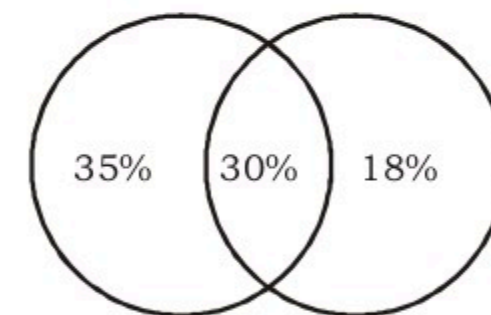
35% 30% 18%

Venn diagram of passed students

percentage of failed students in both subjects

= 100 − (35 + 30 + 18)

= 100 − 83 = 17%

167. (c) Percentage of students took Biology = 72%

Percentage of students took Mathematics = 44%

Percentage of students took both subjects = (72 +44) − 100

= 16%

According to the question,

Total number of students

$= \dfrac{40}{16} \times 100 = 250$

168. (d) Candidates failed in English

= (100 − 60)% = 40%

Candidates failed in Mathematics = (100 − 70)% = 30%

English   Mathematics
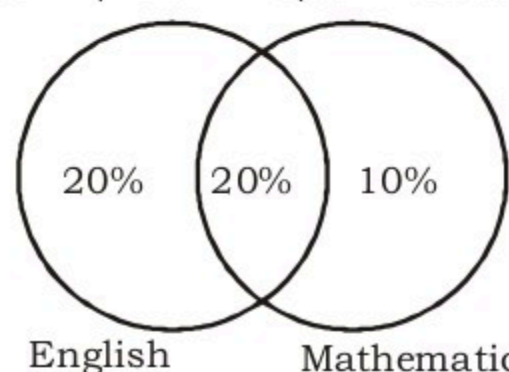
Venn diagram of failed students

Students passed in both subjects

= 100 − (20 + 20 +10)

= 50%

50% of students = 2500

Total students $= \dfrac{2500}{50} \times 100$

= 5000

169. (a) Let the maximum marks = x

According to the question,

Case (i) Pass marks $= \dfrac{30x}{100} + 25$

....(i)

Case (ii) Pass marks

$= \dfrac{40x}{100} - \dfrac{25}{100}\left(\dfrac{30x}{100}+25\right)$ ...(ii)

Note:-Pass marks will be equal in each case

$\dfrac{30x}{100} + 25 = \dfrac{40x}{100} - \dfrac{30x}{400} - \dfrac{25}{4}$

$25 = \dfrac{10x}{100} - \dfrac{30x}{400} - \dfrac{25}{4}$

$25 + \dfrac{25}{4} = \dfrac{40x}{400} - \dfrac{30x}{400}$

$\dfrac{125}{4} = \dfrac{10x}{400} \Rightarrow x = 1250$

Maximum pass marks

$= 1250 \times \dfrac{30}{100} + 25$

$= 375 + 25 = 400$

Alternate:

Note: In such type of question to save your valuable time take help from options.

   Option:-Maximum pass marks = 400

Maximum marks

$= \dfrac{(400-25)}{30} \times 100 = 1250$

According to the question, Required maximum pass marks

$= 1250 \times \dfrac{40}{100} - 400 \times \dfrac{25}{100}$

= 500 − 100 = 400

Hence, the required answer is same as in option (a). Hence option (a) is correct.

170. (b)

Cow   Buffalo
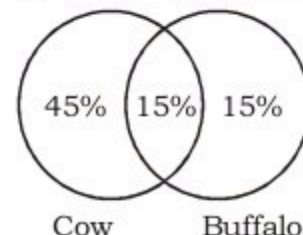
Venn diagram of families which have buffalo and cow.

Required families which do not have a cow or a buffalo

= 100 − (45 + 15 +15) = 25%

According to the question.

Required number $= \dfrac{96}{100} \times 25 = 24$

171. (a) Candidates failed in Mathematics = 35%

Candidates failed in English = 25%

Mathematics   English
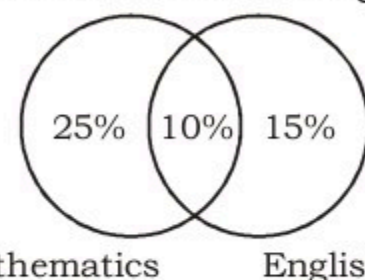
Venn diagram of failed students

Hence percentage of passed candidates in both Subjects = 100 − (25 + 10 +15) = 50%

172. (b) Total marks = (300 + 200)

$\times \dfrac{46}{100} = 230$

Marks obtained by the students in science

$= 300 \times \dfrac{32}{100} = 96$

Required marks in Language Papers

= (230 − 96) = 134

Required percentage

$= \dfrac{134}{200} \times 100 = 67\%$

Hence Required percentage = 67%

Alternate:

use alligation method:

(x− 46)%   14%

3×7   :   2×7

$x - 46 = 21$

$x = 67\%$
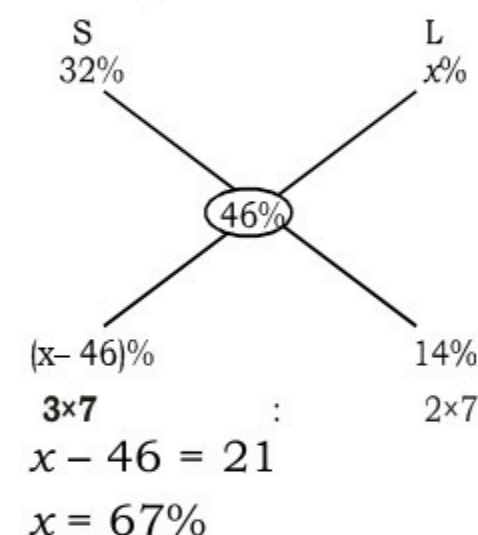
173. (c) Percentage of passed students in both subjects

= (90 + 85) − 100

= 75%

According to the question,

Total number of students

$= \dfrac{150}{75} \times 100 = 200$

174. (c) $40\% = \dfrac{2}{5}$, $75\% = \dfrac{3}{4}$

Let total number of students = 20
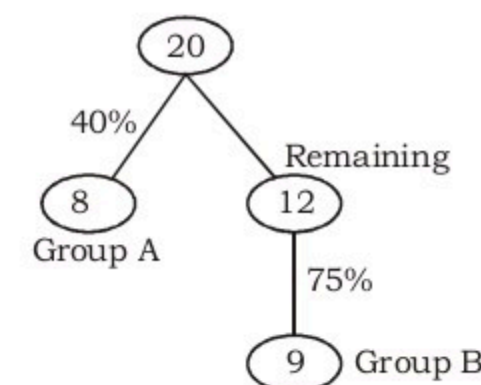
Now remaining students

= 20 − (9 + 8) = 3

According to the question,

3 units = 12

1 unit $= \dfrac{12}{3} = 4$

20 units = 4 × 20 = 80

Hence total number of students = 80

175. (a) $10\% = \dfrac{1}{10}$

Ankita   Eakta

9   10

×9   ×9

81   90
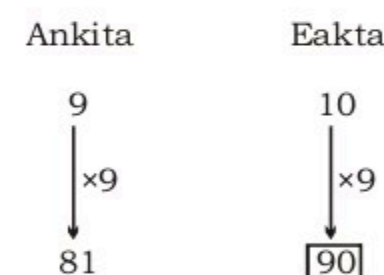
Hence, marks obtained by Eakta = 90

176. (d) According to the question,
Let the total number of students = 100

$$\text{Ratio of } \frac{\text{Boys}}{\text{Girls}} = \frac{3}{2}$$

5 units.................100
1 units.................20
3 units.................20×3 = 60
2 units.................20× 2 = 40

Boys   Girls
60   +   40 = 100
30%↓   ↓70%
Appeared in Exam 18 + 28 = 46

Students not appeared in exam
= 100 − 46 = 54

$$\therefore \frac{\text{Ratio of students appeared in exam}}{\text{Not appeared in exam}}$$

$$= \frac{46}{54} = \frac{23}{27}$$

177. (d) According to the question,
First subject   = 60%
Second subject   = 80%
Aggregate in all subject = 70%
Sum of all those subject = 3×70
                              = 210
∴ First + Second + Third = 210
60 + 80 + Third = 210
Third = 210 – 140 = 70

178. (d) $20\% = \frac{1}{5}$, $30\% = \frac{3}{10}$,

$$10\% = \frac{1}{10}$$

Let total income = 100 units

(100) Total income
|
− 20% (Older son)
(80)
|
− 30% (younger son)
(56)
|
− 10% (trust)
(50.4)
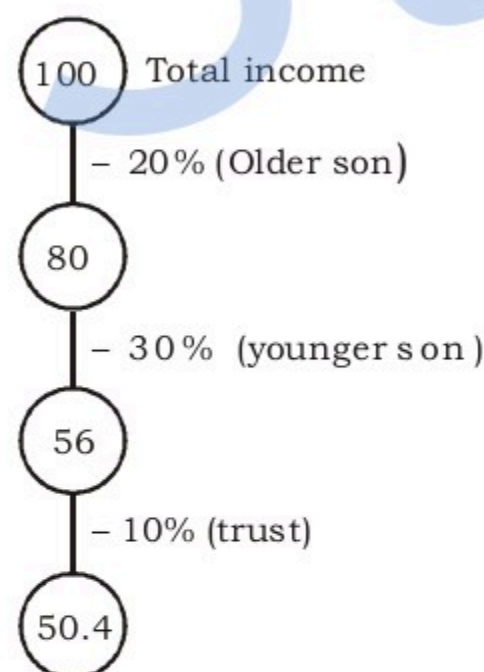
According to the question,
50.4 units = ₹10080

1 Unit = $\frac{1080}{50.4}$ = ₹200

100 units = 200 × 100 = ₹20,000
Hence, Required income = ₹ 20,000

Alternate:-

Initial		Final
5	:	4
10	:	7
10	:	9
500	:	252

×40   ×40

20000   10080

Hence required income = ₹20,000

179. (b) Expenditure
Food   → 40%
House Rent   →20%
Entertainment   →10%
Conveyance   →10%
Total expenditure = 80%
Savings = 100% – 80% = 20%
20% → 1500

$$1\% \to \frac{1500}{20}$$

$$\text{Salary(100\%)} \to \frac{1500}{20} \times 100$$

= Rs. 7500

180. (b) According to the question,

(2500)
60%
(1500)
                    38%
30%   32%   Remaining
Bank
(450)   (480)   (570)
Post   Share
office   holders
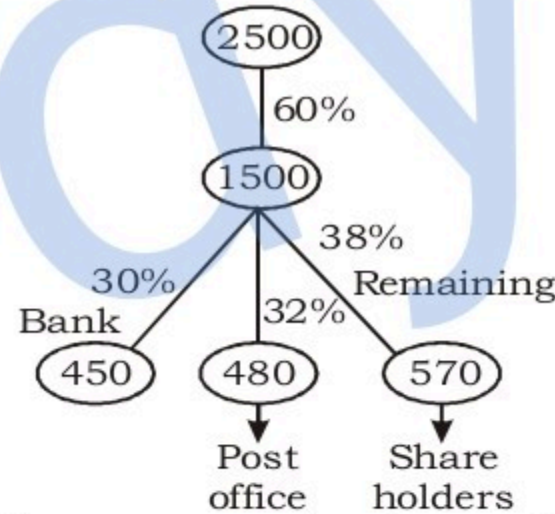
Hence, required number of share holders = 570

181. (d) Let initial salary = 100 units

(100) Total salary
|
(30)   (3)
food   charitable trust
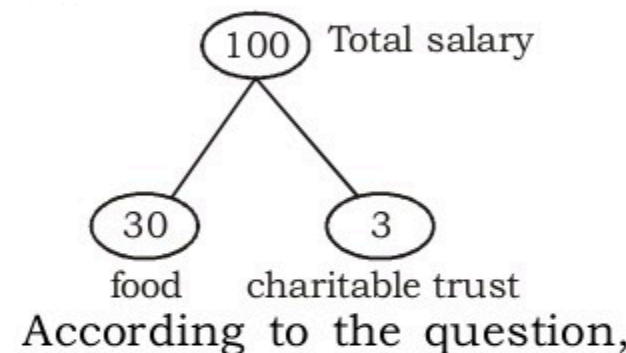
According to the question,
(30 + 3) units = Rs. 2310
33 units   = Rs. 2310

1 unit   = Rs. $\frac{2310}{33}$

100 units = $\frac{2310}{33} \times 100$

Total salary   = Rs. 7000

182. (d) Let the total amount = x
According to the question,

$$x \times \frac{80}{100} \times \frac{95}{100} = (120 + 1400)$$

$$x \times \frac{4}{5} \times \frac{19}{20} = 1520$$

$$x = \frac{1520 \times 100}{76} = 2000$$

Total amount = 2000
Amount spent on transport

$$= 2000 \times \frac{80}{100} \times \frac{5}{100} = \text{Rs. 80}$$

Alternate:

Note : In such type of questions try to follow the given below method to save your valuable time.

$$20\% = \frac{1}{5}, 5\% = \frac{1}{20} = \frac{19 \to \text{Final}}{20 \to \text{Initial}}$$

Total amount = 100 units

(100) Total
$\frac{4}{5}$
(80) Remaining after purchasing
4 units Transport $\frac{19}{20}$
(76) Remaining after transport
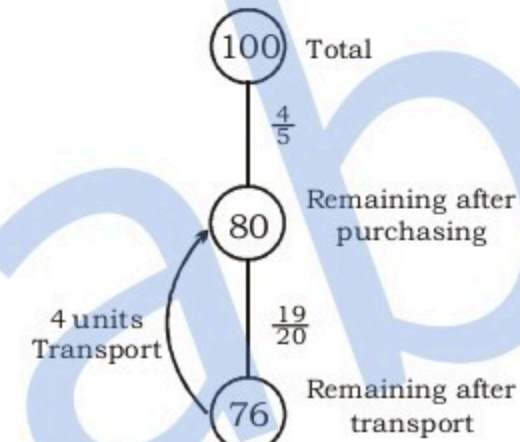
According to the question,
76 units = (1400 + 120) = Rs. 1520
1 unit = 20
4 units = 20 × 4 = Rs. 80

183. (a) $60\% = \frac{3}{5}$, $25\% = \frac{1}{4}$,

$$20\% = \frac{1}{5}$$

Let the total trees in the garden = 100

(100) Total trees
$\frac{3}{5}$
(60) Coconut trees
$\frac{1}{4}$
(15) Mango trees
$\frac{1}{5}$
(3) Apple trees
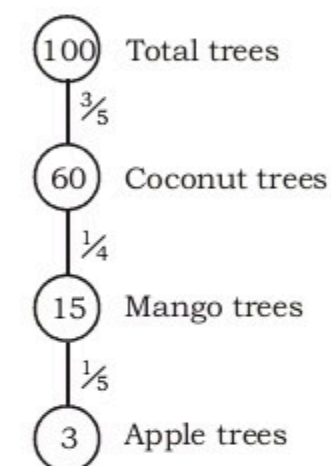
According to the question,
3 units = 1440

1 unit = $\frac{1440}{3}$ = 480

Total trees = 100 units = 480 × 100
              = 48000

184. (d) $20\% = \dfrac{1}{5}$, $70\% = \dfrac{7}{10}$

Let total income = 100 units
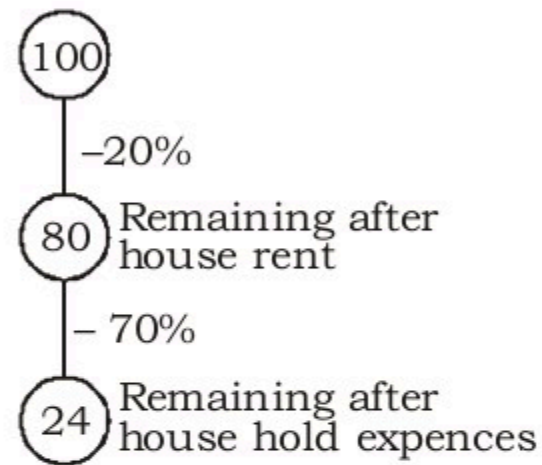
According to the question,
24 units = ₹ 1800

1 unit = ₹ $\dfrac{1800}{24}$

100 units = ₹ $\dfrac{1800}{24} \times 100$

= ₹ 7500

Alternate:

$20\% = \dfrac{1}{5}$,

$70\% = \dfrac{7 \rightarrow \text{Expenditure}}{10 \rightarrow \text{Income}}$

Income	Saving
5	4
10	3
50	12

$\times 150$ $\times 150$

$\boxed{7500}$ 1800

Hence total income = ₹ 7500

185. (a) Let the income of Bhuvnesh = ₹ 100

According to the question,

	Income	Expenditure	Savings
Initial →	100	75	25
	+ 20%	+ 10%	+ 12.5
Final →	120	82.5	37.5

Required % Increased in savings

= $\dfrac{12.5}{25} \times 100 = \mathbf{50\%}$

Alternate:

By Alligation rule

Expenditure   Savings

10   x

20

75   25

   3   :   1

$\dfrac{10 \times 3 + x \times 1}{(3+1)} = 20$
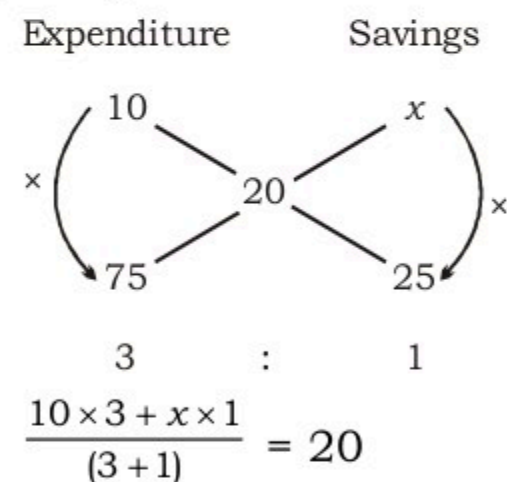
$\dfrac{30 + x}{4} = 20 \Rightarrow 30 + x = 80$

$x = 50\%$

Hence Required increment in savings = 50%

186. (a) $x \times \dfrac{20}{100} \times \dfrac{20}{100} = 16000$

$x = 4,00,000$

187. (d) Let the total number of voters = 100 units
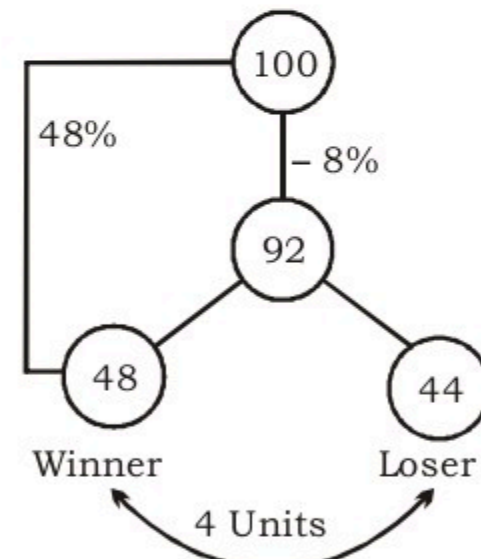
votes get by Loser = (92 − 48)
= 44 units

According to the question,
(48 − 44) units = 1100
4 units = 1100

1 unit = $\dfrac{1100}{4}$ = 275

Total votes = 100 units
= 100 × 275
= 27500

Alternate

Let total votes = x

Votes polled = $x \times \dfrac{92}{100}$

Votes polled for winner = $\dfrac{48x}{100}$

Votes polled for loser = $\left(\dfrac{92x}{100} - \dfrac{48}{100} \right)$

According to the qustion,

$\dfrac{48x}{100} - \left(\dfrac{92}{100} - \dfrac{48x}{100} \right) = 1100$

$\dfrac{48x}{100} - \dfrac{44x}{100} = 1100$

$4x = 1100 \times 100$

$x = 1100 \times 25 = 27500$

Hence, total number of voter = 27500

188. (c) Total valid votes got candidates = $\dfrac{9261}{75} \times 100 = 12348$

Let total number of votes = x

Total votes polled = $x \times \dfrac{75}{100}$

= $\dfrac{75x}{100}$

Valid votes = $\dfrac{75x}{100} \times \dfrac{98}{100}$

According to the question,

$\dfrac{75x}{100} \times \dfrac{98}{100} = 12348$

Hence, total votes = 16800

Alternate

Note: In such type of questions try to write the statement in one line.

Let total votes = x

$x \times \dfrac{75}{100} \times \dfrac{98}{100} = \dfrac{9261}{75} \times 100$

$x = 16800$

Hence required number of total votes = 16800

189. (c) Let total number of votes polled = 100 units
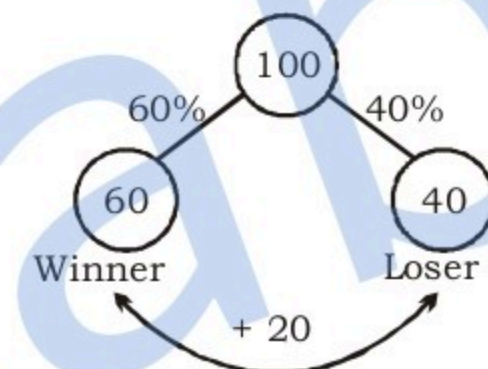
According to the question,
20 units = 14000

1 unit = $\dfrac{14000}{20}$ = 700

60 units = 700 × 60 = 42000

Hence votes polled for winning candidates = 42000

190. (b) Let total salary = 150 units
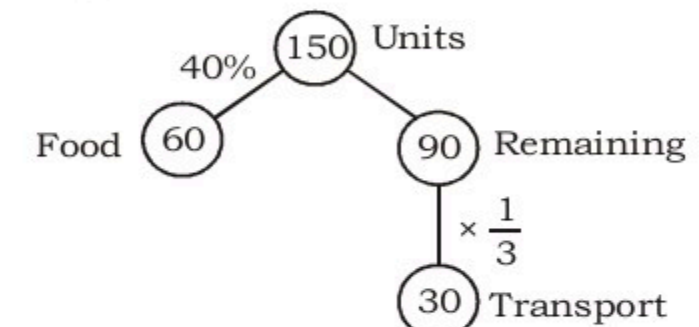
Remaining salary after expenditure
= 150 − (60 + 30) = 60 units

According to the question,

$\dfrac{60}{2}$ units = ₹ 4500

1 unit = ₹ $\dfrac{4500}{30}$ = ₹ 150

Monthly salary
= 150 units = 150 × 150
= ₹ 22500

191. (c) Let the total number of votes = 100
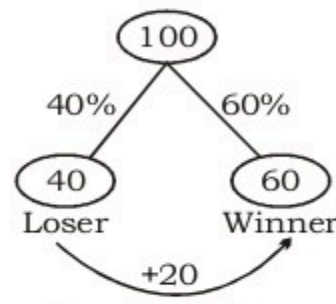
20 units = 298

$$1 \text{ unit} = \frac{298}{20}$$

$$100 \text{ units} = \frac{298}{20} \times 100$$

$$= 1490$$

192. (d) Total votes = 104000

Total valid votes

$$= 104000 \times \frac{(100-2)}{100}$$

$$= 104000 \times \frac{98}{100}$$

$$= 101920$$

Votes polled in favour of the candidate

$$= 101920 \times \frac{55}{100} = 56056$$

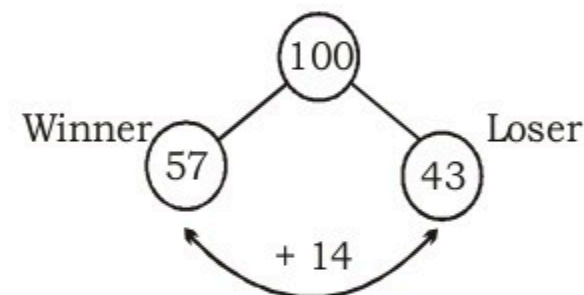**193.** (b) Let the total number of votes = 100 units
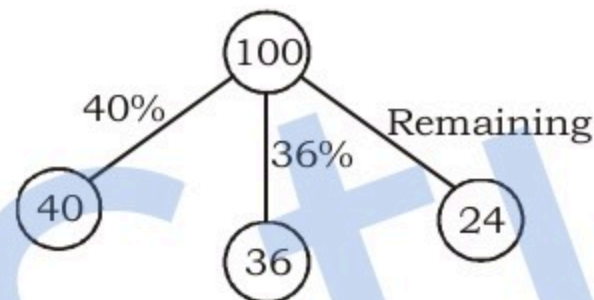
According to the question,

100 units = 36000

1 unit = 360

24 units = 360 × 24 = 8640

Hence required number of votes got by 3rd canditate = 8640

194. (c) Let the total number of votes = 100 units

According to the question,

14 units = 42000

1 unit = 3000

Total votes = 100 units

= 100 × 3000

= 3,00,000

195. (d) Let the total number of valid votes = 100 units
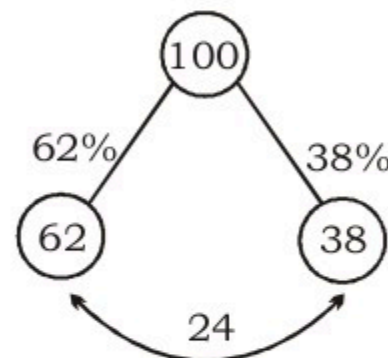
According to the question,

24 units = 7200

1 unit = 300

100 units = 300 × 100

= 30,000

Hence, total number of valid votes

= 30,000

196. (c) $2\frac{1}{2}\% = \frac{5}{2}\% = \frac{1}{40} = \frac{41 \to \text{Final}}{40 \to \text{Initial}}$

Initial Population	Final Population
40	41
40	41
40	41
64000	68921

Hence required population = 68921

197. (a) $10\% = \frac{1}{10}$

Initial	Final
10	9
10	9
100	81

⇒ 81 units = ₹8100

⇒ 1 unit = ₹100

⇒ 100 units = ₹10000

⇒ Value of property 2 years ago = ₹ 10000

198. (a) $25\% = \frac{1}{4}$

Initial	Final
4	5
4	5
4	5
64	125

⇒ 125 units = 10000

⇒ 1 unit = 80

⇒ 64 units = 5120

⇒ Population at the beginning of I^{st} Year = 5120

199. (a) $4\% = \frac{1}{25}$

Initial Population	Final Population
25	24
25	24
625	576
×100	×100
62500	57600

Hence present population of the town = 57,600

200. (c) $4\% = \frac{1}{25}$

Initial	Final
25	26
25	26
625	676

According to the question,

625 units = 50000

$$1 \text{ unit} = \frac{50000}{625} = 80$$

676 units = 80 × 676 = 54080

Hence population after two years = 54080

Alternate:

Population after two years

$$= 50000 \times \frac{104}{100} \times \frac{104}{100} = 54080$$

201. (b) Salary in 2006

$$= \frac{880000}{110} \times 100 = ₹ \, 8,00,000$$

202. (a) $20\% = \frac{1}{5}$

Initial	Final
5	4
5	4
5	4
125	64

−61

Required percentage

$$= \frac{61}{125} \times 100 = 48.8\%$$

203. (a) $4\% = \frac{1}{25}$

Initial	Final
25	26
25	26
625	676
×100	×100
62500	67600

Population before 2 years = 62500

Alternate:
Let the initial population = x
According to the question,

$$x \times \frac{104}{100} \times \frac{104}{100} = 67600$$

$$x = \frac{67600 \times 100 \times 100}{104 \times 104} = 62500$$

Hence required population = 62500

204. (a) $5\% = \frac{1}{20} = \frac{19 \to \text{final}}{20 \to \text{Initial}}$

Initial	Final
20	19
20	19
400	361
×500	×500
2,00,000	**180500**

Hence, value of machine after 2 years = Rs. 180500

Alternate:

$$P' = P\left(1 \pm \frac{R}{100}\right)^{\pm n}$$

Use sign of R and n according to rate and before or after n years.
Value of machine after two years

$$= 2,00,000 \times \frac{(100-5)}{100} \times \frac{(100-5)}{100}$$
$$= \text{Rs. } 180500$$

205. (b) $10\% = \frac{1}{10} = \frac{11 \to \text{Final}}{10 \to \text{Initial}}$

Initial	Final
10	11
10	11
10	11
1000	1331
×64	×64
64000	**85184**

Hence population after 3 years = 85184

Alternate:
population after n years

$$\Rightarrow p' = P\left(1 \pm \frac{R}{100}\right)^{\pm n}$$

$$p' = 64000\left(1 \pm \frac{10}{100}\right)^3 = 85184$$

Alternate:
present population = 64000
1st year = 6400
2nd year = 6400 + 640
3rd year = 6400 + 2 × 640 + 64
Total population after 3 years
= 64000 + 3 × 6400 + 3 × 640 + 64
= 85,184

206. (d) $20\% = \frac{1}{5}$

Year 1974 : Year 1975
Salary → 5 : 6
×610 ×610
3050 : 3660

Hence required salary = ₹ 3050

Alternate :
Note: To save your valuable time in such type of questions try to write the statement in one line.
Salary in 1974 year

$$= \frac{3660}{120} \times 100 = ₹\, 3050$$

207. (a) Required previous salary

$$= \frac{24000}{(100+20)} \times 100 = \frac{24000}{120} \times 100$$
$$= 20000$$

208. (c) $10\% = \frac{1}{10}$, $20\% = \frac{1}{5}$

$$30\% = \frac{3}{10}$$

Initial	Final
10	9
5	4
10	7
500	252
×12.5	×12.5
6250	**3150**

Hence value after 3 years = ₹ 3150

Alternate:
Current value of machine

$$= 6250 \times \frac{90}{100} \times \frac{80}{100} \times \frac{70}{100} = \text{Rs. } 3150$$

209. (a) Required last year salary

$$= \frac{1806}{(100+5)} \times 100 = ₹1720$$

210. (a) $10\% = \frac{1}{10}$

According to the question,

(2000)	(2003)
Initial	Final
10	11
10	9
10	11
1000	1089

+89

Required % increment

$$= \frac{89}{1000} \times 100 = 8.9\%$$

Hence, strength after 3 years will increase by 8.9%

211. (a) $4\% = \frac{1}{25} = \frac{26 \to \text{Final}}{25 \to \text{Initial}}$

Initial	Final
25	26
25	26
25	26
15625	17576
×32	×32
500000	**562432**

Hence, population on 1$^{\text{st}}$ January 2004 was 562432

Alternate:
Required population

$$= 500000 \times \frac{(100+4)}{100} \times \frac{(100+4)}{100} \times \frac{(100+4)}{100}$$
$$= 562432$$

212. (b) Let the income in 2010 be P

$$\Rightarrow R = 20\%$$

$\Rightarrow$ Income of year 2012
$= ₹\, 26,64,000$

$$\Rightarrow \text{Income of 2012} = P\left[1 + \frac{R}{100}\right]^2$$

$$\Rightarrow 2664000 = P\left[1 + \frac{20}{100}\right]^2$$

$$\Rightarrow 2664000 = P \times \frac{6}{5} \times \frac{6}{5}$$

$$\Rightarrow \text{Income in 2010} = 1850000$$

213. (b) $12\% = \frac{3}{25}$

Copper	Total Alloy
3	: 25
× 23	× 23
69 kg	**575 kg**

Hence, required quantity of alloy = 575 kg.

214. (d) $10\% = \frac{1}{10} \to \text{Water} / \text{Mixture'}$

$20\% = \frac{1}{5} \to \text{Water} / \text{Mixture}$

Milk : Water
Initial → 9 ×4 : 1 ×4
Final → 4 ×9 : 1 ×9

Note: Quantity of milk is same in both cases so equate the quantity of milk.

Milk : Water
Initial → 36 : 4)+5
Final → 36 : 9

(36 + 4) units = 40 litres
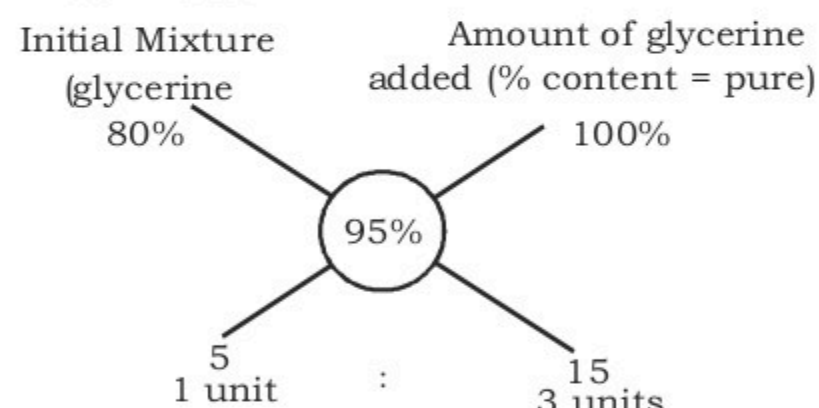1 unit = 1 litre
Required Quantity of water = 5 litres

215. (b) $20\% = \dfrac{1}{5} \rightarrow$ Impurity, $\rightarrow$ Mixture, $5\% = \dfrac{1}{20}$

Impurity   Pure glycerine

$$\begin{array}{ccc} 1 & : & 4 \\ 1 & : & 19 \end{array} \Big\} \text{+ 15 units}$$

According to the question,

(1 + 4) units   = 50 litres

1 unit   = 10 litres

15 units = 10 × 15 = 150 litres

Required quantity of glycerine = 150 litres

Alternate:

Initial Mixture (glycerine 80%   Amount of glycerine added (% content = pure) 100%

95%

5   15

1 unit   :   3 units

Initial mixture 1 unit → 50 Ltr.

Amount of glycerine added 3 units → 3 × 50 = 150ltr.

216. (b) $68\% = \dfrac{17}{25}$, $20\% = \dfrac{1}{5}$

               Water   :   Pulp

Fresh fruit   ⟶   17   :   8

Dry fruit   ⟶ $1_{\times 2}$: $4_{\times 2}$

Note: Both condition the quantity of Pulp would be same.

The weight of fruit is made by Pulp and Water gradually water is decreased but the quantity of Pulp would be same.

              Water   :   Pulp

Fresh fruit ⟶ 17   :   8 $\xrightarrow{+}$ 25

Dry fruit ⟶ 2   :   8 $\xrightarrow{+}$ 10

According to the question,

25 units = 100 kg.

1 unit = $\dfrac{100}{25}$ = 4 kg.

10 units = 4 × 10 = 40 kg.

217. (d) $40\% = \dfrac{2}{5} \rightarrow$ Alcohol, $\rightarrow$ Mixture

     Water   :   Alcohol

        3   :   2

Required percentage = $\dfrac{2}{(5+1)} \times 100$

= $\dfrac{2}{6} \times 100$

= $\dfrac{1}{3} \times 100$ = $33\dfrac{1}{3}\%$

---

218. (c) $15\% = \dfrac{3}{20} \rightarrow$ Water, $\rightarrow$ Mixture

$87.5\% = \dfrac{7}{8} \rightarrow$ Milk, $\rightarrow$ Mixture

          Milk   Water

Initial ⟶ 17   :   3

Final ⟶ $7_{\times 3}$: $1_{\times 3}$

Note:- Milk is added in the mixture hence quantity of water will be same.

          Milk   :   Water

Initial ⟶ 17   :   3 $\xrightarrow{+}$ 20 units

+4

Final ⟶ 21   :   3

According to the question,

20 units = 200 litres

1 unit = $\dfrac{200}{20}$ litres = 10 litres

4 units = 10 × 4 = 40 litres

Hence, required quantity of milk = 40 litres

219. (b) By using Alligation Rule,

    I   II

30%   50%

      45%

   5   :   15

Ratio of Quantity → 1   :   3

Hence required ratio = 1 : 3

220. (b) $30\% = \dfrac{3}{10}$, $70\% = \dfrac{7}{10}$

   Sugar   :   Other

    $3_{\times 3}$: $7_{\times 3}$

    $7_{\times 1}$: $3_{\times 1}$

Note: We are adding sugar so other part will be same.

        Sugar   :   Other

+40 units $\Big(\begin{array}{c} 9 \\ 49 \end{array}$: $\begin{array}{c} 21 \\ 21 \end{array}$

According to the question,

(9 + 21) units = 75 gm

1 unit = $\dfrac{75}{30}$ gm

40 units = $\dfrac{75}{30} \times 40$ = 100gm

221. (d) By Alligation rule,

Ist type   IInd type

   20   35

 × x ×

   10   4

    5   :   2

$\dfrac{20 \times 5 + 35 \times 2}{5 + 2} = x \Rightarrow 100 + 70 = 7x$

$7x = 170 \Rightarrow x = \dfrac{170}{7} = 24\dfrac{2}{7}\%$

---

222. (b)

         Alcohol   :   Water

Ratio of Quantity → 1   :   4

According to the question,

(1 + 4) units = 15 litres

5 units = 15 litres

1 units = 3 litres

Quantity of alcohol = 1 × 3 = 3 litres

Quantity of water = 4 × 3 = 12 litres

New quantity of water = (12 + 3) = 15 litres

Required % = $\dfrac{3}{(15+3)} \times 100$

= $\dfrac{3}{18} \times 100$

= $16\dfrac{2}{3}\%$

223. (b) Mass of lead ore = 8000 kg

⇒ Mass of metal in lead ore = 60% of 8000 = 4800 kg

⇒ Mass of silver in metal

= $\dfrac{3}{4}\%$ of 4800 = 36 kg

⇒ Mass of lead in ore = 4800 − 36 = 4764 kg

224. (b)

      300 gm

   40%   60%

   120   +   180

    Sugar

Sugar + other solution = Mixture

120 + 180 = 300

+ 60   + 60

180 + 180 = 360   [Check with option to save time]

Sugar should be added 60 grams because 120 + x = 180 grams

x = 60 grams

225. (c) According to the question,

Mixture of copper and aluminium = 2000 gm

30 % copper = $\dfrac{30}{100} \times 2000$ = 600 gms.

      Copper   aluminium

      600 gm   1400 gm

20% = 600   +

1unit = 30   30 $\dfrac{x}{80\%}$ ×30

      20%   2400gm

Let the additional aluminium powder = x

1400 + x = 2400 gm

x = 1000 gms

Alternate

Copper : Aluminium
30 : 70
20 : 80

Copper : Aluminium
3 : 7 → 10 units = 2000 gm
1 unit = 200 gm
1 : 4 → × 3

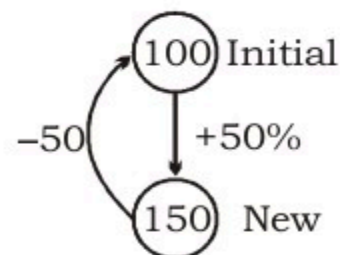We have to equal Copper amount because only Aluminium is added

coper : Aluminium
3 : 7 ⎫
⎬ +5 unit
3 : 12 ⎭

We have to add 5 unit
= 5 × 200 = 1000 gm

226. (c) Let the initial expenditure = 100 units

Decrease in consumption

$= \dfrac{50}{150} = \dfrac{1}{3}$

1 unit = 4 Eggs less

Original consumption = 4 × 3
= 12 eggs.

New consumption = (3 − 1) × 4
= 8 eggs.

Present price per dozen

$= \dfrac{24}{8} \times 12 = ₹ 36$

Alternate:

Note: Required more money when The price is increase 50%

$= 24 \times \dfrac{50}{100} = ₹ 12$

Present price $= ₹ \dfrac{12}{4} = 3$ ₹/egg

Present price of 1 dozen eggs
= 3 × 12 = ₹ 36

227. (b) Let the total capital = 1200
According to the quesion,

Total interest = (9 + 40 + 11) = 60
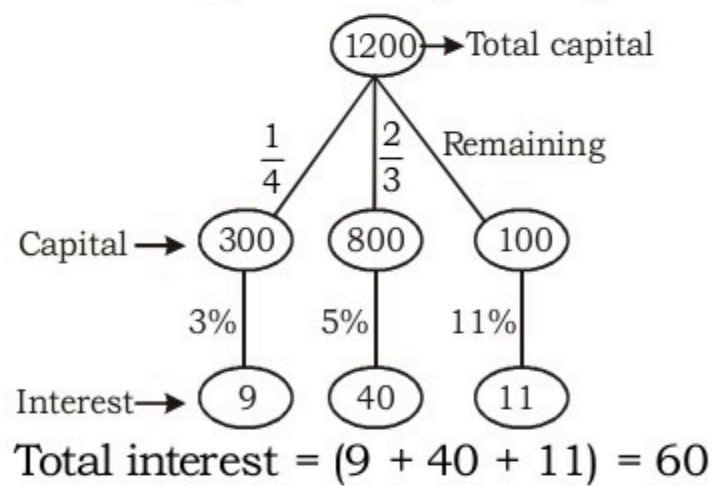
Required percentage

$= \dfrac{60}{1200} \times 100 = 5\%$

228. (a)

	Quantity	Price
Initial →	3	1.25 ⎫
Final →	3	1 ⎭ −0.25

Required % reduction

$= \dfrac{0.25}{1.25} \times 100 = 20\%$

229. (c) **Note:-** In such type of question you can take values as per your need but remember ratio must be same as mentioned in question.

Required percentage increment

$= \dfrac{(24+51+15)}{(120+170+30)} \times 100 = \dfrac{90}{320} \times 100$

$= 28\dfrac{1}{8}\%$

230. (b)

Bus Fare : Train Fare

Initial →	20	:	30
	+10%		+20%
Final →	22	:	36

Required ratio = 36 : 22 = 18 : 11

231. (b) **Note:-** In such type of questions to save your valuable time follow the Alligation method.

$\dfrac{12-x}{15-12} = \dfrac{5}{3}$ or $\dfrac{15 \times 5 + 3x}{5+3} = 12$

⇒ 75 + 3x = 96
3x = 21
⇒ x = 7%

Hence required increase in savings = 7%

232. (d) Let the numbers are 40 and 50 respectively,

A	:	B
40	:	50
+20%		−20%
48	:	40

Required ratio = 48 : 40 = 6 : 5

233. (c) Let the income of the man = ₹ 100

Income	Expenditure	Savings
100	75	25
+ 20%	+15%	+ 8.75
120	86.25	33.75

Required percentage increase

$= \dfrac{(33.75 - 25)}{25} \times 100 = 35\%$

Alternate:

Expenditure = 75%
Savings = (100 − 75)% = 25%
By alligation rule,

$\dfrac{3 \times 15 + x \times 1}{3+1} = 20$

⇒ 45 + x = 80
⇒ x = 35%

234. (d) Let the required number = 15
According to the question

Wrong answer $= \dfrac{3}{5} \times 15 = 9$

Correct answer $= \dfrac{5}{3} \times 15 = 25$

Required % error $= \dfrac{(25-9)}{25} \times 100$

$= \dfrac{16}{25} \times 100 = 64\%$

Alternate

Let the number = x
According to the question,

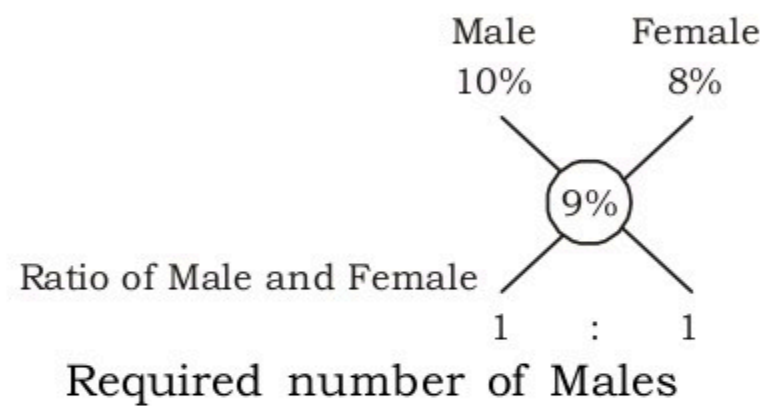wrong answer $= \dfrac{3}{5}x$

correct answer $= \dfrac{5}{3}x$

Required % error

$\dfrac{\dfrac{5}{3}x - \dfrac{3}{5}x}{\dfrac{5}{3}x} \times 100 = \dfrac{16x}{15} \times \dfrac{3}{5x} \times 100$

Required % error = 64%

235.(a) Note: In such type of questions use alligation method to save your valuable time.

Male 10%   Female 8%

9%

Ratio of Male and Female
1 : 1

Required number of Males

$$= \frac{8000}{(1+1)} \times 1 = 4000$$

236. (d) Number of boys = x

Number of girls = $(150 - x)$

According to the question,

$$\Rightarrow 150 \times \frac{x}{100} = (150 - x)$$

$$\Rightarrow 3x = 300 - 2x$$

$$\Rightarrow 5x = 300$$

$$\Rightarrow x = 60$$

Hence, the required number of boys = 60

237. (b) Required price

$$= 19000 \times (8 - 7.5)\%$$

$$= 19000 \times \frac{0.5}{100} = ₹ 95$$

238. (d) Required apples

$$= \frac{420}{(100-40)} \times 100$$

$$= \frac{420}{60} \times 100 = 700$$

Hence required apples = 700

239. (c) Let the monthly salary = x

According to Question

$$x \times \frac{8}{3 \times 100} = 72 \Rightarrow x = 2700$$

$$\left[2\frac{2}{3}\% \Rightarrow \frac{8}{3}\% \right]$$

240. (b) Average Income

$$= ₹ \frac{80,800}{16} = ₹5050$$

Hence, required income

$$= ₹5050 \times \frac{120}{100} = ₹6060$$

241. (d) $62\frac{1}{2}\% = \frac{5}{8}$, $12\frac{1}{2}\% = \frac{1}{8}$

Let the total height of the pole = 64 units

According to the question,

64

3/8

24 → Remaining height after 1 hr.

1/8

3 → distance covered in 2nd hr.
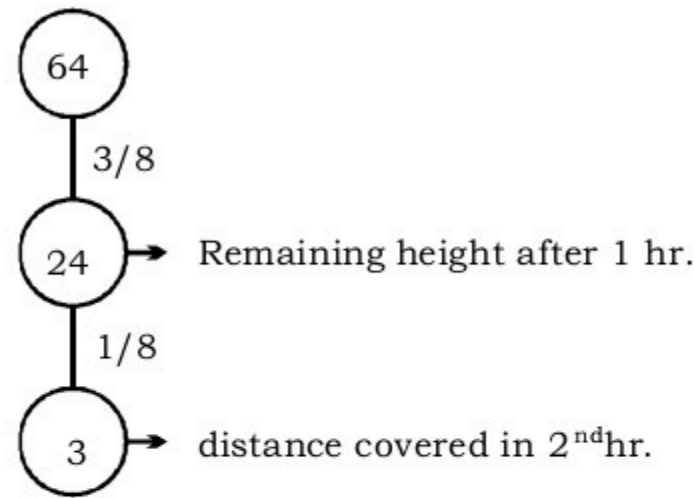
64 units = 192 m

1 unit = 3 m

3 units = 3 × 3 = 9 m

Hence, distance climbed in second hour = 9 metre

Alternate:

Total height = 192m

Distance climbed in second hour = $\frac{1}{8}$

$$= 192 \times \frac{(8-5)}{8} \times \frac{1}{8}$$

$$= 192 \times \frac{3}{8} \times \frac{1}{8} = 9m$$

242. (c) Net Tax rate

$$= 30 + \frac{30 \times 10}{100} = 33\%$$

243. (b) Total score = 110

score made by the bastman by boundries and sixes

$$= 8 \times 6 + 3 \times 4 = 60$$

Runs made by running between the wickets

$$= (110 - 60) = 50$$

Required % $= \frac{50}{110} \times 100 = \frac{500}{11} = 45\frac{5}{11}\%$

244. (c) Let the fraction $= \frac{x}{y}$

According to the question,

$$\frac{x \times 120}{y \times 95} = \frac{5}{2}$$

$$\frac{x}{y} = \frac{5 \times 95}{2 \times 120} = \frac{95}{48}$$

245. (d) Error = 3 hours 45.5 min
– 3 hours 40 min

error = 5.5 min

Required % error $= \frac{5.5}{(3 \times 60 + 40)} \times 100$

$$= \frac{550}{220} = 2.5\%$$

246. (c) Let the income = 100

Let tax rate% = x%

Income	Tax Rate	Net Income
100	x%	$(100 - x)$
100	$1.19x$	$(100 - 1.19)x$

-1%

According to the question,

$$(100 - x) \times \frac{99}{100} = (100 - 1.19x)$$

$$9900 - 99x = 10000 - 119x$$

$$20x = 100$$

$$x = 5\%$$

Hence required tax rate = 5%

Alternate

Note: To save your valuable time you can take help from options.

Option (a) tax rate = 5%

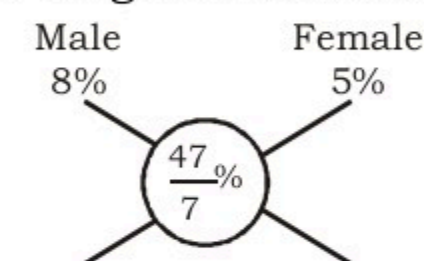| Income	Tax Rate	Net Income
100	5%	95
100	$5 + \frac{5 \times 19}{100} = 5.95\%$	94.05

-0.95

Required reduction in net income

$$= \frac{0.95}{95} \times 100 = 1\%$$

Hence reduction in net income is 1% same as mentioned in question. Hence option (c) is correct.
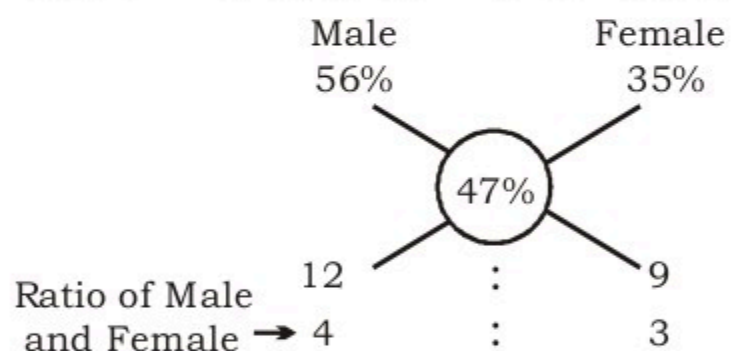
247. (c) Increase in population = (10458 – 9800) = 658 increment

$$= \frac{658}{9800} \times 100 = \frac{658}{98} = \frac{47}{7}\%$$

Use alligation method:

Male 8%   Female 5%

$\frac{47}{7}$%

Note: To make your calulation easier multiply by 7 to all data.

Male 56%   Female 35%

47%

Ratio of Male and Female →
12 : 9
4 : 3

Hence required population of

males $= \frac{9800}{(4+3)} \times 4 = 5600$

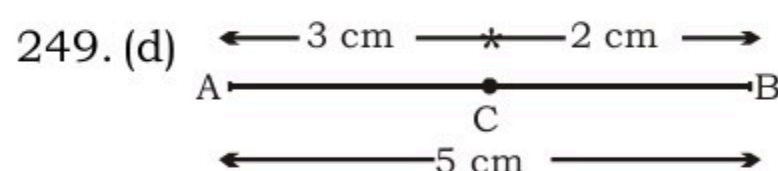**248.** (c) $20\% = \dfrac{1}{5}$

$xy^2 = x \times y \times y$

	Initial Value	Final Value
$x \to$	5	4
$y \to$	5	4
$y \to$	5	4
$xy^2 \to$	125	64

-61

Required %

$= \dfrac{61}{125} \times 100 = \dfrac{61 \times 4}{5} = \dfrac{244}{5}$

Required % $= \dfrac{244}{5} = 48.8\%$

249. (d) $\longleftarrow 3\text{ cm} \longrightarrow \ast \longleftarrow 2\text{ cm} \longrightarrow$

A •————————————•————————• B

C

$\longleftarrow 5\text{ cm} \longrightarrow$

After increment of 6% new length of AC

$= 3 + \dfrac{3 \times 6}{100} = 3.18 \text{cm}.$

Required % decrease $= \dfrac{0.18}{2} \times 100$

$= 9\%$

250. (c) Let the part invested on 5% $= ₹x$

Remaining part $= ₹ (10,000 - x)$

According to the question,

$\dfrac{x \times 5}{100} - \dfrac{(10000-x) \times 6}{100} = 76.50$

$\dfrac{5x}{100} - 600 + \dfrac{6x}{100} = 76.50$

$\dfrac{11x}{100} = 76.50 + 600$

$\dfrac{11x}{100} = 676.50$

$\Rightarrow x = \dfrac{67650}{11}$

$\Rightarrow x = 6150$

Amount invested on 6%

$= (10,000 - 6150) = ₹ 3850$

Alternate:

In such type of questions to save your valuable time go through options.

Option (c) Amount spend on 6% = 3850

Interest $= \dfrac{3840 \times 6}{100} = ₹ 231$

Amount spend on 5% $= (10000 - 3850)$

$= ₹ 6150$

Interest $= \dfrac{6150 \times 5}{100} = 307.50$

Difference in interest

$= (307.50 - 231) = ₹ 76.50$

Now option (c) satisfy both the conditions.

Hence option (c) is correct.

251. (b) $40\% = \dfrac{2}{5} = \dfrac{3 \to \text{Final}}{5 \to \text{Inital}}$

Initial	Final
5	3

$\dfrac{5}{25} \quad \dfrac{3}{9}$

-16

Required decrease in area

$= \dfrac{16}{25} \times 100 = 64\%$

Alternate

By using successive formula, Net decrease in area

$= 40 + 40 - \dfrac{40 \times 40}{100} = 64\%$

252. (b) Salary of shyam $= \dfrac{1540}{22} \times 100$

$= ₹ 7000$

According to the question,

Salary of Ram = Salary of Shaym

Hence salary of Ram = ₹ 7000

Savings of Ram $= 7000 \times \dfrac{14}{100}$

$= ₹ 980$

253. (d) Let the first and second number is a and b respectively

$b - \dfrac{60}{100} a = \dfrac{52}{100} b$

$b - \dfrac{52}{100} b = \dfrac{60}{100} a$

$\dfrac{48}{100} b = \dfrac{60}{100} a$

$4b = 5a$

$\dfrac{a}{b} = \dfrac{4}{5}$

$\Rightarrow a : b = 4 : 5$

254. (a) Marks obtained by A

$= 360$ marks

marks obtained by C

$= \dfrac{360}{125} \times 100 = 288$ marks

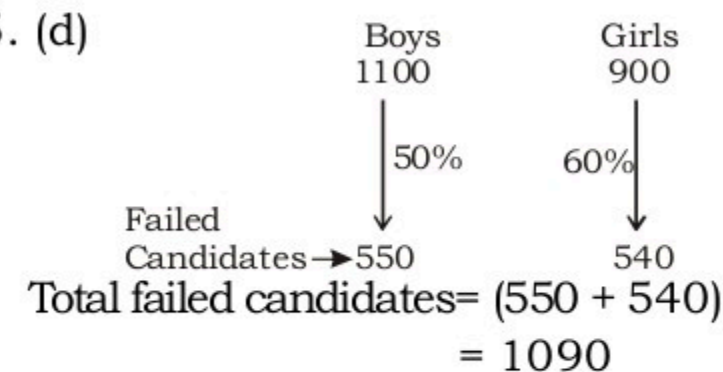marks obtained by D

$= \dfrac{288}{80} \times 100 = 360$ marks

Required % marks obtained by D

$= \dfrac{360}{500} \times 100 = 72\%$

255. (d)

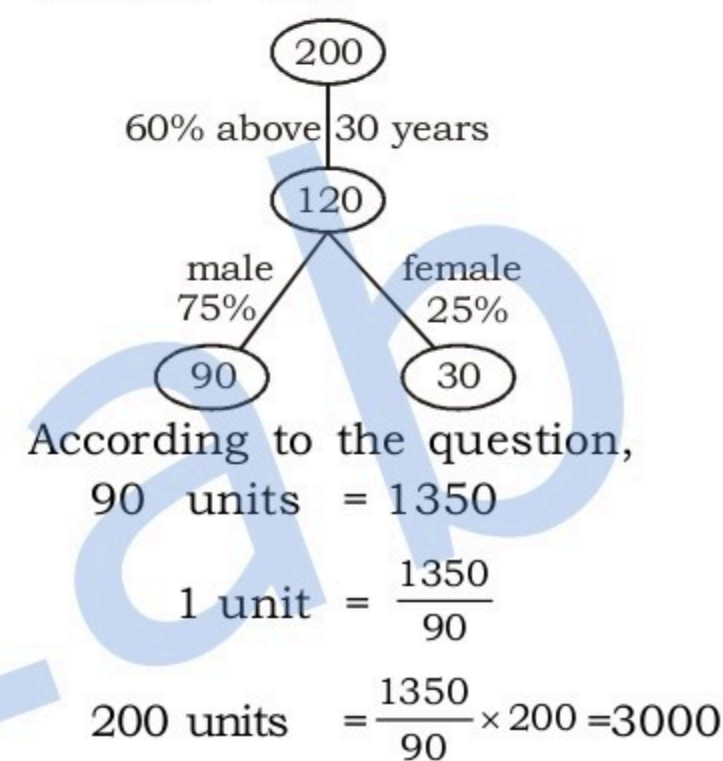|	Boys 1100	Girls 900
	50%	60%
Failed Candidates →	550	540

Total failed candidates = (550 + 540)

$= 1090$

Required percentage of failed candidates

$= \dfrac{1090}{(1100 + 900)} \times 100$

$= \dfrac{1080 \times 100}{2000} = 54.5\%$

256. (a) $60\% = \dfrac{3}{5}$, $75\% = \dfrac{3}{4}$

Let the total numbers of workers = 200

200

60% above 30 years

120

male 75%   female 25%

90   30

According to the question,

90 units $= 1350$

1 unit $= \dfrac{1350}{90}$

200 units $= \dfrac{1350}{90} \times 200 = 3000$

Alternate:

75% → 1350

1% → 18

Workers above 30 years (100%)

→ 1800

Given,

Workers above 30 years (60%) → 1800

1% → 30%

100% → 3000

257. (a) By alligation Rule,

Girls 73	Boys 71

71.8

Ratio of girls and boys → 0.8 : 1.2

2 : 3

Required percentage of girls

$= \dfrac{2}{(3 + 2)} \times 100 = 40\%$
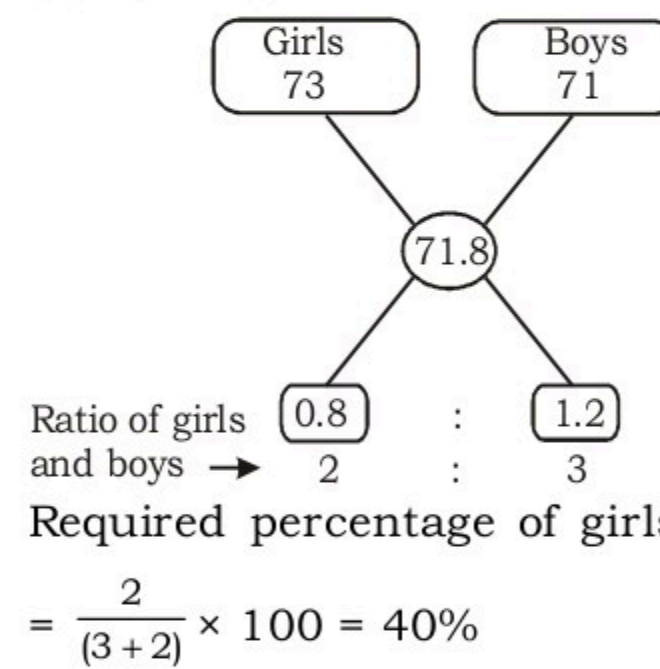
258. (b) Total seats = 10000

Ticket sold = (10000 − 100) = 9900

According to the question,
Total revenue

$$= 9900 \times \frac{20}{100} \times 10 + 9900 \times \frac{80}{100} \times 20$$

$$= 9900 \times 2 + 9900 \times 16$$

$$= 9900 (2 + 16)$$

$$= \text{Rs. } 178200$$

259. (c) Percentage of Non-tax paying employees = (100 − 31)% = 69%

69% of total employees = 20,700

$$\text{Total employees} = \frac{20700}{69} \times 100$$

$$= 30,000$$

260. (c) Basic pay $= \frac{11925}{(100 + 165)} \times 100$

$$= \frac{11925}{265} \times 100$$

$$= \text{Rs. } 4500$$

261. (a) Let the salary = 100 units
savings = 20%

$$\text{savings} = 100 \times \frac{20}{100} = 20 \text{ units}$$

Expenditure = (100 − 20) = 80 units
According to the question,
80 units = Rs. 6000
1 unit = Rs. 75
Savings = 75 × 20
= Rs. 1500

262. (b) Population of town = 3,11,250

Number of women in town

$$= \frac{311250}{(43 + 40)} \times 43 = 161250$$

Number of literate women

$$= 161250 \times \frac{24}{100} = 38700$$

Number of men in the town

$$= \frac{311250}{(43 + 40)} \times 40 = 150000$$

Number of literate men in town

$$= 150000 \times \frac{(100 - 10)}{100}$$

$$= 150000 \times \frac{90}{100}$$

$$= 135000$$

Total literate persons in town
= (38700 + 135000) = 173700

263. (b) No. of females

$$= 25000 \times \frac{1}{5} = 5000$$

No. of Males = 25000 − 5000
= 20000

No. of educated females

$$= 5000 \times \frac{60}{100} = 3000$$

No. of educated males

$$= 20000 \times \frac{95}{100} = 19000$$

Total educated population = 22000
Percentage of educated population

$$= \frac{22000}{25000} \times 100 = 88\%$$

264. (c)

	Blue	Red	Black
Total Balls →	100	50	50
	↓ 25%	↓ 50%	
Taken out →	25	25	
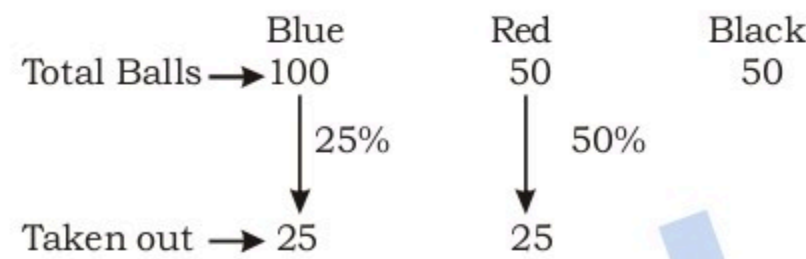
Remaining Balls
= (100 + 50 + 50) − 50
= 150

Required percentage of black balls

$$= \frac{50}{150} \times 100 = 33\frac{1}{3}\%$$

265. (b) Price after discount

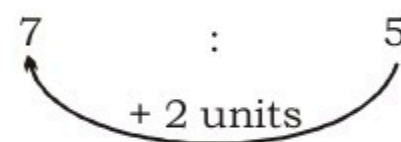$$= \frac{180 \times 80}{100} = \text{Rs. } 144$$

Price of 1 pair of socks

$$= \text{Rs. } \frac{144}{12} = \text{Rs. } 12$$

Required number of pairs

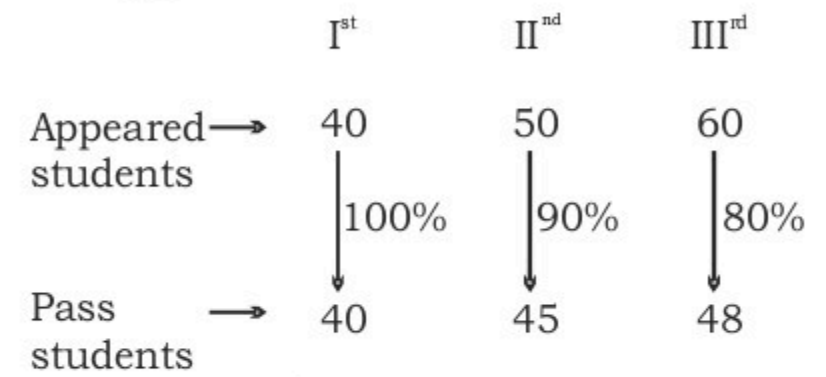$$= \frac{48}{12} = 4 \text{ pairs}$$

266. (c) Bag : Shoe

7 : 5
+ 2 units

According to the question,
2 units = ₹ 200
1 unit = ₹ 100
5 units = ₹ 100 × 5 = ₹ 500
Required price of shoes = ₹ 500

267. (a)

	I^{st}	IInd	IIIrd
Appeared students →	40	50	60
	↓ 100%	↓ 90%	↓ 80%
Pass students →	40	45	48

Required pass %

$$= \frac{(40 + 45 + 48)}{(40 + 50 + 60)} \times 100$$

$$= \frac{133}{150} \times 100 = \frac{266}{3} = 88\frac{2}{3}\%$$

268. (b) Let the bigger number is a and the smaller number is (520 − a)

According to the question,

$$a \times \frac{(100 - 4)}{100} = (520 - a) \times \left(\frac{100 + 12}{100}\right)$$

$$\frac{96a}{100} = (520 - a)\frac{112}{100}$$

$$96a = (520 - a) 112$$

$$13a = 3640$$

$$a = 280$$

Hence, bigger number = 280
Smaller number = (520 − 280) = 240

Alternate:

Note: In such type of questions take help from options to save your valuable time and then satisfy the question candition.

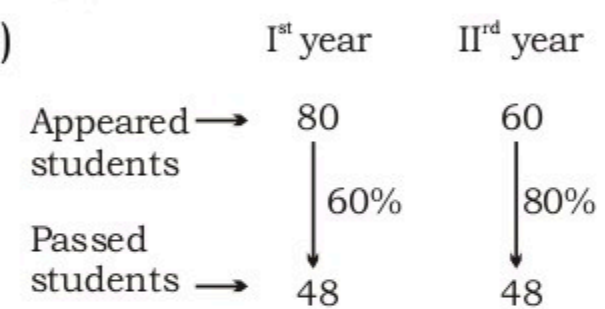**Option:** Smaller number = 240
Hence, Bigger number = 520 − 240
= 280
According to the question,

$$280 \times \frac{96}{100} = 240 \times \frac{112}{100}$$

$$268.8 = 268.8$$

Both sides are equal hence option (c) is correct.

269. (b)

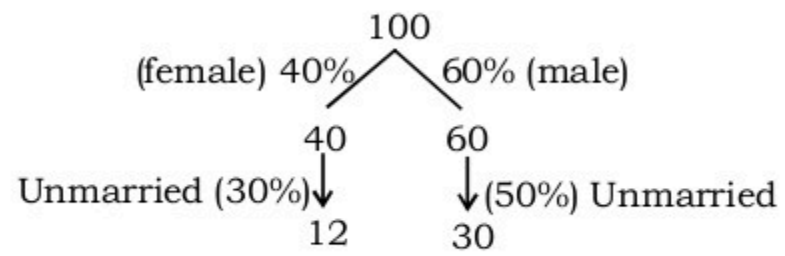|	I^{st} year	IIrd year
Appeared students →	80	60
	↓ 60%	↓ 80%
Passed students →	48	48

Required % average rate

$$= \frac{(48 + 48)}{(80 + 60)} \times 100$$

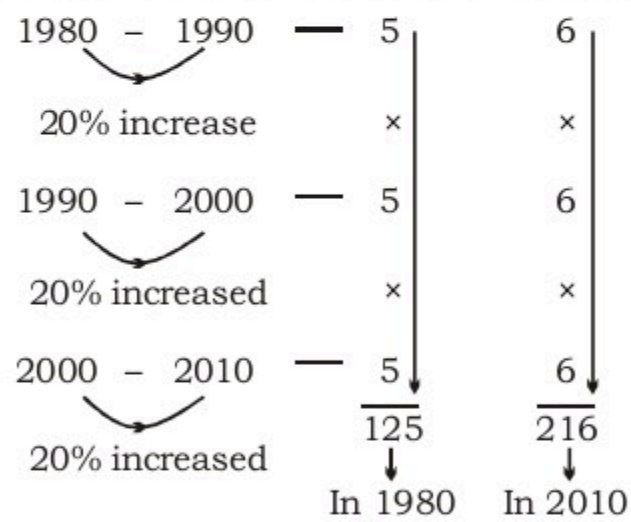$$= \frac{96}{140} \times 100 = \frac{960}{14}$$

$$= 68\frac{4}{7}\%$$

270. (b) Let total staff $=100$

$\Rightarrow 42$ is unmarried staff out of 100 Percentage

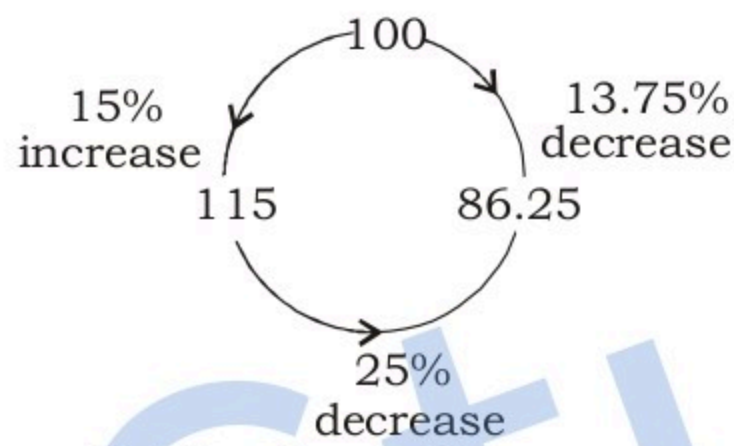$= \dfrac{42}{100} \times 100 = 42\%$ Ans.

271. (b) According to the question.

Popuplation increase in %

$= \dfrac{91}{125} \times 100 = 72.8\%$

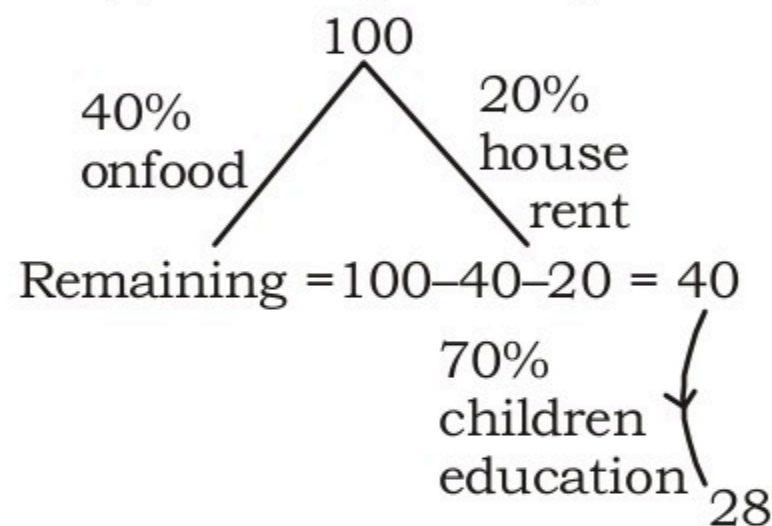**272. (b)** Let the number is $= 100$

According to the question,

25% decrease

13.75 units $\rightarrow$ 22

1 unit $\rightarrow \dfrac{22}{13.75}$

100 units $\rightarrow \dfrac{22}{13.75} \times 100 = 160$

$\therefore$ Original number $= 160$

273. (d) According to the question

Remaining $=100-40-20 = 40$

70% children education

$\therefore$ Income left $= 40-28 = 12\%$

274. (b) Time spend by Ajay in a day $= 8$ hrs.

Time spend by Ajay in a week $= 8 \times 5 = 40$ hrs.

Percentage time spend in a week

$= \dfrac{40}{24 \times 7} \times 100 = 23.81\%$

275. (a) Ist Number : IInd Number

$\qquad\qquad 5 \quad : \quad 4$

$40\% = \dfrac{2}{5}$

2 unit = 12

5 unit = 2×6 = 30

So, 1st number = 30

2nd number $= \dfrac{30}{5} \times 4 = 24$

50% of 2nd Number $= 24 \times \dfrac{1}{2} = 12$

276. (b)
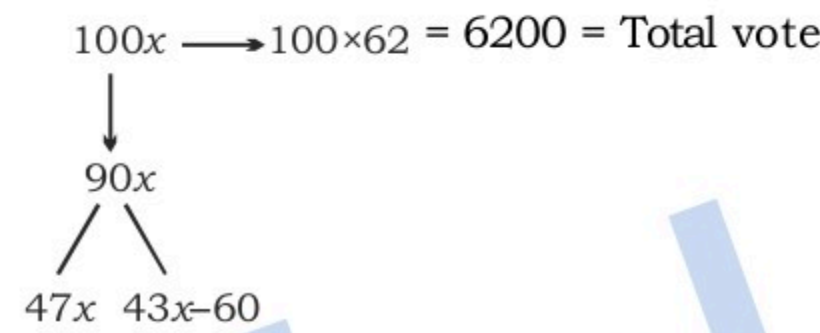
$47x - (43x - 60) = 308$

$4x + 60 = 308$

$4x = 248$

$x = 62$

Total Number of voters in the voter list $= 6200$

277. (a)
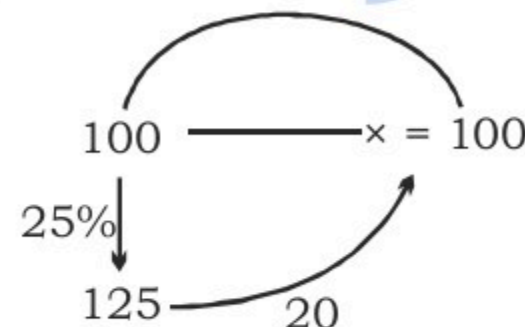
278. (a) Let number of boys $= 8x$

Number of girls $= 12x$

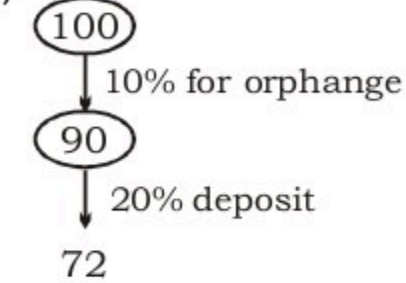Boys are not getting scholarship

$= 8x \times \dfrac{1}{2} = 4x$

Girls are not getting scholarship

$= 12x \times \dfrac{3}{4} = 9x$

% of students not getting scholarship

$= \dfrac{(4x + 9x)}{20x} \times 100 = 65\%$

279. (a)

72 units $\rightarrow$ 7200

1 unit $\rightarrow \dfrac{7200}{72} = 100$

100 units $\rightarrow$ 100 × 100

$=$ Rs. 10000

280. (a) $16\dfrac{2}{3}\% = \dfrac{1}{6}$

Let speed of Rajdhani = R

Let speed of shatabdi = S

So as given = R : S

$\qquad\qquad\qquad 5 : 6$

$\qquad\qquad\qquad\quad 1$

shatabdi is faster than Rajdhani by

$= \dfrac{1}{5} \times 100 = 20\%$

281. (c)

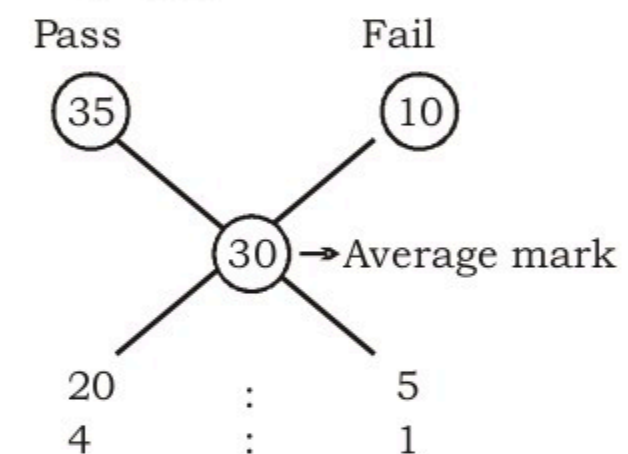|			
1st hour	$\rightarrow$ 10		11
2nd hour	$\rightarrow$ 10		11
3rd & 4th hour	$\rightarrow$ 10		9
5th hour	$\rightarrow$ 20		21
6th hour	$\rightarrow$ 20		21
		400000	480249

400000 Units = 40000

1 unit $= \dfrac{40000}{400000} = \dfrac{1}{10}$

then 480249 $\rightarrow$ 48024.9

$= 48025$ (approx)

282. (d) Find decreased profit $= 10$

$+ 20 - \dfrac{10 \times 20}{100} = 30 - 2 = 28\%$

283. (c) by mixture and alligation method.

4 : 1 = 5 unit

5 unit = 100

1 unit = 20

Pass candidate 4 unit

$= 4 \times 20 = 80$

284. (a) 5% of 120 = $\dfrac{5}{100} \times 120 = 6$

10% of 80 = $\dfrac{10}{100} \times 80 = 8$

So, total defective = 6 + 8 = 14

total machine = 120 + 80 = 200

% of defective machine

= $\dfrac{14}{200} \times 100 = 7\%$

285. (d) Exp + Saving = income

61 + 6 = 67

67 units = Rs. 8710

1 unit = 130

6 unit = Rs. 780

286. (b) Let Initial money = x

So, $x \times \dfrac{25}{100} \times \dfrac{25}{100} \times \dfrac{25}{100} = 2$

$x \times \dfrac{1}{4} \times \dfrac{1}{4} \times \dfrac{1}{4} = 2$

75%	$\dfrac{3}{4}$	
Inc	Ex	Sav
4	3	1

$\boxed{x = 128}$

287. (c) A = 20% B

$\dfrac{A}{B} = \dfrac{1}{5}$

B = 25% C

B = $\dfrac{1}{4}$ C

$\dfrac{B}{C} = \dfrac{1}{4}$

```
   A   B   C
   1   5
       1   4
```

$\underline{1 : 5 : 20}$

A : B : C

1 : 5 : 20

percent of C is equal to A

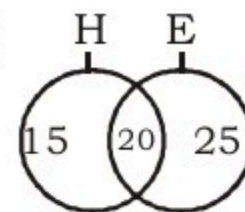= $\dfrac{1 \times 100}{20} = 5$

288. (d)
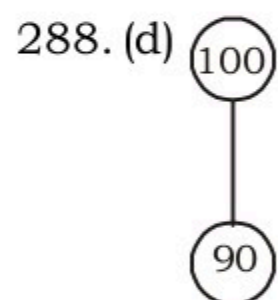
to restore former value

required% = $\dfrac{10}{90} \times 100$
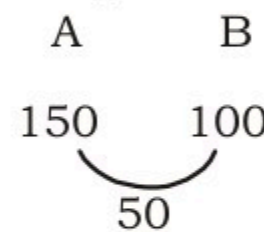
= $11\dfrac{1}{9}\%$

289. (d)

Total failed % = 15 + 20 + 25

= 60%

So, passed% = 100 − 60 = 40%

290. (b) Let salary of B = 100

```
   A       B
  150     100
      50
```

Required % = $\dfrac{50}{150} \times 100 = 33\dfrac{1}{3}\%$

291. (c) Let he ate x apple

than apple sold = $x + x \times \dfrac{40}{100}$

= $x + \dfrac{2x}{5}$

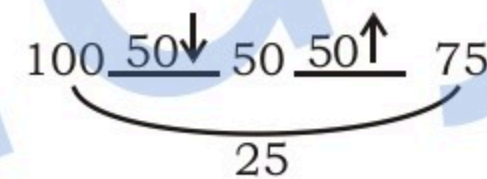A.T.Q = $x + \dfrac{2x}{5} = 70$

= $\dfrac{7x}{5} = 70$

Apple ate = $x = 50$

292. (b) 0.6% = $\dfrac{0.6}{100} = 0.006$

So, difference = 0.6 − 0.006

= 0.594

293. (a) Let A salary's in starting is = 100

Now,

```
100  50↓  50  50↑  75
         25
```

Actual lose = $\dfrac{25}{100} \times 100 = 25\%$

294. (b)

```
       B : 4
       7 : 5
60×↓      ↓×60 = 12 ×60→ 720
420   300
```

to maintain 1:1 we will have to add no. of girl = 420 − 300

= 120

295. (d) remain no. of mangoes

= 300 − 75 = 225

required% = $\dfrac{225}{300} \times 100 = 75\%$
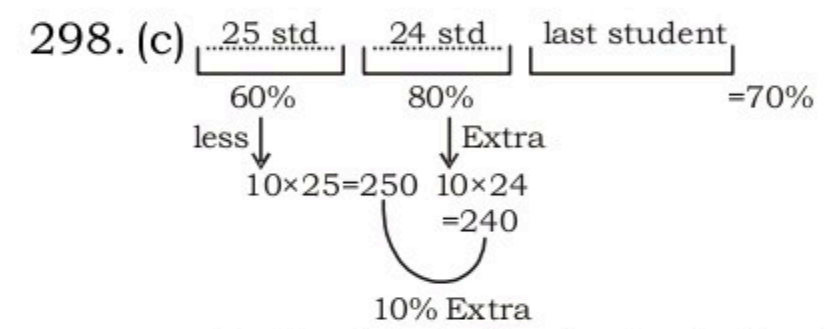
296. (b) A 35% = B 25%

$\dfrac{A}{B} = \dfrac{5}{7}$

A : B = 5 : 7

297. (d) 15% = $\dfrac{15}{100} = \dfrac{3 \to \text{Expenditure}}{20 \to \text{Income}}$

$3 \to 75$

$1 \to 25$

Then Income $20 \to 20 \times 25 = 500$

298. (c)

```
 25 std    24 std   last student
  60%        80%           =70%
less↓       ↓Extra
10×25=250  10×24
           =240
        10% Extra
```

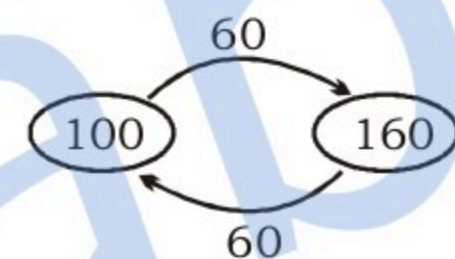marks% obtain by last student

= 70 + 10 = 80%

299. (d) Percentage Increase

= $\dfrac{51300 - 41800}{41800} \times 100$

= $\dfrac{9500}{41800} \times 100 = \dfrac{9500}{418}$

= $\dfrac{500}{22} = \dfrac{250}{11} = 22\dfrac{8}{11}\%$

300. (b) Let price of sugar is 100

then,

reducing % = $\dfrac{60}{160} \times 100$

= $\dfrac{300}{8} = \dfrac{72}{2} = 37\dfrac{1}{2}\%$

301. (a) We find a percentage value of so we take or not take real value does not matters

% Profit = $11\dfrac{1}{9}\% = \dfrac{1}{9}$

$1 \to$ Profit

$\dfrac{1}{9} \to$ CP

so, SP = 10

means in previous at the time of begining the discount is 1 unit in 10 units MP

so, discount is = $\dfrac{1}{10} \times 100$

= 10%

302. (c) 20% = $\dfrac{1}{5}$) +1

after increasment = 1 + 5 = 6
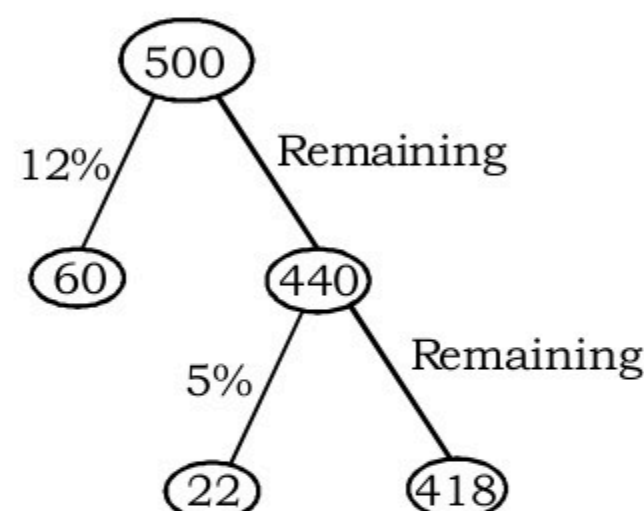
to get back 5 we subtract 1 from 6 so

% decreament = $\dfrac{1}{6} \times 100 = 16\dfrac{2}{3}\%$

303. (b) $12\% = \dfrac{3}{25}$

$5\% = \dfrac{1}{20}$

let the goods is $= 25 \times 20 = 500$

given $418 \rightarrow 8360$

$1 \rightarrow 20$

$500 \rightarrow 20 \times 500$

$= 10,000$

304. (a) $900 \times 72\% = 648$

$700 \times 80\% = 560$

Total scored marks $= 1208$

$= \%$ combined marks

$= \dfrac{1208}{(900+700)} \times 100 = 75.5\%$

305. (b) $10\% \rightarrow \dfrac{1}{10}$

$10 \rightarrow 9$ in war

$10 \rightarrow 9$ in disease

$10 \rightarrow 9$ disabled

$100 \qquad 729$

$729 \rightarrow 729\,000$

$1 \rightarrow 1000$

$1000 \rightarrow 1000 \times 1000$

$= 1000000$

306. (b) Required $\% = \dfrac{30}{24 \times 60} \times 100$

$= 2.083$

307. (c) $25\% = \dfrac{1}{4} \Big\rangle +$, $\quad 4\% = \dfrac{1}{25} \Big\rangle -1$

Let present earning $= x$

According to the questions

$x \times \dfrac{5}{4} \times \dfrac{24}{25} \times \dfrac{5}{4} \times \dfrac{24}{25} \times \dfrac{5}{4} = 72000$

$x \times \dfrac{6}{5} \times \dfrac{6}{5} \times \dfrac{5}{4} = 72000$

$x = 40000$

308. (c) Total passed $\% = 73\% + 70\%$
$- 64\% = 79\%$

Failed $\% = (100 - 79)\% = 21\%$

$\because$ $21\% = 6300$

$100\% = 30000$

309. (b)

$$\begin{array}{ccc}
\text{Income} & \text{Saving} & \text{Expenditure} \\
100 & 25 & 75 \\
20\%\downarrow & \downarrow 12.5\% & \downarrow +10\% \\
120 & 37.5 & 82.5
\end{array}$$

$\%$ Increase in saving

$= \dfrac{12.5}{25} \times 100 = 50\%$

310. (c) Percentage Error

$= \dfrac{1.55 \sim 150}{1.50} \times 100$

$= \dfrac{.05}{1.50} \times 100 = \dfrac{5}{150} \times 100$

$= \dfrac{5 \times 2}{3} = \dfrac{10}{3} = 3\dfrac{1}{3}\%$

311. (a) Duty on Laptop

$= \dfrac{210000 \times 10}{100} = ₹\,21000$

Duty on mobile $= \dfrac{100000 \times 8}{100}$

$= ₹\,8000$

Duty on Television

$= \dfrac{150000 \times 5}{100} = 7500$

Total duty paid by business
man $= 21000 + 8000 + 7500$

$= 36500$

312. (b)

According to question,

$92.5 \times 25\%$ unit $= 370$

$92.5 \times \dfrac{1}{4}$ unit $= 370$

1 unit $= \dfrac{370 \times 4}{92.5}$

100 unit $= \dfrac{370 \times 4 \times 100}{92.5}$

$= ₹1600$

313. (c) Let total $5x$ match is played
between Pakistan and India.
According to question,
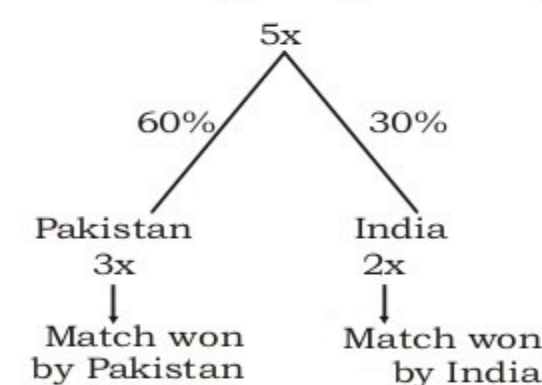
But now India won 30 match
in a row and hence India's
success percentage increase
to 70%.

Now, Total match $= 5x + 30$

$(2x + 30) = (5x + 30) \times \dfrac{70}{100}$

$20x + 300 = 35x + 210$

$15x = 90$

$\boxed{x = 6}$

So total match $= 5x + 30 = 5 \times 6 + 30 = 60$ matches.

314. (d) Correct Answer

$= 1 - \left(\dfrac{1}{4} + \dfrac{1}{5}\right)$

$= 1 - \left(\dfrac{5+9}{20}\right)$

$= \dfrac{11}{20} = 0.55$

Difference in answer

$= 0.55 - 0.45 = -10$

$= \dfrac{10}{55} \times 100 = \dfrac{200}{11}\%$