Answer & Solutions

Level-I

1. (c) Total marks obtained by Meera
$= 100 + 80 + 50 + 90 + 90 + 60 = 470$

2. (a) Average marks obtained by seven students in History

$$= \frac{80+70+70+60+90+60+80}{7} = 72.86$$

3. (b) Only Kunal and Soni got 60% or more marks in all the subjects.

4. (c) Average percentage of Kunal

$$= \frac{90+70+60+90+70+70}{6} = 75\%$$

5. (a)

6. (a) Income of Company B in 2000

$$= 200 \times \frac{120}{100} = ₹\ 240 \text{ crores}$$

7. (c) Expenditure of Company A in 2002

$$= 600 \times \frac{100}{160} = ₹\ 375 \text{ crores}$$

8. (d) We can find out the amount of profit in 1998, we do not know the income and expenditure of A and B. therefore, option d is the correct choice.

9. (b) Ratio of their expenditure

$$= \frac{100}{135} \times \frac{130}{100} = 26:27$$

10. (a) Reqd % increase $= \frac{35-20}{20} \times 100 = 75\%$

11. (c) Percentage increase in crude oil price w.r.t. previous month:

March	April	May	June	July	August	Sept
23.98	20.60	2.92	0.61	15.29	9.08	12.32

12. (b)

13. (a)

14. (e) New crude oil price in April
$= (4800 - 223 =)$ ₹ 4577 per metric tonne

$$\therefore \quad \% \text{ increase} = \frac{4577-3980}{3980} \times 100 = 15\%$$

15. (d) Reqd % increase

$$= \frac{7020-3210}{3210} \times 100 \approx 120\%$$

16. (d) Percentage increase in the total Internet owners

1996-97	1997-98	1998-99	1999-2000	2000-01	2001-02
653.85	206.12	168.89	164.46	135.94	65.56

17. (c) Reqd number
$= (1550000 + 950000) - (1060000 + 450000)$
$= 990000$

18. (b) Reqd ratio $= 520000 : 120000 = 13 : 3$

19. (e) Reqd percentage increase

$$= \frac{950000-12000}{12000} \times 100 \approx 8000\%$$

20. (b) Reqd percentage $= \frac{12000}{230000+12000} \times 100 \approx 5\%$

21. (a) Production in 1996 = 5 lakh units
Production in 2002 = 32.5 lakh units
$\therefore$ The required percentage

$$= \frac{32.5}{5} \times 100 = 650$$

22. (a) Average production

$$= \frac{(5+7.5+10+17.5+25+27.5+32.5)\text{lakhs}}{7}$$

$$= \frac{125}{7} = 17.8 \approx 18 \text{ lakh units}$$

23. (d) It is obvious from the graph.

24. (b) Per cent increase in 1999 $= \frac{17.5-10}{10} \times 100 = 75$

Per cent increase in 2000 $= \frac{25-17.5}{17.5} \times 100$

$$= \frac{7.5 \times 100}{17.5} = 42.86$$

25. (b) Marks obtained by R in B, D and E
$= 54\%$ of $40 + 84\%$ of $50 + 62\%$ of 120
$= 21.60 + 42 + 74.40 = 138.00$

26. (a) Average % marks by all the students in C

$$= \frac{58+67+72+82+64+75}{6} = \frac{418}{6} = 69.66\%$$

Average marks = 69.66% of $80 \approx 56$

27. (c) Average percentage of marks obtained by all the students in 'A'

$$= \frac{80+55+74+68+75+82}{6} = \frac{434}{6} = 72\frac{1}{3}\%$$

28. (e) Total marks obtained by Q in all subjects
$= 55\%$ of $60 + 70\%$ of $40 + 67\%$ of $80 + 74\%$ of $50 + 88\%$ of $120 + 78\%$ of $75 = 33 + 28 + 53.60 + 37 + 105.6 + 58.50 = 315.7$

percentage of marks $= \frac{316}{425} \times 100 \approx 74\%$

29. **(d)** Total marks obtained by student E in all the subjects
$= (75 + 88 + 62 + 72 + 80 + 68)\%$ of $120 = 534$

30. **(c)** Expenditure of Company C in 2000

$= 35 \times \frac{100}{140} = ₹\ 25$ lakhs

31. **(d)** Here, the percentage profits of Companies B and C in 2001 were not the same. Therefore, can't be determined is the correct choice.

32. **(e)** Income of Company C in 2000

$= 32 \times \frac{140}{100} = ₹\ 44.80$ lakhs

33. **(c)** Reqd ratio = 145:155 = 29 : 31

34. **(a)** Expenditure of Company D in 2000

$= 31 \times \frac{100}{155} = ₹\ 20$ lakhs

Profit = Income – Expenditure
= 31 – 20 = ₹ 11 lakhs

35. **(d)** Total no. of students studying in institute G
= 225 + 206 + 182 + 138 + 89 = 840

$\text{Reqd } \% = \frac{182}{840} \times 100 = 21\frac{2}{3}\%$

36. **(e)** Total students in institute D
= 165 + 138 + 245 + 66 + 36 = 650

$\text{Reqd } \% = \frac{36}{650} \times 100 \approx 6\%$

37. **(a)** $\text{Reqd } \% = \frac{125 + 96 + 144}{138 + 196 + 212 + 206} \times 100 = 48.50\%$

38. **(b)** $\text{Reqd } \% = \frac{164}{821} \times 100 \approx 20\%$

39. **(c)** Percentage of institute $A = \frac{187}{700} \times 100 = 26.71\%$

% of institute $B = \frac{152}{750} \times 100 = 20.26\%$

% of institute C = 30.12 %
% of institute D = 21.23 %
% of institute E = 23.05 %
% of institute F = 26.5 % and G = 23.67 %
Hence, maximum % is in institute C.

40. **(c)** Reqd % decrease $= \frac{4-3}{4} \times 100 = 25\%$

41. **(b)** $\text{Reqd } \% = \frac{11}{7} \times 100 \approx 157\%$

42. **(d)** From the graph's slope, it is obvious that the maximum % increase is in the year 1996, i.e., 166.67%.

43. **(a)** Reqd difference = 58 – 31 = 2700000

44. **(e)** Average production for Company B $= \frac{31}{8} = 3.9$

45. **(d)** $\text{Reqd. } \% = \frac{1200}{14900} \times 100 \approx 8\%$

46. **(c)** Total no. of Officers = 2000 + 15000 + 17000 + 3500 + 14900 + 11360 + 9000 = 72760
Total no. of Clerks = 5000 + 17000 + 19500 + 20000 + 17650 + 15300 + 11000 = 105450
Reqd difference = 105450 – 72760 = 32690

47. **(b)** Reqd more %

$= \frac{11000 - 9000}{9000} \times 100 \approx 22\%$

48. **(c)** 300% more means four times the number of Clerks in Bangalore, which is in Hyderabad.

49. **(d)** No. of candidates in different centres: Bangalore = 3550; Mumbai = 44470; Delhi = 43910; Hyderabad = 33950, Kolkata = 35120; Lucknow = 28840; Chennai = 22245

50. **(b)** Let the investment of company *B* in 1996 be ₹ x lakhs.

$\therefore$ Investment of company *B* in 1997 = ₹ $\frac{7}{5}x$

Income of company *B* in 1997 $= \frac{9}{5} \times \frac{7}{5}x = \frac{63}{25}x$

$\therefore$ Reqd. $\% = \frac{63}{25} \times 100 = 252\%$

51. **(d)** Investment for each year is not given.

52. **(e)** Investment of company *A* in 1995 $= 21.7 \times \frac{100}{155}$
= ₹ 14 lakhs

53. **(c)** Let ${}^{i}95_{(A)} = {}^{e}96_{(B)} = ₹\ x$ lakhs

$\therefore$ Regd. ratio $= \frac{x \times \frac{100}{155}}{x} = 20 : 31$

54. **(b)** Income of company *B* in 1993

$= 1540000 \times \frac{145}{100} = ₹\ 22.33$ lakhs

55. **(a)** Strength of *B* in 1998 = 132 + 9 – 2 + 0 + 3 = 142

56. **(e)** Strength of workers in 1999

A	B	C	D	E
192	146	149	135	125

57. **(c)** Strength of *C* in 1996 = 98 + 24 + 11 = 133
Strength of *E* in 1997 = 125 + 2 + 4 – 3 = 128

$\therefore$ Reqd. $\% = \frac{133}{128} \times 100 \approx 104\%$

58. **(e)** Total strength of workers in all the five units in 1996
= 160 + 139 + 133 + 107 + 131= 670.

59. **(c)** Increase in the strength of workers in D in 1998
$= 20 + 11 + 7 + 11 = 49$
$\therefore$ % increase $= 49/76 \times 100 \approx 64.47\%$

60. **(e)** Marks obtained by B = 69% of 150 + 72% of 75 + 71% of 200 + 78% of 100 + 69% of 50 + 66% of 75
$= 103.50 + 54 + 142 + 78 + 34.5 + 49.50 = 461.5$

61. **(a)** Average marks $= \frac{420}{6} \times \frac{75}{100} = 52.5$

62. **(c)** Difference $= 181.50 - 138.75 = 42.75$

63. **(b)** % marks obtains by A $= \frac{233 \times 100}{300} = 77.67\%$

64. **(e)** Since the number of students remain the same for all the states, first of all find the average percentage of passed students,

i.e., $\frac{35 + 43 + 40 + 38 + 39 + 28}{6} = 37.17\%$

Reqd no. = 37.17% of 5000 $\approx$ 1860

65. **(a)** Reqd no. = 22% of 18500 + 36% of 17200
$= 4070 + 6192 = 10262$

66. **(b)** Reqd ratio $= \frac{32\% \text{ of } 100}{45\% \text{ of } 120} = 16 : 27$

67. **(c)** Reqd ratio $= \frac{2}{3} \times \frac{26}{38} = 26 : 57$

68. **(d)** Total no. of students qualified from state E over the years = 532 × 7 =3724
But that does not lead us anywhere because we can't get the break-up.

69. **(d)** Total production by all the companies together
$= 648 + 725 + 679 + 498 + 840 + 580 = 3970$

Reqd % $= \frac{725}{3970} \times 100 \simeq 18\%$

70. **(a)** % increase/decrease for company A 1998 = 16.01%, 1999 = 14.69%, 2000 = 13.27%, 2001= 15.53%, 2002 = 9.78%

71. **(e)** Total production of E
$= 415 + 680 + 840 + 689 + 780 + 637 = 4041$
Total production of F
$= 632 + 775 + 580 + 720 + 670 + 746 = 4123$
Reqd difference $= 4123 - 4041 = 82$ lakh tonnes

72. **(c)** Avg $= \frac{565 + 378 + 483 + 526 + 680 + 775}{6}$

$\simeq$ 570 lakh tonnes

73. **(b)**

74. **(a)** Percentage processing of wool in the month of March by different companies.
Polar = 23.33%. Shephered = 19.51%,
Kiwi = 20.41%, Warmwear = 20.18%
Comfy = 21.84%

75. **(b)** Reqd % $\frac{1100}{1000} \times 100 = 110\%$

76. **(b)** If we see the table, we find that only Shepherd shows less value in February in comparison to the month of April So, it gives the maximum ratio.

77. **(d)** Shephered shows the lowest processing in the month of February and March.

78. **(e)** Reqd % $= \frac{4900}{4100} \times 100 \approx 120\%$

79. **(e)** Sale of Pep-up was the maximum in the year 1989.

80. **(a)** Avg annual sale of Dew-drop

$= \frac{10 + 15 + 25 + 15 + 30 + 25}{6} = 20$ lakhs

Avg. annual sale of Cool-sip

$= \frac{25 + 7 + 20 + 20 + 25 + 30}{6} = 21.16$ lakhs

Avg. annual sale of Pep-up

$\frac{30 + 35 + 30 + 25 + 20 + 20}{6} = 26.66$ lakhs

81. **(c)** Reqd % $= \frac{25 - 20}{20} \times 100 = 25\%$

82. **(e)** Reqd no. = 30 – 20 = 1000000

83. **(c)** Reqd % drop $= \frac{35 - 30}{35} \times 100 \approx 14\%$

84. **(a)** Total no. of students studying in all schools in 1992
$= (1025 + 230 + 190 + 950 + 350 + 225 + 1100 + 320 + 300 + 1500 + 340 + 300 + 1450 + 250 + 280) - (120 + 110 + 150 + 115 + 130 + 150 + 150 + 160 + 125 + 130)$
$= 8810 - 1340 = 7470$

$\therefore$ Average $= \frac{7470}{5} = 1494$

85. **(c)** Number of students studying in school B in 1994
$= 950 + (350 - 150) + (225 - 115) + (185 - 110) + (200 - 90)$
$= 950 + 200 + 110 + 75 + 110 = 1445$

86. **(e)** Number of students leaving school 'C' from 1990 to 1995 = 130 + 150 + 125 + 140 + 180 = 725
Number of students admitted during the period
$= 1100 + 320 + 300 + 260 + 240 + 310 = 2530$

$\therefore$ Required percentage $= \frac{725}{2530} \times 100 \approx 29\%$

87. **(d)** Required difference = (340 + 300 + 295 + 320 + 360) – (350 + 225 + 185 + 200 + 240) = 1615 – 1200 = 415

88. **(b)** Increase in no. of students in school A
$= (230 - 120) + (190 - 110) + (245 - 100)$
$+ (280 - 150) + (250 - 130), = 585$
$\therefore$ % increase from 1990 (1025) to 1995

$$= \frac{585}{1025} \times 100 = 57.07\%$$

Similarly, we can calculate for other schools.
Percentage increases in all schools are given in the following

A	B	C	D	E
57.07%	64.73%	64.09%	61.33%	62.41%

89. **(a)** No. of females above poverty line in state A

$$= 3000 \times (100 - 12)\% \times \frac{3}{7} \approx 1150$$

90. **(d)** Since, we cannot find the population of states C and D separately, we can't find the required value.

91. **(e)** Population of state A below poverty line

$$= 3000 \times \frac{5}{3} = 5000$$

$\therefore$ Total population of state $A = \frac{5000}{12} \times 100$

and the population of state E below poverty line

$$= 6000 \times \frac{11}{6} = 11000$$

Total population of state $E = \frac{11000}{10} \times 100$

$$\text{Required ratio} = \frac{5}{12} \times \frac{10}{11} = \frac{25}{66}$$

92. **(c)** Total population of state $B = 500 \left(\frac{12}{5}\right)\left(\frac{100}{15}\right) = 8000$

93. **(b)** Population of state $E = 19800 \left(\frac{5}{2}\right)\left(\frac{100}{100-10}\right) = 55000$

$\therefore$ Population of males below poverty line

$$= 55000 \left(\frac{10}{100}\right)\left(\frac{6}{11}\right) = 3000$$

94-98: As the formula is given in the question, we should follow it to find the solution.

94. **(e)** The percentage profit of company 'A' in 1998 = 50%
Income, = 142500 (given)

$$\text{Expenditure} = 142500 \left(\frac{100}{100+50}\right) = 95000$$

95. **(d)** $E_{B99} = \frac{90}{100} \; E_{B98}$ (given)

$$I_{B99} = \frac{90}{100} \times \frac{140}{100} \times \frac{100}{135} (I_{B98})$$

$$I_{B99} = \frac{280}{300} \; I_{B98}$$

$$= \frac{280}{3}\% \text{ of } I_{B98} = 93\frac{1}{3}\% \text{ of } I_{B98}$$

96. **(c)** $E_{A97} = ₹ 70$ lakh

$$\Rightarrow \; I_{A97} = 70\left(\frac{125}{100}\right) = ₹ 87.5 \text{ lakh}$$

$$I_{A97} = E_{A98} = ₹ 87.5 \text{ lakh}$$

$$\therefore \; I_{A98} = 87.5\left(\frac{150}{100}\right) = ₹ 131.25 \text{ lakh}$$

$\therefore$ reqd value $= I_{A97} + I_{A98}$
$= 87.5 + 131.25 =$ ₹ 218.75 lakh

97. **(a)** We have to find $I_{B96} : I_{B97}$
Given $E_{B96} = 5x$ and $F_{B97} = 7x$

$$I_{B96} = 5x\left(\frac{140}{100}\right) \text{ and } I_{B97} = 7x\left(\frac{130}{100}\right)$$

$$\therefore \; I_{B96} : I_{B97} = \frac{5x}{7x}\left(\frac{140}{130}\right) = 10 : 13$$

98. **(d)**

99. **(c)** Total marks obtained by A in Psychology and Statistics together

$$\left(\frac{72 \times 150}{100} + \frac{88 \times 125}{100}\right) = 108 + 110 = 218$$

Total marks obtained by F in these two subjects

$$= \left(\frac{84 \times 150}{100} + \frac{82 \times 125}{100}\right) = 126 + 102.5$$

$$= 228.5$$

$\therefore$ Difference = $(228.5 - 218 =) \; 10.5$

100. **(d)** Average % of marks obtained by six students in Sociology

$$= \frac{(65 + 58 + 73 + 65 + 55 + 70)}{6} = \frac{386}{6}$$

$$= 64\frac{1}{3}$$

101. **(b)** Average marks obtained by 6 students in Philosophy out of 75

$$= \left\{\frac{(65 + 70 + 57 + 61 + 76 + 78 =) 407}{6} \times \frac{75}{100}\right\}$$

$$= 50.875$$

102. **(a)** Required answer

$$= \left(\frac{72 \times 150}{100} + \frac{85 \times 80}{100} + \frac{72 \times 60}{100}\right)$$

$$= 108 + 68 + 43.2 = 219.2$$

103. (e) Percentage of marks obtained by *C* in all the subjects together

$$\frac{(63\%\text{ of }150)+(73\%\text{ of }120)+...+(65\%\text{ of }60)}{150+120+....+60}\times 100$$

$$\approx \frac{404}{610}\times 100 \approx 66\%$$

104. (d) $\frac{(110+60+110+100+105+85=)570}{6}$

= 95 lakh tons

105. (c) Average production of units *A, B* and *C* in 2001 [use white bars]

$$\frac{(90+75+100=)265}{3}$$

∴ Average production of units *D, E* & *F* in 2002

$$=\frac{(100+105+85=)290}{3}$$

$$\text{Required answer} = \frac{265\times 3}{3\times 290}\times 100 = 91.38$$

106. (e) Total production by unit *B* in 2001 and 2002 together
= (75 + 60 =) 135 lakh tons

Total production by unit *C* in 2001 and 2002 together
= (100 + 110 =) 210 lakh tons

∴ Required ratio = (135 : 210 =) 9 : 14

107. (a) Total production by unit *F* in year 2001and 2002 together
= (70 + 85 =) 155 lakh tons
Total production by unit *D* in year 2001 and 2002 together
= (95 + 100 =) 195 lakh tons

∴ Required percentage $\left(\frac{155}{195}\times 100\right) = 79.487 \approx 79.49$

108. (b) Required total production = (100 + 110 + 95 + 100 + 85 + 105 =) 595 lakh tons

109. (b) $E_{98} : E_{2000} = I_{98}\left(\frac{100}{145}\right) : E_{2000}$

= 100 : 145 ($\because$ $I_{98} = E_{2000}$)
= 20 : 29

110. (c) According to the given information,

$$\frac{\text{Income of company A in 1999}}{\text{Income of company B in 1999}} = \frac{2}{3}$$

$\Rightarrow$ Income of company A in 1999

$$=\frac{2}{3}\times 18.6$$

I_{A99} = 12.4 lakhs

$$\Rightarrow E_{A99} = 12.4\left(\frac{100}{160}\right) = 7.75 \text{ lakhs}$$

111. (e) Suppose expenditures of A and B in the year 2001 are $4x$ and $5x$ respectively. Then
$4x + 5x$ = 18 Iakhs
∴ x = 2 lakhs; $4x$ = 8 lakhs;
$5x$ = 10 lakhs

$$I_B = 10\left(\frac{140}{100}\right) = 14 \text{ lakhs}$$

112. (a) $I_{A99} = E_{B2000}$(given)
Now,
$E_{A99} : I_{B2000}$

$$= I_{A99}\left(\frac{100}{160}\right) : E_{B2000}\left(\frac{165}{100}\right)$$

= 100 × 100 : 160 × 165 = 25 : 66

113. (d) We can't find the expenditure of company A in the given years separately. So we can't find the profit of the company.

114. (c) Marks obtained by R in different subjects

A	B	C	D	E	F
49. 50	112.5	79	44	108	49. 50

Total marks obtained by R out of 600 marks
= 49.50 + 112.50 + 79 + 44 + 108 + 49.50 = 442.5
∴ Required % marks

$$= \frac{442.5\times 100}{600} = 73.75\%$$

115. (b) Marks of P and T in the subjects 'B, 'D' and.'E'

Sub → / Students ↓	B	D	E	Total
P	102	46	133.5	281.5
T	112.5	34	103.5	250

Hence required difference
= 281.5 – 250 = 31.5

116. (a) Total marks obtained by all the students in subject B

$$=\frac{150\times(68+72+75+62+75+80+68)}{100}$$

∴ Required average = $\frac{750}{7}$ = 107.14

117. (c) $\frac{\text{Total in C} + \text{Total in D}}{1400}\times 100$

$$=\frac{547+565}{14} = 79.43\%$$

118. (d) Required total marks

$$=\frac{75\times(82+70+66+74+78+80+72)}{100}$$

$$=\frac{75\times 522}{100} = 391.5$$

119. (c) Investment per cent of unit C as a fraction of the total investment of all the units in

1996	1997	1998	1999	2000	2001
19.26%	16.87%	16.71%	15.94%	16.76%	16.65%

120. (a) Investment percent in 1997 as a fraction of the total investment in all the given years together of each unit is as follows:

	A	B	C	D	E	F
Investment	132	140	137	125	128	150
Out of	738	824	827	810	817	875
In per cent	17.89%	16.99%	16.57%	15.43%	15.67%	17.14%

121. (e) Required % increase

$$=\frac{(145-98)}{98}\times 100 = 47.96\%$$

122. (b) Investment by units A, B and C in 1998
= 125 + 145 + 138 = 408 crores
Investment by units A, B and C in1999
= 116 + 148 + 136
= 400 crores
Thus, required difference
= 408 – 400 = 8 crores (more)

123. (e) Total investment of units A, B and C in the year 1998
= 125 + 145 + 138 = 408 crores
Investment by the units D, E and F in the years 1999
= 145 + 152 + 156 = 453 crores

Hence required ratio = $\frac{408}{453}$ = 136: 151

124. (b) Total number of the malnourished children in year
(i) 1991 = (10.0 + 1.4 + 0.1)% of 1048000
= 11.5% of 1048000
(ii) 1986 = (12.1 + 3.0 + 0.8)% of 1048000
= 15.9% of 1048000
Hence, the required difference
= (15.9 – 11.5)% of 1048000
= 46112

125. (b)

Year	Percentage of the malnourished
1984	16.1
1985	15.5
1986	15.9
1987	12.9
1989	12.9
1990	12.2
1991	11.5
1992	9.9
1993	8.8

126. (e) Reject (a) and (d) because we see that the percentage of high malnourished cases increases to 0.8 from 0.7 in the year 1986.
Reject (b) because we see that the percentage of moderate malnourished cases increased from 2.7 to 3.0 in the year 1986.
Reject (c) because no such fall is witnesed during the year 1985 to 1986.
Hence, select (e) by elimination.

127. (d) Number of required children
= 0.5% 1071000

$$=\frac{5\times 1071000}{1000} = 5355$$

128. (b) The required malnourished children in 1993
= (7.8 + 0.9 + 0.1)% of 1161000
= 8.8% of 1161000
= 102168

129. (d) Difference of production of C in 1991and A in 1996 = 5,00,000 tonnes.

130. (a) Percentage increase of A from 1992 to 1993

$$\frac{55-40}{40}\times 100 = 37.5\%$$

131. (b) Percentage rise/fall in production for B

1992	1993	1994	1995	1996
9%	–16.6%	10%	– 9%	10%

Here, the maximum difference is from 1992 to 1993, which is 10. And the second nearest to it is fall or rise of 5. So, undoubtedly the answer is 1993.

132. (e) Percentage production = $\frac{120}{90}\times 100 = 133.3\%$

133. (c) Average production of A = 50
Average production of B = 54.17
Average production of C = 50
Difference of production = 54.17 – 50 = 4.17

134. (d) Distance to be travelled by each type of vehicle

$$=\frac{15}{3} = 5 \text{ km}$$

Since, to travel 5 km by vehicle A, he will pay ₹ 9 for 4 km and for the next 1 km he will have to pay

$$₹ = \frac{13.5-9.00}{(7-4)}\times 1.$$

Similarly, for other cases.

$$\text{Fare by A} = ₹\ 9+\frac{13.50-9}{7-4} = 9 + 1.50 = ₹\ 10.50$$

$$\text{Fare by B} = 14.50 + \frac{24.25 - 14.50}{7 - 4}$$

$$= 14.50 + 3.25 = 17.75$$

$$\text{Fare by C} = 19 + \frac{31 - 19}{3} = 19 + 4 = 23$$

Total fare = 10.50 + 17.75 + 23 = ₹ 51.25

135. (a) $\text{Fare byA} = 9 + \frac{4.50}{3} \times 2 = ₹\ 12$

$$\text{Fare by B} = 24.25 + \frac{33.25 - 24.25}{3} \times 2 = ₹\ 30.25$$

Total fare = 30.25 + 12 = ₹ 42.25

136. (b) $\text{Fare for 8 km by A} = 13.50 + \frac{17.25 - 13.50}{10 - 7}$

$$= 13.50 + \frac{3.75}{3} = ₹\ 14.75$$

$$\text{Fare by B} = 24.25 + \frac{33.25 - 24.25}{3} = ₹\ 27.25$$

Difference = 27.25 – 14.75 = ₹ 12.50

137. (e) Fare by B for 5 km = 14.50 + 3.25 = ₹ 17.75

$$\text{Fare by A for 8 km} = 13.50 + \frac{17.25 - 13.50}{3}$$

$$= ₹\ 14.75$$

$$\text{Fare by C for 5 km} = 19 + \frac{31 - 19}{3} = ₹\ 23$$

Total fare = 17.75 + 14.75 + 23 = 55.50

138. (b) $\text{Fare for l4th km by C} = \frac{56.50 - 41.50}{15 - 10} = ₹\ 3$

$$\text{Fare for 9th km by B} = \frac{33.25 - 24.25}{10 - 7} = ₹\ 3$$

139. (a) Total production of
A= 465 + 396 + 524 + 630 + 408 + 650
= 3073 lakh tonnes
C = 694 + 528 + 492 + 575 + 550 + 495
= 3334 lakh tonnes
Hence, required difference = 3334 – 3073
= 261 lakh tonnes

140. (e) Total production of all companies in
1996 = 396 + 482 + 528 + 602 + 551+ 635
= 3194 lakh tonnes
1997 = 524 + 536 + 492 + 387 + 412 + 605
= 2956 lakh tonnes
Hence, required % decrease

$$= \frac{3194 - 2956}{3194} \times 100 = 7.451\%$$

= 7.5%

141. (d) Percentage rise/fall from the previous year in production of company F are as follows :

1996	1997	1998	1999	2000
24.24%	– 4.72%	– 0.82%	– 19.16%	8.24%

You can give the answer without doing any detailed work. A cursory look will help you detect that the required year is either 1996 or 1999. Again, a step further you get that the rise in production in the year 1996 is more than 20% while the production in 1999 is less than 20%.

142. (b) Production of companies A and B together in 1997 = 524 + 536 = 1060 lakh tonnes
Production of companies E and F together in 1998 = 518 + 600 =1118 lakh tonnes

$$\text{Hence, required \%} = \frac{1060}{1118} \times 100 = 94.81\% \approx = 95\%$$

143. (c) Average production of B in the given years (in lakh tonnes)

$$= \frac{372 + 482 + 536 + 480 + 512 + 580}{6}$$

$$= \frac{2962}{6} = 493.66$$

Similarly, average production of E in the given years

$$= \frac{498 + 551 + 412 + 518 + 647 + 610}{6}$$

$$= \frac{3236}{6} = 539.33$$

Hence, required difference = 539.33 – 493.66 = 45.67 lakh tons

144. (a) We have given profit/loss = Income – Expenditure

Therefore, profit in each of the given years is as follows:

Year	96	97	98	99	00	01
Income	350	450	450	500	400	550
Exp.	250	300	400	350	450	450
Profit	100	150	50	150	– 50	100
in crore ₹						

∴ Average profit

$$= \frac{100 + 150 + 50 + 150 - 50 + 100}{6}$$

= ₹ 83.33 crore.

145. (b) Profit earned during the year 1999 = ₹ 150 cr
Expenditure during the year 1999 = ₹ 350 cr
Hence, % profit earned in the year 1999

$$= \frac{150 \times 100}{350} = 42.85\% \approx 43\%$$

146. (d) Per cent increase/decrease in income from the previous year:

1997	1998	1999	2000	2001
28.57%	0%	11.11%	–20%	37.5%

Note : – ve sign indicates fall in income.
you can solve this question merely with the help of the graph.

147. (b) Required % increase

$$= \frac{(400-300)}{300} \times 100 = 33\frac{1}{3}\%$$

148. (c) Average income

$$= \frac{350+450+450+500+400+550}{6} = \frac{2700}{6}$$

= ₹450 crore

149. (b) No.of students who got 0-19 marks in maths = 31
No. of students who got 20-39 marks in Maths = 22; therefore,
no. of students who got less than 40% marks in Maths = 31 + 22 = 53
Hence, no. of students who passed in Maths = 160 – 53 = 107.

150. (a)

Marks	**60-79**	**80-100**
Average of three subjects	35	5

Hence, required no. of students = 35 + 5 = 40

151. (a)

	Marks			
Subject ↓	**40-59**	**60-79**	**80-100**	**40-100**
Hindi	79	30	08	117
English	65	42	02	109
Maths	34	45	28	107

107 is the lowest among 117,109 and 107. Hence, required no. of students = 107.

152. (e) 65 + 42 + 02 = 109

153. (d)

Subject ↓	**Marks**	
	0-19	**No. of those students who obtained 20 or more marks (20-100)**
Hindi	12	148
English	21	139
Maths	31	129

Mere this information is not sufficient to obtain the exact number of students who got 20 or more marks in at least one paper.

154. (e) The difference between the white-coloured cars sold is the minimum in B type model.

155. (a) Blue (E + D) = 37 + 43 = 80 = White (B)

156. (e) Reqd. difference = (50 – 34) × 1000 = 16,000

157. (c) Reqd. percentage $= \frac{173}{192} \times 100 \approx 90\%$

158. (a) Colour-model combinations of car in Metro M

Silver-F	White-C	Blue-B	Red-F	Black-F
52	90	60	42	55

159. (e)

160. (d) Our intelligent observation says that the required year can't be 1993, 1994, 1995. Why? Because see the following conclusions:

$$\% \text{ passed to appear} = \frac{\text{Passed}}{\text{Appeared}} \times 100$$

% of passed to appear is least when $\frac{\text{Passed}}{\text{Appeared}}$ is the least

or, $\frac{\text{Passed}}{\text{Appeared}}$ is the most. Now, we do the further calculations mentally. See the following conclusions:

For 1990: $\frac{7894}{2513} \Rightarrow$ Quotient = 3 & Remainder $\approx$ 300

For 1991: $\frac{8562}{2933} \Rightarrow Q = 3 \;\&\; R \approx 400$

For 1992 : $\frac{8139}{2468} \Rightarrow Q = 3 \;\&\; R \approx 800$

Similarly, for 1993, 1994, 1995, Q is 2.
So, 1992 gives the highest value.
Note: When R is close for close or three years you should go for further calculations and find the exact possible values. But larger difference in R for almost equal divisors gives the option to stop our further calculations, as happened in this case.

161. (a) $\frac{8562-8139}{8562}\times 100 = \frac{423}{8562}\times 100 \approx \frac{42}{84}\times 10 = 5$

162. (a) We don't need to calculate the values for each year. Follow as:

For rural area: 35% of $5032 \approx 35 \times 50 \approx 1750 \approx 1798$

For Semi-urban area : 35% of $9500 \approx 35 \times 95 \approx 3300$

Which can't be approximated to 3500.

For State capitals: $35 \times 85 \approx 3000$

For Metropolises: $35 \times 110 \approx 3850$

163. (c) $1798 + 2513 = 4311$

164. (a) Average marks of Q in 1st periodical

$$= \frac{30+25+33+42+30}{5} = \frac{160}{5} = 32$$

165. (c) Total marks of T in Science

$= 44 + 36 + 40 + 30 + 40 = 190$

166. (b) Average percentage of marks obtained by P in Marks

$$= \frac{80+60+90+40+70}{5} = 68\%$$

= percentage of marks obtained by student R in Geography.

167. (c) Our observation finds two options which are close to each other. These are History & Geography. When we find the actual value, we find that our answer is History.

Note: You can decide the answer with totalling only. You don't need to calculate the percentage value.

168. (b)

169. (a) Production of C type cars in 1996

$= (70-40)\%$ of $4,50,000 = 30\%$ of $4,50,000 = 1,35,000$

Production of C type cars in 1997

$= (65-40)\%$ of $5,20,000$

$= 25\%$ of $5,20,000 = 1,30,000$

$\therefore$ Required difference $= 5,000$

170. (e) Production of E type cars in 1996

$= (100-80)\%$ of $4,50,000$

$= 20\%$ of $4,50,000 = 90,000$

And in 1997 $= 10\%$ of $5,20,000 = 52,000$

$\therefore$ Total production $= 90,000 + 52,000 = 1,42,000$

$\therefore$ Required no. of cars $= 15\%$ of $1,42,000 = 21,300$

171. (b) Production of A type cars in 1997 = production of A type cars in 1996 (given) = $(100 - 85 =)$ 15% of $4,50,000 = 67,500$

$$\therefore \text{ Reqd percentage} = \frac{67,500}{5,20,000}\times 100 \approx 13$$

172. (c) Clearly, by visual inspection D is the desired option.

173. (c) Percentage production of B type cars in 1997 = that in 1996 (given)

$= (40 - 15 =)$ 25% of $5,20,000 = 1,30,000$

174. (e) Average imports made by company A

$$\frac{30+50+60+40+70+60+75}{7} = \frac{385}{7} = 55$$

In none of the given years the imports is exactly equal to 55 (crores). Hence, the answer is (e).

175. (d) By visual inspection it is clear that 1992 is the desired year (as the distance between two points is the maximum in 1992.)

176. (a) By mental observation $\left(\text{as } 50 = \frac{40+60}{2}\right)$, 1992 only is the desired year. You don't need any calculation. See the year where the point of A lies exactly in the middle of points of B and C.

177. (b) Reqd percentage increase $= \frac{50-40}{40}\times 100 = 25\%$

178. (c) The total imports (in crores) made by all the three companies together: From the heights of the points we observe that the total heights of three points is the maximum either in 1995 or 1997. If you observe carefully, our clear answer is 1995, but to be sure we find actual values for the two years.

In 1995 = 70 + 80 + 85 = 235.

In 1997 = 75 + 70 + 85 = 230.

Clearly, 1995 is the desired year.

179. (a) UP (Qua/App)

Arts	Commerce	Science	Engg.	Agr.
0.34	0.39	0.4	0.42	0.42

Alternative Approach: $\frac{\text{Qual.}}{\text{App.}}$ should be the least.

$\Rightarrow$ $\frac{\text{App.}}{\text{Qual.}}$ should be the maximum.

Now, for Arts, if we divide $(4980 \approx)$ 5000 by $(1690 \approx)$ 1700 we find the value of quotient near about 3. But in other cases the quotient is just more than 2. So, our answer is Arts.

180. (b)

181. (e) Percentage of students qualified in commerce

A.P.	U.P.	Kerala	Orissa	M.P.
33.9	38.7	58.2	45.8	28.5

182. (d) Qualifying percentage of UP $= \frac{9280}{23880}\times 100 = 38.86$

Qualifying percentage of MP $= \frac{8625}{26750}\times 100 = 32.24$

Ratio = 38 : 32 = 19 : 16

183. (d) Qualifying percentage for Science

A.P.	U.P.	W.B.	Kerala	Orissa	M.P.
39.9	40.5	37.7	58.8	43.3	43.8

184. (d) Required percentage

$$= \frac{35+40+45+35+35}{45+50}\times 100 = \frac{190}{95}\times 100 = 200$$

185. (b) Average production by $B = \frac{45+35+40}{3} = 40$

Average production by $C = \frac{25+35+45}{3} = 35$

Ratio = (40 : 35) 8 : 7

186. (c) Maximum difference is 5 lakh tonnes for three companies C, D & E. So, our answer should be the company for which the production is least in 1996. Because to calculate the % increase or decrease our denominator is the production in 1996.

187. (a) Percentage drop $= \frac{50-35}{50} \times 100 = 30\%$

188. (e) You should not calculate the values to get answer. You can decide by mere visual observation.

189. (d) Total no. of students who play cricket
= 38 + 40 + 12 + 17 + 25 + 18 + 20 = 170

Reqd % $= \frac{25}{170} \times 100 \approx 15\%$

190. (d) Reqd ratio = 27 : 18 = 3 : 2

191. (e)

192. (e) Total Class X students who play different games = 115

Reqd % $= \frac{21}{115} \times 100 \approx 18\%$

193. (e) Basketball and Badminton are the two games which satisfy the conditions.

194. (a) Slope of the line between 1996 and 1997 is the highest. Therefore, in 1997 there is maximum per cent increase in exports as compared to the preceding year.

195. (a) Reqd difference = 600 – 450
= ₹ 150 cr

196. (d) Reqd % increase $= \frac{950-200}{200} \times 100 = 375\%$

197. (b) Reqd % $= \frac{600}{450} \times 100 = \approx 135\%$

198. (c) Total exports = 300 + 200 + 600 + 450 + 600 + 800 + 950 = ₹ 3900 cr

199. (c) Percent profit earned in 2001– 02

$= \frac{250-125}{125} \times 100 = 100\%$

200. (d) Percent profit in 1999-2000

$= \frac{325-250}{250} \times 100 = 30\%$

percent profit in 2000-2001

$\frac{350-250}{250} \times 100 = 40\%$

$\therefore$ reqd difference = 40 – 30 = 10%

201. (e) Avg. income

$= \frac{150+200+325+350+250}{5} =$ ₹ 255 cr

202. (b) Year which is having the amount of expenditure minimum and the gap between income and expenditure the maximum. And this condition is fulfilled in 1997- 98.

203. (a) Avg profit $= \frac{100+75+75+100+125}{5} =$ ₹ 95 cr.

204. (e) Required percent $= \frac{152.2}{86.4} \times 100 \approx 175\%$

205. (d)

206. (c) Average production of pulse

$\frac{20.5+22.4+24.6+23.5+27.8+28.2}{6} = \frac{147.0}{6}$

= 24.5 million tonnes

207. (a) Required percentage $= \frac{32.4}{450} \times 100 = 7.2\%$

208. (b) Total production of oilseeds in the given years
= 42.4 + 46.8 + 52.4 = 141.6.
Which is equal to the production of wheat in 1994 - 95.

209. (a)

210. (e) The answer is 1997, Machine IV

211. (e)

212. (b)

213. (c)

214. (a) Average $= \frac{52+66+64+75+58}{5} = \frac{315}{5} = 63.$

215. (a) The difference is 9.

216. (a) Percentage increase $= \frac{55-46}{46} \times 100 \approx 20\%$

217. (e) Average highest marks $= \frac{85+80+75}{3} = \frac{240}{3} = 80.$

218. (e)

219. (c) Required percentage $= \frac{80}{64} \times 100 = 125\%$

220. (b) Marks obtained by students = 50 × 60 = 3000

221. (e) The maximum difference is in the years 1992 & 1997. Since the least value is in 1992 and the highest value is in 1997.

222. (a) Reqd. % $= \frac{5.1}{12.5} \times 100 = 40.8\%$

223. (e) Percentage increase $= \frac{38.8-11.8}{11.8} \times 100 \approx 225\%$

224. (b)

225. (d) Reqd. ratio $= \frac{7.4}{16.8} = 37:84$

226. (a) Reqd. % $= \frac{38.8}{63.9} \times 100 \approx 60\%$

227. (e) Reqd. % $= \frac{101.80}{138.50} \times 100 \approx 75\%$

228. (c) Reqd. % $= \frac{1.8}{74.6} \times 100 = 2.41\%$

229. (b) Root vegetables produce per hectare

$= \frac{18560}{800} = 23.20$

230. (c) Tomato, cabbage, root vegetables

231. (a) Reqd. ratio = 72 : 15 = 24 : 5

232. (d) Total area = 19800 hectares

10% of the total area = 1980 hectares ...(i)

Comparing equation (i) and table, we see that in four types of vegetables, area used for production is more than 10% of the total area.

233. (e) Reqd. number $= \frac{42670}{1700} - \frac{13790}{700}$

= 25.1 – 19.7 = 5.4

234. (d) Total number of employees in accounts department = 8% of 4600 = 368

$\therefore$ Number of women $= \frac{368}{(3+1)} \times 1 = 92$

235. (e) Total number of employers in IT and HR departments = (26 + 11)% of 4600

$= \frac{37}{100} \times 4600 = 1702$

236. (c) Total number of men in all the departments

$$= \left[\left(\frac{11}{2} \times 1\right) + \left(\frac{8}{4} \times 3\right) + \left(\frac{15}{5} \times 3\right) + \left(\frac{26}{4} \times 1\right) + \left(\frac{22}{2} \times 1\right) + \left(\frac{18}{6} \times 1\right)\right] \% \text{ of } 4600$$

= (5.5 + 6 + 9 + 6.5 + 11 + 15)% of 4600

= 53% of 4600

Total number of women in all the departments

$$= \left[\left(\frac{11}{2} \times 1\right) + \left(\frac{8}{4} \times 1\right) + \left(\frac{15}{5} \times 2\right) + \left(\frac{26}{4} \times 3\right) + \left(\frac{22}{2} \times 1\right) + \left(\frac{18}{6} \times 1\right)\right] \% \text{ of } 4600$$

= (5.5 + 2 + 6 + 19.5 + 11 + 3)% of 4600

= 47% of 4600

Hence, required ratio = 53 : 47

237. (a) Number of women is merchandising department

$= \frac{1}{6}$ of 18% of 4600

Total number employees in the organization = 4600

Then, required percentage

$= \frac{\frac{1}{6} \text{ of } 18\% \text{ of } 4600}{4600} \times 100\%$

= 3%

238. (b) Number of men in the production department

$= \frac{3}{5}$ of 15% of 4600

Number of men in marketing department

$= \frac{1}{2}$ of 22% of 4600

Then, required ratio $= \frac{3}{5}$ of 15% of 4600 : $\frac{1}{2}$ of 22% of 4600

$= \frac{3}{5} \times 15 : \frac{1}{2} \times 22 = 9:11$

Note : You are suggested not to calculate these numbers of men or women seperately. Just do as we have done here because it makes your calculation easier.

239. (b) Required difference

= (15 – 10)% of ₹ 60 lacs

$= ₹\left(\frac{5}{100} \times 60\right)$ lacs = ₹ 3 lacs

240. (e) Required ratio = 8 : 6 = 4 : 3

241. (b) Required sum of expenditure

$= (8 + 24 + 6)\%$ ₹ 60 lacs $= \left(\frac{38 \times 60}{100}\right)$ lacs

= ₹ 22.8 lacs

242. (c) (a) Ratio = 1 : 3 = Not true

(b) Expenditure on medical facilities $= \frac{7 \times 60}{100}$

= ₹ 4.2 lacs = Not true

(c) Difference between the expenditure on research work and expenditure on research work and medical facilities

$= ₹\left(\frac{8-7}{100} \times 60\right)$ lacs

= 60000 = Definitely true

243. (b) Expenditure on purchase of overhead projectors

$= ₹\left(\frac{24 \times 60}{100}\right)$ lacs

= ₹ 14.40 lacs

After 7% decrease

Now expenditure

$= ₹\left(\frac{93 \times 14.40}{100}\right)$ lacs

$= ₹\ 13,39,200$

244. (a) Percentage of money spent on tennis

$= \left(\frac{45}{360} \times 100\right)\% = 12\frac{1}{2}\%$

245. (d) Degree value of expenditure on hockey = 63°
Degree value of expenditure on golf = 36°

$\therefore$ Required percentage $= \frac{63-36}{36} \times 100 = 75\%$

246. (a) Ammount spent on basketball exceeds that on tennis by

$= ₹\left(\frac{(50-45)}{360} \times 18000000\right) = ₹\ 250000$

247. (c) Degree value of the expenditure
on football = 54°
on cricket = 81°

$\therefore$ Required percentage $= \frac{81-54}{81} \times 100$

$= \frac{27}{81} \times 100 = 33\frac{1}{3}\%$

248. (b) Degree value of expenditure on cricket and hockey
= (81 + 63)° = 144°

$\therefore$ Required amount spent on them $= ₹\ \frac{144}{360} \times 2$ crore

= 0.8 crore = ₹ 8000000

249-251.

249. (e) Cost price of article = ₹ 5600

Marked price = $5600 + 5600 \times \frac{12}{100} = ₹\ 6272$

250. (c) SP $= 6272 - 6272 \times \frac{5}{100} = 5958.4$

Profit% $= \frac{5958.4 - 5600}{5600} \times 100$

$= \frac{358.4}{56} = 6.4\%$

251. (d) Amount of discount $= 6272 \times \frac{5}{100}$

$= 313.6$

252. (b) Total number of users of brand B across all Five cities
= 600 + 500 + 650 + 700 + 550 = 3000

253. (c) 700 = x % of 500

$700 = \frac{x \times 500}{100} \Rightarrow x = \frac{700}{5} = 140$

254. (c) Required average $= \frac{500+550+600+550+700}{5}$

$= 580$

255. (d) Required difference = 1250 – 1100 = 150

256. (a) Required Ratio $= \frac{500}{700} = 5:7$

257. (a) Marks of all student in Chemistry
= 90 + 110 + 100 + 120 + 60 = 480

$\frac{\text{Marks obtained by S in Chemistry}}{\text{Marks of all student in Chemistry}} \times 100$

$= \left(\frac{120}{480} \times 100\right)\% = 25\%$

258. (e) Marks obtained by T in Physics = 50
If 14% marks in Physics are increased, new marks = 50 + 7 = 57

New approximate percentage in Physics $= \frac{57}{140} \times 100$

= 40.71 or $\approx$ 41.

259. (b) Total marks obtained by T in both subjects = 50 + 60 = 110
R in Physics = 80

260. (d) Total marks obtained by P in Physics and Chemistry
= 130 + 90 = 220
Total marks obtained by T in Physics and Chemistry
= 50 + 60 = 110

Ratio = $\frac{220}{110} = 2:1$

261. (b) Total marks obtained by Q and S together in Chemistry
= 110 + 120 = 230
Total marks obtained by P and R together in Physics
= 130 + 80 = 210

Ratio = $\frac{230}{210} = 23:21$

262. (c) No. of people who prefer flute = 11% of 60,000

$= \frac{11}{100} \times 60000 = 6600$

2100 people be less from the people who prefer flute.
Therefore, 6600 – 2100 = 4500

Required percentage = $\frac{4500}{60000} \times 100 = 7.5\%$

263. (a) Total number of people who prefer either Sarod or Guitar = 14% of 60000 + 22% of 60000
$\Rightarrow$ 8400 + 13200 = 21600
Total number of people of who prefer violin or Sitar = 20% of 60000 + 14% of 60000
$\Rightarrow$ 12000 + 8400 = 20400
Required difference = 21600 – 20400 = 1200

264. (b) Required number 14% of 60000

$= \frac{14}{100} \times 60000 = 8400$

265. (d) No. of people who prefer piano = 9% of 60000 = 5400

According to question, $16\frac{2}{3}\%$ no. of the people who prefer piano would go with flute.

Therefore, $\frac{50}{3}\%$ of 5400 = 900

Hence, the required percentage

$$= \frac{900 + 11\% \text{ of } 60000}{60000} \times 100$$

$$= \frac{900 + 6600}{60000} \times 100 = 12.5\%$$

266. (a) No. of people who prefer guitar = 22% of 60000 = 13200
No. of people who prefer Flute or Piano = (11 + 9)% of 60000 = 12000
Required difference = 13200 – 12000 = 1200.

267. (c) In 1981, no. of service workers
= 15% of 150 = 22.5 million

268. (b) In 1981, no. of categories more than 25 million workers i.e. more than 16% of 150.
More than 16% is → Professional, clerical, Blue collar i.e. 3.

269. (c) Ratio of workers to professional in 1981 to 1995
Professional in 1981 → 18%
⇒ 18% of 150 = 27
Professional in 1995 → 24%
⇒ 24% of 175 = 42

$$\text{Ratio} = \frac{27}{42} = \frac{9}{14} \quad \Rightarrow \quad 9 : 14$$

270. (b) Clerical % in country X in 1981 = 20% of 150 = 30
Clerical % in country X in 1985 = 18% of 175 = 31.5
So, increase = 1.5 million

272. (c) % of Blue collar workers in 1981 = 28% of 150 = 42
% of Blue collar workers in 1995
= 20% of 175 = 35

$$\% \text{ decrease} = \frac{42 - 35}{35} \times 100 = 20\%$$

272. (c) $\text{Percent increase} = \frac{380 - 320}{320} \times 100 = 18.75$

273. (b) Total production:

Wheat	⇒ 3700 million tonnes
Rice	⇒ 2000 million tonnes
Barley	⇒ 1800 million tonnes
Other cereals	⇒ 2400 million tonnes

Total Production = (3700 + 2000 + 1800 + 2400)
= 9900 million tonns

$$x = \frac{3700}{9900} \times 100 = 37.4\%$$

274. (a) Percentage increase:

$$\text{Rice} = \frac{160}{400} \times 100 = 40$$

$$\text{Barley} = \frac{30}{380} \times 100 = 7.8$$

$$\text{Cereals} = \frac{190}{500} \times 100 = 38$$

$$\text{Wheat} = \frac{100}{720} \times 100 = 13.8$$

275. (d) Required difference

$$= \frac{2000}{5} - \frac{1800}{5} = 400 - 360 = 40 \text{ million tonnes}$$

276. (a) Percentage decrease

$$= \frac{60 - 40}{60} \times 100 = \frac{100}{3} = 33\frac{1}{3}\%$$

277. (a) Average annual production:

$$\text{Flavour X} \Rightarrow \frac{1}{6} \times 300 = 50 \text{ lakh bottles}$$

$$\text{Flavour Y} \Rightarrow \frac{1}{6} \times 325 = 54\frac{1}{6} \text{ lakh bottles}$$

$$\text{Flavour Z} \Rightarrow \frac{1}{6} \times 300 = 50 \text{ lakh bottles}$$

278. (c) Total production of flavour X in 2005 and 2006 = 90
Total production of flower Z in 2007 and 2008 = 120.
Required percentage

$$= \frac{120}{90} \times 100 = 133.3$$

279 (a) Percentage increase/decrease:

$$\text{Year 2007} \Rightarrow \frac{60 - 50}{60} \times 100 \approx 16\% \text{ decrease}$$

$$\text{Year 2008} \Rightarrow \frac{55 - 50}{50} \times 100 = 10\% \text{ increase}$$

$$\text{Year 2009} \Rightarrow \frac{55 - 50}{55} \times 100 \approx 9\% \text{ decrease}$$

280. (d) Required difference

$$= \frac{1}{3}[(55 + 50 + 55) - (50 + 40 + 55)]$$

$$= \frac{1}{3}(160 - 145) = \frac{15}{3} = 5 \text{ lakh bottles}$$

281. (b) (100 + 160) : (180 + 60)
= 260 : 240 = 13 : 12

282. (c) Required % $= \frac{100}{(100+160+240+40)} \times 100$

$= \frac{100}{540} \times 100 \approx 18.52\%$

283. (d) Required % $= \frac{120}{(180+60+120+20)} \times 100 = 31.58\%$

284. (b) Total students using Samsung = 100 + 180 = 280
Total students using Sony = 160 + 60 = 220
Difference = 280 – 220 = 60

285. (c) Expenditure for education $= \frac{9000}{30} \times 18 = ₹5,400$

286. (b) Central angle of the sector for the expenditure on fuel

$= \frac{360}{100} \times 15 = 54°$

287. (c) Expenditure excluding rent and education

$= \frac{3000}{15} \times (100 - 20 - 18)$
= 200 × 62
= ₹ 12400

288. (c) 30 = x% of (12 + 18 +15)

$30 = \frac{x}{100} \times 45$

$x = \frac{200}{3} = 66\frac{2}{3}$

289. (b) Required difference= (20 + 12 + 15) – 30
= 47 – 30 = 17

290. (c) Saturday

291. (b) Students having both Science and commerce

$= (29+31)\%$ of $200 = \frac{60}{100} \times 200 = 120$

Students who have taken neither science nor commerce = Total students – Students having both scicence and commerce
= 200 –120 = 80

292. (c) No. of people who prefer flute = 11% of 60,000

$= \frac{11}{100} \times 60000 = 6600$

2100 people be less from the people who prefer flute.
Therefore, 6600 – 2100 = 4500

Required percentage $= \frac{4500}{60000} \times 100 = 7.5\%$

293. (a) Total number of people who prefer either Sarod or Guitar = 14% of 60000 + 22% of 60000
⇒ 8400 + 13200 = 21600

Total number of people of who prefer violin or Sitar = 20% of 60000 + 14% of 60000
⇒ 12000 + 8400 = 20400
Required difference = 21600 – 20400 = 1200

294. (b) Required number 14% of 60000

$= \frac{14}{100} \times 60000 = 8400$

295. (d) No. of people who prefer piano = 9% of 60000 = 5400

According to question, $16\frac{2}{3}\%$ no. of the people who prefer piano would go with flute.

Therefore, $\frac{50}{3}\%$ of 5400 = 900

Hence, the required percentage

$= \frac{900 + 11\% \text{ of } 60000}{60000} \times 100$

$= \frac{900+6600}{60000} \times 100 = 12.5\%$

296. (a) No. of people who prefer guitar = 22% of 60000 = 13200
No. of people who prefer Flute or Piano = (11 + 9)% of 60000 = 12000
Required difference = 13200 – 12000 = 1200.

297. (d) $\frac{\theta}{360°} \times 100 = 16$

$\theta = \frac{16}{100} \times 360 = \frac{576}{10} = 57.6°$

298. (d) Required difference (in % value)

$= \frac{18-15}{18} \times 100 = \frac{3}{18} \times 100 = 16\frac{2}{3}\%$

299. (b) Given,
Miscellaneous expenditure = ₹ 1848
⇒ 4% of the total expenditure cost for publishing 5500 copies = ₹ 1848
⇒ Total expenditure cost of 5500 copies (i.e. 100%)

$= \frac{₹1848 \times 100}{4} = ₹ 46200$

⇒ Expenditure cost per copy $= \frac{₹46200}{5500} = ₹ 8.40$

So, marked price of each copy = ₹ 8.40 + 25% of 8.40
= 8.40 + 2.10 = ₹ 10.50

300. (c) Cost of printing i.e., 35% = 17500

So, Royality i.e., 15% $= \frac{17500}{35} \times 15 = 7500$

301. (a) Miscellaneous charges i.e. 4% of total expenditure = ₹ 6000
So, Advertisement charges i.e., 18%

$= \frac{6000}{4} \times 18 = ₹ 27000$

302. (d) Marks in Hindi = 70
Marks in English = 40

$\therefore$ Average marks $= \frac{\text{Marks in Hindi} + \text{Marks in English}}{2}$

Average marks $= \frac{70+40}{2} = 55$

303. (a) Marks in Maths = 80
Marks in History = 60

$\therefore$ Ratio of marks of Maths and History $= \frac{80}{60} = 4:3$

304. (c) Royalty of book = 15%
Printing of book = 20%
$\therefore$ Royalty of book is less than printing cost by 5%

305. (d) $C.P + \frac{20}{100} \times C.P = 180$

$\frac{6}{5} C.P = 180$

C.P = 150

Paper cost = 15% of C.P

$\frac{15}{100} \times 150 = 22.50$

306. (d) Total sales of branches B1, B3 and B5.
= (80 + 105 + 95 + 110 + 75 + 95) = 560 thousand

307. (d) Required ratio $= \frac{75+65}{85+95} = \frac{140}{180} = \frac{7}{9}$

308. (a) Average sale of B1, B2 and B3 in 2001.

$= \frac{105+65+110}{3} = \frac{280}{3}$

Average sale of B1, B3 and B6 in 2000.

$= \frac{80+95+70}{3} = \frac{245}{3}$

Required % $= \frac{\frac{245}{3}}{\frac{280}{3}} \times 100 = 87.5\%$

309. (a) Sales of books B3 in 2001 = 110 thousand
Sales of books B2 in 2001 = 65 thousand

% increase $= \frac{110-65}{65} \times 100 = 69.2$

310. (b)

311. (d) More than 55 years = 4 + 3 + 2 + 1 = 10

312. (a) Number of patients of age more than 40 years and less than 55 years = 8 + 7 + 5 = 20

312. (c) Total patients = 35

Required % $= \frac{1+4+8}{35} \times 100 \approx 37\%$

314. (a) 11% of 35 $= \frac{11}{100} \times 35 \approx 3.8 \approx 4$

315. (d) Ratio

$= \frac{\text{number of pages printed by printer B in 2nd week}}{\text{number of pages printed by printer F in } 5^{\text{th}} \text{ week}}$

$= \frac{441}{693} = \frac{7}{11};\ 7:11$

316. (b) Average number of pages printed by all the printer

$= \frac{256+563+347+651+412+321}{6} = 425$

317. (c)

Printer / Week	A	B	C	D	E	F
1st	664	618	628	552	638	419
2nd	569	441	519	438	621	537
3rd	440	614	503	527	541	742
4th	256	563	347	651	412	321
5th	717	429	598	582	519	693
Total up to 5th week	2646	2665	2595	2750	2731	2712

Printer D printed maximum pages.

318. (e) Required percentage (%)

$= \frac{\text{Pages printed by A in 3rd week}}{\text{Total page printed by D from 1st to 5th weeks}} \times 100$

$= \frac{440}{2750} \times 100 = 16\%$

319. (c) Required difference = Total no. of pages printed by printer C in all given weeks – Total no. of pages by E in 1st, 2nd, 4th week
= 2595 – (638 + 621 + 412) = 924