SOLUTIONS

1. (d) $15\% = \frac{3}{20}$

	Old	New
I year	20	23
II year	20	23
	400	529

ATQ,

529 unit $\rightarrow$ 352314

2yrs. ago = 400 unit $\rightarrow \frac{352314}{529} \times 400$

= 2,66,400

Hence, the population of city was 2 years ago 266400.

2. (b)

$10\% = \frac{1}{10}\uparrow$, $20\% = \frac{1}{5}\uparrow$, $12\% = \frac{3}{25}\uparrow$

	Old	New
I	10	11
II	5	6
III	25	22
	625	726

$\Rightarrow$ Increase % = $\frac{726-625}{625} \times 100$

$= \frac{10100}{625} = \frac{404}{25} \approx 16.16\%$

3. (b) Let, the monthly Income = 100 unit

Exp = 72 unit

Saving = 28 unit

ATQ,

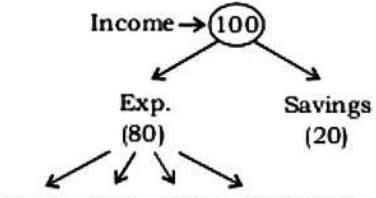
28 unit $\rightarrow$ 5740

1 unit $\rightarrow$ 205

100 unit $\rightarrow$ 20500(monthly income)

Now, the 10% io total annual income = $20500 \times \frac{12 \times 10}{100} = 24600$

4. (b)



ATQ,

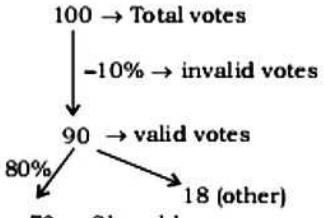
$80 \times \frac{11.25}{100} \rightarrow 7200$

$\Rightarrow$ 1 unit $\rightarrow$ 800

Food = 15 unit $\rightarrow$ 800 × 15

= Rs. 12000

5. (c) Let,



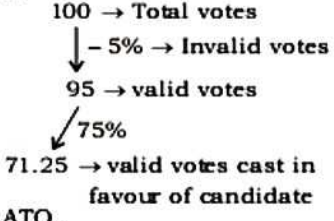
ATQ,

100 unit $\rightarrow$ 4500

Required votes = 18 unit $\rightarrow$ 45 × 18

= 810

6. (b) Let, the total vote be 100 unit



ATQ,

100 unit $\rightarrow$ 146000

$\Rightarrow$ 71.25 $\rightarrow$ 1460 × 71.525

= 104025

7. (c) Let, total votes = 100

80% → casted votes

80 unit → casted votes

↓ –20% invalid votes

64 unit → valid

ATQ,

100 unit → 9000

64 unit → 90 × 64 = 5760

Let, Ajay received x votes

Then,

ATQ,

$x - (5760 - x) = 1152$

$2x = 6912$

$x = 3456$ votes

8. (d) Let, total votes = 100

P Q

40 60

+20

ATQ,

20 unit → 10

Total = 100 unit → 50

9. (c)Surface area of sphere = $4\pi r^2$

	Old	New
Radius	1	2
Area$\times r^2$	1	4

+3 → Increase

$\therefore$ Increase % = $\frac{3}{1} \times 100$

= 300%

10. (b) 100 → Total votes

↓ 80% → casted votes

80 → casted votes

↓ –5% → invalid votes

76 → valid votes

ATQ,

$\frac{80}{100} \times 76$ unit → 9500

$\Rightarrow 100$ unit → $\frac{9500}{80 \times 76} \times 100 \times 100$

= 15625

11. (b) $\frac{1}{5}\% = \frac{1}{5 \times 100} = \frac{1}{500}$

12. (d) ATQ,

Avi × $\frac{110}{100} \times \frac{120}{100}$ = 26400000

Avi = 2,00,00,000

13. (c) Overall change in numbers:-

$+28 - 28 - \frac{28 \times 28}{100}$

= – 7.84% (decrease)

ATQ,

7.84 unit → 784

1 unit → 100

Original number

= 100 unit → 10000

14. (d)

$10\% = \frac{3}{10} \uparrow = \frac{13}{10}$, $20\% = \frac{1}{5} \uparrow = \frac{4}{5}$

	Odd	New
I Year	10	13
II Year	5	4
	50	52

ATQ,

50 unit → 1000

52 unit → Rs. 1040

15. (d) $10\% = \frac{1}{10} \uparrow = \frac{11}{10}$

Consumption $\propto \frac{1}{\text{price}}$ (when exp. is same)

Price → 10 11

Cons.→ 11 10

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

16. (b) Let the total number of vote be = 100 unit

100 unit → Total votes

↓ –30% → Non Cast votes

70 unit → Cast votes

↓ –20% → invalid votes

56 unit → Valid votes

64% 36%

W L

Diff = 28%

ATQ,

$\frac{28}{100} \times 56$ unit → 3136

1568 unit → 313600

Total votes = 100 unit → $\frac{313600}{1568} \times 100$

= 20000

17. (a) Let the total salary is 100 unit

100 → Total salary

H.H	Rent	Transport	Savings
40	25	15	20

ATQ,

100 unit → 50,000

monthly savings = 20 unit → 10000

$\therefore$ yearly savings = 10000 × 12

= 120000

18. (a) $10\% = \frac{1}{10} \uparrow = \frac{11}{10}$

	Old	New
Base radius (r)	10	11
Height (h)	10	11
$V = \frac{1}{3}\pi r^2 h$	1000	13…

…un…

15 / 267

…1%

19. (b) Let the total vote = 100

Total → 100

Winner Looser

75 25

50 → Difference

ATQ,

50 unit → 2500

$\Rightarrow$ 25 unit → 1250

20. (a) Let the total vote = 100 unit

100 unit → Total votes

↓ –20% → Non casted votes

80 unit → casted votes

W L

45 unit (35 unit – 80)

ATQ,

45 unit – (35 unit – 80) = 280

10 unit + 80 = 280

10 unit → 200

$\therefore$ Total = 100 unit → 2000

21. (b) 20% → $\frac{1}{5}$ $\Rightarrow$ R M

6 5

–1

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

22. (c) Let the income of the candiate = 100

Total salary → (100)

Exp. (90) Savings (10)

Edu.	Health	Food
27	30375	

% of income on health

$= \frac{30375}{75000} \times 100 = 40.5\%$

$\therefore$ Food = 90 – (27 + 40.5)
= 22.5%

23. (a)

A	B	C
1136	7636	(11628) ↑ Winner

Total votes = 20,400

$\therefore$ Required% = $\frac{11628}{20400} \times 100$

= 57%

24. (a) ATQ,

$\frac{30}{100} \times R = \frac{40}{100} \times S$

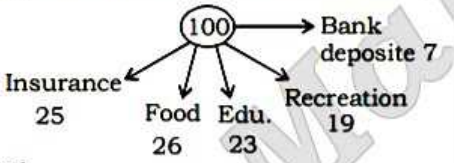
$\Rightarrow \frac{R}{S} = \frac{4}{3}$ (Income)

50% of R Income = 4 × 50%) = 2

Then, Required% = $\frac{2}{3} \times 100$

$= 66\frac{2}{3}\%$

25. (d) Let the total income = 100



Then,
Food + Recreation = 26 + 19
= 45

ATQ,
7 unit → 26600
$\therefore$ 45 unit → 3800 × 45 = 171000

26. (a) Let, it depriciate be a% every years.
ATQ,

$40960 \times \left(\frac{100-a}{100}\right)^3 = 21970$

$\left(\frac{100-a}{100}\right)^3 = \frac{2197}{4096}$

$\Rightarrow \left(\frac{100-a}{100}\right)^3 = \left(\frac{13}{16}\right)^3$

$\Rightarrow$ % required = $\frac{3}{16} \times 100$
= 18.75%

Alternate method:
Directly
Consider,

$\left(\frac{21970}{40960}\right)^{\frac{1}{3}} = \left(\frac{2197}{4096}\right)^{\frac{1}{3}}$

$= \left[\left(\frac{13}{16}\right)^3\right]^{\frac{1}{3}} = \frac{13}{16}$ ↑ –3

$\therefore$ Required% = $\frac{3}{16} \times 100$

= 18.75%

27. (c)

Boys	:	Girls
3	:	4
(Let) 300		400
↓ +10%		↓ +15%
330		460

Required ratio = $\frac{330}{460} = \frac{33}{46}$

28. (a) Let the total number of votes = 100%
Candidate A got =37%
Candidate B got = 63%
ATQ, Candidate A lost the election by 338 Votes.
Hence, 63% – 37% = 338

$1\% = \frac{338}{26}$

$100\% = 13 \times 100 = 1300$

29. (b) Let the population 1 year ago = x
ATQ,
Population is increased by 20%
Hence, 120% of x = 30942

$\Rightarrow \frac{120 \times x}{100} = 30942$

$\Rightarrow x = 25785$

SMART APPROACH:-
Increment of 20% = $\frac{1}{5}$ ↑ = $\frac{6}{5}$
(After increment) (original)
$\therefore$ Original population = $\frac{30,942}{6} \times 5$
= 25785

30. (c) Income of Bhavani = 1000 units
$\Rightarrow$ 150 (Kid's education)
$\Rightarrow$ 200 (Food)
Remaining = 650 units

$\Rightarrow \frac{2}{5} \times 650 = 260$ (Sports)

$\Rightarrow \frac{3}{10} \times 650 = 195$ (Transport)

Remaining = 650 – (260 + 195)
= 195 units
We have, 195 units = Rs. 10,257
$\therefore$ Income of Bhavani

$= \frac{10,257}{195} \times 1000$ = Rs. 52600

31. (d)

	Income	Expenditure	Savings
25% = + $\frac{1}{4}$	16500	10500	6000
	20625	12495	8130
		+19%	

% Increase in savings

$= \frac{2130}{6000} \times 100 = 35.5\%$

32. (b) Annual Birth Rate = 12.7%
Annual Death Rate = 2.7%
Hence, Actual Growth Rate
= 12.7% – 2.7% = 10%
Population of Town After 3 years

$= 125000 \times \frac{110}{100} \times \frac{110}{100} \times \frac{110}{100}$

= 166375
Increase in population
= 166375 – 125000 = 41375

33. (c) Ratio of salaries of A, B & C
= 2 : 3 : 4
Let, their salaries be 200, 300 & 400.
After increment,
New ratio = 260 : 360 : 440
=13 : 18 : 22

34. (a) Let the voter list = $100x$
Casted vote = 65% of $100x = 65x$

Valid vote = $\frac{65x \times 97}{100}$

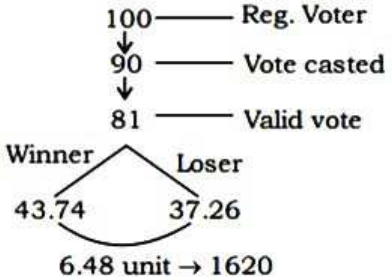
A.T.Q,

$\frac{65x \times 97 \times 65}{100 \times 100} = 81965$

$\Rightarrow x = 2000$
Voter list, $100x = 200000$

35. (b) Let the sum = 100%
Equivalent successive percentage decrement of 20% & 10% = 28%
72unit → 7200
1 unit → 100
Original sum = 100 unit = 10000

36. (a) Let the registered voter = 100



6.48 unit → 1620

Registered voters

$= \frac{1620}{6.48} \times 100 = 25000$

SMART APPROACH:-
Let the number of enrolled voters=x

$x \times \frac{9}{10} \times \frac{9}{10} \times \frac{8}{100} = 1620$

$\Rightarrow x = 25000$

37. (a) **Method-1: Using Ratio**

R	SH	S
17	10	S
	7	10
119	70	100

$\Rightarrow$ R : S = 119 : 100

Method-2: Basic Method

Let the income of Sohan be 100.

Ram $\xrightarrow{70\% \text{ More}}$ Shyam $\xrightarrow{30\% \text{ Less}}$ Sohan

119 $\xrightarrow{70\% \text{ More}}$ 70 $\xrightarrow{30\% \text{ Less}}$ 100

$\Rightarrow$ Ram : Sohan = 119 : 100

38. (a) Looser get = 42% of polled vote.
Remaining vote = 58%, (this includes 1400 invalid votes)
Difference 58 – 42 = 16% = 3080 + 1400 = 4480

Total vote $= \frac{4480}{16} \times 100 = 28000$

% of invalid vote $= \frac{1400}{28000} \times 100$

= 5%

39. (b) Net change

$= (x + y + z) + \left(\frac{xy + yz + zx}{100}\right) + \left(\frac{xyz}{10000}\right)$

$= (10 + 22 + 5) + \left(\frac{10 \times 22 + 22 \times 5 + 5 \times 10}{100}\right) + \left(\frac{10 \times 22 \times 5}{10000}\right)$

$= 37 + \left(\frac{220 + 110 + 50}{100}\right) + \frac{1100}{10000}$

= 37 + 3.80 + 0.11

= 40.91%

SMART APPROACH:-
You can also solve this question by applying successive% formula for two variable by taking 10% & 22% together, which gives 34.2% increment. Now apply again this formula by taking 34.2% & 5% together & get the desired result = 40.91%.

40. (a)

	Initial	Final
35% ↑ $= \frac{+7}{20}$	20	27
40% ↓ $= \frac{-2}{5}$	5	3
25% ↑ $= \frac{+1}{4}$	4	5
Overall	80	81

Net Increase% $= \frac{1}{80} \times 100\% = 1.25\%$

41. (a) We know, 65% = $\frac{13}{20}$

Income – Expense = Saving

20 – 13 = 7

20% ↑ 10% ↑

24 – 14.3 = 9.7

Percentage increase in saving

$= \frac{2.7}{7} \times 100\% = 38.5\%$

42. (c) Manpower × Working Hours =Production

We know, 35% = $\frac{7}{20}$

Manpower changes from 20 to 13. Hence, To restore production working hours is to be increased by $= \frac{7}{13} \times 100\% = 53.85\%$

43. (b) Let the income of Manju = 100
income of Raju = 125
Combined income of Raju and Manju = 125 + 25% of 125
=125+31.25 =156.25
After 40% rise, Income of Manju = 100 + 40% of 100 = 140
After Increment,
Combined Income = 296.25

%Increase $= \frac{296.25 - 225}{225} \times 100\%$

$= \frac{71.25}{225} \times 100\% = 31.67\%$

SMART APPROACH:-

25% = $\frac{+1}{4}$ 40% = $\frac{+2}{5}$

	RAJU	MANJU	TOTAL
Initially	500	400	900
After Increment	$625 = \left(500 \times \frac{5}{4}\right)$	$560 = \left(400 \times \frac{7}{5}\right)$	1185

Net Increment $= \frac{285}{900} \times 100\% = 31.67\%$

44. (d) We know, 2% = $\frac{1}{50}$

Population After Two year

$= 45000 \times \frac{49}{50} \times \frac{49}{50} = 43218$

SMART APPROACH:-
In the last step complete multiplication is not required. First check which option is divisible by 9 (sum of digit is a multiple of 9) you will see only option (d) satisfied.

45. (d) Let the price of the car = 100
After 35% increment, price of car = 135
After 25% decrement, price of car = 75% of 135 = 101.25
Net increment percentage in price of the car–

$= \frac{101.25 - 100}{100} \times 100\%$

$= \frac{1.25}{100} \times 100\% = 1\frac{1}{4}\%$

SMART APPROACH:-
Net change

$= \left(35 - 25 - \frac{35 \times 25}{100}\right)\%$

$= \left(10 - 8\frac{3}{4}\right)\%$

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

Note:- '+' sign denotes increment.

46. (d) Marked Price = ₹ 1000
Selling Price = ₹ 1200

%Increment $= \frac{200}{1000} \times 100\% = 20\%$

47. (d) Total Number of Voter = 150000
2% of total votes were declared invalid

Valid Vote = $150000 \times \frac{98}{100} = 147000$

Number of votes polled in the favor of candidate $= 147000 \times \frac{60}{100} = 88200$

SMART APPROACH:-
Required no. of votes

$= 1,50,000 \times \frac{98}{100} \times \frac{3}{5} = 88,200$

In the last step, no. need of doing complete multiplication. First check the divisibility of 9 in the given options, only option (b) eliminated now, check which option is divisible by 7. only option (d) satisfied.

48. (c) Net change

$= \left(15 - 10 - \frac{15 \times 10}{100}\right)\%$

$= (15 - 10 - 1.5)\% = 3.5\%$

SMART APPROACH:-

Original	Final
20	23
10	9
200	207

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

49. (c) Total Enrolled Voters = $100x$
Vote Casted = $85x$
Valid Vote = 96% of 85
ATQ,
$\Rightarrow$ 85% of (96% of $85x$) = 6936

$$\Rightarrow \frac{85}{100}\times\frac{96}{100}\times 85x = 6936$$

$$\Rightarrow x = \frac{6936\times 100\times 100}{85\times 96\times 85}$$

$\Rightarrow x = 100$
Hence, Total enrolled voter
$= 100 \times 100 = 10000$

SMART APPROACH:-
Let Total enrolled voters = $100x$

$$\Rightarrow 100x\times\frac{85}{100}\times\frac{96}{100}\times\frac{85}{100} = 6936$$

$\Rightarrow x = 100$
Hence, Total enrolled voter
$\Rightarrow 100 \times 100 = 10000$

50. (d) Winner candidate = 60%
So, Loser candidate = 40%
ATQ,
Won by the majority of 180 votes
$\Rightarrow$ 60% – 40% = 180
$\Rightarrow$ 20% = 180
$\Rightarrow$ 1% = 9
Thus, Total number of valid votes
= 100% = 900

51. (d) % Decrease in Area

$$= -11 - 11 + \frac{11\times 11}{100}$$

$= -22 + 1.21$
$= -20.79\%$

52. (b) Price × consumption = expenditure
Let initial consumption = y
And new consumption = y

$$\frac{100}{116} = \frac{100\times x}{110\times y}$$

$$\frac{x}{y} = \frac{110}{116}$$

% decrease in consumption

$$= \frac{6}{116}\times 100 = \frac{3}{58}\times 100$$

$= 5.17\% = 5.2\%$

53. (c) $110\left(\frac{100-x}{100}\right) = 50\left(\frac{100+x}{100}\right)$

$$\frac{100-x}{100+x} = \frac{5}{11}$$

$1100 - 11x = 500 + 5x$
$16x = 600$

$$x = \frac{75}{2}\%$$

Now, x% of 650 : (x + 20%) of 180

$$650\times\frac{75}{200} : 180\times\frac{115}{200}$$

$$325 : 138$$

$$\% \text{ increase} = \frac{325-138}{138}\times 100$$

$$= \frac{187}{138}\times 100 = 135.5\% = 136\%$$

54. (c)
A : B
8 : 5
% of B salary less than A

$$= \frac{8-5}{8}\times 100 = \frac{3}{8}\times 100 = 37.5\%$$

55. (b) % Reduction = 12%
12% = 2100
1% = 175
100% = 17500
The amount of house tax = 17500

56. (d) $\therefore$ Expenditure same

$$\text{Price} \propto \frac{1}{\text{consumption}}$$

	Present	:	Last Month
Price	29	:	25
Cons.	25	:	29

$$\% \text{ Decrease} = \frac{29-25}{29}\times 100\%$$

$$= \frac{4}{29}\times 100\% = 13.79\% = 14\%$$

57. (b) Let, I = 1000 unit
I = E + T + C + S (Saving)
1000 = 600 + 120 + 18 + Savings
Saving = 1000 – 738 = 262
1400 = 840 + 252 + 50.4 + Savings
Saving = 1400 – 1142.4 = 257.6
Difference b/w saving = 262 – 257.6
= 4.4
So, 4.4 = 50000 × 4.4 = 220

58. (c) If we decrease the side of square by 10% this will result into 19% decrement in area, vice-versa.
Side $\propto$ diagonal
So, Decrement in diagonal = –10%

59. (c) 8100 : 9000 $\Rightarrow$ 8 : 9

$$\text{Increment \%} = \frac{1}{9} = 11\frac{1}{9}\%$$

60. (a) Let earlier income = 1000
I = E + T + C + Saving
1000 = 600 + 120 + 18 + Savings
Initial saving = 1000 – 738 = 262
1400 = 840 + 252 + 50.4 + Savings
Present saving = 1400 – 1142.4
= 257.6
Ratio of earlier and present salary-

$$75000\times\frac{262}{1000} : 75000\times\frac{257.6}{1000}$$

$= 2620 : 2576 = 655 : 644$

61. (a)

Income	–	Expenditure	=	Savings
100	–	75	=	25
28%↑		20%↑		
128	–	90	=	38

$$\% \text{ increment} = \frac{38-25}{25}\times 100\%$$

$$= \frac{13}{4}\times 100 = 52\%$$

62. (a)

$$\% \text{ Increase} = \left(\frac{12000-7000}{7000}\right)\times 100\%$$

$$= \frac{5000}{7000}\times 100\% = 71\frac{3}{7}\%$$

63. (c) 40% + 18% + 12% + 5% = 75%
Saving = 100% – 75% = 25%
$\because$ 25% = 20000 – 16000 = 4000
100% = Rs.16000

64. (d) $y = \frac{49x}{100}$

So, y% of 50 = $50\times\frac{49x}{100}\%$
$\Rightarrow 24.5x\% = 24.5\%$ of x

65. (d)

Initial	Final
5	7
4	3
20	23
5	4
500	483

$$\frac{17}{500}\times 100 = 3.4\%$$

66. (c) Pass % of whole class

$$= \frac{5+9+14+18+60}{25+30+40+45+60}\times 100\%$$

$$= \frac{106}{200}\times 100\% = 53\%$$

67. (a) 25% of 400 + 35% of 1260 + 27% of 1800 = 1020 + x
$\Rightarrow$ 100 + 441 + 486 = 1020 + x
$\Rightarrow$ 1027 = 1020 + x
$\Rightarrow x = 7$
x lies between 6 to 10.

68. (d) ATQ,

$$110\left(\frac{100-x}{100}\right)=50\left(\frac{100+x}{100}\right)$$

$$\Rightarrow x=\frac{75}{2}\%$$

x% of 650 : $(x-10)$% of 780

$$\Rightarrow 650\times\frac{75}{2}\% \ : \ 780\times\frac{55}{2}\%$$

$$=25:22$$

$$\%\text{ Increase }=\frac{25-22}{22}\times100$$

$$=\frac{300}{22}\%=\frac{150}{11}\%$$

$$=13.63\%\cong14\%$$

69. (b) % Decrement in area of square

$$=-17-17+\frac{289}{100}$$

$$=-34+2.89$$

$$=-31.11\%$$

70. (c) $\frac{100}{126}=\frac{100\times x}{115\times y}$

$$\frac{x}{y}=\frac{115}{126}$$

$$\%\text{ Decrement }=\frac{126-115}{126}\times100\%$$

$$=8.7\%$$

71. (b) A : B
13 : 10

% of B' salary less than that of A

$$=\frac{13-10}{13}\times100\%=\frac{300}{13}\%=23.1\%$$

72. (a) Let the fraction $=\frac{x}{y}$

ATQ, $\frac{x\times160}{y\times140}=\frac{16}{63}\Rightarrow\frac{x}{y}=\frac{2}{9}$

73. (c) A : B = 135 : 100
= 27 : 20

% of B' Salary less than that of A

$$=\frac{7}{27}\times100\%=25.92\%=26\%$$

74. (c)

$$\text{Pass\%}=\frac{5+9+14+18+30+75}{300}\times100\%$$

$$=\frac{151}{3}=50.3\%\cong50\%$$

75. (a) Total word in PHOTOGRAPH = 10
If PH is replaced by F, then the total word in (FOTOGRAF) = 8

$$\%\text{ Change }=\frac{2}{10}\times100\%=20\%$$

76. (a) Salary = 50,000
E = 50,000 × 50% = Rs. 25,000
T = 25000 × 20% = 5000
P = 5000 × 15% = 750
Total E = 25000 + 5000 + 750 = 30750
Saving = (50,000 – 30,750) = 19250
When salary got raised by 40%
New salary = (50,000 × 140%)
= 70,000
E = 70,000 × 50% = 35,000
T = 35000 × 30% = 10,500
P = 10,500 × 20% = 2100
Total E = (35,000 + 10,500 + 2100)
= 47600
Saving = (70,000 – 47600) = 22400
Saving increase in %

$$=\frac{(22400-19250)}{19250}\times100\%$$

$$=\frac{3150}{19250}\times100\%=(16.4\%\text{ more})$$

77. (c) 60% of $(x-y)$ = 45% of $(x+y)$

$$\frac{x-y}{x+y}=\frac{45}{60}=\frac{3}{4}\Rightarrow\frac{x}{y}=\frac{7}{1}$$

y = k% of x

$$1=\frac{k}{100}\times7$$

$$k=\frac{100}{7}$$

$$21\%\text{ of }k=\frac{100}{7}\times\frac{21}{100}=3$$

78. (b) A B C
49.6 124 100

$$\text{Required \% }=\frac{(100-49.6)}{49.6}\times100\%$$

$$=\frac{50.4}{49.6}\times100\%=101.6\%$$

79. (b)

	Earlier	Now
Price →	25	32
Cons. →	32	25

Earlier family consumed sugar per month = 18.4 kg
Expenditure on sugar was only 12% more than earlier

$$=\frac{18.4}{32}\times25\times112\%=16.1\text{ kg}$$

New consumption of sugar per month = 16.1 kg

80. (c) A B C
60 100 64

$$\%\text{ change }=\frac{(100-60)}{64}\times100\%$$

$$=\frac{40}{64}\times100\%=62.5\%$$

81. (b)

Income	Expense	Saving
30	20	10
↑14%	20%↑	
34.2	24	10.2

$$\%\text{ Change }=\frac{(10.2-10)}{10}\times100\%$$

$$=\frac{0.2}{10}\times100\%=2\%$$

82. (c) 70% x% 60%

80 : 60
4 : 3

$$\Rightarrow60\%=\frac{70\%\times4+3x}{(4+3)}$$

$$\Rightarrow60\%=\frac{70\%\times4+3x}{7}$$

$$\Rightarrow420\%=280\%+3x$$

$$\Rightarrow x=\frac{140\%}{3}=46\frac{2}{3}\%$$

The candidate need to answer correctly $=46\frac{2}{3}\%$

SMART APPROACH:-

Let the total marks = 140

By answering 70% of the first 80 questions correct the has got = 56

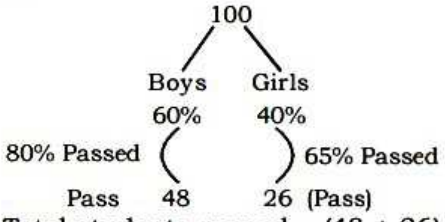
Marks & 60% of total marks = 84

Now the has to score, 84 – 56 = 28 Marks

From the remaining 60 questions.

Req.% $=\frac{28}{60}\times100=46\frac{2}{3}\%$

83. (c)



Total students passed = (48 + 26) = 74%

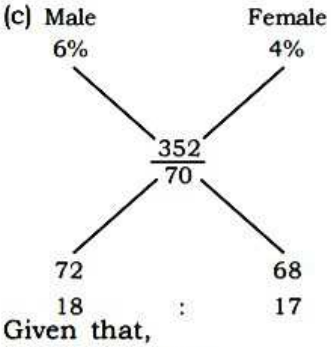
84. (b)

A	:	B	:	C
148		100		99.2

$$\% \text{ change} = \frac{(148 - 99.2)}{99.2} \times 100\%$$

$$= \frac{48.8}{99.2} \times 100\% = 49.2\%$$

85. (c)



Given that,
35 unit = 70,000
Then required difference
(18 – 17) unit = 2000

SMART APPROACH:-

2% M + 4% M + 4% W = 3520
2% M + 2800 = 3520
2% M = 720
⇒ M = 36000 & W = 34000
Difference = 2000

86. (b) Total number of employee

$$= \frac{105}{70\%} \times 100\% = 150$$

Number of employees who got promotion $= 150 \times \frac{80}{100} = 120$

Female employees who got promotion = (120 – 85) = 35
% of female employees who got promotion $= \frac{35}{105} \times 100\% = 33\frac{1}{3}\%$

87. (b)

A	B	C	D
896	640	1600	1000

B is % less than D

$$= \frac{1000 - 640}{1000} \times 100\% = 36\%$$

88. (d)
Let the number be x.

$$\Rightarrow 66.66\% \times 75\% \times \frac{1}{8} \times x = 179$$

$$\Rightarrow x \times \frac{2}{3} \times \frac{3}{4} \times \frac{1}{8} = 179$$

$$\Rightarrow x = 179 \times 16$$

$$\Rightarrow 33\% \text{ of } \frac{3}{4} \text{ of } 179 \times 16 = 716$$

89. (c)

A	B
100	140

Sum Paid to A $= \frac{2040}{240} \times 100$

= Rs.850

90. (c) Number of employees working during the fourth year,

$$= 2000 \times \frac{85}{100} \times \frac{90}{100} \times \frac{110}{100} = 1683$$

SMART APPROACH:-

Check the applicability of divisibility rule of 9. only option (c) satisfied

91. (c) Let the remaining mangoes be sold at Rs. x.
ATQ,

$$\Rightarrow \frac{10,000}{3} \times \frac{24}{25} + x = 10000 \times \frac{130}{100}$$

$$\Rightarrow 3200 + x = 13000$$

$$\Rightarrow x = 9800$$

Price of $\frac{2}{3}$ ton of mangoes= Rs 9800

Price of 1–ton mango $= 9800 \times \frac{3}{2}$

= Rs. 14700

92. (a)

I	E	S
80	50	30
96	55	41

Per centage increase in savings

$$= \frac{11}{30} \times 100 = 36\frac{2}{3}\%$$

93. (a)

A	B	C
25	100	56.25

$$\% \text{ Change} = \frac{56.25 - 25}{25} \times 100\%$$

= 125%

94. (b) Let the number of questions to be answered correctly is x.
ATQ,

$$\Rightarrow 60 \times \left(\frac{65}{100}\right) + x = 120 \times \frac{75}{100}$$

$$\Rightarrow 39 + x = 90$$

$$\Rightarrow x = 51$$

$$\text{Required\%} = \frac{51}{60} \times 100\% = 85\%$$

Method-2

$$\Rightarrow \frac{(65 + y)}{2} = 75$$

$$\Rightarrow 65 + y = 150$$

$$\Rightarrow y = 85\%$$

95. (d) No. of Boys $= 54 \times \frac{1}{3} = 18$

No of girls = 54 – 18 = 36
Let, Avg score of girls = $2x$

Avg score of boys $= 2x \times \frac{3}{2} = 3x$

$$\Rightarrow 18 \times 3x + 36 \times 2x = 54 \times 70$$

$$\Rightarrow 54x + 72x = 3780$$

$$\Rightarrow 126x = 3780$$

$$\Rightarrow x = 30$$

Avg score of Boys = 30 × 3 = 90

96. (d)

A	:	B
1		4

$$\Rightarrow 1 \times \frac{(100 + x)}{100} \times \frac{(100 + x)}{100}$$

$$= \frac{4(100 - x)}{100} \times \frac{(100 - x)}{100}$$

$$\Rightarrow (100 + x)^2 = 4(100 - x)^2$$

$$\Rightarrow \frac{(100 + x)^2}{(100 - x)^2} = \frac{4}{1}$$

$$\Rightarrow \frac{(100 + x)}{(100 - x)} = \frac{2}{1}$$

$$\Rightarrow 200 - 2x = 100 + x$$

$$\Rightarrow 100 = 3x$$

$$\Rightarrow x = \frac{100}{3} = 33\frac{1}{3}\%$$

97. (c) Diff. = (38% – 22%) = 16%

$$\text{Number} = \frac{3200}{16\%} \times 100\% = 20,000$$

$$15\frac{1}{2}\% \text{ of } 20,000 = 20,000 \times \frac{31}{2 \times 100}$$

= 3100

98. (d)

Income	–	Exp.	=	Savings
100	–	75	=	25
		+20		
120	–	95	=	25

$$\% \text{ Change in Exp.} = \frac{20}{75} \times 100\%$$

$$= 26\frac{2}{3}\%$$