



1. (d) Let  $X$  be the number of new science books. Then,  
Total Science books / Total books = 45%.

$$\Rightarrow \frac{\left(X + 110000 \times \frac{40}{100}\right)}{(20000 + 10000)} = \frac{45}{100} \Rightarrow X = 14500.$$

2. (b) Number of runs made by running  
=  $110 - (3 \times 4 + 8 \times 6) = 50$ .

$$\therefore \text{Required percentage} = \left(\frac{50}{110} \times 100\right)\% \\ = 45\frac{5}{11}\%$$

3. (a) Total marks secured = (90% of 100 + 60% of 150 + 54% of 200)

$$= \left(\frac{90}{100} \times 100 + \frac{60}{100} \times 150 + \frac{54}{100} \times 200\right) \\ = (90 + 90 + 108) = 288.$$

$$\text{Total maximum marks} = (100 + 150 + 200) = 450.$$

$$\therefore \text{Aggregate Percentage} = \left(\frac{288}{450} \times 100\right)\% = 64\%$$

4. (d) Let the third number be 100. Then, the first and second numbers will be 20 and 50, respectively.

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

5. (a) Let the total number of applicants be  $x$ . Number of eligible candidates = 95% of  $x$ . Eligible candidates of other categories = 15% of (95% of  $x$ )

$$= \left(\frac{15}{100} \times \frac{95}{100}\right) \times x = \frac{57}{400}x$$

$$\therefore \frac{57}{400}x = 4275 \Leftrightarrow x = \left(\frac{4275 \times 400}{57}\right) = 30000$$

6. (c) Let the salary of Deepa be ₹  $x$ .

$$\text{Then, } 80\% \text{ of } 8\% \text{ of } x = 2240$$

$$\Rightarrow \frac{80}{100} \times \frac{8}{100} \times x = 2240$$

$$\Rightarrow x = \frac{2240 \times 100 \times 100}{80 \times 8} = 35000$$

$$\text{Hence, the salary of Deepa} = ₹ 35000$$

7. (a) Let the original price be  $x$  and sale be of  $y$  units.

$$\text{Then, the revenue collected initially} = x \times y$$

$$\text{Now, new price} = 0.8x, \text{ new sale} = 1.8y$$

$$\text{Then, new revenue collected} = 1.44xy$$

$$\% \text{ increase in revenue} = \frac{0.44xy}{xy} \times 100 \\ = 44\% \text{ increase}$$

8. (a) % reduction in consumption

$$= \frac{\% \text{ change in price}}{100 + \% \text{ change in price}} \times 100$$

$$= \frac{7}{100 + 7}\% = \frac{7}{107}\%$$

9. (c) Let his sales be worth ₹  $x$ . Then,

$$1000 + 2.5\% \text{ of } (x - 4000) = 5\% \text{ of } x + 600$$

$$\Rightarrow \frac{5x}{100} - \frac{2.5(x - 4000)}{100} = 1000 - 600$$

$$\Rightarrow 2.5x + 10000 = 40,000$$

$$\Rightarrow x = \frac{30,000}{2.5} = 12,000$$

10. (c) Let the inspector examined  $x$  metres, then  $0.08\%$  of  $x = 2$

$$\Rightarrow \frac{x \times 0.08}{100} = 2$$

$$\text{or } x = \frac{200}{0.08} = 2500 \text{ metres}$$

11. (a) Let the investment of  $C = ₹ 100$

$$\text{Then } B\text{'s investment} = ₹ 90 \text{ and } A\text{'s investment} = ₹ 99$$

$$\text{Sum of investment} = ₹ (100 + 90 + 99) = ₹ 289$$

$$\text{Hence, } C\text{'s actual investment} = ₹ \left(\frac{14450 \times 100}{289}\right)$$

$$= ₹ 5000$$

12. (a) Let  $B$  get ₹  $x$ . Then  $C$  gets =  $75\%$  of  $x = \frac{3x}{4}$

$$\text{and } A \text{ gets} = 120\% \text{ of } \frac{3x}{4} = \frac{120}{100} \times \frac{3x}{4} = \frac{9x}{10}$$

$$\text{Now, } \frac{9x}{10} + \frac{3x}{4} + x = 4558$$

$$\Rightarrow \frac{53x}{20} = 4558 \Rightarrow x = \frac{4558 \times 20}{53} = 1720$$

$$\text{Hence, } A\text{'s share} = \frac{9x}{10} = ₹ \frac{9 \times 1720}{10} = ₹ 1548$$



13. (b) Let the total number of votes enrolled be  $x$ . Then,  
Number of votes cast = 75% of  $x$ . Valid votes = 98% of (75% of  $x$ ).

$$\therefore 75\% \text{ of } [98\% \text{ of } (75\% \text{ of } x)] = 9261$$

$$\Rightarrow \left( \frac{75}{100} \times \frac{98}{100} \times \frac{75}{100} \times x \right) = 9261$$

$$\Rightarrow x = \left( \frac{9261 \times 100 \times 100 \times 100}{75 \times 98 \times 75} \right) = 16800.$$

14. (d) Height climbed in second hour

$$= 12\frac{1}{2}\% \text{ of } \left( 100 - 62\frac{1}{2} \right) \% \text{ of } 192 \text{ m}$$

$$= \left( \frac{25}{2} \times \frac{1}{100} \times \frac{75}{2} \times \frac{1}{100} \times 192 \right) \text{ m} = 9 \text{ m}.$$

15. (b) Let the original number be 100.

$$\text{Then, the new number} = 100 \times 1.1 \times 0.9 = 99$$

i.e. the number decreases by 1%.

16. (c) Work with option,  $\left(\frac{5}{4}\right)x - \left(\frac{7}{10}\right)x = 22$

Only  $x = 40$  fulfil the above equation.

17. (c) Let the total sales be ₹  $x$ . Then,  $5\frac{1}{2}\%$  of  $x + \frac{1}{2}\%$  of  $(x - 10000) = 1990$

$$\Leftrightarrow \frac{11}{2} \times \frac{1}{100} \times x + \frac{1}{2} \times \frac{1}{100} \times (x - 10000) = 1990$$

$$\Leftrightarrow 12x - 10000 = 398000 \Leftrightarrow 12x = 408000$$

$$\Leftrightarrow x = 34000$$

18. (a) Let the number be  $x$ ,

$$\text{Then, } \frac{12}{100} \times \frac{75}{100} \times x - \frac{5}{100} \times x = 75$$

$$\Rightarrow \frac{9x}{100} - \frac{5x}{100} = 75 \Rightarrow \frac{4x}{100} = 75$$

$$\Rightarrow x = \frac{75 \times 100}{4} = 1875$$

19. (a)  $\therefore$  Amount, he have spent in 1 month on clothes transport = Amount spent on saving per month

$\therefore$  Amount, spent on clothes and transport

$$= \frac{48456}{12} = ₹ 4038$$

20. (a) Let the population of males =  $x$ ; then the population of females =  $9000 - x$

$$\text{Now, } 5\% \text{ of } x + 8\% \text{ of } (9000 - x)$$

$$= (9600 - 9000) = 600$$

$$\text{or } 0.05x + 720 - 0.08x = 600$$

$$\text{or } 720 - 600 = 0.08x - 0.05x$$

$$\text{or, } 120 = 0.03x$$

$$\therefore x = 4000$$

- $\therefore$  Req'd. ratio of population of males and females

$$= \frac{4000}{9000 - 4000} = \frac{4000}{5000} = 4 : 5$$

21. (d) Let salary of Saroj be ₹  $x$ .

$$\therefore \text{Salary of Raju} = \frac{80}{100}x$$

$$\text{Salary of Ram} = \frac{70}{100}x$$

$$\text{Required percentage} = \left( \frac{80x - 70x}{\frac{100 - 100}{70x}} \right) \times 100$$

$$= \frac{10x}{76x} \times 100 = \frac{100}{7} = 14.28\%$$

22. (d) Let the family consumes 1 kg wheat

To keep expenditure at Rs. 24, its new consumption

$$\text{should be } \frac{24}{27} = \frac{8}{9} \text{ kg}$$

- $\therefore$  Percentage decrease in consumption

$$= \left( \frac{1 - \frac{8}{9}}{1} \right) \times 100 = 11.1\%$$

Alternative method :

$$\text{Required \%} = \frac{27 - 24}{27} \times 100 = 11.1\%$$

23. (d) Let the first man's output be  $x$ .

$$\text{Then, } 33\frac{1}{3}\% \text{ of } x = 50\% \text{ of } 1500 \Leftrightarrow \left( \frac{100}{3} \times \frac{1}{100} \times x \right)$$

$$= 750 \Leftrightarrow x = 750 \times 3 = 2250.$$

24. (b) Solve using options. 2/25 fits the requirement.

25. (c)  $10 \times 100 = 1000$ , 100 = no. of visitors

$$\text{Now, } 7.5 \times \text{No. of visitors} = 1200$$

$$\text{No. of visitors} = 160$$

$$\text{Increase \%} = \frac{160 - 100}{100} \times 100 = 60\%$$

26. (c) Let the inspector examined  $x$  metres, then 0.08% of  $x = 2$

$$\Rightarrow \frac{x \times 0.08}{100} = 2$$

$$\text{or } x = \frac{200}{0.08} = 2500 \text{ metres}$$

27. (d) Let the original fraction be  $\frac{x}{y}$



$$\text{Then, } \frac{115\% \text{ of } x}{92\% \text{ of } y} = \frac{15}{16} \Rightarrow \frac{115x}{92y} = \frac{15}{16}$$

$$\Rightarrow \frac{x}{y} = \left( \frac{15}{16} \times \frac{92}{115} \right) = \frac{3}{4}$$

28. (d) Let the class has 100 students.  
 $\Rightarrow$  Number of girls = 35 and number of boys = 65.  
 Since total number of present students = 70 and number of girls present = 80% of 35 = 28, so number of boys present = 70 - 28 = 42.

$$\Rightarrow \text{Required fraction} = 42/65.$$

29. (b) Let 100 units be B's income and X units be B's expenditure

$$\Rightarrow \text{A's income} = 60 \text{ units.}$$

$$\text{A's expenditure} = 70X/100 \text{ units.}$$

$$\text{But } 60 = 75/100 \times X \Rightarrow X = 80.$$

$$\text{i.e., B's saving} = (100 - 80) \text{ units} = 20 \text{ units.}$$

$$\text{Hence A's saving} = 60 - \frac{70}{100} \times 80 = 4 \text{ units.}$$

$$\text{i.e., A's saving : B's saving} = 4 : 20 = 1 : 5.$$

30. (a) Decrease in production is only due to decrease in manpower. Hence, manpower is decreased by 25%

Now, suppose that to restore the same production, working hours are increased by  $x\%$

$$\text{Production} = \text{Manpower} \times \text{Working hours} \\ = M \times W \text{ (say)}$$

$$\text{Now, } M \times W = (M - 25\% \text{ of } M) \times (W + x\% \text{ of } W)$$

$$\text{or, } M \times W = \frac{75}{100} M \times \frac{100+x}{100} W$$

$$\text{or, } 100 \times 100 = 75(100 + x)$$

$$\text{or, } \frac{400}{3} = 100 + x \quad \therefore x = \frac{100}{3} = 33\frac{1}{3}\%$$

31. (b) Let original number = 100  
 New number = 120% of 120% of 100

$$= \left( \frac{120}{100} \times \frac{120}{100} \times 100 \right) = 144.$$

$$\text{Decrease on } 144 = 44. \text{ Decrease on } 100$$

$$= \left( \frac{44}{144} \times 100 \right) \% = 30\frac{5}{9}\%$$

32. (d) Number of ticketless travellers in April

$$= 4000 \times \left( 1 + \frac{5}{100} \right) \left( 1 - \frac{5}{100} \right) \left( 1 - \frac{10}{100} \right)$$

$$= \left( 4000 \times \frac{21}{20} \times \frac{19}{20} \times \frac{9}{10} \right) = 3591.$$

33. (d) Weight of water in the mixture of 60 g water  
 $= 60 \times \frac{75}{100} = 45 \text{ g}$

$$\text{weight of water in the mixture of 45 g water} \\ = 45 + 15 = 60 \text{ g}$$

$$\therefore \text{Percentage of water} = \frac{60 \times 100}{75} = 80\%$$

34. (a) Servant's commission amount  
 $= 6000 - 1500 = ₹ 4500$   
 i.e., 15% = 4500

$$\text{or, } 100\% = \frac{4500}{15} \times 100 = ₹ 30000$$

35. (d) Let the total number of children =  $x$

$$\text{Then, } \frac{720}{x} = 20\% \text{ of } x = \frac{20}{100} \times x = \frac{x}{5}$$

$$\Rightarrow x^2 = 720 \times 5 = 3600$$

$$\Rightarrow x = 60$$

$$\therefore \text{Each child receive} = \frac{720}{60} = 12 \text{ sweets}$$

36. (a) Suppose price of the printer =  $P$

$$\therefore \text{Price of a computer} = 3P$$

$$\text{Total cost of 60 computers} = 180P$$

$$\text{Total cost of 20 printers} = 20P$$

$$\therefore \text{Total cost of the purchase} = 200P$$

Thus total cost of the printers is 10% of the total cost.

37. (d) Population after 2000 = 3244800

$$\text{Population after 2001} = 2985216$$

$$\text{Population at the end of 2003} = 3228810$$

38. (c) Non-defective products

$$\frac{25 \times 0.98 + 35 \times 0.96 + 40 \times 0.95}{100} \times 100 = 96.1\%$$

39. (a) On ₹ 100 he saves ₹ 6. On 115 he still saves ₹ 6.  
 percentage increase of 15 on 94 = 15.95%

40. (c) Half yearly exam

100

Pass (70)      Fail (30)

Annual exam

$$\frac{70 \times 0.6}{42} + \frac{30 \times 0.8}{24}$$

$$\therefore \text{Total pass in annual exam} = 42 + 24 = 66$$

41. (a) Solution = 100 ml and Alcohol = 40 ml

For first vessel

$$\frac{40 + x}{100 + x} = \frac{1}{2}$$

$$\text{so, } x = 20 \text{ ml}$$



For second vessel

$$\frac{40 + \frac{3}{5}y}{100 + \frac{2}{5}y} = \frac{1}{2}$$

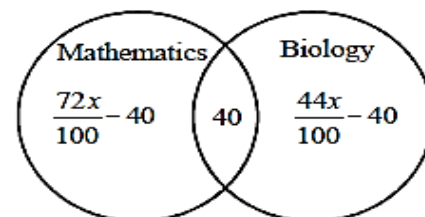
so,  $y = 25\text{ml}$

$$\text{Required percentage} = \frac{5}{25} \times 100 = 20\%$$

42. (d) Total land of Sukhiya =  $\frac{480x}{0.6} = 800x$   
 $\therefore$  Cultivated land of village =  $384000x$   
 $\therefore$  Required percentage =  $\frac{800x}{384000} \times 100 = 0.20833$ .
43. (b) Total votes = 6000. Valid votes = 75% of 6000 = 4500. Bhiku gets 65% of 4500 votes and Mhatre gets 35% of 4500. Hence, Mhatre gets:  $0.35 \times 4500 = 1575$  votes.
44. (b) Solve using options. Checking for option (b), gives us:  
 $200000 \rightarrow 180000 \rightarrow 171000 \rightarrow 153900 \rightarrow 146205$   
 (by consecutively decreasing 200000 by 10% and 5% alternately)
45. (a) Solve through trial and error using the options. 12% (option (a)) is the only value that fits the situation.
46. (d) Salary of Dheeraj = ₹ 100  
 Salary of Anil = ₹ 80  
 Salary of Vinit = ₹ 70  
 $\text{Required percent} = \frac{10}{70} \times 100 = 14.28\%$
47. (d) Let population = 100  
 At least 50 people read a newspaper  
 At most 12.5 people read more than a newspaper  
 Hence, at least 37.5 people read only one newspaper.
48. (a) Let monthly income be  $y$   
 Let money spent on grocery, clothes and education be  $4x, 2x, 5x$   
 Money spent of clothes = ₹ 5540 =  $2x$   
 $x = 2770$   
 Now  $4x + 2x + 5x = 11x = 11 \times 2770$   
 $= 30470 = 55\%$  of  $y$   
 $y = \frac{30470 \times 100}{55}$   
 $y = ₹ 55,400$
49. (e) Let the two number be  $x$  and  $y$ .  
 $35\%x = 2 \times 75\%y$   
 $35\%x = 150\%y$   
 $\frac{35}{100} \times x = \frac{150}{100} \times y$   
 $35x = 150y$

$$\frac{x}{y} = \frac{150 \cdot 30}{35 \cdot 7}, x:y = 30:7$$

50. (a) No. of boys, last year = 610  
 20% of 610 = 122  
 No. of boys, current year =  $610 - 122 = 488$   
 No. of girls = 175% of 488  
 $= \frac{175 \times 488}{100} = 854$  girls
51. (c) Let maximum marks of test =  $x$   
 Vidya marks =  $350 + 296 = 646 = 76\%$  of  $x$   
 $x = \frac{646 \times 100}{76} = 850$
52. (e) Let initial marks of student =  $x$   
 After Re-evaluation marks reduced by 40% of  $x$   
 New score = 60% of  $x = 96$   
 $= \frac{60}{100} \times x = 96$   
 $x = \frac{96 \times 100}{60}$   
 $x = 160$   
 Marks lose =  $160 - 96 = 64$ .
53. (e) No. of candidates selected for job = 20% of 855  
 $= \frac{20 \times 855}{100} = 171$
54. (d) Total cost price =  $200 \times 10 = ₹ 2000$   
 Total selling price =  $12 \times 195 = ₹ 2340$   
 $\therefore$  Profit per cent =  $\frac{2340 - 2000}{2000} \times 100 = 17\%$
55. (a) Saving percentage =  $(100 - 55)\% = 45\%$   
 If the income of Ajay be ₹  $x$ , then,  
 $\frac{45 \times x}{100} = 27000$   
 $\Rightarrow x = \frac{27000 \times 100}{45} = ₹ 60000$
56. (c) Salary in May 2000 = ₹ 15000  
 Salary in July 2000  $\Rightarrow 15000 + 10\%$  of 15000 = ₹ 16500  
 Salary in October 2001 =  $16500 + 10\%$  of 16500 = ₹ 18150
57. (c) Let the total number of students in the class be  $x$ .







$$\therefore \frac{72x}{100} - 40 + 40 + \frac{44x}{100} - 40 = x$$

$$\Rightarrow \frac{72x}{100} + \frac{44x}{100} - x = 40$$

$$\Rightarrow \frac{16x}{100} = 40 \Rightarrow x = \frac{40 \times 100}{16}$$

$$\Rightarrow x = 250$$

58. (c) If the number of trees in the garden be  $x$ , then

$$x \times \frac{60}{100} \times \frac{25}{100} \times \frac{20}{100} = 1500$$

$$\Rightarrow x \times \frac{3}{5} \times \frac{1}{4} \times \frac{1}{5} = 1500$$

$$\Rightarrow x = \frac{1500 \times 5 \times 4 \times 5}{3} = 50000$$

59. (b)  $\frac{P-Q}{2} = (P+Q) \times \frac{30}{100}$

$$\Rightarrow 5(P-Q) = (P+Q) \times 3$$

$$\Rightarrow 5P - 3P = 5Q + 3Q$$

$$\Rightarrow 2P = 8Q \Rightarrow P = 4Q$$

$$Q = \frac{x}{100} \times P$$

$$Q = \frac{x}{100} \times 4Q$$

$$\Rightarrow \frac{4x}{100} \Rightarrow x = 25$$

60. (d) Let the total number of students be  $x$ .

Let  $A$  and  $B$  represent the sets of students who passed in English and Mathematics respectively.

Then, number of students passed in one or both the subjects

$$= n(A \cup B) = n(A) + n(B) - n(A \cap B)$$

$$= 75\% \text{ of } x + 60\% \text{ of } x - (x - 25\% \text{ of } x)$$

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

$$\text{So, } \frac{3}{5}x = 240$$

$$x = \frac{240 \times 5}{3} = 400$$

61. (b)  $\frac{40}{100} \times \frac{4}{5} \times \frac{3}{4} \times x = 48$

$$\frac{6}{25}x = 48$$

$$x = \frac{48 \times 25}{6} = 200$$

1% of 200 is 2.

62. (d) % of votes secured by second candidate =  $(100 - 57) = 43\%$

Let total votes polled be  $x$ .

According to question,

$$(57 - 43)\% \text{ of } x = 42000$$

$$14\% \text{ of } x = 42000 \Rightarrow x = 3,00,000$$

63. (c) Let the number is  $x$ .

According to question

$$x - 10\% \text{ of } x = 30$$

$$x - \frac{10}{100}x = 30$$

$$\left(\frac{100-10}{100}\right)x = 30$$

$$x = \frac{30 \times 100}{90} = 33\frac{1}{3}$$

Hence, the number is  $33\frac{1}{3}$

64. (c) Required percentage =  $\frac{24}{40} \times 100 = 60\%$

65. (a)  $\frac{125}{100} \times x = 100$

$$\Rightarrow x = \frac{100 \times 100}{125} = 80$$

66. (b) Marks of Supriyo =  $x$  marks

According to question

Mahuya marks = Supriyo marks - 10% of Supriyo marks

$$81 = x - 10\% \text{ of } x \Rightarrow x \left(1 - \frac{10}{100}\right)$$

$$81 = \frac{9}{10}x \Rightarrow \frac{810}{9} = x$$

$\therefore x = 90$  marks

67. (a)  $R = S + 0.2S = 1.2S$

$$\left(\frac{R-S}{R}\right) \times 100 = \left(1 - \frac{S}{R}\right) \times 100$$

$$= \left(1 - \frac{1}{1.2}\right) \times 100$$

$$= \frac{100}{6} = \frac{50}{3} = 16\frac{2}{3}$$

68. (a)  $\frac{1}{100} \times \frac{1}{100} \times \frac{25}{100} \times 1000 = 0.025$