

Percentage Exercise

1. If $3x + 7 = x^2 + M = 7x + 5$, what is the value of 120% of M?
(a) 8.90 (b) 9.90
(c) 9.98 (d) None of these
2. P is six times as large as q. The percent that q is less than p, is
(a) $16\frac{2}{3}$ (b) 60
(c) $83\frac{1}{3}$ (d) 90
3. If two numbers are respectively 20% and 50% of a third number, what is the percentage of the first number to the second?
(a) 10 (b) 20
(c) 30 (d) 40
4. A sum of Rs 4558 is divided among A, B and C such that A receives 20% more than C, and C receives 25% less than B. What is A's share in the amount?
(a) Rs 1548 (b) Rs 1720
(c) Rs 1290 (d) Rs 1345
5. The digit at unit place of a two-digit number is increased by 100% and the digit at ten places of the same number is increased by 50%. The new number thus formed is 19 more than the original number. What is the original number?
(a) 22 (b) 63
(c) 24 (d) None of these
6. The owner of a boutique decides to calculate the percentage of customers who purchase hats. If 40 per cent of the store's customers decide to purchase items, and of those customers 15 percent purchase hats, then what per cent of the store's customers purchase hats?
(a) 4% (b) 6%
(c) 15% (d) 24%
7. Groundnut oil is now being sold at Rs 27 per kg. During last month its cost was Rs 24 per kg. Find by how much % a family should reduce its consumption, so as to keep the expenditure same.
(a) $11\frac{1}{9}\%$ (b) $11\frac{1}{11}\%$
(c) $11\frac{9}{10}\%$ (d) $9\frac{1}{10}\%$
8. 10% of the inhabitants of a village having died of cholera, a panic set in, during which 25% of the remaining inhabitants left the village. The population is then reduced to 4050. Find the number of original inhabitants.
(a) 5000 (b) 6000
(c) 7000 (d) 8000
9. Chunilal invests 65% in machinery, 20% in raw material and still has Rs 1,305 cash with him. Find his total investment.
(a) Rs 6,500 (b) Rs 7,225
(c) Rs 8,500 (d) None of these
10. When the price of a pressure cooker was increased by 15%, the sale of pressure cookers decreased by 15%. What was the net effect on the sales?
(a) 15% decrease (b) no effect
(c) 2.25% increase (d) 2.25% decrease
11. If 12% of 75% is greater than 5% of a number by 75, the number is
(a) 1875 (b) 1890
(c) 1845 (d) 1860
12. When the price of sugar was increased by 32%, a family reduced its consumption in such a way that the expenditure on sugar was only 10%

- more than before. If 30 kg were consumed per month before, find the new monthly consumption.
- (a) 20kg (b) 25kg
(c) 30 kg (d) None of these
13. A's income is 60% of B's income, and A's expenditure is 70% of B's expenditure. If A's income is 75% of B's expenditure, find the ratio of A's savings to B's savings.
- (a) 5:1 (b) 1:5
(c) 3.5:1 (d) 2:7
14. The ratio of salary of a workers in July to that in June was $2\frac{1}{2} : 2\frac{1}{4}$, by what % the salary of July more than salary of June. Also find by what % salary if June was less than that of July.
- (a) $11\frac{1}{9}\%$ and 10% (b) 10% and $11\frac{1}{9}\%$
(c) Both 10% (d) Both $11\frac{1}{9}\%$
15. In a housing society, 30 per cent of the residents are men over the age of 18 and 40 per cent are women over the age of 18. If there are 24 children living in the housing society, then how many total residents live?
- (a) 32 (b) 80
(c) 94 (d) 112
16. There is an increase of 30% in the production of milk chocolates in Amul Dairy in one month. If now it is 9, 100 milk chocolates per month, what was it on month ago?
- (a) 10,000 chocolates (b) 9000 chocolates
(c) 8000 chocolates (d) 7000 chocolates
17. In a college election between two rivals, a candidate who got 40% of the total votes polled, was defeated by his rival by 160 votes, The total number of votes polled was
- (a) 900 (b) 800
(c) 700 (d) 600
18. A scooter costs Rs25,000 when it is brand new. At the end of each year, its value is only 80% of what it was at the beginning of the year. What is the value of the scooter at the end of 3 years?
- (a) Rs 10,000 (b) Rs 12,500
(c) Rs 12,800 (d) Rs 12,000
19. The income of A is 150% of the income of B and the income of C is 120% of the income of A. If the total income of A, B and C together is Rs 86000, what is C's income?
- (a) Rs 30000 (b) Rs 32000
(c) Rs 20000 (d) Rs 36000
20. If the price of sugar id increased by 7%, then by how much per cent should a housewife reduce her consumption of sugar, to have no extra expenditure?
- (a) 7 over 107% (b) 107 over 100%
(c) 100 over 107% (d) 7%
21. A Student X passes his examination with 515 marks, having scored 3% above the minimum. If Y had obtained 710 marks, what % would have been above the minimum?
- (a) 40% (b) 42%
(c) 50% (d) Cannotbe determined
22. Ravi's salary is 150% of Amit's salary. Amit's salary is 80% of Ram's salary. What is the ratio of Ram's salary to Ravi's salary?
- (a) 1:2 (b) 2:3
(c) 5:6 (d) 6:5
23. In a shipment of 120 machine parts, 5 per cent were defective. In an another shipment of 80 machine parts, 10 per

- cent were also defective. For the two shipments combined, what per cent of the machine parts were defective?
- (a) 6.5% (b) 7.0%
(c) 7.5% (d) 8.0%
24. The sum of two numbers is $\frac{28}{25}$ of the first number. The second number is what percent of the first?
- (a) 12% (b) 14%
(c) 16% (d) 18%
25. In a class, 65% of the students are boys. On a particular day 80% of girl students were present. What was the fraction of boys who were present that day if the total number of students present that day was 70%?
- (a) $\frac{2}{3}$ (b) $\frac{28}{65}$
(c) $\frac{5}{6}$ (d) $\frac{42}{65}$
26. In a competitive examination in State A, 6% candidates got selected from the total appeared candidates. State B had an equal number of candidates appeared and 7% candidates got selected with 80 more candidates got selected than A. What was the number of candidates appeared from each State?
- (a) 7600 (b) 8000
(c) 8400 (d) Data inadequate
27. By reduction of 20% in the price of oranges, one can purchase 5 oranges more for Rs 2.50. Find the reduced price of the oranges per dozen and also the original price.
- (a) 120 paise, 140 paise (b) Rs 0.8, Rs 1.5
(c) Rs 1.0, Rs 1.5 (d) Rs 1.2., Rs 1.5
28. An inspector rejects 0.08% of the meters as defective. How many metres will he examine to reject 2 metres?
- (a) 200m (b) 250m
(c) 2500m (d) 3000m
29. In a certain school, 20% of students are below 8 years of age. The number of students above 8 years age is $\frac{2}{3}$ of the number of students of 8 years age which is 48. What is the total number of students in the school.
- (a) 72 (b) 80
(c) 120 (d) None of these
30. A positive number is by mistake divided by 6 instead of being multiplied by 6. What is the % error on the basis of correct answer?
- (a) 3 (b) 97
(c) 17 (d) 83
31. From the salary of an officer, 10% is deducted as house rent, 20% of the rest, he spend on conveyance, 20% of the rest he pays as income tax and 10% of the balance, he spends on clothes. Then, he is left with Rs15,552. Find his total salary.
- (a) Rs 25,000 (b) Rs 30,000
(c) Rs 35,000 (d) Rs 40,000
32. If the radius of the circle is diminished by 10%, the area is diminished by
- (a) 36% (b) 20%
(c) 19% (d) 10%
33. Anthony got 30% of the maximum marks in an examination and failed by 10 marks. However, Amar who took the same examination got 40% of the total marks and got 15 more than the passing marks in the examination. What were the passing marks in the examination?
- (a) 35 (b) 250
(c) 75 (d) 85
34. In an election between two candidates, 75% of the voters cast their votes, out of which 2% of the votes were declared

- invalid. A candidate got 9261 votes which were 75% of total valid votes. Find the total number of votes enrolled in that election.
- (a) 16080 (b) 16800
(c) 18600 (d) 16008
35. Peter could save 10% of his income. But two years later when his income is increased by 20%, he could save the same amount only as before. By how much percent has his expenditure increased?
- (a) 22% (b) $22\frac{2}{9}\%$
(c) $23\frac{1}{3}\%$ (d) 24%
36. A screw driver and a hammer currently have the same price. If the price of a screw driver rises by 5% and the price of hammer goes up by 3%, then how much more will it cost to buy 3 screw drivers and 3 hammers?
- (a) 3% (b) 4%
(c) 5% (d) 8%
37. A company bought a total of 60 computers and 20 printers to modernise billing operations. If the price of each computer was three times the price of each printer then what per cent of the total cost of the purchase was total cost of the printers?
- (a) 10% (b) 11%
(c) 15% (d) 20%
38. What is the total number of candidates at an examination, if 31% fail, and the number of those who pass exceeds the number of those who fail by 247?
- (a) 605 (b) 560
(c) 650 (d) 1,650
39. In an election between two candidates, the candidate who gets 30% of the votes polled is defeated by 15,000 votes. What is the number of votes polled by the winning candidate?
- (a) 11,250 (b) 15,000
(c) 26,250 (d) 37,500
40. In measuring the side of a square, an error of 5% in excess is made. The error % in the calculated area is,
- (a) $10\frac{1}{4}\%$ (b) $10\frac{3}{4}\%$
(c) $1\frac{3}{4}$ (d) 25%
41. If A's salary is 25% higher than B's salary, then how much per cent is B's salary lower than A's?
- (a) $16\frac{1}{3}\%$ (b) 20%
(c) 25% (d) $33\frac{1}{3}\%$
42. In the month of January, the railway Police caught 4000 ticketless travellers. In February, the number rise by 5%. However, due to constant vigil by the Police and the Railway staff, the number reduced by 5% and in April it further reduced by 10%. The total number of ticketless travellers caught in the month of April was:
- (a) 3125 (b) 3255
(c) 3575 (d) 3591
43. The total population of a village is 5000. The number of males and females increases by 10% and 15% respectively and consequently the population of the village becomes 5600. What was the number of males in the village? (a) 2000 (b) 2500 (c) 3000 (d) 4000
44. An empty fuel tank of a car was filled with A type petrol. When the tank was half-empty, it was filled with B type petrol. Again when the tank was half-empty, it was filled with A type petrol. When the tank was half-empty again, it was filled with B type petrol. What is the percentage of A type petrol at present in the tank?
- (a) 33.5% (b) 37.5%

- (c) 40% (d) 50%
45. In an examination, 65% students passed in Civics and 60% in History, 40% passed in both of these subjects. If 90 students failed in History and Civics both, then what is the total number of students?
- (a) 600 (b) 650
(c) 700 (d) 750
46. 40% of the people read newspaper X, 50% read newspaper Y and 10% read both the papers. What percentage of the people read neither newspaper?
- (a) 10% (b) 15%
(c) 20% (d) 25%
47. 40% of the students in college play basketball, 34% of the students play tennis and the number of students who play both the game is 234. The number of students who neither play basketball nor tennis is 52%. Determine the total number of students in the college.
- (a) 750 (b) 960
(c) 900 (d) 850
48. The length of a rectangular plot is increased by 25%. To keep its area unchanged, the width of the plot should be:
- (a) kept unchanged (b) increased by 25%
(c) increased by 20% (d) reduced by 20%
49. A store raised the price of an item by exactly 10 per cent. Which of the following could not be the resulting price of the item?
- (a) Rs 5.50 (b) Rs 7.60
(c) Rs 11.00 (d) Rs 12.10
50. When the cost of petroleum increases by 40%, a man reduces his annual consumption by 20%. Find the percentage change in his annual expenditure on petroleum.
- (a) 20% (b) 16%
(c) 12% (d) 40%
51. A reduction of 20% in the price of an apple enable a man to buy 10 apple more for `54. The reduced price of apple per dozen is
- (a) Rs 4.32 (b) Rs 12.96
(c) Rs 10.80 (d) Rs 14.40
52. After three successive equal percentage rise in the salary the sum of 100 rupees turned into 133 rupees and 10 paise. Find the percentage rise in the salary.
- (a) 13% (b) 10%
(c) 15% (d) 14%
53. In an examination in which full mark were 500, A got 10% less then B. B got 25% more than C. C got 20% less than D. If a got 360 marks what % of full mark was obtained by D. (a) 90%
(b) 80%
(c) 50% (d) 60%
54. In an examination 35% of total student failed in Hindi 45% failed in English and 20% in both. Find the percentage of those who passed in both the subjects.
- (a) 40% (b) 60%
(c) 50% (d) 30%
55. In an examination 80% of student passed in English 85% in mathematics and 75% in both English and mathematics. If 40 student failed in both the subject find total number of students.
- (a) 350 (b) 400
(c) 450 (d) 600
56. The length of a rectangle is increased by 15% and breadth decreased by 15%. Then the area of the new rectangle is
- (a) unchanged (b) increased by 2.25%
(c) decreased by 2.25% (d) increased by 15%

ANSWER KEY				
1.(b)	2.(c)	3.(d)	4.(a)	5.(d)
6.(b)	7.(a)	8.(b)	9.(d)	10.(d)
11.(a)	12.(b)	13.(b)	14.(a)	15.(b)
16.(d)	17.(b)	18.(c)	19.(d)	20.(a)
21.(b)	22.(c)	23.(b)	24.(a)	25.(d)
26.(b)	27.(d)	28.(c)	29.(d)	30.(b)
31.(b)	32.(c)	33.(d)	34.(b)	35.(b)
36.(b)	37.(a)	38.(c)	39.(c)	40.(a)
41.(b)	42.(d)	43.(c)	44.(b)	45.(a)
46.(c)	47.(c)	48.(d)	49.(b)	50.(c)
51.(b)	52.(b)	53.(b)	54.(a)	55.(b)
56.(c)				

HINTS & EXPLANATIONS

- (b) If $3x + 7 = x^2 + M = 7x + 5$
ie, $3x + 7 = 7x + 5$
or, $4x = 2, \therefore x = \frac{1}{2}$
and $3x + 7 = x^2 + M$
or, $\frac{1}{4} + M = \frac{3}{2} + 7 \Rightarrow M + \frac{1}{4} = 8 + \frac{1}{2}$
 $\therefore M = 8\frac{1}{4}, 120\% \text{ of } M = 9.90$
- (c) $p = 6q$ So, q is less than p by $5q$.

$$\therefore \text{Required percentage} = \left(\frac{5q}{p} \times 100\right)\%$$

$$= \left(\frac{5q}{6p} \times 100\right)\% = 83\frac{1}{3}\%$$

- (d) Let the third number be 100. Then, the first and second numbers will be 20 and 50, respectively.
Required % = $\frac{20}{50} \times 100 = 40\%$
- (a) Let B get Rs x . Then C gets = 75% of $x = \frac{3x}{4}$ and A gets = 120% of $\frac{3x}{4} = \frac{120}{100} \times \frac{3x}{4} = \frac{9x}{10}$ Now, $\frac{9x}{10} + \frac{3x}{4} + x = 4558$
 $\Rightarrow \frac{53x}{20} = 4558 \Rightarrow x = \frac{4558 \times 20}{53} = 1720$
Hence, A's share = $\frac{9x}{10} = \text{Rs } \frac{9 \times 1720}{10} = \text{Rs } 1548$
- (d) Working with options, we have

Original Number	New Number	Difference
(a) 22	34	12
(b) 63	96	33
(c) 24	38	14

Obviously (d) is the correct option
- (b) Let total customers be 100
40 of them purchase item and 15% of 40 = $\frac{15}{100} \times 40 = 6$ customers purchase hats which is only 6% of total customers.
- (a) % change in rate = $\frac{27-24}{24} \times 100 = \frac{100}{8}\%$ For fixed expenditure, % change in consumption = $\frac{\% \text{ change in rate}}{100 + \% \text{ change in rate}} \times 100$
 $= \frac{100/8}{100 + [1 + \frac{1}{8}]} \times 100 = \frac{100}{9}\% = 11\frac{1}{9}\%$

8. (b) Let the total number of original inhabitants be x . Then, $(100-25)\%$ of $(100-10)\%$ of $x = 4050$
 $\Rightarrow \left(\frac{75}{100} \times \frac{90}{100} \times x\right) = 4050 \Rightarrow \frac{27}{40}x$
 $= 4050 \Rightarrow \left(\frac{4050 \times 40}{27}\right) = 6000$.
 \therefore Number of original inhabitants = 6000.
9. (d) Let he had original x . Then 65% of $x + 20\%$ of $x + 1305 = x$
 $0.65x + 0.2x + 1305 = x$
 $\Rightarrow 0.15x = 1305 \Rightarrow x = \text{Rs } 8700$
 \therefore His total investment = 65% of $8700 + 20\%$ of $8700 = 85\%$ of $8700 = \text{Rs } 7395$
10. (d) Net effect on sale = $\frac{(\text{common \% change})^2}{100} = \frac{-(15)^2}{100} = 2.25\%$ decrease
11. (a) Let the number be x ,
 Then, $\frac{12}{100} \times \frac{75}{100} \times x - \frac{5}{100} \times x = 75$
 $\Rightarrow \frac{9x}{100} - \frac{5x}{100} = 75 \Rightarrow \frac{4x}{100} = 75$
 $\Rightarrow x = \frac{75 \times 100}{4} = 1875$
12. (b) Since, expenditure = price \times consumption
 $\therefore 110\%$ of $30 = \frac{132}{100} \times$ new consumption
 $\Rightarrow \frac{110}{100} \times 30 = \frac{132}{100} \times$ new consumption
 \Rightarrow New consumption = 25kg
13. (b) Let B's Income = Rs x
 A's Income = Rs $\frac{3}{5}x$
 And B's expenditure = Rs y
 A's expenditure = Rs $\frac{7}{10}y$
 Also, $\frac{3}{5}x = \frac{3}{4} \cdot \frac{7}{10}y$

- $$\frac{A's \text{ savings}}{B's \text{ savings}} = \frac{x - y}{\frac{3}{5}x - \frac{7}{10}y}$$
- $$= \frac{\frac{7}{8}y - y}{\frac{3}{5} \cdot \frac{7}{8}y - \frac{7}{10}y}$$
- $$= \frac{-y/8}{\frac{21y}{40} - \frac{7}{10}y}$$
- $$= \frac{5}{25} = 1:5$$
14. (a) Let the salary of July be $\frac{5}{2}x$ and the salary of June be Rs $\frac{9}{4}x$. Required percentages $= \frac{\frac{5}{2}x - \frac{9}{4}x}{\frac{9}{4}x} \times 100$ and $\frac{\frac{5}{2}x - \frac{9}{4}x}{\frac{5}{2}x} \times 100$
 $= \frac{100}{9}\%$ and $\frac{100}{10}\% = 11\frac{1}{9}\%$ and 10%
15. (b) 30% of the residents are children.
 $\therefore 30\%$ of the total residents = 24
 \therefore Total number of residents in the society = $\frac{24}{30} \times 100 = 80$
16. (d) Let one month ago, production be x chocolates. Then, 130% of $x = 9100$
 $\Rightarrow x = \frac{9100 \times 100}{130} = 7000$ chocolates
17. (b) Let total number of votes polled be x .
 Then, votes polled by other candidate $= (100-40)\%$ of $x = 60\%$ of x
 Now 60% of $x - 40\%$ of $x = 160$
 $\Rightarrow \frac{20x}{100} = 160 \Rightarrow x = 80$ votes
18. (c) Cost of scooter = Rs 25,000
 Cost of scooter decrease 20% each year with respect to the cost of scooter at the end of 3 years

- $$= 25,000 \left(1 - \frac{20}{100}\right)^3$$

$$= 25,000 \times \frac{4}{5} \times \frac{4}{5} \times \frac{4}{5} = \text{Rs } 12,800$$
19. (d) Suppose Income of B = Rs x
 Income of A = $\frac{150}{100} \times x = \text{Rs } \frac{3x}{2}$
 Income of C = $\frac{120}{100} \times \frac{3x}{2}$

$$\frac{6}{5} \times \frac{3x}{2} = \frac{9x}{5}$$

$$\therefore x + \frac{3x}{2} + \frac{9x}{5} = 86000$$

$$\frac{10x + 15x + 18x}{10} = 86000$$

$$43x = 860000$$

$$x = 20000$$

 So, income of C = $\frac{9}{5} \times 20000 = \text{Rs } 36000$
20. (a) % reduction in consumption

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

$$= \frac{7}{100+7} \% = \frac{7}{107} \%$$
21. (b)

$$\therefore \frac{\text{Marks of y}}{\text{Marks of x}} = \frac{100 + \% \text{ above minimum of y}}{100 + \% \text{ above minimum of x}}$$

$$\Rightarrow \frac{710}{515} = \frac{100+y}{103} \Rightarrow 100 + y = \frac{710 \times 103}{515} = 142$$

$$\Rightarrow y = 42\%$$
22. (c) Let the salary of Ram be Rs 100.
 Then, salary of Amit = Rs 80 and salary of Ravi = Rs 120
 Ratio of Ram's salary to Ravi's salary = 100:120
 = 5:6
23. (b) Total no. of machine parts in both the shipments = (120+80)=200
 Total defective machine parts in both the shipments = $120 \times 5\% + 80 \times 10\% = 6+8=14$

- Therefore, required % = $\frac{14}{200} \times 100 = 7\%$
24. (a) Let the numbers be x and y.
 Then,

$$x + y = \frac{28}{25}x \Rightarrow y = \frac{28}{25}x - x \Rightarrow y = \frac{3}{25}x$$

$$\Rightarrow \frac{y}{x} = \left(\frac{3}{25} \times 100\right) \% = 12\%$$
25. (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 Required fraction = 42/65.
26. (b) Let the number of candidates appeared from each state be x.
 Then, 7% of x - 6% of x = 80 \Rightarrow 1% of x = 80
 $\Rightarrow x = 80 \times 100 = 8000$
27. (d) Let original price be Rs x per orange. Then, Reduced rate = (1-0.2)x = Rs 0.8x

$$\therefore \frac{2.50}{0.8x} - \frac{2.50}{x} = 5 \Rightarrow \frac{25}{8x} - \frac{2.5}{x} = 5$$

$$\Rightarrow x = \frac{1}{8}$$

 \therefore Original price of oranges per dozen $\frac{1}{8} \times 12 = 1.5$ and Reduced price = Rs (0.8)(1.5) = Rs 1.2
28. (c) Let the inspector examined x metres, then 0.08% of x = 2

$$\Rightarrow \frac{x \times 0.08}{100} = 2 \text{ or } x = \frac{200}{0.08} = 2500 \text{ meters}$$

29. (d) Let the number of students be x .
Then, Total number of students of 8 years and above 8 years
= $(100-20)\%$ of $x = 80\%$ of x .
 $\therefore 80\%$ of $x = 48 + \frac{2}{3}$ of $48 \Rightarrow \frac{80}{100}x = 80 \Rightarrow x = 100$.
30. (b) Let the number be x . Then,
% error = $\frac{6x-x/6}{6x} \times 100 = \frac{35}{36} \times 100 = 97.2\%$
31. (b) Let the total salary be Rs x .
Then, $(100-10)\%$ of $(100-20)\%$ of $(100-20)\%$ of $(100-10)\%$ of $x = 15552$
 $\Rightarrow \left(\frac{90}{100} \times \frac{80}{100} \times \frac{80}{100} \times \frac{90}{100} \times x\right) = 15552$
 $\Rightarrow x = \left(\frac{15552 \times 10000}{64 \times 81}\right) = 30,000$.
32. (c) If the radius is diminished by $r\%$, then
Area is diminished by $(2r - r^2)100\% = 2 \times 10 - 10^2 100 = 19\%$
33. (d) Let the maximum marks be x .
Then, $x \times 30\% + 10 = x \times 40\% - 15$
 $\Rightarrow x \times 10\% = 25$ or $x = 250$
Therefore, passing marks = $250 \times \frac{30}{100} + 10 = 85$
34. (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).
 $\therefore 75\%$ of $[98\%$ of $(75\%$ of $x)] = 9261$
 $\Rightarrow \left(\frac{75}{100} \times \frac{98}{100} \times \frac{75}{100} \times x\right) = 9261$
 $\Rightarrow x = \left(\frac{9261 \times 100 \times 100 \times 100}{75 \times 98 \times 75}\right) = 16800$
35. (b) Let original income = Rs. 100.
Then, saving = Rs 10 and expenditure = Rs 90.
New income = Rs 120, New saving = Rs 10.
New expenditure = RS $(120-10) =$ Rs 110.
Increase in expenditure = Rs $(110-90) =$ Rs 20.
 \therefore Increase % = $\left(\frac{20}{90} \times 100\right)\% = 22\frac{2}{9}\%$
36. (b) Let the original price of a screw driver and a hammer be Rs 100 each.
Then, price of 3 screw drivers and 3 hammers = Rs 600 Now, after increase of 5%, the price of 3 screw drivers = Rs 315
And after 3% increase the price of 3 hammers = Rs 309 Increase price of 3 hammers and 3 screw drivers = Rs 624
Therefore, % increase in price = $\frac{24}{600} \times 100 = 4\%$
37. (a) Suppose price of the printer = P
 \therefore Price of a computer = 3P
Total cost of 60 computers = 180 P
Total cost of 20 printers = 20P
 \therefore Total cost of the purchase = 200P
Thus total cost of the printers is 10% of the total cost.
38. (c) Let the total number of candidates = x
Then, number of passed candidates = $(100-31)\%$ of $x = 69\%$ of x
Now, 69% of $x - 31\%$ of $x = 247$
 $\Rightarrow 38\%$ of $x = 247$

- $\Rightarrow \frac{38}{100}x = 247 \Rightarrow x = \frac{247 \times 100}{38} = 650$
39. (c) Let the total number of votes be x
 \therefore votes polled by winning candidate
 $= (100-30)\%$ of $x = 70\%$ of x
 Now, 70% of $x - 30\%$ of $x = 15,000$
 $\Rightarrow 40\%$ of $x = 15,000$
 $\Rightarrow x = \frac{15000 \times 100}{40} = 37,500$
 \therefore number of votes polled by winning candidate
 $= 70\%$ of 37500
 $= \frac{70 \times 37500}{100} = 26,250$
40. (a) If side is increased by a %, area increased by $\left(2a + \frac{a^2}{100}\right)\%$
 $= 2 \times 5 + \frac{5^2}{100} = 10\frac{1}{4}\%$
41. (b) Let B's Salary be Rs 100, then A's salary = Rs 125
 $\%$ lesser $= \frac{125-100}{125} \times 100 = \frac{25}{125} \times 100$
 $= \frac{1}{5} \times 100 = 20\%$
 Short cut method:
 B's Salary is lower than A's salary by $\left(\frac{25}{100+25} \times 100\right)\% = 20\%$
42. (d) Number of ticketless travellers in April
 $= 400 \times \left(1 + \frac{5}{100}\right) \left(1 - \frac{5}{100}\right) \left(1 - \frac{10}{100}\right)$
 $= \left(4000 \times \frac{21}{20} \times \frac{19}{20} \times \frac{9}{10}\right) = 3591$
43. (c) Let the number of males be x . Then, number of females = $(5000-x)$
 $\therefore 10\%$ of $x + 15\%$ of $(5000-x) = (5600-5000)$
 $\Rightarrow \frac{10}{100}x + \frac{15}{100}(5000 - x) = 600$

- $\Rightarrow 10x + 75000 - 15x = 60000$
 $\Rightarrow 5x = 15000 \Rightarrow x = 3000.$
44. (b) Let the capacity of the tank be 100 litres. Then, Initially: A type petrol = 100 litres.
After first operation:
 A type petrol $= \left(\frac{100}{2}\right) = 50$ litres;
 B type petrol = 50 litres.
After second operation:
 A type petrol $= \left(\frac{50}{2} + 50\right) = 75$ litres;
 B type petrol $= (50/2) = 25$ litres.
After third operation:
 A type petrol $= \left(\frac{75}{2}\right) = 37.5$ litres;
 B type petrol $= \left(\frac{25}{2} + 50\right) = 62.5$ litres.
 \therefore Required percentage = 37.5%
45. (a) Let the total number of students be x .
 Number of students passed in one or both is given by:
 $n(A \cup B)$
 $= n(A) + n(B) - n(A \cap B)$
 $= 65\%$ of $x + 60\%$ of $x - 40\%$ of x
 $= \left(\frac{65}{100}x + \frac{60}{100}x - \frac{40}{100}x\right) = \frac{85}{100}x = \frac{17}{20}x.$
 Filed in both $= \left(x - \frac{17}{20}x\right) = \frac{3x}{20}.$
 $\therefore \frac{3x}{20} = 90 \Rightarrow x = \left(\frac{90 \times 20}{3}\right) = 600$
46. (c) $n(A) = 40, n(B) = 50, n(A \cap B) = 10$
 $n(A \cup B) = n(A) + n(B) - n(A \cap B)$
 $= 40 + 50 - 10 = 80$
 \therefore Percentage reading either or both newspapers = 80%

- Hence, percentage reading neither newspaper = $(100-80)\% = 20\%$
47. (c) Let the number of students be 100. Then number of students who play both the games = $(34+40)-(48)=26$
If 26 students play both the games, then the total number of students = 100
Therefore, if 234 students play both the games, then the total number of students
 $= \frac{100}{26} \times 234 = 900$
48. (d) Let the original length and breadth be both 10 cm each. Then original area = 100cm^2
New length = $10 \times 1.25 = 12.5\text{cm}$
Let new breadth be x. Then, $12.5x = 100$
 $\Rightarrow x = \frac{100}{12.5} = 8\text{ cm}$
Hence, % reduction in breadth = $\frac{2}{10} \times 100 = 20\%$
49. (b) $5 + 10\% = 5.50$
 $10 + 10\% = 11$
 $11 + 10\% = 12.10$
50. (c) **First expenditure:** Suppose 10 litres of petroleum at 100 units of money per litre, then total expenditure = 100×100 units of money = 10000 units of money.
Second expenditure: Now 80 litres of petroleum at 140 units of money per litre, total expenditure = 80×140 units of money = 11200 units.
 \Rightarrow Expenditure increase by
 $\frac{11200 - 10000}{10000} \times 100 = 12\%$

Short-cut: $\text{Exp}_1 - \text{PX}$, $\text{Exp}_2 = 1.4\text{ P}$
 $(0.8\text{X}) = 1.12\text{ PX}$.

- \Rightarrow Directly we see, answer = 12%
51. (b) Let the original price of apple be Rs x/dozen
New price Rs = $\frac{4x}{5}$ /dozen.
$$= \frac{54}{\frac{4x}{5}} - \frac{54}{x} = \frac{10}{12}$$

$$\Rightarrow 54 \left(\frac{5}{4x} - \frac{1}{x} \right) = \frac{5}{6}$$

$$\Rightarrow 54 \left(\frac{1}{4x} \right) = \frac{5}{6}$$

$$\Rightarrow 4x = \frac{54 \times 6}{5}$$

$$\Rightarrow \frac{4x}{5} = 12.96$$
52. (b) Let rise in salary be x%
$$100 \left(1 + \frac{x}{100} \right) \left(1 + \frac{x}{100} \right) \left(1 + \frac{x}{100} \right) = 133.1$$

$$\left(1 + \frac{x}{100} \right)^3 = \frac{133.1}{100} = 1.331$$

$$1 + \frac{x}{100} = 1.1$$

$$\frac{x}{100} = 0.1 \Rightarrow x = 10$$

Rise in salary is 10%
53. (b) $360 = x - \frac{x \times 10}{100} = \frac{9x}{10} \Rightarrow x = 400$
when x is mark obtained by B mark obtained by C = y
$$400 = y + y \times \frac{25}{100} = \frac{5y}{4}$$

y = 320 mark obtained by D = z
$$320 = z - z \times \frac{20}{100} = \frac{4z}{5}$$

z = 400
% of mark obtained of D = $\frac{400}{500} \times 100 = 80\%$

54. (a) Let A and B be the sets of students who failed in Hindi and English respectively

$$\text{Then } n(A) = 35$$

$$n(B) = 45$$

$$n(A \cap B) = 20$$

$$n(A \cup B) = n(A) + n(B) - n(A \cap B) \\ = 35 + 45 - 20 = 60$$

% of student failed in Hindi or English or both = 60%

$$\% \text{ percentage passed} = 100 - 60 = 40\%$$

55. (b) Let total no. of student = x
Let A and B represent the sets of students who passed in English and mathematics respectively

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

B)

$$= 80\% \text{ of } x + 85\% \text{ of } x - 75\% \text{ of } x \\ = \frac{80}{100}x + \frac{85}{100}x - \frac{75}{100}x = \frac{90}{100}x = \frac{9x}{10}$$

∴ Students failed in both subjects

$$= x - \frac{9x}{10} = \frac{x}{10}$$

$$\text{So, } \frac{x}{10} = 40 \quad x = 400$$

56. (c) $A = l \times b$

$$A' = \left(l + \frac{15}{100}l\right) \left(b - \frac{15}{100}b\right) \\ = 1.15l \times 0.85b$$

$$A' = 0.9775A$$

$$\% \text{ change} = \frac{A - 0.9775A}{A} \times 100 = 2.25\%$$

GK Study Materials [PDF Download](#)

All subject Study Materials [PDF Download](#)

2018 Current Affairs Download – [PDF Download](#)

Whatsapp Group  [Click Here](#)

Telegram Channel  [Click Here](#)

Join Us on FB : English – [Examsdaily](#)

Follow US on  Twitter - [Examsdaily](#)