# Percentage

# Concept to discuss

1. Conversion of percentage to fraction and vice versa
2. X % of Y = Y% of X
3. Percentage change
4. Percentage Increase and decrease concept
5. Successive increase and decrease
6. Consumption and Expenditure
7. Examination , election and population

**Percentage:** Per means divided and cent means 100.

**To convert any value on the base of hundred**.

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**Conversion of percentage to fraction**: To convert percentage to fraction, divide that percent value by 100.

E.G. 50% = 50/100 = ½
25% = 25/100 = ¼

**Conversion of fraction to percentage**: To convert fraction to percentage multiply the fraction by 100.

For e.g. 3/8 = (3/8)*100 = 37.5 %

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|---|---|---|---|
| $\frac{1}{2} = 50\%$ | | | |
| $\frac{1}{3} = 33\frac{1}{3}\%$ | $\frac{2}{3} = 66\frac{2}{3}\%$ | | |
| $\frac{1}{4} = 25\%$ | $\frac{3}{4} = 75\%$ | | |
| $\frac{1}{5} = 20\%$ | $\frac{2}{5} = 40\%$ | $\frac{3}{5} = 60\%$ | $\frac{4}{5} = 80\%$ |
| $\frac{1}{6} = 16\frac{2}{3}\%$ | $\frac{5}{6} = 83\frac{1}{3}\%$ | | |
| $\frac{1}{7} = 14\frac{2}{7}\%$ | $\frac{2}{7} = 28\frac{4}{7}\%$ | $\frac{3}{7} = 42\frac{6}{7}\%$ | $\frac{4}{7} = 57\frac{1}{7}\%$ |
| | | $\frac{5}{7} = 71\frac{3}{7}\%$ | $\frac{6}{7} = 85\frac{5}{7}\%$ |
| $\frac{1}{8} = 12\frac{1}{2}\%$ | $\frac{3}{8} = 37\frac{1}{2}\%$ | $\frac{5}{8} = 62\frac{1}{2}\%$ | $\frac{7}{8} = 87\frac{1}{2}\%$ |
| $\frac{1}{9} = 11\frac{1}{9}\%$ | $\frac{2}{9} = 22\frac{2}{9}\%$ | $\frac{4}{9} = 44\frac{4}{9}\%$ | $\frac{5}{9} = 55\frac{5}{9}\%$ |
| | | $\frac{7}{9} = 77\frac{7}{9}\%$ | $\frac{8}{9} = 88\frac{8}{9}\%$ |
| $\frac{1}{10} = 10\%$ | $\frac{3}{10} = 30\%$ | $\frac{7}{10} = 70\%$ | $\frac{9}{10} = 90\%$ |
| $\frac{1}{11} = 9\frac{1}{11}\%$ | $\frac{2}{11} = 18\frac{2}{11}\%$ | $\frac{3}{11} = 27\frac{3}{11}\%$ | $\frac{4}{11} = 36\frac{4}{11}\%$ |
| $\frac{1}{12} = 8\frac{1}{3}\%$ | | | |

Question : Find 55.55 % of 45.

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Question : Find 45.45 % of 44

# X % of Y = Y% of X

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Question : Find 45% of 133.33

Answer : 45% of 133.33 = 133.33 % of 45

= (100+33.33)% of 45

= (1+1/3) * 45

= 4/3 * 45

= 60

# Percentage Change

- 40 is what percent of 60?
- 60 is how much percent greater than 40?
- 40 is how much percent lesser than 60?

Question : If A’s salary is 20 % more than B, then by how much Percent B’s salary is less than A.

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(a)20%

(b)25%

(c)16.66%

(d)30%

Question : If A’s marks in an exam is 40 % less than B then by how much % B’s marks are more than A.

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(a)40 %

(b)60 %

(c)66.66 %

(d)20 %

Question : If 16(2/3) % of a number is added to itself the number becomes 700. Find original number.

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(a)400

(b)600

(c)800

(d)700

Question: A student multiplied a number by 3/5 instead of 5/3

What is the percentage error in the calculation?

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(a) 44%

(b) 64%

(c) 40%

(d) 60%

Question: The number was being multiplied by 5/6. By mistake it is divided by 5/6. Find percentage error in result.

(a) 44%

(b) 64%

(c) 40%

(d) 60%

# Successive Increase and Decrease

$$\text{Net change} = a + b + \frac{ab}{100}$$

For Increase = Take positive sign

For decrease = Take negative sign

Question : Price of petrol first increased by 20% and then it is decreased by 10% . Find the net change in the price.

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(a)8 % increase

(b) 2 % decrease

(c) 10 % increase

(d) 8 % decrease

Question : Demand of a car went down by 25 % in 2016 and 20 % in 2017. What is net % decrease in demand?

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(a) 45 %

(b) 40 %

(c) 50 %

(d) 60 %

Question : If the length of a rectangle is increased by 20 % and width is decreased by 30% then find the resultant change in area.

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(a) 16 %

(b) 20 %

(c) 24 %

(d) 28 %

Question : A number is first increased by 15% and then decreased by 20%. The number so obtained is 64 less than the original number. What is the original number?

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(a) 600

(b) 750

(c) 800

(d) 860

Question :If the price of petrol is raised by 20% then the percentage by which a car owner must reduce his consumption so that there is no change in expenditure.

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(a) 16.66 %

(b) 18 %

(c) 15 %

(d) 25 %

We know , **Expenditure = Price × Consumption**

Convert given % into fraction (a/n)

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- If Increase $\frac{a}{n}$ ⟷ Decrease $\frac{a}{n+a}$

For this case if 1/5 increase ---------- 1/6 decrease

1/6 = 100/6 % = 16.66 %

- If Decrease $\frac{a}{n}$ ⟷ Increase $\frac{a}{n-a}$

For this case if 2/5 decrease ---------- 2/3 Increase

Question :If the price of sugar is decreased by 12.5% then the percentage by which one household must increase his consumption so that there is no change in expenditure.

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(a) 10 %

(b) 8 %

(c) 14.28 %

(d) 12.5 %

Question :If the price of commodity is decreased by 20% and its consumption increased by 20%, what will be the change in expenditure.

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(a) 4 % increase

(b) 4 % decrease

(c) 8 % decrease

(d) 8 % increase

Question: If the price of sugar is increased by 25% then by how much percent consumption should be reduced so that the expenditure will increase by only 5%

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(a) 25%

(b) 15%

(c) 16%

(d) 20%

Question :If the price of sugar is reduced by 20% due to which a person can buy 2kg more sugar for Rs. 200. Find the original price of sugar per kg.

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(a) Rs. 25 per Kg

(b) Rs. 20 per Kg

(c) Rs. 22 per Kg

(d) Rs. 16 per Kg

Question: The price of sugar is increased by 30% due to this a housewife purchase 12 kg less sugar so that her expenditure will increase by 10% only. Find her original consumption.

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(a) 70 kg

(b) 80 kg

(c) 75 kg

(d) 78 kg

Question : A student scored 140 Marks and still failed by 35 marks. If the passing criteria of that exam is 35%. Then find the maximum marks of that exam.

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(a) 500

(b) 600

(c) 1000

(d) 700

Question : A student scored 25 % in an examination and still failed by 30 marks while another candidate scored 50% marks and get 20 marks more than the passing marks. Then find the passing percentage.

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(a) 30 %

(b) 40 %

(c) 45 %

(d) 50 %

Question : A student scored 30 % in an examination and still failed by 12 marks while another candidate scored 40% marks and got 28 marks more than the passing marks. Then find the maximum marks in the examination.

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(a) 300

(b) 400

(c) 500

(d) 700

Question: In an Exam, 52% candidates failed in English, 42% in mathematics and 17% in both. What was the number of percentage of passed students in both subjects?

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(a) 23

(b) 77

(c) 6

(d) 94

Question: In an Exam, 70% candidates passed in English, 65% in mathematics and 27% failed in both. If 248 candidates was pass in both the subjects, then What was the total number of students?

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(a) 300

(b) 400

(c) 500

(d) 600

Question : The population of a town is 50,000. It increases by 10% in the first year and 12% in the second year. What will be the population after 2 years.

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(a) 55000

(b) 61600

(c) 72700

(d) 84600

Question : The current population of a town is 28,000.During the last 2 years the population increased at the rate of 16% and 20% per year. The population 2 years ago was (approximately)

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(a) 24000

(b) 22000

(c) 20000

(d) 18000

Question : Raju invest 65% of his investment in a machine and 20% of his investment on raw material. If he has Rs. 6000 balance. Find the total money he had.

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(a) 30000

(b) 40000

(c) 50000

(d) 60000

Question : Raju spend 40% of his salary on house rent. On the remaining 10% spend on travel. On remaining 16(2/3) % spend on food and remaining is saved . Find the money he spent on food.

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(a) Rs. 450

(b) Rs. 400

(c) Rs. 500

(d) Rs. 600

Question: In a library 20% of the books are in Hindi, 50% of the remaining in English and 30% of the remaining are in French and rest 6300 books are in regional language. Then find the number of books in library.

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(a) 20000

(b) 22500

(c) 35000

(d) 15000

Question: In an Election between two candidates one got 65% of the votes and won by 300 votes. Find total no. of votes.

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(a) 1200

(b) 1500

(c) 1800

(d) 1000

Question : In a election of 2 candidate the candidate who gets 40% of the total votes rejected by 80 votes. Find total number of votes.

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(a) 450

(b) 400

(c) 500

(d) 600

Question : In a election of 2 candidate 12 % of the voters did not cast their votes. The winner by getting 45% of the total votes, defeated his rival by 2000 votes. Find the total number of voters.

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(a) 25000

(b) 50000

(c) 80000

(d) 100000

Question: In an Election, 10% persons didn't cast their votes and 10% found to be invalid. The winner got 54% of valid votes and won by 1620 votes. Find total number of votes?

(a) 12500

(b) 17500

(c) 25000

(d) 35000

Question: In an election two candidates participated. 20% voters did not cast their votes, out of which 600 votes declared invalid and the winner get 75% of valid votes and wins by 1500 votes. Find the number of total votes.

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(a) 3600

(b) 3000

(c) 4000

(d) 4500


return
Thank You!