

Percentage

Concept to discuss

1. Conversion of percentage to fraction and vice versa
2. $X \% \text{ of } Y = Y \% \text{ of } X$
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.

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

$$\text{E.G. } 50\% = 50/100 = \frac{1}{2}$$

$$25\% = 25/100 = \frac{1}{4}$$

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

$$\text{For e.g. } \frac{3}{8} = (\frac{3}{8}) * 100 = 37.5 \%$$

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

Question : Find 55.55 % of 45.

Question : Find 45.45 % of 44

$X \% \text{ of } Y = Y \% \text{ of } X$

Question : Find 45% of 133.33

Answer : 45% of 133.33 = 133.33 % of 45

$$= (100+33.33)\% \text{ of } 45$$

$$= (1+1/3) * 45$$

$$= 4/3 * 45$$

$$= 60$$

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.

(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.

(a) 40 %

(b) 60 %

(c) 66.66 %

(d) 20 %

Question : If $16\frac{2}{3}\%$ of a number is added to itself the number becomes 700. Find original number.

(a)400

(b)600

(c)800

(d)700

Question: A student multiplied a number by $\frac{3}{5}$ instead of $\frac{5}{3}$

What is the percentage error in the calculation?

- (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.

- (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?

(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.

(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?

(a) 600

(b) 750

(c) 800

(d) 860

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

Convert given % into fraction (a/n)

- 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 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.

(a) 16.66 %

(b) 18 %

(c) 15 %

(d) 25 %

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.

(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.

(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%

- (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.

(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.

- (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.

- (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.

(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.

(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?

- (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?

(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.

(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)

(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.

- (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 $16\frac{2}{3}$ % spend on food and remaining is saved . Find the money he spent on food.

(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.

- (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.

- (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.

(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.

- (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.

- (a) 3600
- (b) 3000
- (c) 4000
- (d) 4500

