

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.

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.

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

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

Fraction	Percent
1/2	50 %
1/3	33.33 %
2/3	66.67 %
1/4	25 %
2/4	50 %
3/4	75 %
1/5	20 %
2/5	40 %
3/5	60 %
4/5	80 %
1/6	16.67 %
2/6	33.33 %
3/6	50 %
4/6	66.67 %
5/6	83.33 %
1/7	14.285714 %

1/7	14.285714 %
2/7	28.571429 %
3/7	42.857143 %
4/7	57.142858 %
5/7	71.428571 %
6/7	85.714286 %
1/8	12.5 %
2/8	25 %
3/8	37.5 %
4/8	50 %
5/8	62.5 %
6/8	75 %
7/8	87.5 %
1/9	11.111111 %
2/9	22.222222 %
3/9	33.333333 %
4/9	44.444444 %
5/9	55.555556 %
6/9	66.666667 %
7/9	77.777778 %

7/9	77.777778 %
8/9	88.888889 %
1/10	10 %
2/10	20 %
3/10	30 %
4/10	40 %
5/10	50 %
6/10	60 %
7/10	70 %
8/10	80 %
9/10	90 %

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

$$\text{Answer : } 45\% \text{ of } 133.33 = 133.33 \% \text{ of } 45$$

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

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

$$= 4/3 * 45$$

$$= 60$$

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 $\frac{5}{6}$. By mistake it is divided by $\frac{5}{6}$. 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

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 %

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 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

