



# DAV INSTITUTIONS ODISHA, ZONE – 1

Name Of The School : DAV Public School,  
Rajabagicha, Cuttack

Class : VI

Subject : Mathematics

Topic : Percentage And Its Applications

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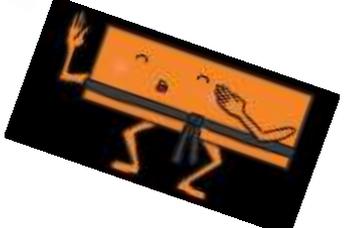
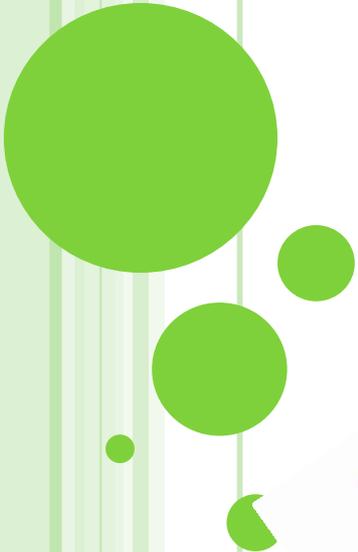


CLASS - VI



MATHEMATICS

PERCENTAGE AND IT'S APPLICATIONS



# LEARNING OBJECTIVES



The students will be able to :

- understand the concept of percentage.
- convert percentage to fractions, decimals and ratios.
- convert fractions, mixed numerals, decimals and ratios to percentage.
- express one quantity as a percent of other quantity.
- find the percentage of any given quantity.
- apply percentage to solve various problems.
- understand the terms S.P, C.P, profit and loss.
- find the profit or loss by comparing S.P and C.P.
- learn the formula to calculate profit percent and loss percent.
- establish the relation between C.P , S.P, profit and loss.
- understand the concept of simple interest.
- understand the terms principal (P), rate of interest (R) and time period (T).
- learn the formula of simple interest and amount.





# INTRODUCTION

The word **per cent** is derived from the Latin word ‘**per centum**’ meaning **per** or ‘**out of a hundred**’. In mathematics, percentages are used like fractions and decimals, as ways to describe parts of a whole. When you are using percentages, the whole is considered to be made up of hundred equal parts. The symbol % is used to show that a number is a percentage.

You will see percentages almost everywhere : in shops, on the internet, in advertisements and in the media. Being able to understand what percentages mean is a key skill that will potentially save you time and money. This is a part of our commercial life.





# PERCENTAGES

- Calculating percentage is one of the simplest and most useful of mathematical tricks.
- It is one of the simplest ways of quantifying things and presenting comparative ratios.
- You will need to know how to calculate percentages as it is a concept used in almost every field where quantification is involved.
- Let us first define what percentage means and then explain a simple formula for calculating percentages.



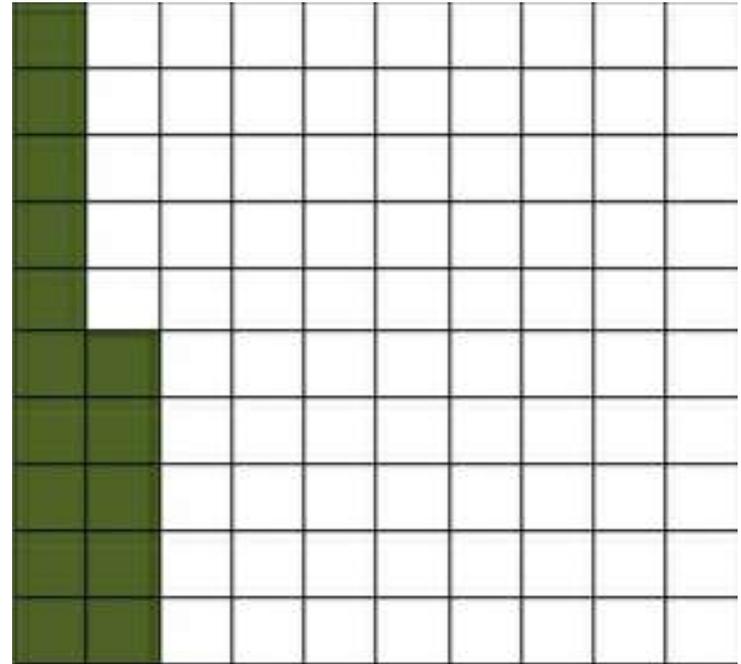
What is the sum?



# WHAT IS PERCENTAGE

- 'Per-Centage' literally means 'per 100 pieces' of anything, which is one way of specifying the fraction of a complete whole.
- Simply put, a percentage value is a fraction multiplied by 100.
- A portion of the whole ; a part.
- A way of representing a fraction with the denominator of 100.

i.e.,  $\frac{15}{100} = 15\% = 0.15$



So **15%** means 15 per 100  
(15% of this box is green)

# How to calculate percentages

■ Let's say I have a basket of fruits. Out of a total of 20 fruits, 5 are apples, 10 are oranges and 5 are pineapples. Then the percentage of all 3 fruits in the basket is calculated in the following way :

- First determine the 'part' and the 'whole'. Here the whole is the fruit basket containing 20 fruits and the parts are 5 apples, 10 oranges and 5 pineapples.
- Secondly, you must determine the fraction of fruits in the basket, that are apples, oranges and pineapples. That is, you must establish the fractions. Here the fractions are :

$$\text{Fraction of apples} = \frac{5}{20} = \frac{1}{4}$$

$$\text{Fraction of oranges} = \frac{10}{20} = \frac{1}{2}$$

$$\text{Fraction of pineapples} = \frac{5}{20} = \frac{1}{4}$$



- Once the fraction has been established, calculating percentages is extremely simple.
- The percentage of different fruits in the basket can be calculated using the formula.

$$\text{percentage (\%)} = (\text{part/whole}) \times 100$$

- Therefore, now we can calculate the percentage of different fruits as :

$$\text{percentage of apples} = \frac{5}{20} \times 100 = \frac{1}{4} \times 100 = 25\%$$

$$\text{percentage of oranges} = \frac{10}{20} \times 100 = \frac{1}{2} \times 100 = 50\%$$

$$\text{percentage of pineapples} = \frac{5}{20} \times 100 = \frac{1}{4} \times 100 = 25\%$$



# Convert a percentage into a fraction in lowest term

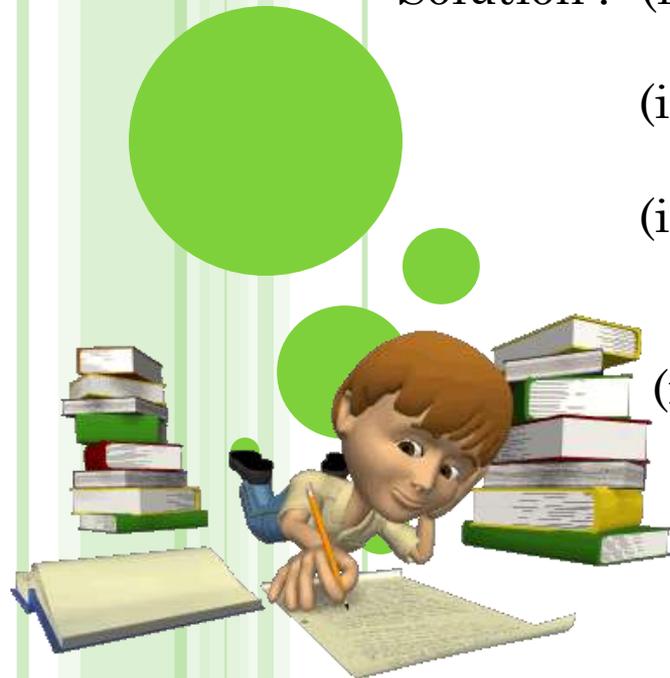
- To convert percentage into a fraction, remove the percent (%) sign and divide the number by 100.
- Reduce the fraction obtained to its lowest term as required.
- Example : Convert the followings into fractions –  
(i) 25 %    (ii) 42.5 %    (iii)  $\frac{5}{9}$  %    (iv)  $4\frac{2}{5}$

Solution :- (i)  $25\% = \frac{25}{100} = \frac{1}{4}$

(ii)  $42.5\% = \frac{42.5}{100} = \frac{425}{1000} = \frac{17}{40}$

(iii)  $\frac{5}{9}\% = \frac{5}{9} \times \frac{1}{100} = \frac{1}{180}$

(iv)  $4\frac{2}{5}\% = \frac{22}{5}\% = \frac{22}{5} \times \frac{1}{100} = \frac{11}{250}$



# Convert percentage into a decimal form

- Convert the given percentage into fraction.
- Then convert the fraction into the decimal form.
- Example : Convert each of the following into decimal form –

(i) 45 %    (ii) 2.8 %    (iii) 126 %    (iv) 0.85 %

Solution :- (i)  $45\% = \frac{45}{100} = 0.45$

(ii)  $2.8\% = \frac{2.8}{100} = 0.028$

(iii)  $126\% = \frac{126}{100} = 1.26$

(iv)  $0.85\% = \frac{0.85}{100} = 0.0085$



# Convert a fraction or mixed number into percentage

▪ To convert a fraction into percentage, multiply the fraction by 100 and put the symbol of percent (%).

▪ Example : Convert the following fractions into percentage –

$$(i) 1\frac{3}{5} \quad (ii) \frac{11}{20} \quad (iii) 2\frac{1}{4} \quad (iv) \frac{19}{25}$$

$$\text{Solution : } (i) 1\frac{3}{5} = \frac{8}{5} = \frac{8}{5} \times 100\% = 160\%$$

$$(ii) \frac{11}{20} = \frac{11}{20} \times 100\% = 55\%$$

$$(iii) 2\frac{1}{4} = \frac{9}{4} = \frac{9}{4} \times 100\% = 225\%$$

$$(iv) \frac{19}{25} = \frac{19}{25} \times 100\% = 76\%$$





# Convert a given percentage into ratio

- Convert the given percentage into fraction by dividing it by 100 and removing the (%) symbol.
- Reduce this fraction into lowest term and write it as a ratio.
- Example : Express each of the following percentage as ratio –

(i) 20%    (ii) 0.4%    (iii) 125%    (iv)  $3\frac{2}{5}$

Solution : (i)  $20\% = \frac{20}{100} = \frac{1}{5} = 1:5$

(ii)  $0.4\% = \frac{0.4}{100} = \frac{4}{1000} = \frac{1}{250} = 1:250$

(iii)  $125\% = \frac{125}{100} = \frac{5}{4} = 5:4$

(iv)  $3\frac{2}{5}\% = \frac{17}{5}\% = \frac{17}{5} \times \frac{1}{100} = \frac{17}{500} = 17:500$



# Convert a ratio into a percentage

- Write the given ratio into a fraction.
- Multiply this fraction by 100 and put a percent (%) sign.
- Example : Convert each of the following ratios into percentage –

(i) 7 : 25    (ii) 4 : 5    (iii) 1 : 9    (iv) 20 : 50

Solution : (i)  $7 : 25 = \frac{7}{25} \times 100\% = 28\%$

(ii)  $4 : 5 = \frac{4}{5} \times 100\% = 80\%$

(iii)  $1 : 9 = \frac{1}{9} \times 100\% = \frac{100}{9}\% = 11\frac{1}{9}\%$

(iv)  $20 : 50 = \frac{20}{50} \times 100\% = 40\%$

# Convert a decimal into a percentage



- Multiply the given decimal number by 100 and put a percent sign (%).
- Note : When we multiply the decimal number by 100, then we shift the decimal point two places to the right.
- Example : Convert each of the following decimals as percentage –
  - (i) 0.6
  - (ii) 1.7
  - (iii) 0.56
  - (iv) 0.003

Solution : (i)  $0.6 = 0.6 \times 100\% = 60\%$

(ii)  $1.7 = 1.7 \times 100\% = 170\%$

(iii)  $0.56 = 0.56 \times 100\% = 56\%$

(iv)  $0.003 = 0.003 \times 100\% = 0.3\%$



# TRY THESE

Q 1. Convert each of the following fractions into percentage.

(i)  $\frac{21}{30}$       (ii)  $\frac{5}{4}$       (iii)  $\frac{12}{25}$

Q 2. Convert each of the following percentage into fraction.

(i) 35 %      (ii)  $3\frac{1}{2}\%$       (iii) 12.25 %

Q 3. Convert each of the following percentage into ratio.

(i) 61%      (ii) 0.5%      (iii) 2.5%

Q 4. Convert each of the following ratios into percentage.

(i) 12 : 25      (ii) 45 : 100      (iii) 7 : 8

Q 5. Convert each of the following percentage into decimal form.

(i) 142%      (ii) 0.66%      (iii) 7.8%

Q 6. Convert each of the following decimals into percentage.

(i) 3.2      (ii) 0.06      (iii) 0.007

# Percentage of the given quantity

▪ To find the percentage of the given quantity we must multiply the given number by the given percentage by expressing the percentage as a fraction with denominator 100.

▪ Example : Find –

(i) 25% of 2 hours.

(ii) 4.5% of Rs.800

(iii) 12% of 1 kg

(iv) 70% of 35 litres

Solution : (i) 25% of 2 hours

1 hour = 60 minutes

Therefore, 2 hours =  $2 \times 60 = 120$  minutes

$$\therefore \frac{25}{100} \times 120 = 30 \text{ minutes}$$

(ii) 4.5% of Rs.800

$$= \frac{4.5}{100} \times 800 = \text{Rs. } 36$$

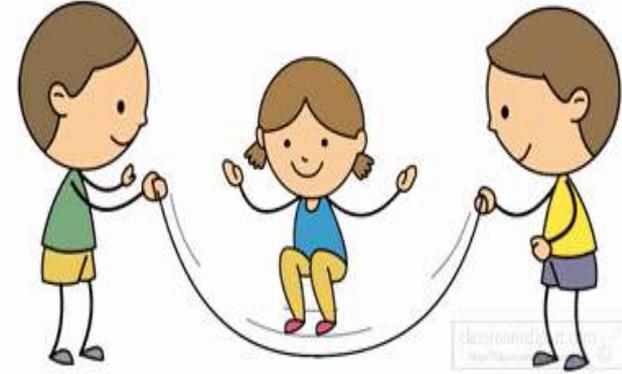


(iii) 12% of 1 kg

$$= \frac{12}{100} \times 1000 = 120g \quad (1\text{kg} = 1000\text{g})$$

(iv) 70% of 35 litres

$$= \frac{70}{100} \times 35 = 24.5 \text{ litre}$$



Q . In a pack of 700 apples, 15% are found rotten. Find the number of good apples?

Solution : Number of rotten apples = 15% of 700

$$= \frac{15}{100} \times 700 = 105 \text{ apples}$$

Therefore, number of good apples =  $700 - 105 = 595$

Q . The total population of a town is 74000. If 55% of the population are males, find the population of females.

Solution : Number of males = 55% of 74000

$$= \frac{55}{100} \times 74000 = 40700$$

Therefore, number of females =  $74000 - 40700 = 33300$

# Expressing one quantity as a percent of another quantity

Example : Q . What percent of 120 is 30 ?

Solution : Let  $x\%$  of 120 = 30

$$\Rightarrow \frac{x}{100} \times 120 = 30$$

$$\Rightarrow x = \frac{30 \times 100}{120} = 25$$

Therefore, 25% of 120 is 30.

Q . Find a number whose 15% is 225.

Solution : Let the number be  $x$ .

Then, 15% of  $x = 225$

$$\Rightarrow \frac{15}{100} \times x = 225$$

$$\Rightarrow x = \frac{225 \times 100}{15} = 1500$$

Therefore, 15% of 1500 is 225.



Q . What percent is 12 hours of 3 days ?

Solution : 12 hours of 3 days

$$3 \text{ days} = 3 \times 24 \text{ hours} = 72 \text{ hours}$$

12 hours of 72 hours

$$\Rightarrow \frac{12}{72} \times 100 = \frac{50}{3} \%$$



Q . What percent is 225 ml. of 1 litre ?

Solution : 225 ml. Of 1 litre

1 litres = 1000 ml.

$$\Rightarrow 225 \text{ ml. of } 1000 \text{ ml.}$$

$$\Rightarrow \frac{225}{1000} \times 100 = 22.5\%$$

## More about percentage :

Example : Find 8% more than Rs.900.

$$\text{Solution : } 8\% \text{ of Rs.900} = \frac{8}{100} \times 900 = \text{Rs.72}$$

$$\therefore 8\% \text{ more than Rs.900} = \text{Rs.900} + \text{Rs.72} = \text{Rs.972}$$

Example : Find 15% less than 1200 metre.

$$\text{Solution : } 15\% \text{ of } 1200 \text{ m} = \frac{15}{100} \times 1200 = 180 \text{ m}$$

$$\therefore 15\% \text{ less than } 1200 \text{ m} = 1200 \text{ m} - 180 \text{ m} = 1020 \text{ m}$$

# TRY THESE



Q 1. Find

- (i) 125% of 84    (ii) 0.4% of 25    (iii)  $1\frac{1}{6}$  % of 120

Q 2. Find

- (i) 80% of 2 days    (ii) 130% of 45 litres    (iii) 4.2% of 60kg

Q 3. Nishit gets Rs.300 as pocket money every month. If it increased by 5% , then find his new pocket money.

Q 4. The value of a scooter depreciates 10% annually. If its present value is Rs.32000, what will be its value after 1 year?

Q 5. The price of a pencil increased from Rs.10 to Rs.12. What is the percentage increase?

Q 6. Monthly expenditure of Neeta is Rs.12500. if this monthly expenditure is increased by 12%, find the increase in expenditure and total expenditure.

Q 7. What percent of 600 is 60 ?

# Word problems on percentage

Q 1. In a village 25% did not vote in an election. If there are a total of 2000 people in the village, find the number of people who actually voted.

Solution : 25% of 2000 people did not vote.

$$\Rightarrow \frac{25}{100} \times 2000 = 500 \text{ people did not vote.}$$

Total number of people in the village = 2000

Therefore, people who actually voted =  $2000 - 500$   
= 1500 people voted

Q 2. The cost of petrol is increased by 9%. Find the increase in amount if the cost is Rs.62 per litre. What is the new cost after increase ?

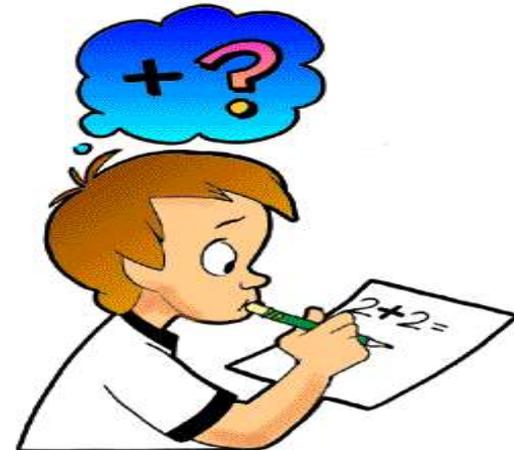
Solution : Increase in the cost of petrol = 9%

Cost of petrol per litre = Rs.62

$$\text{Then, } 9\% \text{ of } 62 = \frac{9}{100} \times 62 = \frac{558}{100} = \text{Rs. } 5.58$$

The increase in amount of petrol is Rs.5.58

Therefore, the new cost after increase is  
= Rs.62 + Rs 5.58 = Rs.67.58



Q 3. A factory produced 4000 bolts. Out of it 240 bolts were found defective. Find the percentage of non-defective bolts.

Solution : Total number of bolts produced = 4000

Number of defective bolts = 240

Number of non-defective bolts =  $4000 - 240 = 3760$

Percentage of non-defective bolts =  $\frac{3760}{4000} \times 100 = 94\%$

Therefore, the percentage of non-defective bolts is 94%.

Q 4. A milkman added 3 litres of water in 18 litres of milk. Find the percentage of water in the mixture of water and milk.

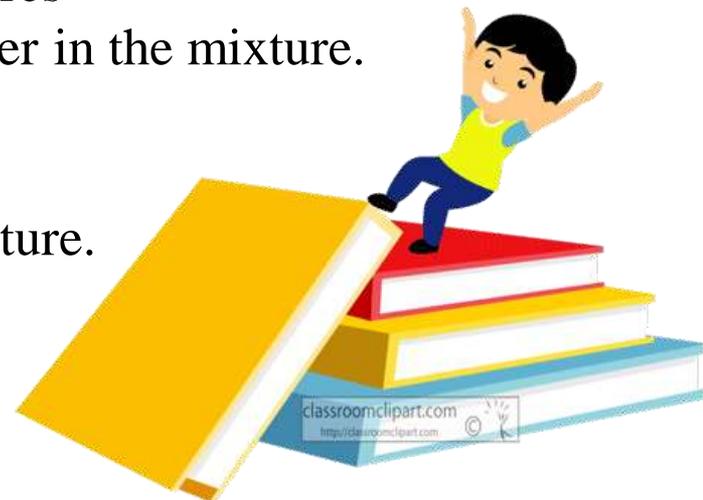
Solution : Total quantity of milk = 18 litres

Amount of water added in milk = 3 litres

We have to find the percentage of water in the mixture.

$$\text{i.e. } \frac{3}{18} \times 100 = \frac{100}{6} = \frac{50}{3} = 16\frac{2}{3}\%$$

Therefore,  $16\frac{2}{3}\%$  of water is in the mixture.



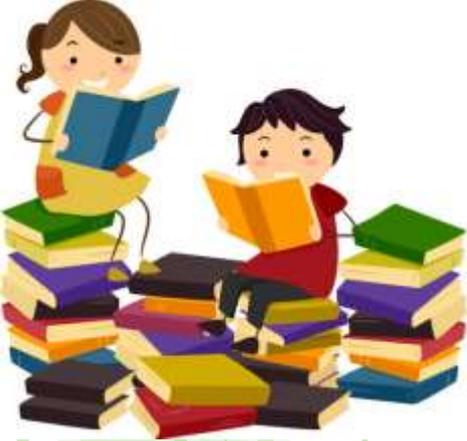
Q 5. The speed of a train is 80 km/h. If it is increased to 120 km/h, find the percentage increase.

Solution : Speed of train = 80 km/h

Increase in speed = 120 km/h – 80 km/h = 40 km/h

Percentage increase in speed =  $\frac{40}{80} \times 100 = 50\%$





# PROFIT AND LOSS

## INTRODUCTION :

- The profit and loss is a financial statement that summarizes the revenues costs and expenses incurred during a specified period, usually a fiscal quarter or year. The profit and loss statement is synonymous with the **income statement**. These records provide information about a company's ability or inability to generate profit by increasing revenue, reducing cost or both.
- In our day-to-day life, we buy goods from the shopkeeper in the market which they buy either directly from the manufacturers or through wholesalers. The shopkeeper sales these articles to the customers and face a situation of profit or loss depending upon the standard of the market.
- In this part, we shall learn to apply the concept of percentage to find profit and loss in buying and selling goods in our day-to-day life.



# Terms related to profit and loss

- **Cost Price (C.P)** : The price at which an article is purchased is called the cost price (C.P).
- **Selling Price (S.P)** : The price at which an article is sold is called the selling price (S.P).
- **Gain or Profit** : When selling price is greater than the cost price, then there is a gain or profit.  
**Profit**  $\longrightarrow$  **S.P > C.P**
- **Loss** : When selling price is less than the cost price, then there is a loss.  
**Loss**  $\longrightarrow$  **S.P < C.P**

## FORMULAE

1. Profit/Gain = S.P – C.P	5. C.P = S.P – Profit
2. Loss = C.P – S.P	6. C.P = S.P + Loss
3. S.P = C.P + Profit	7. Profit % = $\left(\frac{\text{Profit}}{\text{C.P}} \times 100\right)$
4. S.P = C.P – Loss	8. Loss % = $\left(\frac{\text{Loss}}{\text{C.P}} \times 100\right)$

**Example** : Find the gain or loss percent when

(a) C.P = Rs.900 and S.P = Rs. 720

(b) S.P = Rs.570 and Loss = Rs.30

**Solution** : (a) C.P = Rs.900, S.P = Rs.720

Since S.P < C.P, so there is loss.

$$\text{Loss} = \text{C.P} - \text{S.P}$$

$$= \text{Rs.}900 - \text{Rs.}720 = \text{Rs.}180$$

$$\text{Loss percent} = \left( \frac{\text{Loss}}{\text{C.P}} \times 100 \right) \%$$

$$= \left( \frac{180}{900} \times 100 \right) = \frac{180}{9} = 20\%$$

Therefore, loss percent = 20%

(b) S.P = Rs.570, Loss = Rs.30

$$\text{C.P} = \text{Loss} + \text{S.P}$$

$$= \text{Rs.}30 + \text{Rs.}570$$

$$= \text{Rs.}600$$

$$\text{Loss percent} = \left( \frac{\text{Loss}}{\text{C.P}} \times 100 \right)$$

$$= \left( \frac{30}{600} \times 100 \right) = \frac{30}{6} = 5\%$$

Therefore, loss percent = 5%



**Example :** The cost price of a watch is Rs.5000 and its selling price is Rs.5200. Find profit or loss and profit or loss percent.

**Solution :** Cost price of watch = Rs.5000

Selling price of watch = Rs.5200

Here  $S.P > C.P$ , so profit

$$\begin{aligned}\text{Profit} &= S.P - C.P \\ &= \text{Rs.}5200 - \text{Rs.}5000 = \text{Rs.}200\end{aligned}$$

$$\begin{aligned}\text{Now, Profit \%} &= \left( \frac{\text{Profit}}{C.P} \times 100 \right) \\ &= \left( \frac{200}{5000} \times 100 \right) \% = \frac{20}{5} = 4 \%\end{aligned}$$

Profit percent = 4%

**Example :** A man purchased shoes for Rs.1800 and sold it for Rs.2250 to his friend. Find his gain or loss percent.

**Solution :** Cost price of shoes = Rs.1800

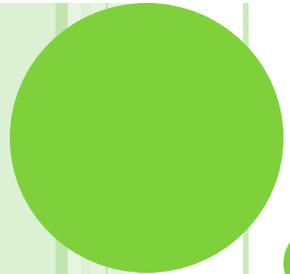
Selling price of shoes = Rs.2250

Since,  $S.P > C.P$ , so profit

$$\begin{aligned}\text{Profit} &= S.P - C.P \\ &= \text{Rs.}2250 - \text{Rs.}1800 = \text{Rs.}450\end{aligned}$$

$$\text{Now, Gain \%} = \left( \frac{\text{Profit}}{C.P} \times 100 \right) \%$$

$$\text{Therefore, gain percent} = \left( \frac{450}{1800} \times 100 \right) = \frac{450}{18} = 25\%$$



**Example :** A fruit seller bought fruits for Rs.2300 and spent Rs.200 on its transportation. He sold these fruits for Rs.2200. Find his gain or loss percent .

**Solution :** Cost price of fruits = Rs.2300

Cost of transportation = Rs.200

Total C.P = Rs.2300 + Rs.200  
= Rs.2500

Selling price (S.P) of fruits = Rs.2200

Since, S.P < C.P, so loss

Loss = C.P – S.P  
= Rs.2500 – Rs.2200  
= Rs.300

$$\begin{aligned}\text{Loss percent} &= \left( \frac{\text{Loss}}{\text{C.P}} \times 100 \right) \% \\ &= \left( \frac{300}{2500} \times 100 \right) = \frac{300}{25} = 12\%\end{aligned}$$

Therefore, loss percent = 12%





# TRY THESE

Q 1. Find gain or loss percent.

(a) C.P = Rs.500, S.P = Rs.700

(b) C.P = Rs.1800, S.P = Rs.1350

Q 2. Find the S.P, when

(a) C.P = Rs.7500, Gain = 20%

(b) C.P = Rs.450, Loss = 20%

Q 3. Find the C.P, when

(a) S.P = Rs.390, Loss = 20%

(b) S.P = Rs.18000, Profit = 20%

Q 4. Priyansh bought a second hand cycle for Rs.800 and spent Rs.100 on its repairs. He sold it for Rs.1350. Find his profit or loss percent.

Q 5. A shopkeeper purchase 18 dozen of eggs at the rate of Rs.50 per dozen. He sold the eggs at the rate of Rs.5.50 each. Find his profit or loss and profit or loss percent.

Q 6. Ajay bought an article for Rs.5200 and sold it at a loss of 20%. Find the selling price of the article.



# SIMPLE INTEREST

## INTRODUCTION :

Sometimes a person borrows money from a bank, from another person, an agency or a money lender in certain circumstances such as an occasion of marriage in the family, for buying property or some medical emergency. When this sum of money is returned after a certain period of time, an extra amount is paid back for having used the original amount. This extra amount is called **interest**.

## SIMPLE INTEREST :

If interest is calculated uniformly on the original principal throughout the loan period, it is called **simple interest**.

Here by interest, we shall mean simple interest,

## Terms associated with simple interest :

- **Principal (P)** : The amount of money borrowed by borrower from a lender is called the principal or sum.
- **Simple interest (S.I)** : The extra money paid back for using the borrowed money is called the interest or simple interest (S.I).
- **Rate (R)** : The interest paid for each hundred rupees for one year is called the rate percent per annum.

- **Time Period (T)** : The time for which the money is borrowed is called the time period denoted by 'T'.
- **Amount (A)** : The total of the principal and the interest is called the amount.

### Calculation of simple interest :

When principal (P), rate of interest (R) and time period (T) are given, we can find simple interest (S.I) using the following formula :

$$\text{Simple interest (S.I)} = \frac{\text{Principal} \times \text{Rate} \times \text{Time}}{100}$$

$$S.I = \frac{P \times R \times T}{100}$$

Amount = Principal + Simple interest

$$A = P + S.I$$



**Example :** Find The simple interest on Rs.4500, for 2 years at the rate of 8% per annum. Also find the amount.

**Solution :** Principal = Rs.4500, Rate = 8% per annum, Time = 2 years

$$S.I = \frac{P \times R \times T}{100} = \frac{4500 \times 8 \times 2}{100}$$
$$= 45 \times 8 \times 2 = Rs.720$$

$$\text{Amount} = \text{Principal} + \text{Interest}$$
$$= Rs.4500 + Rs.720$$
$$= Rs.5220$$

**Example :** Find the simple interest on Rs.12800 at 9% per annum for 6 months. Also find the amount.

**Solution :** Principal = Rs.12800, R = 9%, Time = 6 months =  $\frac{6}{12}$  years =  $\frac{1}{2}$

$$S.I = \frac{P \times R \times T}{100} = \frac{12800 \times 9 \times 1}{100 \times 2}$$
$$= 64 \times 9 \times 1 = Rs.576$$

$$\text{Amount} = \text{Principal} + \text{Interest}$$
$$= Rs.12800 + Rs.576$$
$$= Rs.13376$$





**Example :** Find the simple interest and amount for the sum of Rs.48400 or a period of 2 years at the rate of  $4\frac{1}{4}\%$  per annum.

**Solution :**  $P = \text{Rs.}48400$ ,  $T = 2$  years,  $R = 4\frac{1}{4}\% = \frac{17}{4}\%$

$$S.I = \frac{P \times R \times T}{100} = \frac{48400 \times 17 \times 2}{100 \times 4}$$

$$= 121 \times 17 \times 2 = \text{Rs.}4114$$

Amount = Principal + Interest

$$= \text{Rs.}48400 + \text{Rs.}4114$$

$$= \text{Rs.}52514$$

**Example :** Find the simple and amount on a sum of Rs.4500 at  $3\frac{1}{2}\%$  per annum from 5<sup>th</sup> June 2019 to 17<sup>th</sup> August 2019.

**Solution :** Principal (P) = Rs.4500, Rate (R) =  $3\frac{1}{2}\% = \frac{7}{2}\%$  per annum

Time (T) = 5<sup>th</sup> June 2019 to 17<sup>th</sup> August 2019

June = 25 days (30 – 5 = 25)

July = 31 days

August =  $\frac{17 \text{ days}}{365}$ , 73 days =  $\frac{73}{365} \text{ yrs} = \frac{1}{5} \text{ yrs.}$

Total =  $\frac{73 \text{ days}}{365}$

$$S.I = \frac{P \times R \times T}{100} = \frac{4500 \times 7 \times 1}{100 \times 2 \times 5} = \frac{63}{2} = \text{Rs.}31.50$$

Amount = Principal + Interest

$$= \text{Rs.}4500 + \text{Rs.}31.50 = \text{Rs.}4531.50$$

## TRY THESE



Q 1. Find the simple interest, when :

- (i) Principal = Rs 500, Rate of interest = 12.5% and Time = 4 years.
- (ii) Principal = Rs 4500, Rate of interest = 4% per annum and Time = 6 months.
- (iii) Principal = Rs 1000, Rate of interest = 10% per annum and Time = 73 days.

Q 2. What will be the simple interest on Rs 4000 at 12% per annum for the period from 4<sup>th</sup> February 2005 to 18<sup>th</sup> April 2005?

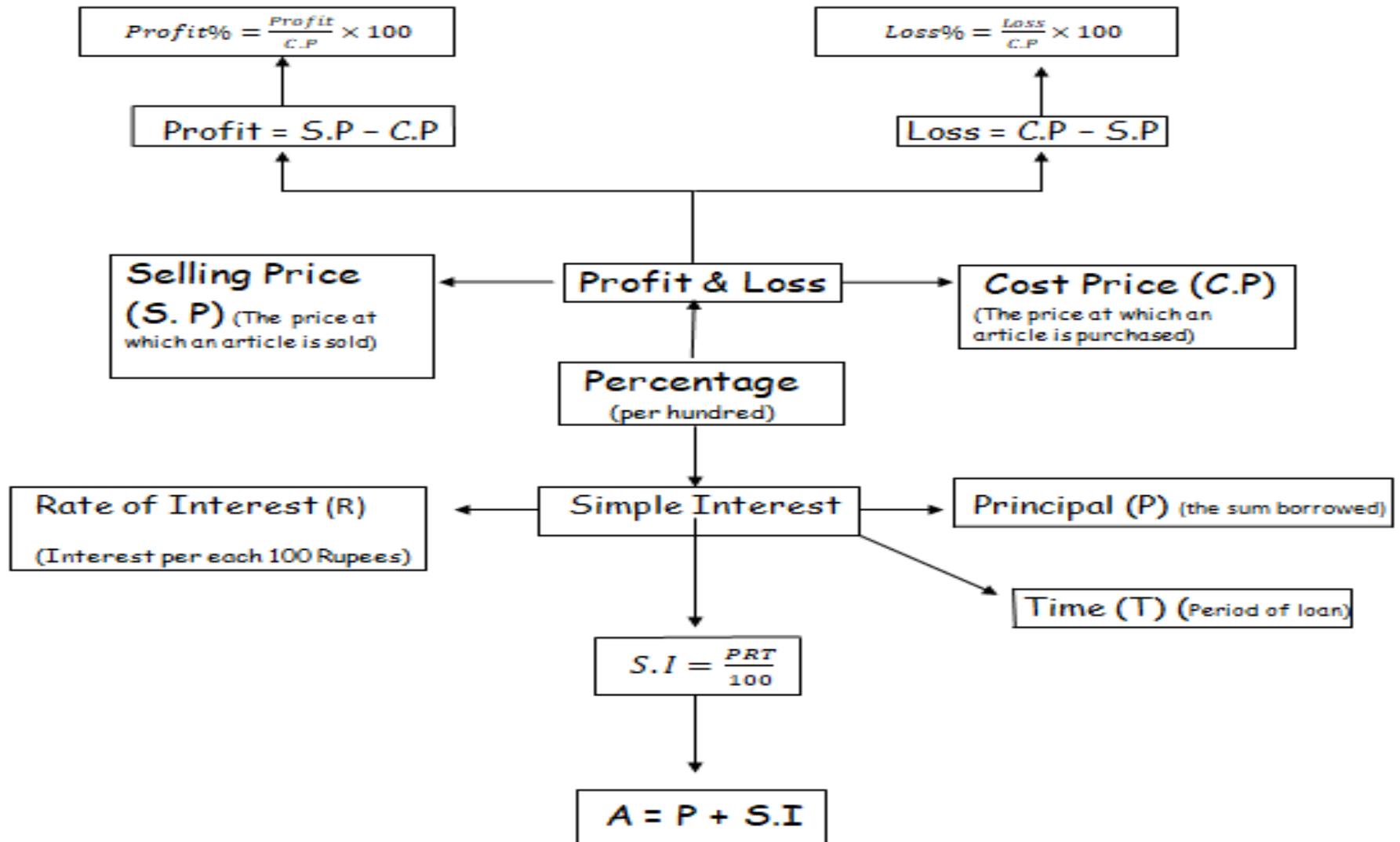
Q 3. A sum of Rs 2668 amounts to Rs 4669 in 5 years at the rate of simple interest. Find the rate percent.

Q 4. Find the difference in amount and principal for Rs 4000 at the rate of 5% per annum in 4 years.

Q 5. At the rate of 8% per annum simple interest, a sum of Rs 5800 is invested for 2 years and 3 months. Find the interest earned.

Q 6. A sum of money amounts to Rs 2240 at 4% per annum simple interest in 3 years. Find the interest on the same sum for 6 months at 3.5% per annum.

# CONCEPT MAP



# LEARNING OUTCOMES



The students are able to :

- understand the concept of percentage.
- explain percentage as a fraction with denominator 100 or out of hundred.
- convert percentage to fractions, decimals and ratios and vice-versa.
- calculate the percentage of any given quantity.
- express one quantity as a percentage of other quantity.
- apply the concept of percentage to solve many problems of real life situations.
- understand the concept of profit and loss.
- explain the terms S.P, C.P, profit and loss.
- calculate profit and loss by comparing S.P and C.P.
- find profit % or loss % by using the formula in the given problems.
- apply the relation of S.P, C.P, profit and loss in solving problems.
- understand the concept of simple interest.
- explain the terms principal, rate of interest and time period.
- apply the formula to calculate simple interest and amount.
- apply the concept of simple interest and profit and loss in practical life situations and commercial sectors.

Learning is fun!



# YOU MUST KNOW

1. Percentage is a way of comparing quantities. Percentages are numerators of fractions with denominator 100.
2. To convert a fraction into percent, multiply the fraction by 100 and put the sign percent (%).
3. To convert percent into fraction, remove the % sign and divide the number by 100. Then reduce to the lowest term.
4. To convert percent into decimal, remove the % sign and move the decimal two places to the left.
5. To convert a decimal into percentage, shift the decimal point two places to the right and write the % sign.
6. If  $S.P > C.P$ , Profit =  $S.P - C.P$ .
7. If  $S.P < C.P$ , Loss =  $C.P - S.P$ .
8. Profit % or gain % =  $\left(\frac{\text{Profit}}{C.P} \times 100\right)$
9. Loss % =  $\left(\frac{\text{Loss}}{C.P} \times 100\right)$
10. Profit % and loss % are always calculated on the cost price.
11.  $S.I = \frac{P \times R \times T}{100}$
12. Amount = Principal + Interest.

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