

# Percentage Questions

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## Example 1:-

When 60 is subtracted from 60% of a number then the resulting number is 60. Find that number.

### Solution:-

Let 'x' be the number  
Therefore, as per given question.

$$60\% \times x - 60 = 60$$

$$\frac{60}{100} \times x - 60 = 60$$

$$\frac{6x}{10} - \frac{60}{1} = 60$$

$$\frac{6x - 600}{10} = 60$$

$$6x - 600 = 60 \times 10$$

$$6x = 600 + 600$$

$$x = \frac{1200}{6}$$

$$x = 200 \text{ Ans.}$$

Write the final answer in the form of statements

## Example 2:-

A fruit seller had some apples. He sells 40% apples and still has 420 apples. Originally, he had how many apples.

### Solution:-

Let 'x' be the apples  
Therefore, as per question

$$(100 - 40)\% \times x = 420$$

$$60\% \times x = 420$$

$$\frac{60}{100} \times x = 420$$

$$0.6 \times x = 420$$

$$x = \frac{420}{0.6}$$

$$x = 700 \text{ Ans.}$$

## Example 3:-

The price of a bundle of pens rose from 10% to 15%. What is the percentage increase in the price of bundle.

### Solution:-

$$\therefore \text{percentage increase} = \frac{\text{increase in value}}{\text{original value}} \times 100$$

$$\% \text{ increase} = \frac{5\%}{10\%} \times 100$$

$$\% \text{ increase} = 50\% \text{ Ans.}$$

## CSS 2017. Question No. 7 (A)

A man buys 5kg of meat at Rs. 500 per kg. In addition, for every kilogram of meat purchased, he has to pay a consumption tax of 6% on the selling price. Calculate the total amount of money that he has to pay.

### Solution:-

$$1 \text{ kg} = \text{Rs. } 500.$$

$$\text{So, } 5 \text{ kg} = 500 \times 5$$

$$5 \text{ kg} = 2500 \text{ Rs.}$$

$$\text{consumption tax} = 6\% \text{ of selling price}$$

$$\text{consumption tax} = \frac{6}{100} \times 2500$$

$$\text{consumption tax} = 150 \text{ Rs.}$$

$$\text{Total payable amount} = \text{selling price} + \text{consumption tax}$$

$$\text{Total payable amount} = 2500 + 150$$

$$\text{Total payable amount} = 2650 \text{ Rs.}$$

So, the man has to pay a total amount of Rs. 2650.

### CSS 2018. Question No: 6 (A)

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It takes 3 litres of paint to cover an area of 24 square meters. What percentage increase in the quantity of paint would be required to cover an area of 50.4 square meters.

Solution:- first we have to find increase in litres, so by using arrow method.

Litres	Area
↑ 3	24 ↑
x	50.4

$$\frac{x}{3} = \frac{50.4}{24}$$

$$x = \frac{50.4 \times 3}{24}$$

$$x = 6.3 \text{ litres}$$

$$\text{So, \% increase} = \frac{\text{Increase in value}}{\text{original value}} \times 100$$

$$\% \text{ increase} = \frac{6.3 - 3}{3} \times 100$$

$$\% \text{ increase} = \frac{3.3}{3} \times 100$$

$$\% \text{ increase} = 110$$

### CSS 2019. Question No: 6 (C)

The cost of hiring a car for 2 days in 2018 was 264 Rs. which was 20% more than in 2013. What was the cost of hiring a car in 2013?

Solution:-

Let 'x' be the hiring of car in 2013.

Therefore, as per given question.

$$x + 20\% \text{ of } x = 264$$

$$x + \frac{20x}{100} = 264$$

$$x + 0.2x = 264$$

$$1.2x = 264$$

$$x = \frac{264}{1.2}$$

$$x = \text{Rs. } 220$$

So, the cost of hiring of car in 2013 was 220 Rs.

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CSS 2021. Question No. 6 (c).

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R.w

Mr. Faheem has dinner with his family at a restaurant which offers 10% discount on food. The marked price of the food that they order was Rs. 15000-. Given that there was a service charges of 10% and GST is 17%, calculate the total amount of money he has to pay.

$$\begin{array}{r} 23 \\ 135 \\ 17 \\ \hline 945 \\ 135 \times \\ \hline 2295 \end{array}$$

$$\begin{array}{r} 11 \\ 13500 \\ 1350 \\ 2295 \\ \hline 17145 \end{array}$$

Solution:-

- Marked price of food = 15000
- Discount on the food = 10%
- Service charges on the food = 10%
- GST on the food = 17%

Price of food after discount = Marked price of food - 10% of food

$$\begin{aligned} \text{Discounted food} &= 15000 - \frac{10}{100} \times (15000) \\ // &= 15000 - 1500 \\ // &= \text{Rs. } 13500 \end{aligned}$$

Price of food he has to pay = Price of food + 10% service charge of food + 17% GST charges on food.

$$\begin{aligned} // &= 13500 + \frac{10}{100} \times (13500) + \frac{17}{100} \times (13500) \\ // &= 13500 + 1350 + 2295 \\ // &= \text{Rs. } 17145 \end{aligned}$$

So, Mr. Faheem has to pay the total amount of Rs. 17145.

CSS 2022. Question No. 8 (c)

During a sale a clerk was putting new price tags on each item. on one sweater, he accidentally raised the price by 20% instead of lowering the price by 20%. As a result the price on the tag was Rs. 80 too high. what was the original price of the sweater?

Solution:-

Let "x" be the original price of the sweater.

Therefore, As per given question.

- (E.P) Error price =  $x + 20\% \cdot x$
- (R.P) Required price =  $x - 20\% \cdot x$

E. P - R. P = 80

$$(x + 20\% \cdot x) - (x - 20\% \cdot x) = 80$$

$$x + 20\% \cdot x - x + 20\% \cdot x = 80$$

$$40\% \cdot x = 80$$

$$\frac{40x}{100} = 80$$

(11)

$$40x = 80 \times 100$$

$$40x = 8000$$

$$x = \frac{8000}{40}$$

$$x = 200 \text{ R.S.}$$

So, The original price of the sweater was 200 Rupees.

## CS5 2022. Question No. 6(b)

The incoming of a company decreased by 10% and 15% in two successive years. What is the Percentage decrease in income after two years.

Solution:-

Let 'x' be the income of the company  
Therefore, As per given question.

Now, the income first decreased by 10%.

$$x - 10\% \text{ of } x$$

$$x - \frac{10}{100}x$$

$$\frac{100x - 10x}{100}$$

$$\frac{90x}{100}$$

Again the income decreased by 15%  
So,

$$\frac{90x}{100} - \frac{15}{100} \times \frac{90x}{100}$$

$$\frac{90x}{100} - \frac{13.5x}{100}$$

$$\frac{90x}{100} - \frac{13.5x}{100}$$

$$\frac{90x - 13.5x}{100}$$

$$\frac{76.5x}{100}$$

Now, calculate Percentage decrease in income after 2 years.

$$\% \text{ decrease} = \frac{\text{Final Value} - \text{Initial Value}}{\text{Initial Value}} \times 100$$

$$\% \text{ decrease} = \left( \frac{\frac{76.5x}{100} - \frac{x}{1}}{x} \right) \times 100$$

$$\% \text{ decrease} = \frac{(76.5x - 100x)}{100} \times 100$$

$$\% \text{ decrease} = \frac{-23.5x}{x}$$

$$\% \text{ decrease} = -23.5\%$$

Method - 2

Sol:- Let 'x' be income of company  
Therefore, as per given question.

$$x \left( \frac{1 - \frac{10}{100}}{1} \right) \left( \frac{1 - \frac{15}{100}}{1} \right)$$

$$x \left( \frac{100 - 10}{100} \right) \left( \frac{100 - 15}{100} \right)$$

$$x \left( \frac{90}{100} \right) \left( \frac{85}{100} \right)$$

$$x \left( \frac{9}{10} \right) \left( \frac{17}{20} \right)$$

$$\frac{153x}{200}$$

$$\% \text{ decrease} = \frac{\text{Final Value} - \text{Initial}}{\text{Initial}} \times 100$$

$$\% \text{ decrease} = \left( \frac{\frac{153x}{200} - \frac{x}{1}}{x} \right) 100$$

$$\% \text{ decrease} = \frac{153x - 200x}{200} \times 100$$

$$\% \text{ decrease} = \frac{-23.5x}{x} \times 100$$

$$\% \text{ decrease} = -23.5\%$$

Example 2:-

Ahmed borrowed Rs. 50,000 for 3 years at the rate of 3.5% per annum. Find the interest accumulated at the end of 3 years.

Solution:-

Principal amount = P = 50,000 Rs  
Time for which it is borrowed = T = 3 years  
Simple interest per annum = 3.5%

$$\text{Simple interest amount} = \frac{P \times R \times T}{100}$$

$$S.I = \frac{50,000 \times 3.5 \times 3}{100}$$

$$S.I = 5250 \text{ Rs}$$

Example 3:- Ahmed pays 9000 Rs as an amount on the sum of Rs. 7000 that he had borrowed for 2 years. Find the rate of interest.

Solution:-

Principal amount = 7000  
Time for which it was borrowed = T = 2 years  
Total amount after the given period = A = 9000  
Rate of interest = ??

$$\text{Simple interest} = A - P$$

$$S.I = 9000 - 7000$$

$$S.I = \text{Rs. } 2000$$

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

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

$$R = \frac{2000 \times 100}{7000 \times 2}$$

$$R = \frac{100}{7}$$

$$R = 14.29\%$$

R.W

$$7 \overline{) 100} \begin{array}{r} 14 \cdot 288 \\ \underline{98} \\ 20 \\ \underline{14} \\ 60 \\ \dots \end{array}$$

MR. Raheel invests Rs. 60000/- in an account that earns simple interest. At the end of 5 years, the investment is worth Rs. 85000/-. Calculate the rate of simple interest per year.

Solution:-

Principal amount = P = 60000 Rs.  
Time period for that it was invested = T = 5 years.  
Total amount after given period = A = Rs. 85000/-  
Rate of interest = ?? (R)

$$\therefore S.I = A - P$$

$$S.I = 85000 - 60000$$

$$S.I = 25000 \text{ Rs.}$$

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

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

$$R = \frac{25000 \times 100}{60000 \times 5}$$

$$R = \frac{250}{30}$$

$$R = 8.33\%$$

So, The rate of simple interest per year is 8.333%..