

# 12 ways to calculate percentages (%), percentage formulas

Percentage calculation is a fundamental mathematical skill that helps express a fraction of a number relative to its total value. To calculate a percentage, you divide the fraction by the total value, then multiply by 100. There are a total of 12 different percentage calculation formulas, including percentage interest, percentage discounts, etc.

**Percentage calculations** are the most common type of calculation we encounter. The most common examples include calculating the percentage difference between two years, calculating bank interest rates, percentage growth, percentage profit, percentage completion, and calculating product discounts, etc.



**The quickest and most accurate ways to calculate percentages.**

## Percentage Calculations:

1. Percentage Ratio.
2. Discount.
3. Price Increase.
4. Interest Rate.
5. Difference.
6. Between Two Years.
7. Completion.
8. Goods.
9. Percentage of Total.

10. In Excel.

11. Salary.

12. Volume.

## *The quickest and most accurate way to calculate percentages.*

### *1. How to calculate percentages*

Calculating a percentage of a total is a common method in current percentage calculations. To calculate the percentage of a number or the percentage of an object among many objects, you simply divide the number of objects to be calculated by the total number of objects, and then multiply by 100 to get the result.

- Calculating the percentage of a and b:

+ Percentage of **a** =  $\frac{a}{(a+b)} \times 100(\%)$ .

+ Percentage of **b** =  $\frac{b}{(a+b)} \times 100(\%)$  or  $\%b = 100 - \%a$ .

**Example:** Suppose you have a problem that requires you to calculate the percentage of goods shipped: 35 boxes of shirts and 30 boxes of pants. What percentage of the total goods shipped are shirts?

==> % of shirts

$$\frac{35}{(35+30)} \times 100 = 53,8$$

==> % of pants in the box =  $100 - 53.8 = 46.2\%$  or

$$\frac{30}{(35+30)} \times 100 = 46,2\%$$

### *2. The quickest way to calculate discount percentages*

- Formula: **Amount after discount** = **Price** x  $[(100 - \% \text{ discount})/100]$ .

- **Example:** You go shopping and choose an item that costs 500,000 VND, and you get a 20% discount. What is the quickest way to calculate the percentage discount?

==> Applying the above formula to the example, we have the following information: 20% discount, which means  $100\% - 20\% = 80\% \Rightarrow 80/100 = 0.8$ .

==> Therefore, the price of the item after the discount will be:  $500,000 \text{ VND} \times 0.8 = 400,000 \text{ VND}$ .

Mastering formulas and methods for calculating percentages of mass helps students solve exercises and exam questions effectively.

### ***3. How to calculate percentage price increase***

- To calculate the percentage increase as quickly as possible, you can apply the same method as for calculating the percentage decrease above.

- **For example:** An item costs 500,000 VND, but now the price increases by 20%. The quick calculation formula would be:  $100\% + 20\% = 120\%$ .

Therefore, the amount you will have to pay is:  $500,000 \times 120\% = 500,000 \times 1.2 = 600,000$  VND.

### ***4. How to calculate interest rate percentages***

- To calculate profit percentages or interest rates, specifically bank interest rates, TipsMake has covered many specific cases and banks in this area. Readers can refer to the calculation methods and view bank interest rates through the detailed article here. This article describes and explains bank interest rates and how to calculate interest when you deposit money in a bank.

### ***5. How to calculate percentage growth and compare percentage differences.***

- The method for calculating percentage growth to compare percentage differences is also the method for calculating percentage profit. This calculation will determine the percentage difference between two different values.

- The formula for calculation will be:  **$(b-a)/a \times 100$  (%)**.

- **Where:** b is the number you need to compare the difference with; a is the benchmark for the comparison.

- **Example:** Regarding revenue. You have revenue in April of 400 million VND, revenue in May of 500 million VND. Calculate the percentage growth of May compared to April.

==> **Percentage growth of May =  $(500 - 400)/400 \times 100 = 25\%$**

$$\frac{(500-400)}{400} \times 100 = 25 \%$$

The percentage above could be negative if the revenue in subsequent months is lower than the previous month. For example, if the revenue in June was 600 million, but in July it was only 550 million => the percentage difference would be that July's revenue decreased by 50 million compared to June. Similarly, the calculation would yield the percentage growth result as: **% growth in July =  $(550 - 600)/600 \times 100 = -8.3\%$** .

## ***6. How to quickly calculate the percentage difference between two years***

- Let's assume a company named **Taimienphi.vn** had a revenue of **115 billion VND** in 2016. The total revenue for 2017 was **132 billion VND** . What is the percentage growth difference between the two years, calculated using this percentage method?

- We will have **the 2017 growth percentage** = (2017 Revenue - 2016 Revenue) / 2016 Revenue \* 100 = (132 - 115) / 115 = **14.78 (%)**.

==> In conclusion, TipsMake company had a growth difference **of nearly 15%** compared to 2016.

## ***7. How to Calculate Percentage of Completion***

- For example, Taimienphi.vn **set** a target of 150 billion VND for 2017. However, by the third quarter of 2017, the company's total revenue had reached **159 billion VND** . What **percentage of completion** compared to the initial proposal is this? Apply the percentage completion calculation method in this case.

- **We apply the formula:** % Completed = Revenue Achieved / Target Revenue \* 100 (Unit is %).

- Thus , **the percentage achieved** = 159/150 \* 100 = **106 (%)**.

==> In conclusion, after only 3 quarters, TipsMake company has exceeded its target by **6%** .

## ***8. How to Calculate the Percentage of Goods***

- Suppose you buy a **laptop for 25 million VND** . If you have an **8% discount code** , how much will you get off and how much will you have to pay? In this case, which percentage calculation method would you use?

- **Formula** : Discount amount = Percentage \* Price / 100.

- Substitute the numbers to get the discount amount.

$$\frac{8 \times 25.000.000}{100} = 2.000.000 \text{ (đồng)}$$

Substituting the values, we get 25 million - 2 million = 23 million.

Therefore, you will get a discount of 2 million and only have to pay 23 million for this laptop.

## ***9. How to Calculate Percentage of the Total***

- This method of calculating percentages using total numbers is very common. For example, TipsMake has **30 male employees and 24 female employees**. Let's use **percentage** calculation to determine what percentage of the total number of female employees are in the company.

- We will apply: **% female** = Number of female employees / (Number of male employees + Number of female employees) \* 100 = 24 / (30 + 24) = **44.44 (%)**.

==> In conclusion, the number of female employees accounts **for more than 44%** of the total number of workers in the company, and the number of male employees is nearly 56%.

## ***10. How to calculate percentages in Excel***

- With Excel, users can easily apply it to specific cases to calculate percentages of salary, percentage of volume, percentage of mass in chemistry, percentage of tax, etc. You can use the percentage calculation formulas already available in Excel. Excel software now has built-in percentage calculation formulas, so you don't need to do mental calculations or calculate manually. You just need to apply the formula to get the result you want.

## ***11. How to calculate salary percentages***

- Calculate the difference between the old salary and the new salary using the formula: (New salary - Old salary) : Old salary x 100.

**For example** : If the salary in July was 7.7 million VND and the salary in June was 6.4 million VND, then the percentage increase/decrease in salary in July compared to June =  $(7.7 - 6.4) : 6.4 \times 100 = 20.31\%$ .

## ***12. How to calculate percentage by mass***

- Formula: Percentage by mass = molar mass of the element / molecular mass of the compound x 100.

- **Example**: Calculate the percentage by mass of Hydrogen in one water molecule.

- The chemical formula of water is H<sub>2</sub>O.

- The atomic mass of Oxygen is 16, the atomic mass of Hydrogen is 1.

==> Therefore, the percentage by mass of Hydrogen in one water molecule is  $(1 \times 2) : (2 + 16) \times 100 = 11.11\%$ .

Above are the quickest and most accurate percentage calculation methods currently available, which you can apply to various purposes.

By the way, in this article, why don't we practice a little more Excel? For those who use Excel frequently, statistical functions are very important and often used. The following compilation of **statistical functions in Excel** are the ones you need to pay attention to if you want to master Excel.

If you're looking for formulas to calculate percentage by mass in chemistry, check out this article. TipsMake provides very detailed information, making it easy for you to apply the formulas to your exercises.

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