

Percent: Increase, Decrease, Interest, and Tipping

Percent and decimals are very closely related. The word “percent” is actually made up of two words, “per” and “cent”, loosely translated to “for each 100.” Technically defined as “the number ratio expressed as a fraction of a hundred,” we see percent a lot, in terms of sales, money, and grades.

To change a percent into a decimal, one merely has to divide it by one hundred.

Ex. 65% is the same as 0.65, which is 65 hundredths or $\frac{65}{100}$.

Finding Percent

When asked to find the percent of something, merely multiply the number by the decimal form of the percent.

Ex. What is 24% of 50?

24% is the same as 0.24 ... So, we multiply $(0.24) \times (50) = 12$

Therefore 12 is equal to 24% of 50.

Percent Increase and Decrease

There are times, unfortunately, that the percent number is not given and one must find the value of the percent based off of two different figures. The easiest way to do this is to find the difference between the two numbers, divide it by the original number, then multiply it by 100.

$$\text{Percent Change \%} = \frac{(\text{New Value} - \text{Old Value})}{\text{Old Value}} \times 100$$

Sound confusing? Yeah, admittedly it can be. Most times, it is easiest to see it as an example. Here is such an example, hopefully this should help.

Ex. If Rodd bought 15 cases of water in March and 25 cases of water in April, what is the percent change in his purchasing policy?

First step, we need to figure out the difference between the two numbers. Thus, $25 - 15 = 10$. Therefore, there is a difference in ten cases of water.

Next, we see how much the ratio of 10 cases of water is to the original number. We do this by dividing the difference by the original amount. $10 \div 15$, which is equal to 0.667.

Lastly, we multiply the number by 100 to get the percent. Thus, we know that for this problem, there is approximately a 66.7% increase in the amount of water bottles that he purchased.

If the number goes down (or the difference is a negative number), it is considered a percent decrease. If the number rises, it is thus a percent increase.

Interest

Learning about interest is interesting (pun intended). Technically defined as the money that is charged or accrued at regular intervals based on a specific rate, interest is most often seen with money. While there are many varied form of interest, the formula that we will learn here will be the very basic Simple Interest.

Simple Interest is equal to the Principal times the Rate times the Time.

$$I = Prt$$

The Principal is the amount of money that one starts with.

The Rate is the rate at which the money is growing.

The Time is the amount of time that has occurred.

Ex. What is the interest if there is a principal of \$500, a rate of 3.5%, and it has been going on for four years?

$$I = (\$500) \times (0.035) \times (4) = \$70$$

Tipping

Tipping, especially for people in the service industry, is very important – it is the predominant way that their money is made. Since it is such a prevalent part of our culture, it is important to be able to learn how to do it quickly and without the need of a calculator.

Tips are generally a minimum of 15%-20%, so that is how we will calculate it mentally here.

Easiest way is to know how to take 10% of a number ... move the decimal to the left once. For instance ...

10% of \$3.40 is equal to \$0.34
10% of \$25.00 is equal to \$2.50
10% of \$410.50 is equal to \$41.05

If we are doing 20%, then we multiply that number by two.

20% of \$3.40 is equal to \$0.68
20% of \$25.00 is equal to \$5.00
20% of \$410.50 is equal to \$82.10

For 15%, take the 10% and divide it in half (to find 5%). Then, add it to the 10%.

15% of \$3.40 is equal to \$0.34 + \$ 0.17 = \$0.51
15% of \$25.00 is equal to \$2.50 + \$1.25 = \$3.75
15% of \$410.50 is equal to \$41.05 + \$20.52 = \$61.57