Percentage Difference Tip Sheet

A Percentage Difference is a difference shown as a percentage of the original value.

	***Difference*** means to subtract one value from another, for example the difference between 5 and 3 is: 5-3 = **2**.
	***Percentage Difference*** means to show that difference as a **percent of the original value**, so the percentage difference from 5 to 3 is 2/5 = 0.4 = **40%**.

How to Calculate

Here are two ways to calculate a percentage difference, use whichever method you prefer:

Method 1

Step 1: Calculate the difference (subtract one value form the other)

Step 2: Divide that Difference by the old value (you will get a decimal number)

Step 3: Convert that to a percentage (by multiplying by 100 and adding a "%" sign)

Note: if the new value is greater then the old value, it is a percentage increase, otherwise it is a decrease.

Method 2

Step 1: Divide the New Value by the Old Value (you will get a decimal number)

Step 2: Convert that to a percentage (by multiplying by

100 and adding a "%" sign)
Step 3: Subtract 100% from that
Note: if the result is positive it is a percentage increase, if negative, just remove the minus sign and cal it a decrease.

Examples

Example: A pair of socks went from $5 to $6, what is the percentage difference?

Answer (Method 1):

- Step 1: $5 to $6 is a $1 increase
- Step 2: Divide by the old value: $1/$5 = 0.2
- Step 3: Convert 0.2 to percentage: 0.2×100 = **20% rise**.

Answer (Method 2):

- Step 1: Divide new value by old value: $6/$5 = 1.2
- Step 2: Convert to percentage: 1.2×100 = 120% (ie $6 is 120% of $5)
- Step 3: Subtract 100%: 120% - 100% = 20%, and that means a **20% rise**.

Another Example: There were 160 smarties in the box yesterday, but now there are 116, what is the percentage difference?

Answer (Method 1): 160 to 116 is a decrease of 44. Compared to yesterday's value: 44/160 = 0.275 = **27.5% decrease**.

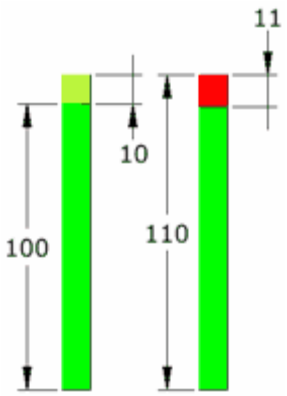
Answer (Method 2): Compare today's value with yesterday's value: 116/160 = 0.725 = 72.5%, so the new value is 72.5% of the old value. Subtract 100% and you get -27.5%, or a **27.5% decrease**.

How to Reverse a Rise or Fall

Some people think that a percentage increase can be "reversed" by the same percentage decrease. But no!

For example, a 10% increase from 100 is an **increase of 10**, which equals 110 ...

... but a 10% reduction from 110 is a **reduction of 11** (10% of 110 is 11), which equals **99** (not the 100 we started with)



Because a percentage is always **in relation to the old value**. The 10% increase was applied to **100**. But the 10% decrease was applied to **110**.

To "reverse" a percentage rise or fall, use the right formula here:

To Reverse:	Use this Percent:	Example 10%
An "x" percent rise:	x/(1+x/100)	10/(1+10/100) = 10/(1.1) = 9.0909...
An "x" percent fall:	x/(1-x/100)	10/(1-10/100) = 10/(0.9) = 11.111...