

Percentage

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Example 1:

Last year, you earned \$20,000. This year, you earned \$25,000.

Your income this year is $\frac{25000}{20000} = 1.25 = 125\%$ of your income last year.

Note that the reference number is always considered as 100%. Your income last year is the reference number.

Compared to last year, your income this year has increased by 25%. (125% compared to 100%)

Your income last year is $\frac{20000}{25000} = 0.8 = 80\%$ of your income this year.

So, your income last year is 20% less than your income this year. (80% compared to 100%)

The two following sentences sound contradictory of each other:

Your income last year is 20% less than your income this year. Your income this year is 25% higher than your income last year.

But nothing is wrong here. The references are different in two sentences.

Example 2:

You are 20 years old. Your brother is 15 years old.

Your age is $\frac{20}{15} = 133.33\%$ of your brother's age, so your age is 33.33% higher than your brother's age.

Your brother's age is $\frac{15}{20} = 75\%$ of your age, so his age is 25% lower than your age.