Percent of Change, Part 2

To calculate the percent of change in some quantity (either percent of increase or percent of decrease):

- Find the fraction $\dfrac{\text{difference in the quantity}}{\text{original quantity}}$
- Write that fraction as a percentage.

Example. A baby weighed 5 kg, but now he weighs 6 kg. How many percent did his weight increase?

When we set up the fraction (difference in weight) / (original weight), we get 1 kg / 5 kg = 1/5. As a percentage, 1/5 is 20%. So his weight increased by 20%.

1. Fill in the missing information and find the percent of increase or decrease.

a. This year the college has 1,200 students. Last year it had 900 students. What is the percent of increase in the number of students?

1. Find the fraction $\dfrac{\text{difference in the number of students}}{\text{original number of students}} =$

2. Write that as a percentage:

b. In May, a bookstore sold 2,400 books. In June, it sold 2,000 books. By how many percent did the book sales decrease?

1. Find the fraction $\dfrac{\text{difference in the number of books sold}}{\text{original number of books sold}} =$

2. Write that as a percentage:

2. In May, a website had 500,000 visitors. In December, it had 700,000 visitors. Find the percent of increase in the number of visitors.

3. Mary's dog weighed 25 kg, but then it got sick and lost 2 kg. How many percent of his body weight did the dog lose?

When the numbers are harder, you can use a calculator.
Example. The rent increased from \$325 to \$342. How much was the percent of increase? First we find the actual increase (difference) in the rent: \$342 − \$325 = \$17. Then, we write the fraction where we compare \$17 to the original rent: \$17 / \$325. Using the calculator, this fraction is 0.0523077 as a decimal, or about 5%.

4. To the nearest tenth of a percent, calculate by how many percent these quantities changed.

a. The postage for a letter increased from \$0.78 to \$0.81.	**b.** Dad's weekly work hours were cut from 40 h to 37.5 h.
c. Jamie sold 445 newspapers last week. This week he sold 487.	**d.** Potatoes were \$1.09 per pound but went up to \$1.14 per pound.

5. **a.** The price of a biology textbook was \$50. Then it was lowered to \$45. Calculate the percentage of change in price.

b. The price was increased back to \$50. Calculate the percent of increase. Hopefully this is not a surprise to you, but the answer is *not* the same as in part (a)!

6. The price of a jar of honey went from \$5.50 to \$6.00. Then it increased further to \$6.50.

a. Calculate by how many percent the price increased at first.

b. Calculate by how many percent the price increased later on.

c. If the price were to increase by another \$0.50 (from \$6.50 to \$7.00), would the percent increase be more, less, or the same as what you got in part (b)?

7. **a.** Three items, with prices of \$50, \$60, and \$70, have their prices *increased* by \$10. For which item is the *percent* increase in price the greatest?

b. Three items, with prices of \$50, \$60, and \$70, have their prices *discounted* by 12%. Which item's *price* decreases the most (in dollars)?