

Percentage of Change

Percent(age of) change is a way to describe how much a price or some other quantity is increasing or decreasing (changing). Let's look at how to calculate the percentage a quantity is changing.

Example 1. A phone used to cost \$50. Now it has been discounted to \$45. What percentage was the discount?

Since this problem is asking for the *percentage*, we will use our basic formula $\frac{\text{part}}{\text{total}} = \text{percentage}$.

Because the change is relative to the *original* price, that original price becomes the “total” in our equation. The “part” is the actual amount by which the quantity changes, in this case \$5. So we get

$$\text{percentage} = \frac{\text{part}}{\text{total}} = \frac{\$5}{\$50} = 1/10 = 10\%$$

Essentially, we wrote **what fraction the \$5 discount is of the original \$50 price** and converted that fraction into a percentage.

In summary: To calculate the percent change, use the same basic formula that defines a percentage: *part/total*. Since the change is relative to the original price, the original price is the “total,” and the change in price is the “part.”

$$\text{percentage of change} = \frac{\text{part}}{\text{total}} = \frac{\text{difference}}{\text{original}}$$

1. Write an equation and calculate the percentage of change.

a. A toy construction set costs \$12. It is discounted and costs only \$8 now. What percentage is the discount?

$$\frac{\text{difference}}{\text{original}} =$$

b. A sewing kit costs \$20. It is discounted and costs only \$16 now. What percentage is the discount?

c. A bouquet of flowers used to cost \$15, but now it costs \$20. What is the percentage of increase?

d. The price of a stove was \$160. The price has increased, and now it costs \$200. What is the percentage of increase?