

Pre-Algebra

Applying a Percent Increase

It is common in mathematics to work with percent increases. An example of an everyday application of this is the sales tax you pay in the local store. Sales tax is expressed in the form of a percent increase.

Applying a Percent Increase

There are two methods for working with percent increases. Use the one you like best.

Method 1:

- Start with the amount before increase (i.e., the original amount).
- Calculate the amount of the increase.
- Add the original amount and the amount of the increase to obtain the final amount.

$$\left(\begin{array}{c} \text{increase} \\ \text{amount} \end{array} \right) = \left(\begin{array}{c} \text{original} \\ \text{amount} \end{array} \right) \cdot \left(\begin{array}{c} \text{percent} \\ \text{increase} \end{array} \right)$$

$$\left(\begin{array}{c} \text{final} \\ \text{amount} \end{array} \right) = \left(\begin{array}{c} \text{original} \\ \text{amount} \end{array} \right) + \left(\begin{array}{c} \text{increase} \\ \text{amount} \end{array} \right)$$

An advantage of this approach is that you calculate the amount of the increase. Sometimes, this is an important value to know.

Example: What do you get when you increase 150 by 10%?

$$\text{Increase Amount} = 10\% \cdot 150 = 15$$

$$\text{Final Amount} = 150 + 15 = 165$$

Method 2:

- Add the percent increase to 100%.
- Multiply the original amount by this new percentage to obtain the final amount.

$$\left(\begin{array}{c} \text{total} \\ \text{percent} \end{array} \right) = 100\% + \left(\begin{array}{c} \text{percent} \\ \text{increase} \end{array} \right)$$

$$\left(\begin{array}{c} \text{final} \\ \text{amount} \end{array} \right) = \left(\begin{array}{c} \text{original} \\ \text{amount} \end{array} \right) \cdot \left(\begin{array}{c} \text{total} \\ \text{percent} \end{array} \right)$$

This approach may be easier and has extensive business applications.

Example: What do you get when you increase 150 by 10%?

$$\text{Total Percent} = 100\% + 10\% = 110\% = 1.1$$

$$\text{Final Amount} = 150 \cdot 1.1 = 165$$