

## Lesson 5-3 → Multi-Step Percent Change Problems

A city increases its population from 2000 to 2010 by 10%. The city increase by 5% from 2010 to 2020. In 2000, the city had 100,000. What is the population in 2020.

$$\text{New Amount} = \text{Original Amount} \left( 1 \pm \begin{array}{l} \text{First} \\ \text{Percent} \\ \text{Change} \end{array} \right) \left( 1 \pm \begin{array}{l} \text{Second} \\ \text{Percent} \\ \text{Change} \end{array} \right)$$

$$\text{New Amount} = 100K(1 + 0.1)(1 + 0.05)$$

$$\text{New Amount} = 100,000(1.1)(1.05)$$

$$\text{New Amount} = 115,500$$

Note 115,500 is NOT +15% from 100K  
This is because the +5% is from 110K  
CANNOT do in just one step!