Sales Tax and Commission

Objective 1 Solve an Applied Sales Tax Problem

Applied sales tax problems are very similar to applied percent problems and also generally can be solved using the following structured format.

(A percent) of (a total) is (a portion).

$$(\%) \cdot (Total) = (Portion)$$

$$\left(\begin{array}{c} \% \\ Sales\ Tax \end{array} \right) \cdot \left(\begin{array}{c} Purchase \\ Price \end{array} \right) = \left(\begin{array}{c} Amount\ of \\ Sales\ Tax \end{array} \right)$$

We refer to the **purchase price** as the "Total". This can also be thought of as the price shown on the price tag. The amount of sales tax you pay at the register is a portion of the purchase price and is calculated once you are at the cash register. Finally, the "Total Amount" you pay at the register is the sum of the purchase price and the amount of sales tax.

$$\left(\begin{array}{c} Total \\ Amount \end{array} \right) = \left(\begin{array}{c} Purchase \\ Price \end{array} \right) + \left(\begin{array}{c} Amount\ of \\ Sales\ Tax \end{array} \right)$$

Example 1: Suppose the sales tax rate in a certain county is 7%. If the price of a calculator is $34.95, what is the amount of sales tax? What is the total price paid at the register?

$$\left(\begin{array}{c}\text{Amount of}\\\text{Sales Tax}\end{array}\right) = \left(\begin{array}{c}\%\\\text{Sales Tax}\end{array}\right) \cdot \left(\begin{array}{c}\text{Purchase}\\\text{Price}\end{array}\right)$$

$$\left(\begin{array}{c}\text{Amount of}\\\text{Sales Tax}\end{array}\right) = \left(0.07\right) \cdot \left(34.95\right)$$

$$\left(\begin{array}{c}\text{Total}\\\text{Amount}\end{array}\right) = \left(\begin{array}{c}\text{Purchase}\\\text{Price}\end{array}\right) + \left(\begin{array}{c}\text{Amount of}\\\text{Sales Tax}\end{array}\right)$$

Example 2: If the purchase price of a television is $276 and the amount of sales tax is $13.80, what is the percent sales tax?

$$\left(\begin{array}{c} \text{Amount of} \\ \text{Sales Tax} \end{array} \right) = \left(\begin{array}{c} \% \\ \text{Sales Tax} \end{array} \right) \cdot \left(\begin{array}{c} \text{Purchase} \\ \text{Price} \end{array} \right)$$

Example 3: If the purchase price of a stereo system is $625 and the amount of sales tax is $37.50, what is the percent sales tax?

Objective 2 Solve a Commission Rate Problem

Some careers pay their sales personnel a portion of their total sales. This portion is called the **amount of commission**. The amount of commission is actually a percentage of the total sales. This percentage is called the **commission rate**.

The way we calculate the amount of commission is very similar to the way we calculate the amount of sales tax.

$$\begin{pmatrix} \text{Amount of} \\ \text{Commission} \end{pmatrix} = \begin{pmatrix} \% \\ \text{Commission} \end{pmatrix} \cdot \begin{pmatrix} \text{Total} \\ \text{Sales} \end{pmatrix}$$

Example 4: A real estate agent has a commission rate of 3.5% and sells a property for $240,000. What is the amount of her commission?

$$\begin{pmatrix} \text{Amount of} \\ \text{Commission} \end{pmatrix} = \begin{pmatrix} \% \\ \text{Commission} \end{pmatrix} \cdot \begin{pmatrix} \text{Total} \\ \text{Sales} \end{pmatrix}$$

Example 5: If the commission for selling a car is $516 and the car sold for $12,000, what is the commission rate?

Example 6: If the commission rate for selling an appliance is 2.5% and the appliance sold for $945, what is the amount of commission?