

**Example 3**

Izzy wants to buy a new car with a base price of \$22 500 before taxes. She wants the following options worth \$2450 before taxes: leather seats, sunroof, and chrome wheels.

- a) State the sticker price of the car.

$$\begin{aligned} \text{Sticker Price (Before taxes)} &= \text{Base Price} + \text{options} \\ &= 22\,500 + 2\,450 \\ \text{Sticker Price} &= \boxed{\$ 24\,950} \end{aligned}$$

- b) Izzy has a car to trade-in worth \$12 250. Calculate the total cost of the car after taxes.

$$\begin{aligned} \text{Total Cost of Vehicle} &= \text{Sticker Price} - \text{Trade-in Value} + 12\% \text{ taxes} \\ &= 24\,950 - 12\,250 + 12\% \text{ taxes} \\ &= 12\,700 \times 1.12 \\ &= \boxed{\$ 14\,224} \end{aligned}$$

Once purchased and driven off the dealer's lot, a new vehicle's value will start to **depreciate** (its value will drop). The largest amount of **depreciation** occurs in the first year. As a result, many people look to purchase cars that are 1 to 3 years old. These vehicles have depreciated so they are cheaper to buy, but they usually have some time remaining on the manufacturer's warranty for peace of mind.

**Example 4: Calculating Value after One Year of Depreciation**

Mahsheed buys a new car that is valued at \$24 000.00. In the first year, the value of the car depreciates by 20%. What is the value of the car after one year?

$$\begin{aligned} \text{Value of car after 1 year} &= \text{Value of new car} - 20\% \text{ of the value of new car} \\ &= 24\,000 - (24\,000 \times 0.20) \\ &= 24\,000 - 4\,800 \end{aligned}$$

$$\text{After 1 year, the value of the car} = \boxed{\$ 19\,200}$$

**Example 5: Calculating Value after Multiple Years of Depreciation**

Benigna buys a new car that is valued at \$19 500. It's value will depreciate by 18% in the first year, and by 14% in the second year. Calculate the value of the car after two years have passed.

To find the value of the car after 2 years:

$$\begin{aligned} \textcircled{1} \text{ Calculate the car value after the first year} &= 19\,500 - (19\,500 \times 0.18) \\ &= 19\,500 - 3\,510 \\ &= \underline{\$ 15\,990} \end{aligned}$$

$$\begin{aligned} \textcircled{2} \text{ Calculate the car value after 2 years} &= 15\,990 - (15\,990 \times 0.14) \\ &= 15\,990 - 2\,238.60 \end{aligned}$$

$$\text{Value of the car after 2 years} = \boxed{\$ 13\,751.40}$$