

Problem 2: Discounts and Sales Tax

Concept: Calculating consecutive percentage changes.

Question:

A new video game console is priced at **\$450**. The store is running a sale offering a **20%** discount. After the discount is applied, a **6%** sales tax is added to the purchase price.

What is the **final price** the customer pays for the video game console?

Guidance:

1. Calculate the **20%** discount and subtract it from the original price to find the sale price.
2. Calculate the **6%** sales tax on the *sale price*.
3. Add the tax amount to the sale price to get the final price.

Next

Step 1: Calculate the Discount and Sale Price

First, find the price after the 20% discount is applied.

1. **Calculate the discount amount:**

$$\text{Discount Amount} = \text{Original Price} \times \text{Discount Rate}$$

$$\text{Discount Amount} = \$450 \times 0.20 = \$90$$

2. **Calculate the sale price:** Subtract the discount from the original price.

$$\text{Sale Price} = \$450 - \$90 = \mathbf{\$360}$$

The price after the discount is **\$360**.

next

Step 2: Calculate the Sales Tax Amount

The **6%** sales tax is applied to the discounted price (the \$360 sale price, not the original \$450).

1. **Convert the tax rate to a decimal:**

$$6\% = 0.06$$

2. **Calculate the tax amount:**

$$\text{Tax Amount} = \text{Sale Price} \times \text{Tax Rate}$$

$$\text{Tax Amount} = \$360 \times 0.06 = \mathbf{\$21.60}$$

Step 3: Calculate the Final Price

Add the tax amount to the sale price to find the total amount the customer pays.

$$\text{Final Price} = \text{Sale Price} + \text{Tax Amount}$$

$$\text{Final Price} = \$360 + \$21.60 = \mathbf{\$381.60}$$

Final Answer:

The final price the customer pays for the video game console is **\$381.60**.