Section 8.9

READING AND SELF-DISCOVERY QUESTIONS 8.9

1. Identify the following words as describing an increase or a decrease:

   Raise of 5% salary ___an increase___

   Discount of 20% off the list price ___a decrease___

2. What process do you use for calculating a percent increase?

   Divide the increased amount by the original amount because:
   [increased amount] = [percent increase] × [original amount]

3. What process do you use for calculating a percent decrease?

   Divide the decreased amount by the original amount because:
   [decreased amount] = [percent decrease] × [original amount]

CRITICAL THINKING QUESTION 8.9

1. If an item is on sale for 50% off and you have a coupon for 25% off, why don't you save 75% on the item? What insight does this give you about sales and savings?

   The sale discount is subtracted from the original price to find the amount that the 25% discount will then be applied to. This will be a price LESS than the full amount. The result will be somewhat smaller that 75% of the original number.

DEMONSTRATE YOUR UNDERSTANDING 8.9

1. Jane is a saleswomen who earns a commission of 5% of annual gross sales. Her annual gross sales were $200,000.

   a) In words, write the process for calculating the amount of her commission.

   Multiply her annual gross sales by the decimal form of her commission rate.
   Validate by dividing the result by her annual gross sales.

   b) Using mathematical symbols, write the equation. **commission = $200,000 × (0.05)**

   c) Solve the equation. $\$200,000 \cdot (0.05) = \$10,000$

   Validate

   $$\frac{\$10,000}{\$200,000} = \frac{1}{20} = 0.05 = 5\%$$

IDENTIFY AND CORRECT THE ERRORS 8.9

In the second column, identify the error(s) you find in the following worked solution and describe the error made. Solve the problem correctly in the third column.

Problem	Describe Error	Correct Process
If your salary of $25,000 is raised by 5% each year, what is your salary after two years? **Worked Solution** *(What is wrong here?)* (salary) + (year 1 raise) + (year 2 raise) = $25,000 + 5%(25,000) + 5%(25,000) = $25,000 + $1,250 + $1,250 = **$27,500**	**Student did not take into account that the second year salary was 5% more than the first year salary. The base *salary* goes up each year so for year two, the base amount is [25,000 + 5% (25,000).] Calculating the *raise* for that year means to calculate 5% of that amount.**	(salary) + (year 1 raise, "yr1r") + (year 2 raise, "yr2r") = salary after two years $25,000 "*salary*" + 5%(25,000) "*yr1r*" + 5% [(25,000)+ 5%(25,000)] "*yr2r*" = $25,000 + $1,250 + $1,312.50 (salary) + ("yr1r") + ("yr2r") = **$27,562.50**