Part 6 Multi-Step Word Problems

Unit 38 Introduction to Multi-Step Word Problems

1. Understanding word problems
   A. Word problems thus far have required just one math operation.
   B. Better skills are needed to solve word problems requiring two or more math operations.
2. Problem-solving procedures

A. Read the problem to determine the questions (unknowns).

B. Reread the problem underlining the given data and the unknown variables. An unknown will often be the question.

C. State what is unknown and what is given. Use a diagram when appropriate.

D. Write the appropriate equation (formula) using an unknown and given data.

E. Solve the equation. Continue until the problem is solved.

F. Does the final answer make sense?

3. Example 1:

Mary had $5.00. She bought cards for $2.50 and a $.50 soda. How much money does she have left?

First reading reveals the problem is about calculating her change. Rereading and underlining reveals the following:

Mary had $5.00. She bought cards for $2.50 and a $.50 soda. How much money does she have left?

Unknown:
money left

Given:
started with $5.00
spending = $2.50 and $.50

Solution:

spending $2.50 + $.50 = $3.00

money left $5.00 - $3.00 = $2.00

This answer makes sense because $3.00 of spending plus $2.00 change equals her original $5.00.

4. Example 2: Let's make the example with Mary a little more complicated. Mary went to the store with $5.00. She bought birthday cards for $2.50 and an orange soda for $.50. She was required to pay an 8% sales tax on the total purchase. How much money does she have left?

Unknown:
money left

Given:

started with $5.00
spending = $2.50 and $.50
tax = 8%

This answer makes sense because total outlay of $3.24 plus change of $1.76 equals Mary's original $5.00.

Solution:

spending $2.50 + $.50 = $3.00

tax $\frac{\%}{100} = \frac{Part\ (is)}{Whole\ (of)}$

$\frac{8}{100} = \frac{x}{3.00}$

$24.00 = 100x$

$x = \$.24$

total spending $3.00 + $.24 = $3.24

money left $5.00 - $3.24 = **$1.76**

5. Example 3: Let's make the example with Mary even more complicated.

Mary went to the new shopping mall with a new $5.00 bill. She bought two really cute birthday cards for a total of $2.50 and a small orange soda for $.50. She was required to pay a very high 8% state sales tax on the total purchase. How much money and what percent of her hard-earned money does she have left?

Unknown:
money left
percent left

Given:
started with $5.00
spending = $2.50 and $.50
tax = 8%

This answer makes sense because 30% of $5.00 is $1.50, and $1.76 should yield a slightly higher answer.

Solution:

spending $2.50 + $.50 = $3.00

tax $\frac{\%}{100} = \frac{Part\ (is)}{Whole\ (of)}$ and $\frac{8}{100} = \frac{x}{3.00}$

$24.00 = 100x$

$x = \$.24$

total spending $3.00 + $.24 = $3.24

money left $5.00 - $3.24 = $1.76

percent left $\frac{\%}{100} = \frac{Part\ (is)}{Whole\ (of)}$ and $\frac{x}{100} = \frac{1.76}{5.00}$

$5x = 176$

x = 35.2%

Note: These 3 examples are designed to illustrate how good problem-solving skills can make complicated problems easier to solve.

Note: This learning unit does not have practice problems as this entire part of **Quick Notes** is designed to help you learn how to do these multi-step problems.