

## Helpful Hints for L.5.5

All of the principles about multiplication fact families that you used in P.4.4 still apply. (If you have questions about those, please see "Helpful Hints for P.4.4.") There are two new formulas in this section. Value problems deal with coins and items that you would purchase. Interest problems deal with saving and borrowing money. All of the problems in the section deal with the formula:  $Ratio \cdot Factor = Product$ . In order to understand the problems, we need to know the vocabulary from the problems that relate to the parts of the multiplication formula above.

### Value Problems

The first kind of value problems deals with money. In these problems the value of one coin is the *Ratio*, the number of coins you have is the *Factor*, and the total amount of money is the *Product*. The trick to getting these problems correct is to remember that all money values are given in dollars. This means that while a nickel is worth 5 cents, we need to write it in dollar format which is \$.05. When you fill in the boxes, the ratio box would be .05 and the label behind it is "\$ per coin". Below is an example of the answer boxes for a problem involving 35 nickels correctly filled in.

	Values	Labels
Ratio	.05	\$ per coin
Factor	35	Number of coins
Product	1.75	\$ Total Value

The second kind of value problem deals with buying items like tickets or pencils or whatever. In these cases, the cost of one item is the *Ratio* value, the number of items is the *Factor*, and the total amount paid is the *Product*. For example, if a problem says that Sally bought 6 tickets to a play that cost \$7.50 per ticket, your boxes would look like this:

	Values	Labels
Ratio	7.50	\$ per ticket
Factor	6	Number of tickets
Product	45	\$ Total cost

In summary, for value problems:

Ratio	Factor	Product
Value of one Coin	Number of coins	Value of all money
Cost of one item	Number of items purchased	Cost of all items (before tax)

## Interest Problems

Interest problems are also based on basic multiplication. The formula is: *interest rate* · *amount* = *\$ earned/owed*. The amount could be either money invested or money borrowed. If money is invested, interest is earned. If money is borrowed, interest is owed. The trick to these problems is that the interest rate needs to be put into the box in a different way than you put it into the calculator. The reason for this is due to the labels that are asked for in the box. If the interest rate in a given problem is 7%, you would put 7 in the Value box for the *Ratio* and "% Interest" in the Labels box. When you do calculations with this problem, you would use .07. That is because you are converting from a percent to a decimal.

Here is an example of how to fill in the boxes for an interest problem where \$2000 is invested for 1 year at 7% interest:

	Values	Labels
Ratio	7	% interest
Factor	2000	\$ invested
Product	140	\$ Earned

To find the \$ Earned, you would type the following into your calculator:  $.07 \times 2000$ .

Summary for interest problems,

<b>Ratio</b>	<b>Factor</b>	<b>Product</b>
Interest rate	Amount invested	Interest earned
Interest rate	Amount borrowed	Interest paid