Name: _____ Date: _____

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Section 5.2 Math Link

This worksheet will help you with the Math Link on page 189.

Items that may be purchased to add to $100 are given below. Each item has a variable that can be used to represent the item.

Item	Cost per Item	Variable
blender	$23	*a*
watch	$17	*b*
book	$8	*c*
soccer ball	$13	*d*
drum	$40	*e*
coffeemaker	$27	*f*

1. a) One combination that adds to $100 is 2 coffeemakers and 2 blenders. Using the variables in the table above, an algebraic expression to represent this purchase combination is $2f + 2a$.

- Are the variables in this expression in alphabetical order?
- What does it mean for an expression to be arranged in alphabetical order?
- Rearrange this expression so that it is in alphabetical order.

b) Another combination is 1 drum, 1 book, and 4 soccer balls. Using the variables from the table above, an algebraic expression to represent this purchase combination is $e + c + 4d$. Rearrange this expression so that it is in alphabetical order.

2. Two other possible purchase combinations are:

- 4 watches and 4 books
- 1 coffeemaker, 1 blender, 2 watches, and 2 books

a) Use the variables in the table above to write algebraic expressions to represent each purchase combination. Ensure that your expressions are in alphabetical order.

b) Find two other purchase combinations, or refer to the combinations you discovered in the Math Link for section 5.1. Write algebraic expressions for these in alphabetical order.

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(continued)

3. Notice from the table on the previous page that the drum, represented by the variable *e*, has a value of $40. Fill in the blanks to show other combinations that have a value of $40.

Combination	Expression
1 blender and 1 watch	$a + b$
5 books	
1 soccer ball and 1 coffeemaker	

4. Find other combinations that add to $100. In #1b), the purchase combination $e + c + 4d$ equals $100. The value of the drum, *e*, equals $40. Replace the value of *e* with your expressions from #3. Simplify each new expression by collecting like terms. Ensure your final expression is arranged in alphabetical order. The first one is done for you.

Combination Equal to *e*	Algebraic Expression Equal to *e*	Substitute Into $e + c + 4d$	Simplified
1 blender and 1 watch	$a + b$	$(a + b) + c + 4d$	$a + b + c + 4d$
5 books			
1 soccer ball and 1 coffeemaker			

5. How would you use algebra in the same way you did in #4 to find purchase combinations that add to $101? **Hint:** One combination is 2 drums, 1 soccer ball, and 1 book, which is $c + d + 2e$.