

# ***Green Purchasing Project***

Worksheet for Algebra Students, Item III

## **Calculating and Reporting**

### **Do The Math**

This worksheet will help you create two algebraic formulas: One will give the life-cycle cost of a washing machine. The other will give the carbon footprint (in lbs of CO<sub>2</sub> equivalent). Each formula will have as its inputs different numbers that depend on each washer (for instance, energy used per year).

Please turn in one nicely written up copy for your whole group, though I recommend each person in your group also have their own copy for their records. I suggest you work through this worksheet together on your own pages, and after you know all the answers fill out the copy you'll turn in.

1. Make a list of all the factors that you think should be considered in the life-cycle cost of a clothes washer. (This is your answer to #2 on your worksheet for the Meeting with Business Students WS II.)

2. Define your variables: For each input you listed on #4 worksheet for the Meeting with Business Students WS II (the values which were dependent on the washing machine) give a variable name.

3. Rewrite all the constants that are independent of the washing machine. (#5 on worksheet for the Meeting with Business Students WSII) Notice that many of these are rates. (Rates typically have units of something/something, for instance miles/hour or dollars/minute.) These numbers will tend to change over time, but for simplicity we will think of them as constants.

While doing the calculations for #4, it's ok if you need to go back and fill more things into #1, #2, and #3.

4. (a) For each factor in problem 1, write the corresponding cost in terms of the variables you have defined in problem 2. (There may be some judgments you have to make. For instance, how do you account for the fact that electricity costs different amounts at different times of the year? Write these judgments/assumptions in part 4(b).) Also include any complicated calculations here.

(b) What judgments and/or assumptions did you make as part of the process? Explain the motivation for each of the decisions you made.

5. Write the formula for the total life cycle cost  $C$  of a clothes washer in terms of the variables you defined in #2.