Name: _____ Date: _____ Period: _____

Energy Audit

Prediction

Copy the list of appliances that you will be testing from the board. Which one do you think will use the most energy? Please circle **ONE**.

Procedures

1. Using your Kill-a-Watt meter, measure the wattage of each appliance.
2. When you get to an appliance, plug your Kill-a-Watt meter into the outlet.
3. Push the "watt" button and be sure your Kill-a-Watt meter is reading 0.
4. Plug your appliance directly into the front of the Kill-a-Watt meter.
5. Write the name of the appliance in your data table. Record the wattage while the appliance is off but plugged in.
6. Turn on the appliance. If you need assistance, please ask. Record the wattage while the appliance is on for at least 5 seconds. The wattage may not stay consistent. If this happens, record a general measurement that reflects the average wattage when it is turned on.

Data

	Appliance	Wattage While Appliance is OFF (W)	Wattage While Appliance is ON (W)
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Results

1. Which appliance from your energy audit used the most energy? _____

2. Do your results support your prediction? In other words, did the appliance that you chose in the prediction question use the most energy?

Yes No

Analysis

1. Did some appliances use energy when they were plugged in but NOT turned on?

Yes No

2. Choose <u>one</u> of the appliances from the data table that you use at home and could either reduce the use of OR unplug when not in use. <u>Choose one</u> table below and complete it according to your chosen appliance.

REDUCE USE
Appliance:
How many hours per day could you <u>reduce</u> the use of this appliance? (Record minutes as a fraction of an hour. For example, 1 hr and 30 min = 1.5 hours.)
How many days per week could you do this action?
Wattage when ON:

<u>OR</u>

UNPLUG WHEN NOT IN USE
Appliance:
How many hours per day could you leave this appliance <u>unplugged</u>? (Record minutes as a fraction of an hour. For example, 1 hr and 30 min = 1.5 hours.)
How many days per week could you do this action?
Wattage when OFF:

3. Enter the numbers from the table you chose above into the equation below to calculate the number of watt-hours you could save per year.

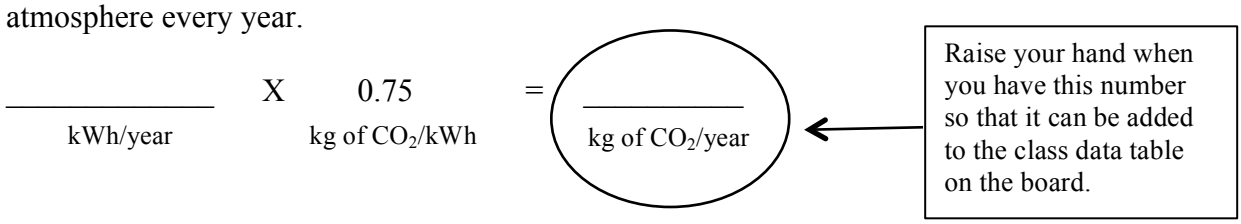
_____	X	_____	X	_____	X	52	=	_____
watts		hours/day		days/week		weeks/year		watt hours/year

4. Convert watt hours/year to kilowatt hours (kWh)/year.

_____	÷	1000	=	_____
watts hours/year		watts/kilowatt		kWh/year

Developed by the Asombro Institute for Science Education (www.asombro.org)

5. Calculate the mass (in kilograms) of carbon dioxide that you could keep out of the atmosphere every year.



6. Enter the class data from the board and add them all together to calculate the total amount of carbon dioxide that could be conserved by your class.

Class Data					
Student	**Potential CO_2 Conserved (kg of CO_2/year)**	**Student**	**Potential CO_2 Conserved (kg of CO_2/year)**	**Student**	**Potential CO_2 Conserved (kg of CO_2/year)**
1		13		25	
2		14		26	
3		15		27	
4		16		28	
5		17		29	
6		18		30	
7		19		31	
8		20		32	
9		21		33	
10		22		34	
11		23		35	
12		24		36	
Total amount that could be conserved by your class					kg of CO_2/year

7. Which animal is the closest in mass to the mass of the carbon dioxide that your class could keep out of the atmosphere in a year?

   a. Medium dog (20 kg)
   b. Black bear (110 kg)
   c. Polar bear (270 kg)
   d. Ayrshire cow (550 kg)

8. What if many more students in New Mexico conserved the amount of carbon dioxide that you calculated for your selected appliance? Use the circled number on page 3 of this handout and the number of students your teacher wrote on the board.

_____	X	_____	=	_____
kg of CO_2/year (from page 3)		# students (from board)		kg of CO_2/year

9. How does energy production contribute to the rise in global temperatures?

10. As the number of people on Earth continues to grow toward eight billion, how do you think the atmosphere will be affected? Think about your energy measurements and your knowledge of the enhanced greenhouse effect to answer this question.