

Energy Audit Answer Key

Student answers will vary,
sample data shown

	B. Wattage While ON (W)	C. Estimated Hours Used Weekly	D. Watt Hours Per Week <i>Column B × Column C</i>	E. Watt Hours Per Year <i>Column D × 52 weeks per year</i>	F. kW Hours Per Year <i>Column E ÷ 1000</i>	G. CO ₂ Emissions Per Year (kg) <i>Column F × 0.58 kg CO₂</i>
<i>Hair dryer</i>	1552	1.75	2,716	141,232	141.232	81.91
<i>Microwave</i>	1229	1.5	1,843.5	95,862	95.862	55.6
<i>iPhone 6Plus</i>	6.0	30	180	9,360	9.36	5.41
<i>Table lamp</i>	77.8	42	3,267.6	169,915.2	169.92	98.55
Add CO₂ totals in column G to calculate the amount of CO₂ you emit through these activities:						241.47

Results

Student answers will vary

1. Which animal is most responsible for the mass of the carbon dioxide that you emit to the atmosphere from these appliances in one year?

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

2. Complete the following whole class data table as each student reports their CO₂ emissions. Add the values up to calculate the CO₂ emissions from your class in one year using these appliances.

Class Data					
Student	CO ₂ emitted through these activities (kg of CO ₂ /year)	Student	CO ₂ emitted through these activities (kg of CO ₂ /year)	Student	CO ₂ emitted through these activities (kg of CO ₂ /year)
1	241.47	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 of CO₂ emitted by your class					kg of CO ₂ /year

Conclusion

3. Imagine every student in your grade in New Mexico emitted the same amount of CO₂ as you to the atmosphere using these appliances. How much CO₂ total would be released into the atmosphere in one year?

$$\begin{array}{r} \underline{241.47} \\ \text{Personal Emissions} \\ \text{kg of CO}_2\text{/year} \\ \text{(from page 1)} \end{array} \quad \times \quad \begin{array}{r} 25,000 \\ \text{students} \\ \text{per grade} \end{array} \quad = \quad \begin{array}{r} \underline{6,036,750} \\ \text{kg of CO}_2\text{/year} \end{array}$$

4. 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 human enhanced greenhouse effect to answer this question.

More people on Earth will likely mean more energy use and more energy production. If fossil fuels continue to be used as a major source of energy production, more carbon dioxide will be released into the atmosphere.

5. This activity shows only a snapshot of the energy that humans use: the personal use of a just a few appliances. However, humans use energy in many ways and at much larger scales. What are some other human behaviors that require large amounts of fossil fuels?

Transportation and industry also require a large amount of energy. Cars, buses, planes, and trains all require large energy in the form of oil. These behaviors burn fossil fuels and release greenhouse gases to the atmosphere. Additionally, the creation of many products that humans use regularly requires the burning fossil fuels as an energy source.

6. What are some actions you can take to reduce the amount of CO₂ you emit to the atmosphere?

I can reduce my electricity use at home, utilize alternative forms of transportation, and reuse products that require fossil fuels for production.