Energy Audit Your Classroom

Every electric appliance needs a specific amount of electricity in order to work. Wall outlets carry enough electricity to run most of the things we use. But for some jobs, we need stronger or weaker power. Three key electricity terms are "volt," "amp," and "watt."

The power of electricity is measured in *volts.* The symbol for a volt is $V\sim$. The power that something needs is called *voltage.*

The speed of electricity is measured in amperes, or "amps." The electric speed that we need is called amperage. The symbol for an amp is A.

The amount of electricity is measured in *watts*. The symbol for a watt is W . The amount of electricity we need is called *wattage.*

Most wall outlets carry 120 volts of electricity. 120 volts is strong enough to power things like fans, TVs, lamps, and clocks.

Bigger things like ovens and dish washers need 240 volts of electricity. These products need special wall outlets that carry 240 volts of electricity.

Most of the devices we use come with labels that say how many volts of electricity they must have. The label might look like this.


```
✷AWESOME                    c ⒰Ⓛ us
MODEL: 571                      LISTED
120V~, 60Hz, 900W              E 139890
                                  6K89
DO NOT IMMERSE IN WATER
NE PAS IMMERGER DANS L'EAU
FOR HOUSEHOLD USE ONLY
USAGE DOMESTIQUE SEULEMENT
MADE IN CHINA/FABRIQUÉ EN CHINE      P.N.  104896
```

This label says that we need 120 volts of electricity.

The label has another important number. It says that this product uses 900 watts of electricity per hour. This number is important because we can use it to add up how much electricity we use every day.

If you look through your classroom, you will see many electrical appliances. Check the labels to see how many watts of electricity each one uses.

Copy the following table onto a whiteboard and complete it as a class. If an appliance does not say its wattage, it may still list its amperage. If so, multiply the amperage by the voltage $(A \times V\sim)$ to calculate the wattage (W).

Next, turn your number of watts into *kilowatts* (kW). Power companies measure electricity in kilowatts, which is 1/1000th of a watt. To turn your number of watts into kilowatts, divide your wattage by 1000 $(W \div 1,000 = kW)$.

Then estimate how many hours your class runs the appliance each day. Multiply the number of kilowatts for each appliance by the number of hours you use the appliance each day. Your answer will be a number in kilowatt hours (kWh).

Now multiply the kilowatt hours by the rate your electrical cooperative charges. $(kWh \times \$0.12)$

Appliance	Wattage		Kilowatts	Hours per day		Kilowatt Hours	CVEC price per kWh		Price per day
		÷1,000		X	=		X 0.12	=	
		÷1,000		X	=		X 0.12	=	
		÷1,000		X	=		X 0.12	=	
		÷1,000		X	=		X 0.12	=	
		÷1,000		X	=		X 0.12	=	
		÷1,000		X	=		X 0.12	=	
		÷1,000		X	=		X 0.12	=	
		÷1,000		X	=		X 0.12	=	
		÷1,000		X	=		X 0.12	=	
		÷1,000		X	=		X 0.12	=	

Energy Audit Your Home

Television $0.04 x _____ x _____ = _____ X4 = _____ X12 = _____
  Number of appliances   **Hours per week**   **Cost per week**   **Cost per month**   **Cost per year**

Computer $0.06 x _____ x _____ = _____ X4 = _____ X12 = _____
  Number of appliances   **Hours per week**   **Cost per week**   **Cost per month**   **Cost per year**

Washing Machine $0.03 x _____ x _____ = _____ X4 = _____ X12 = _____
  Number of appliances   **Loads per week**   **Cost per week**   **Cost per month**   **Cost per year**

Clothes Dryer $0.65 x _____ x _____ = _____ X4 = _____ X12 = _____
  Number of appliances   **Loads per week**   **Cost per week**   **Cost per month**   **Cost per year**

Oven Range $1.44 x _____ x _____ = _____ X4 = _____ X12 = _____
  Number of appliances   **Hours per week**   **Cost per week**   **Cost per month**   **Cost per year**

Microwave $0.18 x _____ x _____ = _____ X4 = _____ X12 = _____
  Number of appliances   **Hours per week**   **Cost per week**   **Cost per month**   **Cost per year**

Refrigerator $0.07 x _____ x _____ = _____ X4 = _____ X12 = _____

Number of appliances | Hours per week | Cost per week | Cost per month | Cost per year

Air Conditioner $0.11 x _____ x _____ = _____ X4 = _____ X12 = _____

Number of rooms | Hours per week | Cost per week | Cost per month | Cost per year

Heater (Portable) $0.18 x _____ x _____ = _____ X4 = _____ X12 = _____

Number of appliances | Hours per week | Cost per week | Cost per month | Cost per year

Water Heater $0.54 x _____ x _____ = _____ X4 = _____ X12 = _____

Number of appliances | Hours per week | Cost per week | Cost per month | Cost per year

Incandescent bulbs (4 pack) $0.05 x _____ x _____ = _____ X4 = _____ X12 = _____

Number of rooms | Hours per week | Cost per week | Cost per month | Cost per year

CFL bulbs (4 pack) $0.01 x _____ x _____ = _____ X4 = _____ X12 = _____

Number of rooms | Hours per week | Cost per week | Cost per month | Cost per year

Total: _____

Challenge Questions

1. How can you reduce the cost of electricity in your home?

2. How could you calculate your school's electric bill?

3. Whenever you use electricity, you spend money and natural resources. Come up with a plan to save electricity. Write it below. Your plan should include at least four steps. You plan may be for home or school use.

1._____

_____

2._____

_____

3._____

_____

4._____

_____

? _____

_____

? _____

Central Virginia Electric Cooperative