**WEEK 29 – Reducing Electricity Consumption**

**Grade:** Intermediate (9)

**Unit:** Number Sense and Algebra

**Curriculum Expectations**  
**MPM 1D/MFM 1P:** interpret the meanings of points on scatter plots or graphs that represent linear relations  
**SNC1D:** produce a plan of action to reduce electrical energy consumption at home (e.g., using EnerGuide information when purchasing appliances), and outline the roles and responsibilities of various groups (e.g., government, business, family members) in this endeavor

**Activity  
1)** For this activity, you are to begin to break down the cost of lighting in your house and determine how you might begin to lower not just the cost of your electricity but to reduce your energy consumption **2)** There are various types of lightbulbs that use different amounts of energy depending on how they are lit. The government requires that these amounts be labelled on packaging, however for our purposes, we will be using the chart below.   
**3)** Your task is to create a scatter plot showing how much electricity (measured in watts) each lightbulb uses based on its brightness (measured in lumens). You will then evaluate which bulbs are the most efficient by their various brightness.   
**4)** You will then need to calculate the cost each day to run a lightbulb for 6 hours. To calculate the cost to run a lightbulb, you must convert this to kilowatts (divide by 1000) then multiply by the number of hours the lightbulb will be on for and multiply that by the cost in kWh. You will find an example on the worksheet below. Electricity costs $0.10/kWh  
**5)** Lastly, you will count the number of lightbulbs in your home. You will then calculate the total cost to light your house, assuming you run each bulb for an average of 6 hours/day

**Check for Understanding**   
I can determine the amount of electricity I am using  
I can determine the cost of my electricity usage  
I understand the relevance of calculating electricity use in my everyday life

**Materials**   
Recording sheet (attached below), pencil, information sheet below or internet access, calculator

Lightbulb usage in watts based on brightness

|  |  |  |  |
| --- | --- | --- | --- |
| *Brightness (Lumens)* | *700+* | *900+* | *1300+* |
| Standard bulb | 60W | 75W | 100W |
| Halogen bulb | 42W | 53W | 70W |
| CFL | 12W | 15W | 20W |
| LED | 10W | 13W | 18W |

What is the area of the entire backyard?

Cost to run each lightbulb for 6 hours

|  |  |  |  |
| --- | --- | --- | --- |
| *Brightness (Lumens)* | *700+* | *900+* | *1300+* |
| Standard bulb |  |  |  |
| Halogen bulb |  |  |  |
| CFL |  |  |  |
| LED |  |  |  |

Example:

If you have a 60W lightbulb and run it for 6 hours per day

60/1000=0.06\*6hours\*$0.10=$0.04 to run the lightbulb.

How many lightbulbs do you have in your home?

What is the total cost to light your house per day with each type of lightbulb? What do you use now? Which is cheapest?