Name_____ **Date**_____

Calculate Your Savings
Comparing Bulbs Producing the Same Amount of Light

By saving energy, we can help prevent climate change. One way you can save energy is to replace your incandescent light bulb with a **compact florescent lamp (CFL)** or **light emitting diode (LED) bulb**. Incandescent light bulbs use energy to produce light, but they also produce a lot of heat. Only 10% of an incandescent light bulb's energy is used to create light. About 90 percent of its energy is wasted generating heat. CFL and LED light bulbs use most of their energy to create light. Because of this, much less energy is wasted, resulting in a cooler, more efficient light bulb. Let's figure out the difference between the three light bulbs in the amount of energy used and cost.

	1 Incandescent Bulb	***1 CFL Bulb***	***1 LED Bulb***
Amount of electricity used:	**60 watts**	**15 watts** *(producing the same amount of light as a 60 watt incandescent bulb)*	**10 watts** *(producing the same amount of light as a 60 watt incandescent bulb)*
Lifespan:	**1,000 hours**	**10,000 hours**	**50,000 hours**
Cost of bulb: *Actual lightbulb prices vary significantly by retailer*	**$ 1.00** 	**$ 3.00** 	**$ 6.00** 
Cost of electricity over lifespan: *Estimated at 20 cents per kilowatt hour*	**$12.00**	**$30.00**	**$100.00**

1. Please rank in descending order each bulb's electricity use.

_____ **>** _____ **>** _____

(Most energy used) (Least energy used)

2. An incandescent bulb uses _____ times as much energy as a CFL bulb and _____ times as much energy as an LED bulb.

3. Please rank in descending order each bulb's lifespan.

_____ **>** _____ **>** _____

(Longest lifespan) (Shortest lifespan)

4. How many of each kind of bulb would you need to purchase to have 50,000 hours of light?

Incandescent _____ bulb(s) **CFL** _____ bulb(s) **LED** _____ bulb(s)

5. How much would you need to spend to purchase enough light bulbs to last 50,000 hours? (Hint: multiply the number of bulbs needed by the cost per bulb. Do not include the cost of electricity.)

Incandescent $ _____ **CFL** $ _____ **LED** $ _____

6. How much would you spend on electricity for 50,000 hours of light for each type of bulb? (Hint: Multiply the number of bulbs needed to last 50,000 hours by the cost of electricity per bulb. Do not include the cost of bulbs)

Incandescent $ _____ **CFL** $ _____ **LED** $ _____

7. What is the total cost for bulbs plus electricity to operate for 50,000 hours?

Incandescent $ _____ **CFL** $ _____ **LED** $ _____

8. Circle the type of light bulb that is least expensive to purchase and operate for 50,0000 hours.

Incandescent

CFL

LED

9. Compared to incandescent bulbs, how much money do you save over the lifetime of an LED bulb **$**_____ **per LED bulb.** (Hint: Use your answers from Question 7 and subtract the total cost for LED bulbs from the total cost for incandescent bulbs.)

Additional resources for more information:

ENERGY STAR – Learn about LED Bulbs
https://www.energystar.gov/products/lighting_fans/light_bulbs/learn_about_led_bulbs

ENERGY STAR – Comparing Light Bulbs Classroom Activity
https://www.energystar.gov/ia/partners/promotions/change_light/downloads/classroom_activity_k_5.pdf

Mass Save – School Activities and Resources
https://www.masssave.com/en/learn/activities-and-school-resources/

US Department of Energy – How Energy-Efficient Light Bulbs Compare with Traditional Incandescents
https://energy.gov/energysaver/save-electricity-and-fuel/lighting-choices-save-you-money/how-energy-efficient-light