Name:_____

LIGHT SOURCES ACTIVITY

1. Which Bulb is it? Decide which number bulb corresponds to each bulb type and description:

#_____   <u>Compact Fluorescent Bulb</u> - electric current excites mercury vapor inside the tube

to produce short-wave ultraviolet light, that then causes a phosphor coating on the Inside of the tube to visibly glow. Tubes may be straight or curved.

#_____   <u>Incandescent Bulb</u> - a wire filament is heated to such a high temperature that it glows with visible light. Bulbs come in a variety of sizes and shapes.

#_____   <u>Light Emitting Diode (LED) Bulb</u> – when electric current is applied to two-lead semiconductors, electrons recombine and release visible light. Diodes are typically small and may be placed inside traditional "Edison" bulb shapes.

2. Compare and describe the light from these bulbs (#1, #2, #3):

Which bulb's light appears most cool (blue) in color? #_____

Which bulb's light appears most warm (orange) in color? #_____

Which bulb's light most looks like sunlight? #_____

Which bulb gets hottest? *(be careful not to touch hot bulb!)* #_____

Which light would you like best for your room at home? #_____

3. Reference the bulb information sheets to answer:

How much does each bulb cost?

LED $_____   Incandescent $_____   Compact Fluorescent $_____

Circle the most expensive bulb.

How much energy does each bulb use?

LED _____watts   Incandescent _____watts Compact Fluorescent _____watts

Circle the bulb that uses the least energy.   *(OVER)*

4. Select one bulb and calculate the cost to light a gallery for one day. #_____

The **watt** is a unit of power measuring the energy the bulb uses each second. (Example: 100W)

I. Convert energy from watts to kilowatts: Note the wattage of the bulb you selected and convert from watts to kilowatts by dividing by 1000. An easy way to divide by one thousand is to move the decimal point three places to the left. (Ex. 40W = .040kW)

_____ W ÷ 1000 = _____kW
(bulb)   (Ans. A)

II. Calculate the kilowatt hours used in one day by your bulb by multiplying the kilowatts used by the bulb by number of hours a day. Hint: The Museum is only open to the public 10 AM to 4 PM.

_____ kW x _____ hrs/day = _____ kWh/day
(Ans. A)   (Ans. B)

III. Calculate the cost for one day of bulb use: Energy companies charge for each "kilowatt-hour" (kWh).

GEORGIA POWER
A SOUTHERN COMPANY   **Winter Billing Rate……………………………………………………$0.06** per kWh

Multiply the number of kWh/day used by your bulb by the cost per kWh.

_____ kWh/ day X 0.06 $/ kWh = _____ $/day
(Ans. B)   (Ans. C)

IV. Count the number of bulbs needed to light the gallery and cases in the photo. Multiply the cost to light one bulb for a day by the number of light bulbs you observe for the total cost to light this gallery.

_____ $/day X _____ # bulbs = _____ $/day
(Ans. C)   (Ans. D)

Compare the cost per month to operate each bulb type: Share Ans. D with other groups.

Bulb #1 _____   Bulb #2 _____   Bulb #3 _____

5. Which bulb would you choose to light the gallery and why? _____