



Bright Ideas

STEM Sims

Lesson 1: Incandescent Light bulbs

Incandescent bulbs are the most popular type of light bulb. They consist of a thin piece of tungsten metal, called the filament, coiled inside of a glass bulb. The filament is held up by a glass support and is connected to electrical contacts. When electricity flows through the filament, it heats it up to 4,000 degrees Fahrenheit so that the filament produces light. Inside the glass bulb is an inert gas (usually argon) to help keep the filament from catching on fire (the inert gas replaces the oxygen inside the bulb, so the filament can't catch on fire).

Doing the Science

1. Start the Bright Ideas Simulation by clicking on the "Sim" tab.
2. Click on the Incandescent light bulb. It will move to the base. Record the number of watts that the display reads on the base in Table 1 below.
3. Click on the timer in the lower right hand part of the screen. When the bulb burns out, the data will be filled in below. Repeat step 2 over and over again until your time is out. A table will appear with all of the data for the incandescent row completed.
4. Record your findings in Table 1 below.

Table 1.

Bulb Type	Bulb Wattage	Average bulb life (hours)	Cost of light bulbs	Electricity cost	Total cost
Incandescent					

Do You Understand?

1. To calculate the kWh, use the following formula:

$$\text{kWh} = \frac{\text{bulb wattage} * \text{hours run}}{1000}$$

If the test ran for only 20,000 hours, what would the kWh be?

2. If you can buy one pack of three incandescent light bulbs each time you go to the store, how many times a year do you need to go shopping for light bulbs? (Note: Assume your bulbs are being constantly used. One month is approximately 730 hours.)