

Name: _____

Date: _____

Does Light Make Heat?

When we think of things that make light, we think of things like the sun, fire and light bulbs. We know the sun is a big ball of burning gas that is so hot we could never get close to it. We have experienced the fact that if you sit too close to a fire you get uncomfortable due to the extreme heat, and many people have suffered burns when trying to remove a light bulb that has just been on for a while. The question is, do all sources of light produce heat? And, if so, are some hotter than others? Today we will focus more on the second half of that question, looking at similar light bulbs.

Equipment:

- Lamp
- Florescent Light Bulb
- Incandescent Light Bulb
- Thermometer
- Incandescent Christmas Lights
- LED Christmas Lights

Procedure:

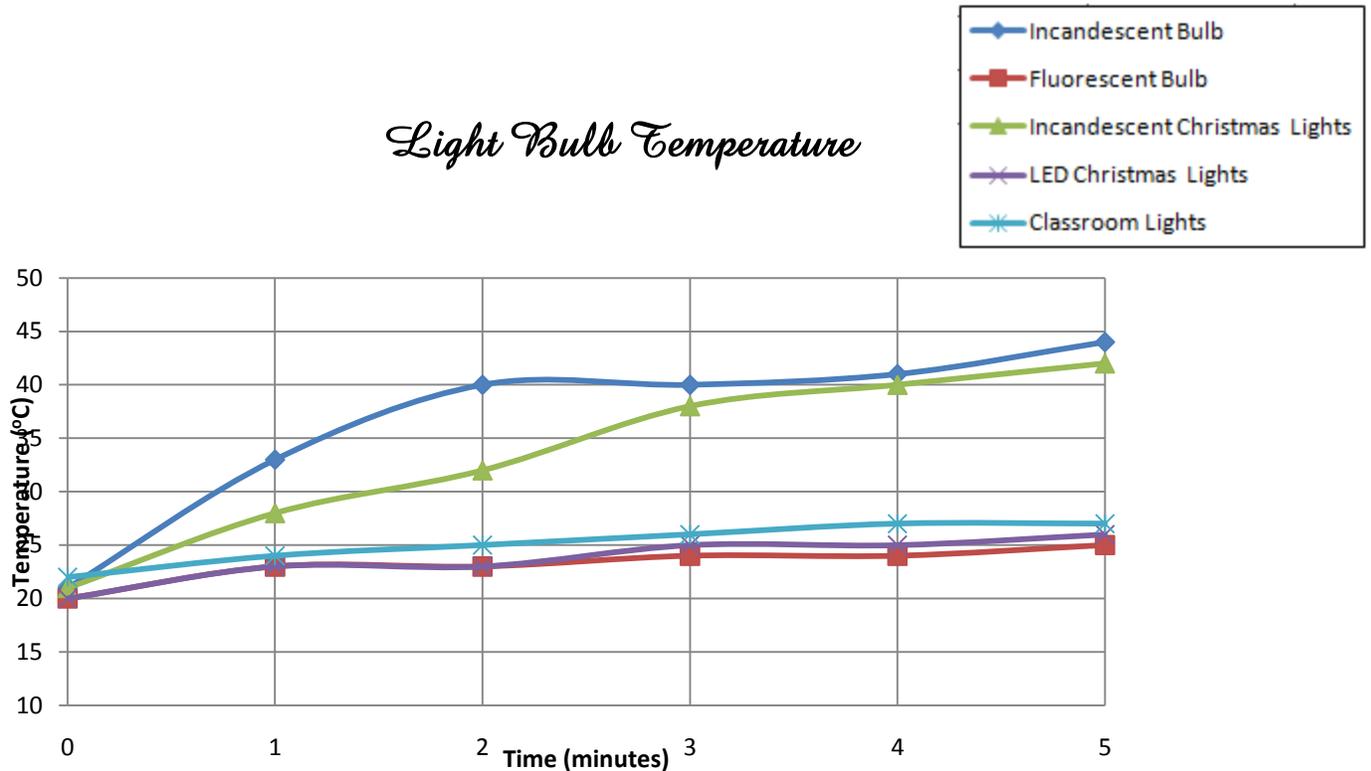
1. Set up the thermometer such the bulb is touching the light source.
2. Turn record the temperature.
3. Turn the light source on.
4. Record the temperature every minute for 5 minutes.
5. Get the date for the rest of the light sources from your classmates.

Observations:

Light Source	Temperature (°C)					
	Initial	1 min	2 min	3 min	4 min	5 min
Incandescent Bulb	21	33	40	40	41	44
Fluorescent Bulb	20	23	23	24	24	25
Incandescent Christmas Lights	21	28	32	38	40	42
LED Christmas Lights	20	23	23	25	25	26
Classroom Lights	22	24	25	26	27	27

**Numbers will not be exact, this is for example purposes*

Light Bulb Temperature



**Graph will vary based on numbers.*

Discussion:

1. There are a lot of advertisements out that say people should switch their lights to fluorescent bulbs. Based on what you have observed today, what is your opinion?

Our answers show that incandescent bulbs get very hot, but fluorescent do not. This means that fluorescent bulbs are not wasting energy on creating heat. So, I would agree with the advertisements.

2. Boxes of LED Christmas lights say they save 80% to 95% more energy than regular Christmas lights. Based on today's experiment, can you explain one reason as to why that might be?

Our results show that incandescent (old) Christmas lights get much hotter than LED Christmas lights. This shows that LED lights save energy by not producing as much heat.