# Inquiry Master 7.1

Name: Class: \_ Date:

# Planning Sheet: Sample Experimental Design

**What I will keep the same:**

* *The power (wattage) of the lightbulb*
* *The length of time I keep the lamp on during each trial*

**What I will change:** *The distance from the radiometer to the lamp*

**Materials I will use:**

*1 radiometer*

*1 150-W lightbulb*

*1 clamp lamp*

*1 measuring tape*

1. *student timer*
2. *bookends*

**Procedures I will follow:**

1. *Set up the clamp lamp so that the cords do not drape across traffic areas.*
2. *Select one lightbulb to use throughout the entire investi­ gation (such as 150 W). Record that on my table. Do not turn on the lamp yet.*
3. *Decide on three distances to test (for example, 50 cm, 35*

cm, *and 20 cm). Record those data in my data table.*

1. *Set up the radiometer. Make sure that the vane is steady.*
2. *Place the measuring tape on the table so that the "O" end is at the radiometer and the other end* is *near the lamp.*
3. *Place the clamp lamp on the measuring tape so that it is at the first distance away from the radiometer (such as 50cm).*
4. *Decide how long to keep the lamp on (such as 30* sec­

*onds) during each trial. Record that time on my table.*

1. *Turn the lamp on. Time for the given number of sec­ onds. Gently tap the radiometer if needed. Shut off the clamp lamp after 30 seconds.*
2. *Count the number of seconds the radiometer vane spins after the lightbulb is shut off. Record data.*
3. *Conduct three trials at that distance.*
4. *Move the clamp lamp (and NOT the radiometer) to the next distan ce. Repeat the steps above.*

**Question I am trying to answer.**

How does *the distance from the lamp to the radiometer* affect *the length of time the radiometer vane spins?*

**What I think will happen:**

*The radiometer vane will spin for a longer period the closer the radiometer* is *to the lightbulb.*

**What I will look for:**

*I will look for how many seconds the vane continues to spin inside the radiometer after the clamp lamp is turned off.*

**What I will measure:**

*I will measure the distance from the lamp to the radiometer. I will measure the time the radiometer vanes continue to spin after turning off the lamp.*

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## Student Sheet 7.1

**Collecting Radiant Energy Data**

**Directions** Reco rd the power of your lightbulb (in watts) . Record the amount *oi* time (in seconds) that you will keep the clamp lamp on during each trial. Then complete Table 1. Use your averages to plot the number of seconds the radiometer vane continues to spin at each distance in Graph 1.

 watts

 seconds

**Table 1 Distance Versus Time**

|  |  |
| --- | --- |
| j**Distance From the Ughtbulb****to Radiometer** ( **cm)** | **Time****(Number of Seconds the Radiometer Continues To Spin** **After Turning Off the Clamp Lamp)**  |
| **Trial 1** |  |
| **Trial 2** | **Trial 3** | **Average** |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

**Graph 1 Distance Versus Time**



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Distance (cm)

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