

NAME: \_\_\_\_\_ Class: \_\_\_\_\_ Date: \_\_\_\_\_

## PINHOLE CAMERA

### Learner Outcomes:

- Investigate and interpret emerging technologies for storing and transmitting images in digital form.

### Key Terms:

**Question:** How can we create a pinhole camera to produce an image?

### Materials:

Paper or Styrofoam  
cup

Pin  
Rubber band

Wax paper  
Light source

### Procedure:

1. Use the pin to make a small hole in the bottom of the cup.
2. Place a piece of wax paper over the open end of the cup and secure it in place using the rubber band.
3. Turn off the room lights and point the end of the cup with the hole toward the light bulb.
4. Observe the image formed on the wax paper.

### Observations:

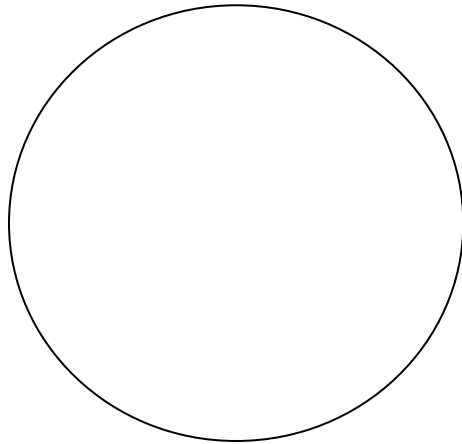
Sketch only the brightest part of the filament of the light bulb.



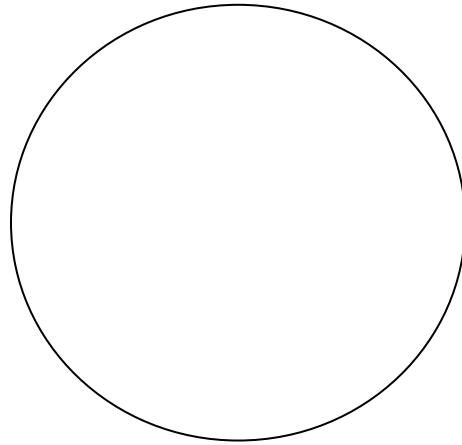
This investigation / activity has been adapted from:

Mah K, Martha J, McClelland L, et al. *Science in Action 9*. Toronto, ON: Addison Wesley.

Sketch the image on the wax paper with the camera about one inch from the bulb.



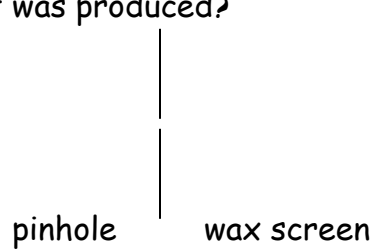
Sketch the image on the wax paper with the camera FURTHER AWAY.



**Analysis:**

1. Explain what is happening to produce the image on the wax paper.

2. On the picture below, draw a straight line that starts at the top of the bulb, goes through the pinhole and then to the screen. Draw a second line from the bottom of the bulb and goes through the pinhole to the screen. What has happened to the image that was produced?



3. Considering the diagram shown above, how does the distance between the pinhole and the light bulb influence the size of the image on the screen?
4. What impact would a larger cup have on the image? Explain or illustrate with a diagram.
5. What impact would a larger hole have on the image? Explain or illustrate using a diagram.

**Conclusion:** Summarize how the features of a pinhole camera produce an image.

**Extension:**

1. Find, or draw, a diagram of a simple (not digital) camera and label each of the camera's functional structures. Explain how each structure contributes to focusing and producing an image on the camera's film.

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