



## How Black Is Black? The Black Body Box Lab



### Background

Stars are huge objects made up of very hot gases. When these gases are heated, they emit or give off continuous radiation in many wavelengths of light. A star, like our Sun, is considered a Black Body, which absorbs and emits all wavelengths of electromagnetic radiation.

To understand this better, let's examine a black body box, which will help us understand the idea of absorbing (absorptivity) light.

### Materials

black body box, different samples of black materials (black paper, black velvet, etc.), data sheet

### Procedure

1. Observe the samples of black materials at your lab station. Describe how black the samples appear to you in the data table below. You may quantify your observations on a scale of 1 to 5, where 1 = somewhat black to 5 = extremely black.
2. Look into the black body box through the small viewing hole on the top of the box. Describe how black the interior of the box appears to you. Record your observations in the data table below.
3. Rank your observations of blackness after you have observed all the items.
4. Predict what object (if any) might be inside the black body box.
5. Your teacher will open the black body box, so you can observe what's inside. Record your observations in the data table and answer the questions in the conclusion.

### Data

name of sample	description of blackness	rate the blackness 1 to 5 1 = somewhat black 5 = extremely black	rank item blackness 1 = most black
black body box			
contents of black body box	predicted		actual

**Conclusion**

1. Did all of the samples appear to be the same blackness? Explain why or why not.

---

---

---

2. Why did the inside of the black body box look so black?

---

---

---

3. Did your prediction of the contents of the black body box match what was in the box? Were you surprised? Explain why or why not.

---

---

---

4. How is the black body box the same as a star?

---

---

How is the black body box different from a star?

---

---

5. Add any other ideas or questions you have after this lab here.

---

---

---