

“Black Box” Lab

Goal: Use careful observations and comparisons to infer characteristics of items you cannot see.

Directions:

- You may NOT open the sealed “black boxes” at any time during this lab.
- You may gently shake, tip, and otherwise manipulate the “black boxes”.
- You may use the empty “control” box to place items into to do comparison tests.
- Record each movement you chose to use and your observations.
- Write your inferences about the traits of the object or objects inside the “black box”. This should be a short description (a model) of what you think is contained in the box. Include as much detail as you possibly can. Draw a diagram (including dimensions if you can!) of your model.

Example:

1. *Shake/tilt (gently), listen, feel the box, etc.*
 2. **Observation:** *An object rolls as you tilt the box from side to side.*
 3. **Inference:** *There is a cylinder in the black box.*
- **Think about whether you should test this same hypothesis again. Are you confident in one experiment? How else might you test this hypothesis?***

Question: What is inside the sealed container?

“Black Box” # _____

Movement Used	Observation	Inference about Characteristics

Conclusion: I think the object in the “black box” is _____.

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Question: What is inside the sealed container?

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Movement Used	Observation	Inference about Characteristics

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Question: What is inside the sealed container?

“Black Box” # _____

Movement Used	Observation	Inference about Characteristics

Conclusion: I think the object in the “black box” is _____.

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Teacher Notes:

Items to possibly include:

- **Penny**
- **Paper clip**
- **Marble**
- **High-bounce ball**
- **Nail**
- **Washer**
- **Screw**
- **Rubber band**
- **Jingle bell**
- **Bead**
- **Crayon**
- **Poker chip**
- **Tooth pick**
- **Cotton ball**
- **Cork**
- **3D shape blocks (cylinder, cube, cone, etc.)**

Materials to provide for making observations:

- **Ruler**
- **Magnet**
- **Balance / scale (if enough available for all groups)**
- **A set of several items, but not necessarily identical to what is in the black boxes.**
- **Empty “control” box**