



Constructing a Model

Question

How can you construct a model of an unknown object by (1) making inferences about an object that is in a closed container and (2) touching the object without seeing it?

Procedure

Record all of your results in a data table.

1. Your teacher will provide you with a can that is covered by a sock sealed with tape. Without unsealing the container, try to determine the number of objects inside the can as well as the mass, shape, size, composition, and texture of each. To do this, you may carefully tilt or shake the can. Record your observations in a data table.
2. Remove the tape from the top of the sock. Do *not* look inside the can. Put one hand through the opening, and make the same observations as in step 1 by handling the objects. To make more-accurate estimations, practice estimating the sizes and masses of some known objects outside the can.

Then compare your estimates of these objects with actual measurements using a metric ruler and a balance.

Discussion

1. Scientists often use more than one method to gather data. How was this illustrated in the investigation?
2. Of the observations you made, which were qualitative and which were quantitative?
3. Using the data you gathered, draw a model of the unknown object(s) and write a brief summary of your conclusions.

Materials

- can covered by a sock sealed with tape
- one or more objects that fit in the container
- metric ruler
- balance



SECTION REVIEW

1. List the five main points of Dalton's atomic theory.
2. What chemical laws can be explained by Dalton's theory?

Critical Thinking

3. **ANALYZING INFORMATION** Three compounds containing potassium and oxygen are compared. Analysis shows that for each 1.00 g of O, the compounds have 1.22 g, 2.44 g, and 4.89 g of K, respectively. Show how these data support the law of multiple proportions.