OBSCERTAINERS **05.01.06**

Name _____
Date _____ **Hour** ___

How many times have you looked at an object that attracted your attention and asked the question, "What is it made of?" That same question has been asked thousands of times in many different languages.

We can look back at some of the answers suggested by the early Greek philosophers (as the scientists were called in those days) and smile. Today, even an elementary-school student knows, for example that water is composed of two substances, hydrogen and oxygen. The Greeks, however, suggested that the world itself was made up of four elements of which water was one, and fire, earth and air were the other three. Because of lack of careful observation and experimentation, men accepted the idea suggested by the Greeks. This acceptance is seen in our literary works where a storm, for example, is described as the raging of the elements This idea was so well established that it was not until the seventeenth century that scientists established the fact that the Greeks were mistaken and science came closer to the answer it sought.

Most individuals consider themselves good observers. This lab activity involves many things, mainly, making careful observations and checking the accuracy of inferences you make. It is important for a science student to practice making useful observations even if he doesn't use them immediately in the complete solution of a problem. In this lab activity, you will begin by observing.

Problem: What is the configuration (design) of the inside of a closed container (OBSCERTAINER)?

Theory: This lab activity is an exercise in indirect measurement or observation. The closed OBSCERTAINERS have partitions inside and a steel ball that can freely move. You will not be able to see or touch the inside of the OBSCERTAINER and yet you will have to determine the design of the inside by indirect means.

Procedure: Move the steel ball around by *carefully* shaking and tilting the OBSCERTAINER. By the sound and path of the steel ball, determine the shape and location of the partition(s). In the blanks below, indicate the identity of the OBSCERTAINER (its number) and infer the arrangement of the partition(s)—this inference is called a hypothesis. Retest your hypothesis and indicate any changes in the second drawing—redraw the arrangement even if it is the same as the first. <u>This should reflect your final decision</u>.

Some of the OBSCERTAINERS are more difficult than others, therefore time should be spent in making careful observations. Do not spend more than 5-minutes with each OBSCERTAINER. DO NOT OPEN THE OBSCERTAINER. Study four different containers.

Follow-up….Of the four obscertainers you checked, how many of your inferences were:

Correct? _____ Incorrect? _____

Enter your data on the data sheet provided in class…..For the class, how many inferences were:

Correct? _____ Incorrect? _____ Total? _____

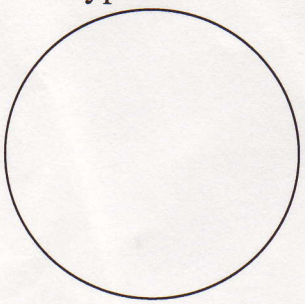
Calculate the percentage of correct and incorrect hypotheses (show your calculations)…..

What two observation skills helped you with making your inferences in this activity?

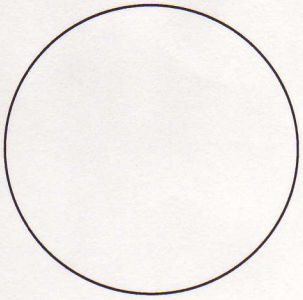
_____ _____

OBSCERTAINER #_____

Hypothesis



Retest



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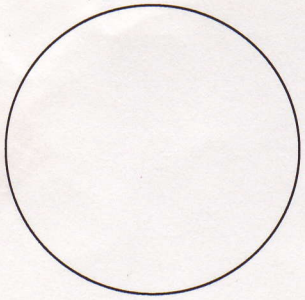
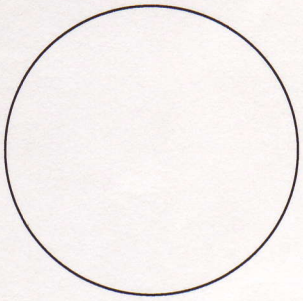
OBSCERTAINER #_____

Hypothesis



Retest



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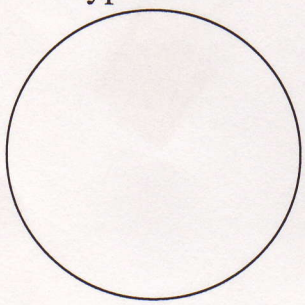
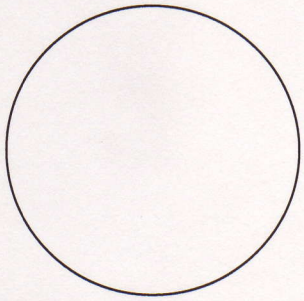
OBSCERTAINER #_____

Hypothesis



Retest



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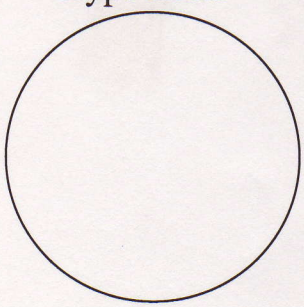
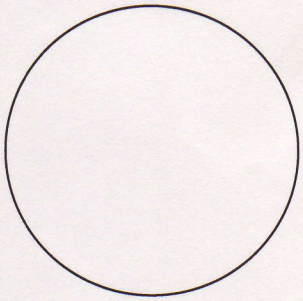
OBSCERTAINER #_____

Hypothesis



Retest



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