

What is it? Mystery Box Activity

- Introduce Investigation-Tell students about how people, such as scientists, investigate things they can't see (cells, planets). Brainstorm ways they think scientists study things they can't see. Tell students that today they are going to investigate something that they can't see. (The item in the box.)
- Distribute Materials-Give each group a sealed box with a number on it. Tell them they are going to investigate the box **WITHOUT OPENING** it. Tell them it's sort of like what they do at Christmas, but we're going to do it like scientists would. We're going to use our "Plan for Finding Answers". (Refer to the Observe, Think, Question poster.)

OBSERVE

- Begin Scientific Investigation-Tell students to observe the box using **ALL THEIR SENSES** (no peeking inside). Give students a few minutes to do this. Don't give students any ideas or suggestions. Keep reminding them to use **ALL** of their senses.
- Record Observations-Groups should write down the number on the box and record four words to describe what you sense about the object or objects in the box. Give students a few minutes to do this.

THINK

- Make Comparisons to Things You Already Know-Tell students that sometimes scientists make comparisons to things they already know and compare it to things that are similar. "How does the object in your box compare to things you know about?" "Is it heavy, light, soft, loud, etc..?" "Does it slide, roll?" "Does it sound like its wood, metal, plastic?" This sometimes helps scientists look at things in a different light.
- Make More Comparisons-Now have students trade boxes with another group and make comparisons. Tell them to decide if their object is heavier, lighter, etc... than the other group's object.
- Return Boxes and Record-Return boxes to original groups and tell students that handling another box may have made them aware of some new things about their own box. Instruct students to add these new observations to their paper.

ASK QUESTIONS

- Ask Experts-Tell students that sometimes when scientists are at a loss for understanding some data, they call, write or e-mail colleagues and ask, "Have you ever investigated anything like...?" Sometimes scientists get lucky and get a reply like, "Oh I investigated exactly the same thing once before and I found that....." Tell students that in this room each box has a TWIN that contains exactly the same object as their box. Tell them that they will "pretend" that the group with the TWIN box is the "expert" and knows everything about the object in the box. With the students, discuss questions they would ask this team of experts. Some examples might be, What is it made of? How much does it weigh? What is it used for? etc... Tell students that they may go around the room and find the group that has their twin. Give students a few minutes to find the group that has their TWIN box. Students should talk with that group and write down their observations if they have any that are different.
- Decide on Research Questions-Tell students that at this time they would normally list questions for further investigation. Tell them that the big question they're working on now is "What's in this box?", but this investigation may spark curiosity of new topics and lead to more questions such as, "How are plastic objects made? Why do some things roll? etc..." Tell them it's a good thing when they think of MORE QUESTIONS.....this is how people learn, it's how scientists learn and KEEP learning and discovering new things. When people ask a question and find an answer, they are DONE LEARNING and learn only one new thing. When people ask a question and CONTINUE to ask questions throughout their research, they're REALLY THINKING and that thinking leads to learning LOTS of new things.
- Conduct Research-Tell students that at this point in an investigation, a good scientist goes to the library or the internet to conduct research. If we REALLY went to the library, maybe we would look up information on what different objects are made of, or the weight of different objects. This research might help us figure out what might be in the boxes. Since we have only a short time today, we will not actually go to the library and conduct research. Let's pretend that through our research we've found out that our box MUST contain one of the following objects:
 - A nickel
 - A rock
 - A marble
 - A screw
 - A cotton Ball
 - A Paper Clip

THE ANSWER Not all Investigations have one!!!

- Scientific Explanation-Ask students to look at what they have written and at the research you have given them and record the type of object that they think is in the box. Tell them this is their scientific explanation based on the investigation they've done. Just like scientists, they may not always be right. Often there is **NO RIGHT ANSWER**.
- Open the Boxes-Tell students that if this was a "real scientific investigation they would not get to look inside the box, but because this is just for learning "about" scientific investigations, we will go ahead and open the boxes. Pick one person from each group to open the box and show the others what was inside. Have them pass the object around the table so each person can observe it.
 - "Was your explanation correct?"
 - Did the descriptive words you wrote fit the object that you have found?
 - What about the group that had your twin?
 - Did they have the same description? The same guess? Was that box **REALLY** the twin to your box?
- Return the Boxes-Tell students to be sure the object is back in the box and close the box. Collect the boxes.

Review the ANSWER PLAN poster and remind students that they can add wonderings to their wonder wall at any time. Tell them that their teacher will remind them to add things when they are starting new topics.

Box Number _____

OBSERVE

1. _____

2. _____

3. _____

4. _____

THINK

1. _____

2. _____

3. _____

4. _____

Question

1. _____

2. _____

3. _____

4. _____