

## HOW SCIENCE WORKS: MAKE UP ASSIGNMENT FOR MYSTERY BOX LAB

One of the very important things that I'd like you to take from this class is the knowledge of how science works, and the knowledge that you can do "scientific inquiry" in your everyday life. You'll find that this is a lot like CSI or Sherlock Holmes.

1. In the next day or so, I want you to make an observation that is related to some sort of process. It can be about any process, but the key to a decent observation is to be able to ask "why is it like that?" or "How does this happen?"

For instance, while sitting in the dentist chair yesterday I noticed a big curved scrape in the drywall on the wall in front of the chair, about 2 feet long, ¼ inch deep. See the drawing below.



2. Next, ask a question about your observation. This question will usually include the words "how" or "why."

"How did that scrape get there?"

If you have trouble forming a decent question, you might want to consider a different observation.

3. Then, make ***at least*** three more observations that help you answer that question.

"There are no other marks on the wall."

"The part of the chair that sticks out the most is the elbow on the rotating arm the light is attached to."

"The scrape is higher on the wall than any or part of the chair or other instrument in the room, including the elbow of the light arm."

"There is some drywall stuck to the back side of the elbow of the light arm, and it has some paint on it that is the same color as the paint on the wall" (I had to get up out of the chair and look around to find this data)

4. Once you have made several observations that help answer your question, go ahead and try to answer your question. The answer to your question is your hypothesis, and it should come in the form of a confident statement. Then you should justify your statement with your observations.

"The scrape on the wall happened when they moved the chair into the office and the light arm rubbed against the wall. The evidence I see for this is the paint and drywall stuck on the back of the elbow of the light arm, and that the light arm is not high enough for this to happen while it is sitting in its current position. Also, it only happened once because there is only one scrape. It must have happened when the chair was higher than it is now, and that would be when people were moving it into the office."

5. Finally, make at least two additional hypotheses based on your conclusions that attempt to increase your understanding of the process or the objects involved:

"It must be difficult to move a dental chair into position"

"These people really don't care about what this place looks like since they haven't fixed or painted the wall, they haven't even hung a picture over the scrape, and the crud is still on the light arm."

6. Write it up. You should use formal language and grammar (no text-message speak). Your submission will be assessed on the appropriateness of your observations, the logic you used to answer your initial question, the quality of the additional hypotheses, and the overall quality of your writing.