

# Learning to Make Observations

FRAMEWORK
I. Scientific and Engineering Practices
II. Cross-Cutting Concepts
III. Physical Sciences

SKILLS/OBJECTIVES
<ul style="list-style-type: none"> <li>○ Indicate goal of lesson: both the basic outline of the science that should be learned &amp; any “science skills” that should be exercised via the lesson plan</li> </ul>
<ul style="list-style-type: none"> <li>○</li> </ul>

MATERIALS
<ul style="list-style-type: none"> <li>○ Materials List</li> </ul>
<ul style="list-style-type: none"> <li>○ Paper</li> <li>○ Pencils</li> <li>○ Variety of candy (five or six at least) of any kind</li> </ul>

NOTES
Be aware of allergies

## BACKGROUND

- Recap of prior weeks’ activities and lesson if part of a theme
- Introduction to new topic – can provide open ended questions that ask kids to think about what they know or can guess about the topic, or any previous exposures to it in a learning setting.
- If necessary/helpful to include some extra background material just for instructors, this should be indicated here but included at end as an appendix of information (important to go through and note this/read this before arriving at the school and beginning the lesson.
- Stress key term/idea to hit home for the week, including vocal repetition.

Activity #1	<b>Demonstration</b>
Materials	None
Worksheet	No

- Start off by leading a game of 20 questions with the entire group of students. The “thing” the kids are trying to guess should be an animal, like a pig or a cow. Be sure to first explain the rules of the game: The kids only have 20

guesses, the guesses can only be in 'yes' or 'no' form, and they must take turns asking questions (establish a system to make sure each kid gets to ask at least one question). They cannot guess what the unknown is until all guesses have been made.

- After 20 questions, explain that scientists, when they're in the field studying new plants and animals, often need to make their observations "20 Questions-Proof"—that is, they need to be detailed enough in their observations so that someone could guess what it is that they're describing. Today we're going to practice making observations that are also "20 Questions-Proof!"

Activity #2	<b>Describe your candy!</b>
Materials	None
Worksheet	No

- Have each kid choose a candy that they are going to observe. Have the student describe the candy in 20 different ways, based on things like color, size, shape, texture, flavor, crunchy-ness, etc. Push the student when s/he says vague things like "it is small." How is it small? Smaller than a speck of dust? Smaller than a sandwich? Same for observations like "it is light/heavy," "it is green," etc. Push the kids to be as specific as possible. Tell the kids that they should pretend they are describing their candy to someone who has never tasted or seen the candy before – like an alien!
- The student should record each of his/her 20 observations.
- Once student A has created her list of '20 questions' (really 20 observations), she should partner up with another student (student B) and pose her list of observations to the other student. At the end, Student B will try and guess which kind of candy Student A has. Then the two will switch roles.
- *For youngers:*
- Since youngers can't really write yet, have them pick a candy and just verbally describe it to their partner and have the other partner guess what it is. This should definitely be done in groups with youngers so they can have Wes supervision to help them stay on track! On the worksheet, just have them sketch a picture of their candy.
- For all groups, they can play this game more than once and with more than one partner
- If time permits:
- Have each student conduct a taste test to try and determine whether or not color affects the taste of a) Skittles and b) M & Ms (or whatever other candy they choose). One student will close her eyes, and then the other student selects which color candy to use. The student then tastes the candy (lets say red M&M) and guess which color she thinks it is. The procedure is repeated, this time with a different colored candy (this time red skittle), and the student again guesses which color she thinks it is. Is the student able to distinguish a difference? Have the students switch roles and repeat the experiment. They can also test their own questions and make mini-

experiments using the candy. Try same colored skittles vs. M&Ms (like red skittles vs. red M&Ms) and then try two different colored candies from the same category (like red skittles vs. green skittles or red M&Ms vs. green M&Ms). If you still have extra time, let the kids try investigating their own inquiries! Get creative!

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### **CONCLUSIONS**

Closing powwow with group to reinforce the basic take home message or final discovery (in bold or otherwise easily observable) the lesson should help kids get to.

Any “continued investigations” projects should be sent home with them on paper in an easily follow-able for guardians. Should contain basic highlighting of the lesson name and big message for guardians as they not be able to get all that information out of the kids.