

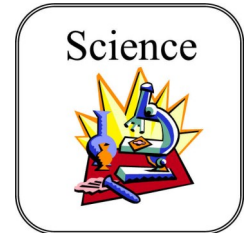
Engage: What are some possible research questions for the REACH Program air quality scientific investigation?

Name _____ Class _____ Date _____

“Science is a way of thinking much more than it is a body of knowledge.”

Carl Sagan

1. What is science?



2. Carefully observe the demonstration or short video. Describe the problem you observed. Frame the problem in the form of a question that could be investigated.

3. Propose an explanation for the problem you observed. A proposed answer or solution to a problem is similar to formulating a *hypothesis*.

4. Describe an experiment you could perform that would test the explanation you proposed in step 3.

5. Summarize the process you used to explain the problem you observed in step 2. This process is similar to the process experiment-based scientists use to answer questions and solve problems.

Background: The purpose of this activity is to have you and your research group brainstorm possible questions that you would be interested in investigating as part of a REACH Program air quality-based scientific investigation. Develop questions that are of interest to you and that would further the cause of improving the air quality in your home, school, or community. Develop questions where you can control as many variables as possible and that are not overly complicated. As you consider possible research questions, remember you will have access to instruments that can measure and record data on PM_{2.5} concentrations, carbon monoxide levels, and radon levels.

Who are you working with on the air quality research project?

Brainstorm two research project ideas. For each idea, provide a possible research question; a brief explanation of why the project interests you; and a summary of how you would collect data for the project.

A. Possible Research Question 1:

Why is this question relevant or of interest to you and your group?

How will you collect data for this project; how much data do you think is necessary e.g. how many trials and duration of the trials; and how will you analyze the data.



B. Possible Research Question 2:

Why is this question relevant or of interest to you and your group?

How will you collect data for this project; how much data do you think is necessary e.g. how many trials and duration of the trials; and how will you analyze the data.

C. Upon careful consideration of your research ideas, which question seems to be most appealing to you? Why?

D. What are some of the societal benefits of conducting the research you outlined in part C above? Describe some difficulties you may encounter while doing the research outlined in part C above.

Teacher Comments: