

20 Questions¹

The following exercise is designed to show you that you have the ability to think through the scientific method--going from observations, to questions, to hypothesis, to analysis and interpretation of data.

The first part of this exercise asks you to provide yourself with an uninterrupted interval in which to ask questions about a natural system. The second part asks you to analyze your questions, and the third, that you write up one of your best questions in the form of a small research proposal.

Asking questions

1. Isolate yourself someplace in nature where you can not see or hear other people.
2. Find a comfortable place and observe the organisms in the area for 5 minutes. Do not move around.
3. Write down questions as rapidly as you can for 20 minutes.
4. Do not filter your questions--i.e. don't reject writing down questions that you know the answer to or questions that seem trivial or stupid, etc.
5. Ask questions about things around you--don't ask questions about yourself or other people, but questions about the environment around you. (Environment applies to all living and nonliving things surrounding you.)

Analysis of questions

1. What kinds of questions did you ask? (informational, functional relationships, evolutionary)
2. Make an "x" by all the questions you do not know how to answer. How many are there?
3. How would you find out if these questions can be answered?
4. Answer as many questions as you can with an educated guess (hypothesis).
5. How would you test these educated guesses (hypotheses)? (**take time to think through this but do not give a written answer**)
6. Assuming you can be objective about your own questions--what proportion would you judge to be good?

Research proposal

Develop one of your better questions into a short research proposal.

There is no set formula for research proposals, but they should convince the reader:

1. that the question is interesting and important,
2. that the methods used to test the hypothesis involved are known and available,
3. that the question is answerable in a finite interval,
4. that the researcher has the skills, knowledge, motivation, etc. to obtain, analyze and interpret the data.

¹ Modified from "OTS 50 Questions"