

Designing Experiments: Questions

Part 1: Matching and Multiple Choice

Match each term to its definition at right.

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|------------------------------|----------------------------------------------------------------|
| ___ variable | A. something for which the experimenter measures the response |
| ___ independent variable | B. a limitation on the accuracy and precision of a measurement |
| ___ dependent variable | C. things in an experiment that are kept constant |
| ___ controlled variable | D. something changed by the experimenter |
| ___ experimental uncertainty | E. anything in an experiment that may be changed |

Part 2: Problem Solving

- Write a correctly worded hypothesis in response to each of the following Questions.
 - “What effect does the temperature of the reactants in a chemical reaction have on the rate of the reaction?”
 - “How does the population of a specific species of fish in an environment change as the pH of the environment decreases (becomes more acidic)?”
 - “What happens to the current through a circuit when the resistance of the circuit is changed?”
- For each of the Questions above, identify the independent and dependent variables.
- For each of the Questions above, give at least three examples of variables that would have to be kept constant.
- Some experiments are done not to determine the relationship between variables but to find the value of a specific quantity. For example, a Question might be, “What is the pH of store-bought vinegar?”
 - Write a hypothesis that might be used to answer the Question.
 - How many trials would you have to do to determine the pH? Explain why.

