

Principles of Natural Science

Name _____

Scientific Method Scenarios

Use your scientific method notes to help you analyze the following problems.

1. Peter loves music. He believes that he does his homework better and faster when he listens to music. His parents say that music is distracting when studying.



- a. What is the problem?

- b. Write a testable hypothesis in the "If..., then" form. Be sure it is in this form and a complete sentence.

- c. Describe in 3 –6 sentences an experiment Peter could do to test his hypothesis.

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- d. What would the independent variable be? _____

- e. What would the dependent variable be? _____

- f. What would the control variables be? _____

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TRUE OR FALSE

Place a T next to statements that are true and an F next to statements that are false.

1. The first step of the scientific process is testing the hypothesis.
2. Sometimes, steps of the scientific process must be repeated.
3. Every experiment should have at least three experimental factors or variables.
4. A control is a factor that is missing the variable, but is the same as other factors in every other way.
5. Written observations made while using the scientific process are known as data.
6. A theory is a hypothesis that has not yet been tested.
7. Measurements must be made carefully to make sure all factors, except the variable, are the same.
8. In the salt water experiment performed in the video, salt was the single variable.
9. Recording data keeps other scientists from repeating our experiments.
10. A hypothesis is an educated guess.

What is Wrong with the experiment?

Read the scenario, decide what is wrong with the experiment and how you would correct it. You can use the back of the page to explain/justify your answer.

Scenario 6 Fossils and Cliff Depth

Susan observed that different kinds and amounts of fossils were present in a cliff behind her house. She wondered if changes in fossil content occurred from the top to the bottom of the bank. She marked the bank at five positions: 5, 10, 15, 20, 25 m from the surface. She removed 1 bucket of soil from each of the positions and determined the kind and number of fossils in each sample.

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Identify the variables

Read the scenario and identify each variable. Explain why you decided to assign the factor in the story to the particular variable.

One tank of gold fish is fed at the normal amount of food once a day. A second tank is fed twice a day. A third tank is fed four times a day during a six week study. The fish's weight is recorded daily.

Independent variable _____

Dependent variable _____

Standardizing variable

Control variable

Is it a Fact, Law, Hypothesis, Theory, or Belief?

Use your notes to determine whether the statements below are a fact, law, hypothesis, theory or belief. Briefly explain why you decided each statement is such.

1. The milky way is a spiral type galaxy.
 2. The soccer ball changes direction when it is kicked is because a force is acting upon it.
 3. The solar panels generate electricity even when the sun is not bright in the sky
 4. The sun will rise in the east and set in the west
 5. There are ghosts in old houses.