

Name _____ Date _____ Period _____

PLANNING AN INVESTIGATION

FORMING A HYPOTHESIS AND IDENTIFYING THE VARIABLES IN SCIENTIFIC INVESTIGATIONS

1. What is a hypothesis? What are the two parts that should be included in a good hypothesis?
2. What is a manipulated (independent) variable?
3. Why is it important that an experiment have only one manipulated variable?
4. What are controlled variables?
5. What is a responding (dependent) variable?

Below is a list of experimental questions. For each question, make a hypothesis (giving both a prediction and your reasoning for making this prediction). Also, explain what would be the manipulated variable, responding variable and at least 4 controlled variables in an experiment to test this hypothesis.

6. Does the type of music played while a person is eating affect the rate at which he/she eats?
 - a. My hypothesis:
 - b. Manipulated variable:
 - c. Responding variable:
 - d. Controlled Variables (minimum of 4)
7. Do plants grow faster when grown under red light compared to green light?
 - a. My hypothesis:
 - b. Manipulated variable:

c. Responding variable:

d. Controlled Variables (minimum of 4):

8. Does salt water have a higher boiling point than fresh water?

a. My hypothesis:

b. Manipulated variable:

c. Responding variable:

d. Controlled Variables (minimum of 4):

9. Do heavy objects always fall faster than light objects on Earth?

a. My hypothesis:

b. Manipulated variable:

c. Responding variable:

d. Controlled Variables (minimum of 4):

10. Do darkly colored clothing absorb more heat than lightly colored clothing?

a. My hypothesis:

b. Manipulated variable:

c. Responding variable:

d. Controlled Variables (minimum of 4):

11. In writing an experiment, why is it important to specify that the data should be recorded, or to include a data chart?

12. Why is it important to have repeated trials or multiple samples in an experiment?

13. In testing whether the type of milk used in making ice cream affects the freezing temperature of the ice cream, Monica and Carlos designed an experiment comparing nonfat milk, 2% milk and whole milk. They conducted an experiment comparing these 3 types of milk. Does this qualify as having repeated trials in their investigation? Explain your answer.