Assignment: Introduction to Science and The Scientific Method

1. Match the definitions on the left with the correct word in the right column.

____	using scientific knowledge to make products	A. observation
____	factors such as temperature that can effect the results of experiments	B. scientific method
____	observations involving amount	C. data
____	educated guess	D. science
____	observations involving characteristics such as colour	E. scientific theory
____	gaining knowledge and understanding of our natural world	F. hypothesis
____	a way of explaining theories	G. variable
____	information collected in a experiment	H. technology
____	widely accepted hypothesis such as 'germs cause disease'	I. quantitative
____	approach used by scientists to solve problems	J. scientific law
____	an accepted truth	K. model
____	defines a relationship between observed facts	L. qualitative
____	gathering information through our senses	M. control
____	part of an experiment used for comparison	N. fact

2. Fill in the following:

1. A variable that is changed by the investigator is called the_____ variable.
2. A variable that changes in response to a deliberate change in the other variable is called the _____ variable.
3. A possible answer or untested explanation that relates to the initial question in an experiment is called a _____.
4. An _____ _____ is a brief description of the procedure by which a hypothesis is tested.
5. _____ are any information that is obtained through the senses or by extension of the senses.
6. A _____ observation is a numerical observation based on measurements or counting.
7. All scientific investigations begin with a(n) _____.

[Answers to Question 2

1. Independent 2. Dependent 3. Hypothesis
4. experimental *design* 5. observations 6. *quantitative* 7. Question]

3. Match each of the following traits to the related term. Choices may be used more than once.

a. qualitative observation
b. quantitative observation

Number	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Question	texture	mass	states of matter	length	temperature	population count	odour
Answer							

4. Match each description to the related term. Choices will be used only once.

a. variable
b. independent variable
c. dependent variable
d. controlled experiment
e. observational study
f. hypothesis
g. prediction
h. experimental design

1. An experiment in which the independent variable is deliberately changed to find out what change, if any, occurs in the dependent variable. _____
2. A variable that is changed by the investigator. _____
3. A brief description of the process by which a hypothesis is tested. _____
4. A statement that predicts the outcome of a controlled experiment, without an explanation . _____
5. The careful watching and recording of a subject or phenomenon to gather scientific information to answer a question. _____
6. Any condition that changes the outcome of a scientific inquiry. _____
7. A variable that changes in response to a deliberate change in another variable. _____
8. A possible answer or untested explanation that relates to the initial question in an experiment. __

[**Answers to Question 4:** 1.d 2.b 3.h 4.g 5.e 6.a 7.c 8.f]

5. Identify four categories of skills that are important to any scientific investigation.

(**Answer to Question 5:** The four categories are initiating and planning, performing and recording, analyzing and evaluating, and communicating.)

6. Describe the two functions of a hypothesis.

(Answer to Question 6: A hypothesis proposes a possible explanation along with reasons for this explanation. It also suggests a method of obtaining evidence that will support or reject the proposed explanation.)

7. Explain why it is important to analyze and evaluate your observations at the end of a scientific investigation.

[**Answer to Question 7**: Your observations must be analyzed and evaluated to determine an answer to the beginning question. You must also determine whether the evidence gathered supports or does not support your hypothesis.]

8. When evaluating the evidence of a scientific investigation, you also need to evaluate what other aspects of the investigation?

[Answer to Question8: The quality of the evidence depends on the quality of the plan, the equipment and materials, the procedures, and the skills of the investigator.]