Scientific Inquiry Homework Worksheet

Name: _____ **Date:** _____

1. A biologist in a laboratory reports a new discovery based on experimental results. If the experimental results are valid, biologists in other laboratories should be able to

   A. repeat the same experiment with a different variable and obtain the same results

   B. perform the same experiment and obtain different results

   C. repeat the same experiment and obtain the same results

   D. perform the same experiment under different experimental conditions and obtain the same results

2. The current knowledge concerning cells is the result of the investigations and observations of many scientists. The work of these scientists forms a well-accepted body of knowledge about cells. This body of knowledge is an example of a

   A. hypothesis

   B. controlled experiment

   C. theory

   D. research plan

3. In his theory, Lamarck suggested that organisms will develop and pass on to offspring variations that they need in order to survive in a particular environment. In a later theory, Darwin proposed that changing environmental conditions favor certain variations that promote the survival of organisms. Which statement is best illustrated by this information?

   A. Scientific theories that have been changed are the only ones supported by scientists.

   B. All scientific theories are subject to change and improvement.

   C. Most scientific theories are the outcome of a single hypothesis.

   D. Scientific theories are not subject to change.

4. A biologist reported success in breeding a tiger with a lion, producing healthy offspring. Other biologists will accept this report as fact only if

   A. research shows that other animals can be crossbred

   B. the offspring are given a scientific name

   C. the biologist included a control in the experiment

   D. other researchers can replicate the experiment

5. Which statement best describes the term theory as used in the gene-chromosome theory?

   A. A theory is never revised as new scientific evidence is presented.

   B. A theory is an assumption made by scientists and implies a lack of certainty.

   C. A theory refers to a scientific explanation that is strongly supported by a variety of experimental data.

   D. A theory is a hypothesis that has been supported by one experiment performed by two or more scientists.

6. A scientist conducted an experiment in which he fed mice large amounts of the amino acid cysteine. He observed that this amino acid protected mouse chromosomes from damage by toxic chemicals. The scientist then claimed that cysteine, added to the diet of all animals, will protect their chromosomes from damage. State whether or not this is a valid claim. Support your answer.

7. Which statement best describes a scientific theory?

   A. It is a collection of data designed to provide support for a prediction.

   B. It is an educated guess that can be tested by experimentation.

   C. It is a scientific fact that no longer requires any evidence to support it.

   D. It is a general statement that is supported by many scientific observations.

8. Which statement most accurately describes scientific inquiry?

   A. It ignores information from other sources.

   B. It does not allow scientists to judge the reliability of their sources.

   C. It should never involve ethical decisions about the application of scientific knowledge.

   D. It may lead to explanations that combine data with what people already know about their surroundings.

9. In 1910, Thomas Morgan discovered a certain pattern of inheritance in fruit flies known as sex linkage. This discovery extended the ideas of inheritance that Gregor Mendel had discovered while working with garden peas in 1865. Which principle of scientific inquiry does this illustrate?

   A. A control group must be part of a valid experiment.

   B. Scientific explanations can be modified as new evidence is found.

   C. The same experiment must be repeated many times to validate the results.

   D. Values can be used to make ethical decisions about scientific discovery.

10. A television commercial for a weight-loss pill claims that it has been "scientifically tested." The advertisement includes statements from 10 people who say that the pill worked for them. State *two* reasons why someone should question the claims made in this advertisement.