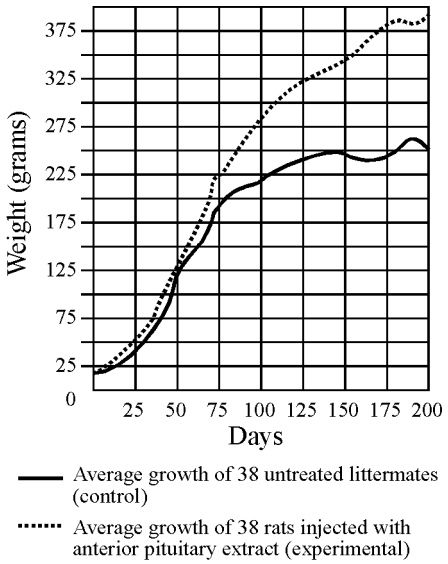
Scientific Method TEST REVIEW

Name: _____ **Date:** _____

1. The graph shows the average growth rate for 38 pairs of newborn rats. One of each pair was injected with anterior pituitary extract. The other member of each pair served as a control.



The graph shows the relationship between the weight of treated and untreated rats and the

A. age of the rats

B. sex of the rats

C. size of the rats' pituitary glands

D. type of food fed to the rats

2. Corn seeds were germinated in a dark room. Not one of the seedlings was green. When placed in the light, 75 percent of these seedlings turned green. Which conclusion about chlorophyll production in corn plants can most reasonably be drawn from this information?

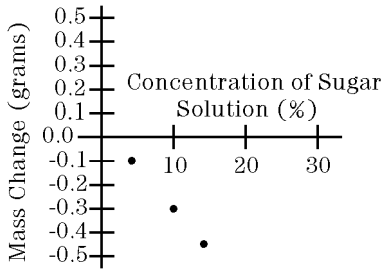
A. Light is the only factor that controls the production of chlorophyll.

B. Darkness is the only factor that prevents the production of chlorophyll.

C. Light and vitamins are necessary for chlorophyll production.

D. Light and some other factor are necessary for chlorophyll production.

3. Three pieces of apple were cut so that all were the same mass and shape. The pieces were placed in three different concentrations of sugar water. After 24 hours, the pieces were removed and their masses determined. The graph shown indicates the change in the mass of each piece.



The three points on the graph represent

A. assumptions B. data

C. hypothesis D. conclusions

4. A student reported that a wilted stalk of celery became crisp when placed in a container of ice water. The student's statement was based on

A. a deduction
B. a hypothesis
C. a conclusion
D. an observation

5. A student reported that a wilted stalk of celery became crisp when placed in a container of ice water. The student then suggested that water entered the stalk and made it crisp. This suggestion is considered to be

A. a control
B. a hypothesis
C. an observation
D. a variable

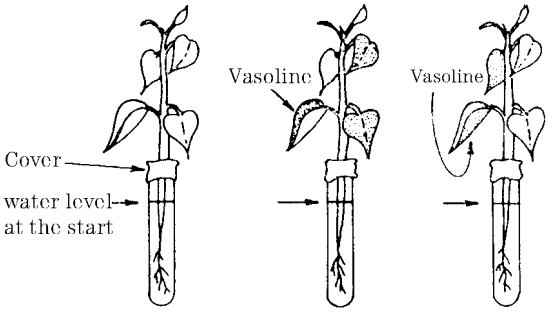
6. An experiment was designed to determine the effect of nitrates on plant growth. Two groups of plants were grown under identical conditions, except one group was watered with a dilute nitrate solution and the other group received water without nitrates. In this investigation, the group of plants grown without added nitrates is known as the

A. abiotic factor
B. control
C. variable
D. environmental stimulus

7. Which sequence should be followed when conducting a laboratory investigation?

A. gather experimental data, make observations, form a conclusion, form a hypothesis
B. define a problem, form a hypothesis gather experimental data, form a conclusion
C. form a hypothesis, form a conclusion, gather experimental data, define a problem
D. make observations, gather experimental data, form a conclusion, state a problem

8. The diagrams shown represent an investigation concerning the growth of bean plants. The roots of three identical bean plants were each placed through a hole in covered tubes containing water as shown in the diagrams. Nothing was done to plant *A*. Vaseline was used to cover the upper surface of the leaves of plant *B*. Vaseline was used to cover the lower surface of plant *C*. The water level of each tube was marked and the plants were placed together near a window. After 24 hours, the water level in each tube was measured.



Which tube represents the control for this investigation?

A. *A*
B. *B*
C. *C*

9. A drug company tested a new medication before putting it on the commercial market. Pills without medication were given to 500 test subjects in group *A* and pills containing medication were given to 500 test subjects in group *B*. In this experiment, the individuals in group *A* served as the

A. host
B. variable
C. control
D. hypothesis

10. An investigation was performed with honeybees to determine the average amount of nectar a bee carried in relation to the distance the flowers were from the hive. The following data were collected: 400 meters, 45 milligrams; 100 meters, 43 milligrams; 600 meters, 44 milligrams; 200 meters, 47 milligrams; 300 meters, 41 milligrams; 500 meters, 42 milligrams.

Which inference is best supported by the data collected?

A. The distance had no clear effect on the amount of nectar collected.
B. The farther away the bees had to go the less nectar they carried.
C. There is a distance beyond which bees lack the energy to carry back a maximum load of nectar.
D. The flowers near the hive had less nectar.

11. Graphs of the data from laboratory investigations are used to

A. observe general trends in the data
B. make the observed data more accurate
C. prevent errors in measuring data
D. help change the original data tables

12. In a scientific investigation, after the question is defined, the next step is most likely

A. formulating a hypothesis
B. identifying needed equipment
C. designing the experiment
D. collecting the data

13. The number of meadow mice in a certain grassy field was determined each year from 1977 to 1989. The results are represented in the data table.

Data Table

Year	Number of Meadow Mice
1977	130
1978	325
1979	50
1980	175
1981	125
1982	170
1983	125
1984	175
1985	30
1986	180
1987	125
1988	225
1989	75

During which time period did the greatest change in the size of the population of meadow mice take place?

A. 1977–1978 B. 1978–1979

C. 1984–1985 D. 1986–1987

14. Which inference can best be drawn from this study?

A. Food for the meadow mice was plentiful between 1977 and 1978.

B. Herbivores that prey on meadow mice increased between 1977 and 1978.

C. Meadow mouse populations decreased during years of plentiful rain.

D. The largest population was exactly double that of the smallest population.

15. A student conducted an original, well-designed experiment, carefully following proper scientific procedure. In order for the conclusions to become generally accepted, the experiment must

A. contain several experimental variables

B. be repeated to verify the reliability of the data

C. support the original hypothesis

D. be conducted by a scientist

16. In an experiment, the setup that provides a basis of comparison is known as

A. the conclusion B. a variable

C. a control D. the problem

17. What is the first step of a scientific investigation?

A. perform the experiment

B. analyze the experimental data

C. formulate a hypothesis

D. state the problem

18. A new concept that is tested in a scientific investigation is known as

A. a theory B. the hypothesis

C. an inference D. an observation