

1. What would be the best way to determine the weight of a dog using a floor scale?
 - a) put the dog directly onto the floor scale
 - b) place an object the same size as the dog on the floor scale and weigh it
 - c) weigh yourself and the dog on the floor scale
 - d) first weigh yourself, then weigh yourself holding the dog

2. Maggie set up an experiment to test factors that affect the growth of bread mold. She put two identical slices of white bread into separate plastic bags. She added eight drops of water to one bag and no water to the other bag. Both bags were exposed to the air for two hours and then sealed. The bags were kept in a warm, dark place. Which variable was Maggie testing?
 - a) temperature
 - b) moisture
 - c) exposure to air
 - d) size and thickness of bread

3. The more that grass is watered, the taller it will grow. Which type of variable is the amount of water?
 - a) control/constant
 - b) manipulated (independent)
 - c) derived
 - d) responding (dependent)

4. A lab report for a plant experiment contained the four statements below. Which statement is an ***inference*** rather than an ***observation***?
 - a) Lack of light caused the plants to grow at a slower rate.
 - b) All of the plants bent toward the small light source.
 - c) Each of the plants grew less than 2 centimeters.
 - d) Several of the plants have yellow leaves.

5. The type of graph that's most useful for showing how one variable changes in response to another variable is called a:
 - a) circle graph.
 - b) bar graph.
 - c) line graph.
 - d) data table.

1. A scientist makes an important discovery as a result of an experiment. Which would provide the best evidence of the validity of the scientist's findings?
 - a) the quality of the scientist's previous experiments
 - b) the level of detail provided in the scientific report of the experiment
 - c) the opinion of other scientists about the results
 - d) the replication of the experiment by other scientists, producing the same results

2. Sam is investigating the density of sand from his favorite beach. Which tools should he use?
 - a) beaker and balance scale
 - b) beaker, balance scale, and metric ruler
 - c) graduated cylinder and metric ruler
 - d) graduated cylinder and balance scale

3. Carrie wanted to determine the relationship between exercise and heart rate. She found that after 15 minutes of exercise Ken's heart rate had increased from 60 beats per minute to 157 beat per minute and then returned to 60 beats per minute after he had rested. What should she do to make sure her results are correct?
 - a) take Ken's heart rate again one day later
 - b) take Ken's heart rate again one minute later
 - c) conduct her test on another person under the same conditions
 - d) conduct her test on another person without a period of rest

4. The correct SI unit symbol for a liquid's density is:
 - a) g/mg.
 - b) g/ml.
 - c) g/cm.
 - d) g/° C.

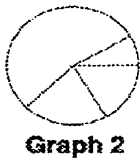
5. Tamara and James want to know why they see bumblebees in the summer but not in the winter. To solve the problem, which step of the scientific method should they do ***first***?
 - a) analyze data
 - b) gather information
 - c) draw a conclusion
 - d) perform an experiment

1. What kind of graph would you use to represent data on the rate at which a developing baby gains mass?
 - a) circle graph
 - b) line graph
 - c) bar graph
 - d) concept map

2. Diane wanted to test how well three antiseptic cleaning solutions stop bacterial growth. She soaked paper disks in each of the three solutions and placed each of them on a Petri dish with bacteria growing on it. After 48 hours Diane observed a clear area around the disks, indicating no growth of bacteria. She concluded that each of the solutions stopped bacterial growth. Her teacher said that her conclusion might not be correct because her experiment:

- a) did not include a control. b) was too long. c) was contaminated. D) was too complicated.

3. There are four types of blood: A, B, AB, and O. Diane and John collected information about students' blood types in their school. Which of the types of graphs would be appropriate to show what they found?



- a) Graph 1 only
b) Graph 3 only
c) Graph 1 or 2
d) all three graphs

4. Which question **cannot** be answered using the methods of science?

- a) How many kinds of tree frogs are there in Georgia?
b) What are some of the effects of pollution on apple trees?
c). Are roses more beautiful than butterflies?
d) Which brand of paper towels absorbs the most water?

5. A researcher plans to study the effect of temperature on the rate of metamorphosis from tadpole to frog. The researcher sets up two tanks with one tadpole in each. Both tanks are filled with water from a nearby pond. One tank is kept at 15° C and the other at 25° C. How should this experiment be improved?

- a) use tap water in one tank and pond water in the other
b) keep both tadpoles in the same tank and vary its temperature
c) use tadpoles of two different species
d) have many tadpoles in each tank

1. What is the best tool for observing cells?

- a) microscope b) spectroscope c) telescope d) oscilloscope

2. Which unit would you use to measure one dose of cough syrup?

- a) kilograms b) centimeters c). meters d) milliliters

3. To determine the effect of color of light on plant growth, four groups of bean plants were grown under the light conditions described below.

Group A	placed under red light for 12 hours per day
Group B	placed under green light for 12 hours per day
Group C	placed under violet light for 12 hours per day
Group D	placed in sunlight for 12 hours per day

All other factors, such as light intensity and amount of moisture, were held constant. In this investigation, which group of bean plants served as the control?

- a) Group A b) Group B c) Group C d) Group D

4. Ted is testing soils to find the kind of soil that helps plants grow best. Which of these should he do?

- a) Plant the same types of plants in three different kinds of soil.
b) Plant three different types of plants in the same kind of soil.
c) Plant the same types of plants in the same kind of soil, but water some plants more than others.
d) Plant three different types of plants in three different kinds of soil.

5. Which experiment would best determine the temperature at which tulips grow most rapidly?
- a) Keep one plant in a dark refrigerator and another on a windowsill near a heater.
 - b) Put one plant in a shady window and another in a sunny window.
 - c) Put one plant in a cool place and the other in a warm place, but give both the same amount of light and water.
 - d) Keep both plants side by side, but water one with cold water and the other with warm water.

1. For one week, Marta kept data on the amount of time she spent studying, eating, sleeping, and playing video games. What kind of graph would she use to represent this data?

- a) bar graph
- b) circle graph
- c) thinking map
- d) line graph

2. All plants are: a) autotrophs. b) unicellular. c) heterotrophs. d) prokaryotes.

3. Which of the following statements could be investigated scientifically?

- a) Taking something that belongs to another person is wrong.
- b) Each year when the weather gets cold, birds fly to warmer regions.
- c) People who don't recycle should have to pay fines.
- d) Basketball is a better sport than soccer.

4. When a person's body needs water, the brain helps maintain homeostasis by sending signals that make the person:

- a) feel thirsty.
- b) perspire.
- c) put on a sweater.
- d) feel tired.

5. Which of the following statements is not an example of a correctly written testable hypothesis?

- a) Does handling toads cause warts?
- b) If a truck is heavily loaded, then it will use more gasoline than an empty truck.
- c) Exercising for five minutes will increase my heart rate.
- d) If water contains salt, then it will be easier to swim in than fresh water.

1. How many millimeters are in 2.2 decimeters? a) 220 mm b) 22 mm c) 2.2 mm d) 0.22. mm

Use the information below to answer question 2.

Carla and her two teammates designed an experiment to test how exercise affects heart rate. First, Carla measured her heart rate after she'd been sitting still for five minutes. Next, she walked around the school for five minutes, stopped, and measured her heart rate. Last, she did jumping jacks for five minutes, stopped, and measured her heart rate. All heart measurements were done by taking a pulse for 1 minute, immediately after stopping the exercise. Then they repeated this procedure for the other two people in the group.

2. To organize their data, the team decided to create a data table. What should the labels for the columns in the data table be?

- a) Heart Rate, Sitting, Walking, Jumping Jacks
- b) Person, Sitting, Walking, Jumping Jacks
- c) Person, Heart Rate
- d) Person, Exercise, Heart Rate

3. Which term refers to the movement of water molecules through a selectively permeable membrane?

- a) passive transport
- b) engulfing
- c) active transport
- d) osmosis

4. Which of the following foods contains a large amount of carbohydrates?

- a) poultry
- b) fish
- c) fruit
- d) oil

5. What is the broadest classification level?

- a) family
- b) kingdom
- c) phylum
- d) species

1. According to the cell theory, all cells come from:

- a) animals.
- b) existing cells.
- c) nonliving matter.
- d) spontaneous generation.

Use the information below to answer question 2.

Maria designed an experiment to determine whether water or land gets hotter or cooler in the sun. She set up a pan of water and a pan of soil, each with a thermometer in it. She placed the pans in the sun for ten minutes and measured the temperature in each pan once every minute. She then placed both pans in the dark and measured the temperatures once every minute for ten minutes.

2. What were the manipulated variables in the experiment?
 - a) The size of the pans and the contents of the pans.
 - b) The amount of time the pans were placed in the sun and the presence or absence of sunlight.
 - c) The size of the pans and the presence or absence of sunlight.
 - d) The contents of the pans and the presence or absence of sunlight.
3. The function of a cell membrane is to:
 - a) perform different functions in each cell.
 - b) control what enters and leaves the cell.
 - c) protect and support the cell.
 - d) form a hard outer covering for the cell.
4. Tissues within a many-celled organism contain cells that:
 - a) perform similar functions.
 - b) do not work together.
 - c) no longer divide.
 - d) do not grow.
5. Which of the following kingdoms consists entirely of organisms that make their own food?
 - a) animals
 - b) fungi
 - c) plants
 - d) protists
1. According to the chromosome theory of inheritance, genes are carried from parents to their offspring on:
 - a) traits.
 - b) centromeres.
 - c) chromosomes.
 - d) nitrogen bases.
2. Both plant cells and animal cells contain mitochondria. What process, therefore, happens in both types of cells?
 - a) digestion
 - b) photosynthesis
 - c) cellular respiration
 - d) transpiration
3. What kingdom is not found in the domain Eukarya?
 - a) animals
 - b) fungi
 - c) bacteria
 - d) plants
4. Some genetic disorders, like Down syndrome, are caused by changes in the overall structure or number of chromosomes. Others, like hemophilia, are caused by:
 - a) sickle cells.
 - b) gene therapy..
 - c) mutations.
 - d) recessive allele.
5. One characteristic used to place organisms into kingdoms is:
 - a) how they move.
 - b) where they live.
 - c) their ability to make food.
 - d) their ability to reproduce.
1. The scientific name for bread mold is *Rhizopus stonifer*. Which classification group is *Rhizopus*?
 - a) genus
 - b) class
 - c) phylum
 - d) species
2. Single-celled organisms can reproduce and create cells exactly like themselves without combining genes from two different parent cells. When they do this, they use a type of:
 - a) asexual reproduction.
 - b) natural selection.
 - c) gamete formation.
 - d) sexual reproduction.
3. Which of the following lacks a nucleus?
 - a) a plant cell
 - b) an animal cell
 - c) an amoeba
 - d) a virus
4. Which of the following organelles use carbon dioxide to produce sugars?
 - a) vacuoles
 - b) ribosomes
 - c) chloroplasts
 - d) mitochondria
5. The part of the cell that is a "storage tank" is the:
 - a) vacuoles.
 - b) lysosomes.
 - c) mitochondria.
 - d) endoplasmic reticulum.