

**General Biology & Scientific Method**

- The volume of a liquid must be measured to the tenth of a milliliter. Which of the following is the best piece of lab equipment to use?
  - A beaker with markings at intervals of five milliliters.
  - A flask with marking at intervals of one milliliter.
  - A graduated cylinder with markings at intervals of five milliliters.
  - A graduated cylinder with markings at intervals of one milliliter.
- Which of the following is a disadvantage of using a dissecting microscope instead of a compound light microscope?
  - A dissecting microscope cannot magnify a sample as much as a compound light microscope.
  - A compound light microscope has more lenses.
  - A dissecting microscope requires one eye to be closed to view a specimen.
  - A compound light microscope produces images that show depth.
- A planned procedure to test a hypothesis is called
  - a prediction.
  - the control.
  - an experiment.
  - a variable.
- The amount and temperature are examples of
  - factors necessary for life.
  - methods of energy production.
  - factors to which living things respond.
  - factors that affect reproduction.
- The variable that is measured in an experiment is the \_\_\_\_\_ variable.
  - independent.
  - control.
  - dependent.
  - experimental.
- In science, a hypothesis is useful only if
  - it is proven correct.
  - it can be proven incorrect.
  - it can be tested.
  - the explanation is already known.
- Which of the statements best describes three-dimensional models?
  - They are perfect representations of the structure and function of a biological system.
  - They do not need to be updated.
  - They can be viewed from multiple perspectives.
  - They display all the functions but only some of the structures of a biological system.

- A well-tested explanation that unifies a broad range of observations is a(n)
  - hypothesis.
  - inference.
  - theory.
  - controlled experiment.
- The process by which organisms keep their internal conditions relatively stable is called
  - homeostasis.
  - metabolism.
  - evolution.
  - photosynthesis.
- What is the term for the land, water, and air on Earth?
  - population
  - biosphere
  - ecosystem
  - environment
- Which of the following is a valid hypothesis for why a plant appears to be dying?
  - The plant is not being watered enough.
  - The plant is being watered too much.
  - The plant is receiving too much sunlight.
  - all of the above.

Louis Pasteur set out to disprove the idea of spontaneous generation. He boiled chicken broth for a period of 15min at 103°C then separated it into 4 identical sterile flasks. One of the flasks was left open to the air. The other 3 flasks were fitted with a 40cm thin glass tube. One of the tubes sat straight into the air, one was slanted at an angle, and one had an S-shape. Each was set in the same location for observation indefinitely. He found that the flask with the S-shaped tube opening attached was the only one that showed no sign of bacterial growth after 30days. He concluded that life (the bacteria) was in the air, that life does not come from non-living matter.

- A. Independent Var.      B. Dependent Var.**
- C. Constant(3)      D. Hypothesis      E. Control**
- The 4 flasks were identical.
  - The opening of each flask was different.
  - Each flask had the same amount of chicken broth.
  - Pasteur did not believe living things rose from non-living matter.
  - One flask was left completely open, while the others were open to the air through a tube.
  - Each flask was observed for the growth of bacteria.
  - Each flask was set in the same location.
  - List the steps of the scientific method.
  - What is metabolism?