

Study Guide: Scientific Measurements

Scientific Method

1. List the five steps used in the scientific method.
2. Define the terms: hypothesis, controlled experiment, controlled variable, independent variable, dependent variable, control group, and theory.
3. What must a hypothesis be, if it is to be useful in science?
4. Explain why some variables are controlled.
5. Explain why a control group should always be used, if at all possible.
6. Explain why an unsupported hypothesis can still be useful to science.
7. Describe when to use bar graph, a circle graph, and a line graph.

Metric System

1. List the six most common metric prefixes, along with their values.
2. List the base unit used for length, mass, and volume.
3. List the phrase used to help remember the order of the metric prefixes.
4. Convert 3 grams (g) into milligrams (mg), by moving the decimal point.
5. Convert 5 decimeters (dm) into meters (m), by moving the decimal point.
6. List the measuring devices used to measure length, mass, and volume.
7. Describe how to use the water displacement method to measure the volume of an irregular shaped object.
8. Explain the difference between mass and weight.

Density

1. Describe what density means.
2. Calculate the density of a substance that has a mass of 20 grams (g) and a volume of 40 milliliters (mL).
3. Decide whether the substance in question 2 would sink or float when placed in water.
4. Calculate the mass of a substance that has a density of 30 g/cm^3 and a volume of 5 cm^3 .
5. Calculate the volume of a substance that has a mass of 40 g and a density of 5 g/cm^3 .

Mapping

1. Which of the following runs parallel to each other and to the equator? Latitude Longitude
2. Which of the following meets at the poles? Latitude Longitude
3. Which of the following would be followed by a N or S? Latitude Longitude
4. Which of the following would be followed by an E or W? Latitude Longitude
5. What is the reference point for longitude? _____
6. What is the reference point for latitude? _____
7. On a topography map, how can you tell if there is a hill? _____

8. How can you tell which way the water flows? _____

9. If the highest contour line on a hill is 50 m and the contour interval is 20 ft, what is the highest that hill can possibly be? _____
10. How can you tell if that land has a steep grade? _____
