

THE SCIENTIFIC METHOD

Name _____

Put the following steps of the scientific method in the proper order.

- _____ Organize and analyze data
- _____ State a hypothesis
- _____ Identify the problem
- _____ State conclusion
- _____ Design and carry out an experiment
- _____ Make observations and record data
- _____ Gather information

Match the term in Column I with its definition in Column II.

Column I

- 1. theory _____
- 2. law _____
- 3. hypothesis _____
- 4. experiment _____
- 5. variable _____
- 6. control _____
- 7. data _____
- 8. conclusion _____
- 9. application _____

Column II

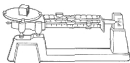
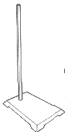
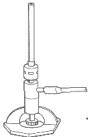
- a. suggested explanation to a problem or observation based upon known information
- b. used to test a hypothesis
- c. anything that can affect the results of an experiment
- d. observations and measurements made during an experiment
- e. part within the experiment that is maintained without change in order to provide a comparison for the part of the experiment containing the variable
- f. hypothesis that has been tested and supported by a great amount of evidence over a long period of time
- g. statement describing (but not explaining) a natural event or phenomenon
- h. new use to which results are put or new technique developed
- i. a summary that explains whether or not the data support the hypothesis

LABORATORY EQUIPMENT

Name _____

Match the following names of lab instruments and equipment with the correct picture.

- a. beaker c. balance e. test tube g. funnel i. tongs
b. graduated cylinder d. Bunsen burner f. test tube clamp h. Erlenmeyer flask j. ring stand

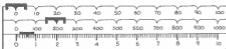


USING THE BALANCE

Name _____

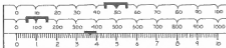
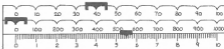
The following balance measure mass is grams. What masses are shown on each of the following balances?

Answer: _____



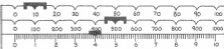
Answer: _____

Answer: _____



Answer: _____

Answer: _____



MEASURING LENGTH

Name _____

What lengths are marked on the following centimeter ruler?



cm

mm

- | | | |
|----|-------|-------|
| a) | _____ | _____ |
| b) | _____ | _____ |
| c) | _____ | _____ |
| d) | _____ | _____ |
| e) | _____ | _____ |

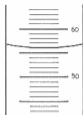
Measure the following lines with a centimeter ruler.

- | | | |
|----|-------|-------|
| f) | _____ | _____ |
| g) | _____ | _____ |
| h) | _____ | _____ |
| i) | _____ | _____ |
| j) | _____ | _____ |
| k) | _____ | _____ |
| l) | _____ | _____ |

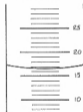
MEASURING LIQUIDS

Name _____

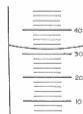
What volume is indicated on each of these graduated cylinders? The unit of volume of is mL.



a) _____



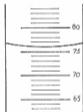
d) _____



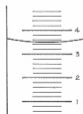
g) _____



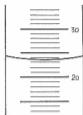
b) _____



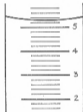
e) _____



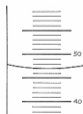
h) _____



c) _____



f) _____

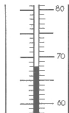


i) _____

READING THERMOMETERS

Name _____

What temperature is indicated on each of these thermometers?



a) _____



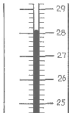
b) _____



c) _____



d) _____



e) _____



f) _____



g) _____



h) _____



i) _____

DENSITY

Name _____

Which has the greater mass, air or lead? Most of you would answer lead, but actually this question does not have an answer. To compare these two things you need to know how much of each you have. A large amount of air could have a greater mass than a small amount of lead. To compare different things, we have to compare the masses of each that occupy the same space, or volume. This is called density.

$$\text{density} = \frac{\text{mass}}{\text{volume}}$$

Solve the following problems.

1. What is the density of carbon dioxide gas if 0.196 g occupies a volume of 100 mL?

Answer: _____

2. A block of wood 3.0 cm on each side has a mass of 27 g. What is the density of this block?

Answer: _____

3. An irregularly shaped stone was lowered into a graduated cylinder holding a volume of water equal to 2.0 mL. The height of the water rose to 7.0 mL. If the mass of the stone was 25 g, what was its density?

Answer: _____

4. A 10.0 cm³ sample of copper has a mass of 89.6 g. What is the density of copper?

Answer: _____

5. Silver has a density of 10.5 g/cm³ and gold has a density of 19.3 g/cm³. Which would have a greater mass, 5 cm³ of silver or 5 cm³ of gold?

Answer: _____

6. Five mL of ethanol has a mass of 3.9 g, and 5.0 mL of benzene has a mass of 4.4 g. Which liquid is denser?

Answer: _____

7. A sample of iron has the dimensions of 2 cm x 3 cm x 2 cm. If the mass of this rectangular-shaped object is 94 g, what is the density of iron?

Answer: _____