

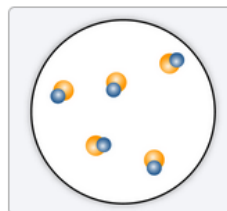
Multiple Choice: (4 points each. Put answers in left margin as capital letters.)

1. Which of these mixtures is heterogeneous?

- A) air
B) brass (copper and zinc alloy)
C) granite
D) a cup of black coffee
E) salt and water

2. The following picture is a depiction of a _____.

- A) compound**
B) element
C) heterogeneous mixture
D) homogeneous mixture



3. A pure substance is a material

- A) made of only one type of atom.
B) made only one type of molecule.
C) that is uniform throughout.
D) that cannot be broken down into a simpler substance
E) All of the above

4. Scientific theories are based on

- A) general assumptions on how systems work.
B) large amounts of data collected over time.
C) mathematical principles that can be proven to be true.
D) observations within a single scientific discipline.
E) All of the above.

5. How many significant figures are in the answer to the following problem?
(250 x 147.0) + 12.4?

- A) 1 **B) 2** C) 3 D) 4 E) 5

6. A block has a temperature of -8 °F. What is its temperature in °C?

- A) -54 °C **B) -22 °C** C) -8 °C D) 13 °C E) 18 °C

7. One decimeter equals 10^x meters. What is x?

- A) -3 B) -2 **C) -1** D) 1 E) 2

8. Given what you know about the following materials from everyday experience, which is most dense?

- A) air B) ice **C) iron** D) Styrofoam® E) water

9. Which of the following elements is a halogen?
A) chlorine B) neon C) lithium D) potassium E) sulfur
10. Which of the following properties is not typically associated with nonmetals.
A) brittle C) low density E) poor electrical conductor
B) ductile D) multicolored

Discussion Questions: (**You must show your work to receive credit.**)

1. Define: (5 points each)

anion – negatively charged particles

mixture – a combination of two or more substances

law – statements of fact

Fill-in-the-blanks (5 points each)

127.0 in scientific notation: 1.270×10^2

When used in an equation, 17% would be expressed as 0.17

Provide an English/metric conversion factor for **length**: your choice

In the modern periodic table, the rows of elements are called periods

The atomic symbol for calcium is Ca.

Rexulti[®] is the brand name for brexiprazole, a prescription supplement to improve the efficacy of antidepressant medications. It composed of a single molecule that contains 25 carbon atoms, 27 hydrogen atoms, three nitrogen atoms, two oxygen atoms, and one sulfur atom. Write out its chemical formula. $C_{25}H_{27}N_3O_2S$

Show your work problems (5 points each)

1. Briefly, for a single material, how does its solid form differ from its liquid form. How are they similar?
Solids and liquids generally occupy similar volumes. It is how they behave and why that the difference arises. The particles that make up the solid are held firmly in place by attractive forces between the molecules, while in the liquid there is enough energy for the particles to move.
2. How many fluid ounces are in a quart?

$$\text{volume (oz)} = (0.75 \text{ qt}) \left(\frac{32 \text{ oz}}{1 \text{ qt}} \right) = 24 \text{ ounces}$$

3. How many milliliters are in 1.0 pint?

$$\text{volume (mL)} = (1.0 \text{ pt}) \left(\frac{1 \text{ qt}}{2 \text{ pt}} \right) \left(\frac{1 \text{ L}}{1.05 \text{ qt}} \right) \left(\frac{1000 \text{ mL}}{1 \text{ L}} \right) = 480 \text{ mL}$$

4. Provide 3 properties (from the notes and/or book) common to metals.
Ductile, malleable, high luster (shiny), good electrical conductors, good thermal conductors, typically grey, high density, chemical react with non-metals to form ionic compounds