Building Blocks of Matter Extra Review

Name: _____

Date: _____

1. Categorize each of the following as an element (E), compound (C), or mixture (M).

   _____ a) candy bar   _____ b) paint   _____ c) silver

   _____ d) carbon dioxide   _____ e) coffee   _____ f) pizza

2. Which of the substances from question 1 would be classified as homogeneous?

3. Which of the substances from question 1 would be classified as heterogeneous?

4. Gold is a "pure substance." Water is also a "pure substance" even though it is made of more than one thing—hydrogen and oxygen. Explain.

5. What component of air—oxygen or nitrogen—combined with mercury to produce the reddish compound in Lavoisier's experiment? Was this combination a chemical or a physical change?

6. Lavoisier did two experiments to prove that air was a _____ and water was a _____.
   element, mixture, or compound   element, mixture, or compound

7. True or False: Kool-aid is an example of a homogeneous mixture and sand is an example of a heterogeneous mixture.

8. If element X and element Y combine to form a compound, how do the chemical properties of X and Y change as the compound is formed?

9. If element X and element Y combine to form a mixture, how do the chemical properties of X and Y change as the mixture is formed?

10. When a _____ forms the elements always combine in the same definite ratio.
    mixture or compound?
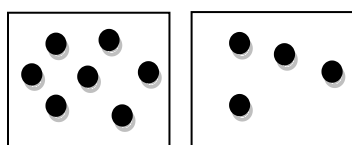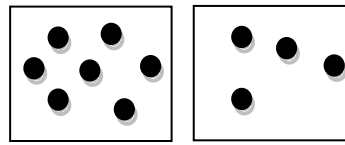
11. The following data were obtained from various rocks.

White Rocks

	Mass (g)	Volume (mL)
Sample #1	42.6	10.1
Sample #2	29.5	7.0
Sample #3	84.9	20.2

Black Rocks

	Mass (g)	Volume (mL)
Sample #1	13.8	4.45
Sample #2	58.4	18.8
Sample #3	60.1	19.4

   a) Which type of rock--white or black--has the greater density?

   b) If you were to graph each set of data with Mass on the Y axis and Volume on the X axis, which would have the steeper slope?

   c) Circle the set of particle diagrams that are labeled correctly?

| White Rock | Black Rock | OR | Black Rock | White Rock |

12. Sketch Lavoisier's experiment in which he used mercury. What did his experiment attempt to explain.

13. What is the density of a piece of metal whose mass is 210g and volume is 37 cm^3. Include units.

14. A certain liquid has a density of 0.79 g/mL. Calculate the volume of 35g of the liquid.

15. Find the mass of a 10 liter boulder whose density is 15.3 kg/L.

16. Complete the following problems and round your answer to the correct number of significant figures.

a) $6500 \div 135 =$

f) $9820 \div 1.3 =$

b) $(5.6 \times 10^4)(3.68 \times 10^6) =$

g) $25{,}120 \times 45.8 =$

c) $0.04580 \div 0.00190 =$

h) $0.04520 \div 0.0030 =$

d) $(1.200 \times 10^3)(4) =$

i) $12{,}000 \times 185 =$

e) $7800 \div 45 =$

j) $65{,}020 \div 120 =$

17. Perform the following unit conversions.

a) 45.9 cm = _____ km

d) 0.00466 km = _____ mm

b) 12,000 kg = _____ g

e) 3.22 mL = _____ L

c) 0.00443 nm = _____ cm

f) 10,040 cm = _____ m

18. Convert the following from scientific notation to standard notation.

a) 4.29×10^{-7}

b) 6.800×10^5

c) 7.54×10^9