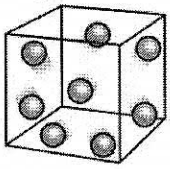
Unit 1 Equation: mass = density (volume) Name:_____

Chemistry:Unit 1 - Physical Properties of Matter Test

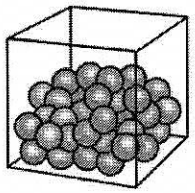
Multiple Choice
Identify the choice that best completes the statement or answers the question.

1. Which is the state of matter shown in this figure? Please note: movement arrows are not shown on the particles.



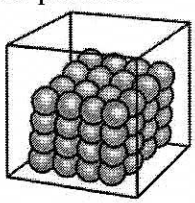
a. solid
b. liquid
c. gas
d. plasma

2. Which is the state of matter shown in this figure? Please note: movement arrows are not shown on the particles.



a. solid
b. liquid
c. gas
d. plasma

3. Which is the state of matter shown in this figure? Please note: movement arrows are not shown on the particles.



a. solid
b. liquid
c. gas
d. plasma

Use the table below to answer questions 4-7.
A student conducts an experiment to determine the effect of adding salt on the boiling temperature of water. The results are shown below.

Sample	Amount of Salt	Boiling Temperature
Sample 1	0 g	100.0° C
Sample 2	2 g	102.3° C
Sample 3	5 g	104.8° C
Sample 4	10 g	107.5° C

4. Which is the independent variable in this experiment?
   a. Amount of salt added
   b. Volume of water
   c. Boiling temperature
   d. Time required for water to boil

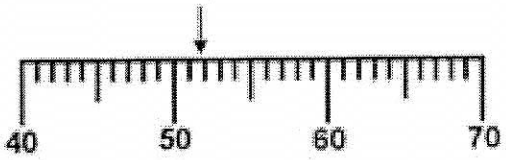
5. Which is the dependent variable in this experiment?
   a. Amount of salt added
   b. Volume of water
   c. Boiling temperature
   d. Time required for water to boil

6. Which is a value that should remain constant for all samples in this experiment?
   a. Amount of salt added
   b. Volume of water
   c. Boiling temperature
   d. Time required for water to boil

7. Which is a reasonable hypothesis for this experiment?
   a. If salt is added to water, the water will boil at a higher temperature
   b. Salt makes water boil
   c. If water is boiling, it must have salt added to it
   d. If salt is added to water, the water will get cloudy

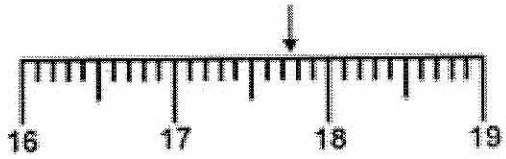
Unit 1 Equation: mass = density (volume)

8. Which is the correct measurement for location marked by the arrow?



a. 50.2
b. 51.8
c. 52
d. 51

9. Which is the correct measurement for location marked by the arrow?



a. 17.076
b. 17.8
c. 17.76
d. 17.7

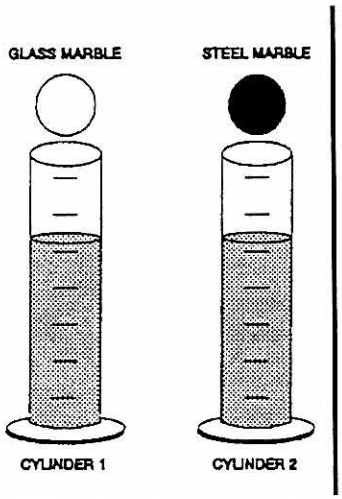
10. An object has a mass of 26.94 grams and a volume of 2.568 cubic centimeters. What material is it likely to be made of?

Substance	iron	gold	silver	copper
Density (g/cm^3)	7.874	19.32	10.49	8.92

a. Iron
b. Gold
c. Silver
d. Copper

11. A bottle contains 3.100 mL of a liquid. The total mass of the bottle and the liquid together is 6.300 g. The mass of the empty bottle is 4.240 g. What is the density of the liquid?
a. 0.665 g/mL
b. 1.368 g/mL
c. 1.505 g/mL
d. 2.032 g/mL

12. Below are drawings of two identical cylinders filled to the same level with water. Also shown at the right are two marbles, one glass and one steel. The marbles are the same size but the steel one is much heavier than the glass one.



When the glass marble is put into Cylinder 1 it sinks to the bottom and the water level rises to the 6th mark. If you put the steel marble into Cylinder 2, the water will rise

a. to the same level as it did in Cylinder 1
b. to a higher level than it did in Cylinder 1
c. to a lower level than it did in Cylinder 1
d. not enough information to answer the question

13. The above statement in the previous question is true because

a. the steel marble will sink faster.
b. the marbles are made of different materials.
c. the steel marble is heavier than the glass marble.
d. the marbles are the same size.

14. What happens to matter during a chemical reaction?
a. Matter is neither destroyed or created.
b. Some matter is destroyed.
c. Some matter is created.
d. Some matter is destroyed and some is created.

Unit 1 Equation: mass = density (volume)

15. The number of significant digits in 20000100 mL has

    a. 1 significant figures
    b. 2 significant figures
    c. 4 significant figures
    d. 6 significant figures

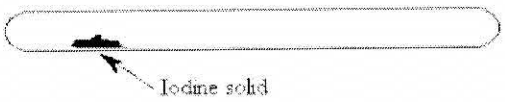
16. What is the volume of 45.6 g of silver if the density of silver is 10.5 g/mL?
    a. 0.23 mL
    b. 4.34 mL
    c. 479 mL
    d. none of the above

17. As the density of a substance increases, the volume of a given mass of that substance ____.
    a. increases
    b. is not affected
    c. decreases
    d. fluctuates

18. A piece of aluminum is cut in half. How does the density of each half compare to the density of the original piece?
    a. The density of each half is *greater* than the density of the original piece
    b. The density of each half is *less* than the density of the original piece
    c. The density of each half cannot be determined.
    d. The density of each half is *the same* as the density of the original piece

19. What is the reason for your answer to question 18?
    a. The mass of each cubic centimeter of aluminum is unchanged
    b. Reducing the mass of the sample reduces the density
    c. Reducing the volume of the sample increases the density
    d. None of these accounts for what happens to the density

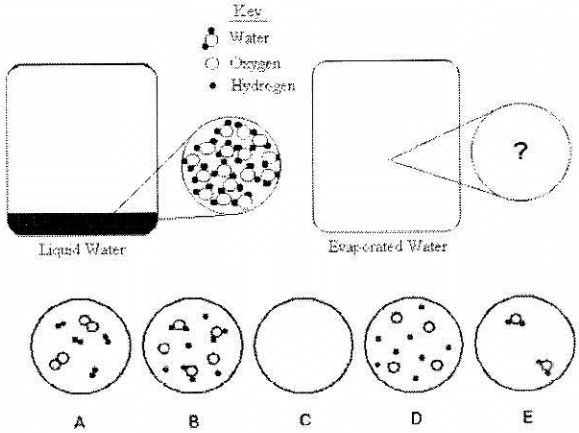
20. A 1.0-gram sample of solid iodine is placed in a tube and the tube is sealed after all of the air is removed. The tube and the solid iodine together weigh 27.0 grams



    The tube is then heated until all of the iodine evaporates, filling the tube with iodine gas. After heating, the total mass will be:
    a. less than 26.0 grams
    b. 26.0 grams
    c. 27.0 grams
    d. more than 27.0 grams

21. What is the reason for your answer to question 20?
    a. A gas weighs less than a solid.
    b. Mass is conserved.
    c. Heating increases the mass.
    d. Evaporating produces more particles.

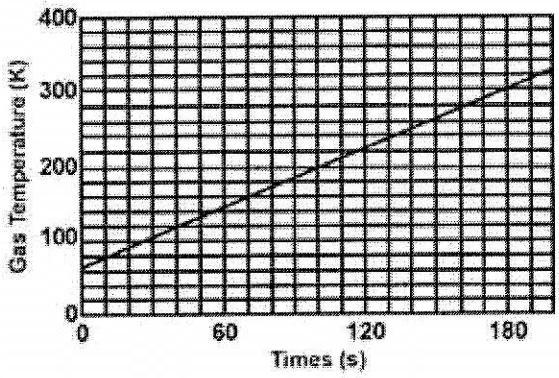
22. The circle on the left shows a magnified view of a very small portion of liquid water in a closed container. What would the magnified view show after the water has evaporated?



    a. View A
    b. View B
    c. View C
    d. View D
    e. View E

Unit 1 Equation: mass = density (volume)

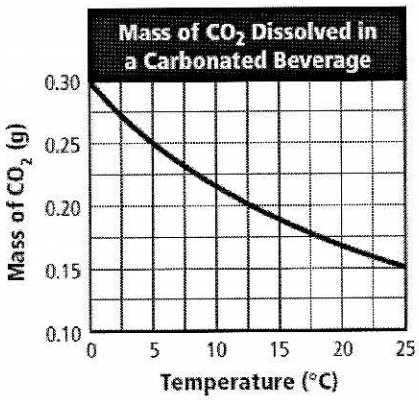
23. Identify the units for the slope of the trendline.



a. K
b. s
c. K/s
d. Gas / Times

24. Use the table and graph below to answer questions 24 & 25.

Page From a Student's Laboratory Notebook	
Step	Notes
Observation	Carbonated beverages taste fizzier when they are warm than when they are cold. (Carbonated beverages are fizzy because they contain dissolved carbon dioxide gas.)
Hypothesis	At higher temperatures, greater amounts of carbon dioxide gas will dissolve in a liquid. This is the same relationship between temperature and solubility seen with solids.
Experiment	Measure the mass of carbon dioxide (CO_2) in different samples of the same carbonated beverage at different temperatures.
Data analysis	See graph below.
Conclusion	



What must be a constant during this experiment?

a. temperature
b. mass of CO_2 dissolved in each sample
c. amount of beverage in each sample
d. not enough information to determine a constant

25. Assuming that all of the experimental data is correct, what is a reasonable conclusion for this experiment?

a. Greater amounts of CO_2 dissolve in a liquid at lower temperatures
b. The different samples of beverages contained the same amount of CO_2 at each temperature
c. The relationship betwen temperature and solubility seen with solids is the same as the one seen with CO_2.
d. CO_2 dissolves better at higher temperatures.