

Chem-H, Exam Study Guide, S1, 2013, Part 1

1. A measure of the quantity of matter is
 - a. mass.
 - b. volume.
 - c. weight.
 - d. density.
2. The following describe a sample of solid sulfur:
 - i. Brittle, crystalline solid.
 - ii. Melting point of 113°C .
 - iii. Density of 2.1 g/cm^3 .
 - iv. Combines with oxygen to form sulfur dioxide

Which, if any, of these descriptions apply to one single atom of sulfur obtained from the sample?

- a. i only. b. ii and iii only. c. iv only. d. All of these descriptions would apply. e. None of these descriptions would apply.

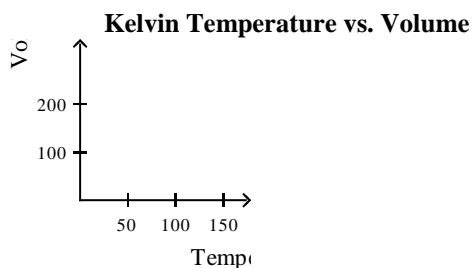
For questions 7 - 8 refer to the following:

Two cups contain equal amounts (250 g) of coffee; one is cold, the other is hot. You add 10 g of sugar to each cup and stir

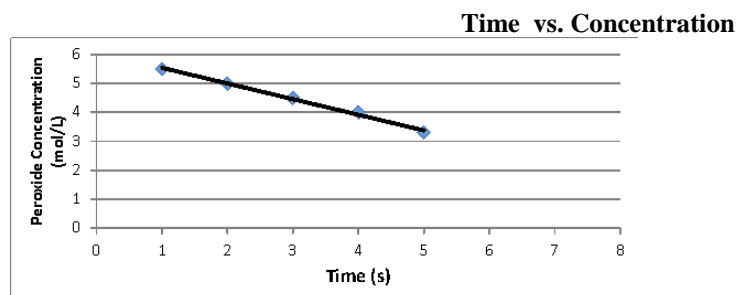
3. What is the mass of the contents of each of the cups?
 - a. 250 g b. somewhere between 250 g and 260 g c. 260 g d. somewhat more than 260 g e. none of the above
4. What happens to the sugar particles when you add them to each of the cups of coffee?
 - a. They cease to exist. b. They spread out through the coffee. c. They become liquid. d. They form a new and different type of substance with the coffee. e. None of the above.
5. Why does the sugar dissolve faster in the hot coffee?
 - a. The sugar particles cease to exist faster when in a hot liquid. b. The particles of hot liquid bump into the sugar particles more often. c. The sugar becomes a liquid faster in a hot liquid. d. The sugar forms a new substance faster in a hot liquid.
6. In an experiment to determine the effects of radiation on the germination of seeds, the dependent variable would be
 - a. the amount of radiation b. the germination rate of seeds c. the temperature of the soil d. the amount of water added to the seeds
7. In the above experiment, factors that should be controlled are
 - a. A & C b. A & B c. B & D d. C & D
8. A scientist wants to determine if a type of yeast will make a cake rise. The scientist bakes one cake with the yeast and one cake with no yeast. Which of the following is the independent variable in this experiment?
 - a. the scientist b. the yeast c. the cake without the yeast d. the cake with the yeast

Chem-H, Exam Study Guide, S1, 2013, 1

9. A researcher who wants to learn about the behavior of a particular gas examines the relationship between temperature and gas volume when the gas is held at a constant pressure. The graph below shows the data collected. What would the data show if the temperature were decreased to 100 Kelvin?

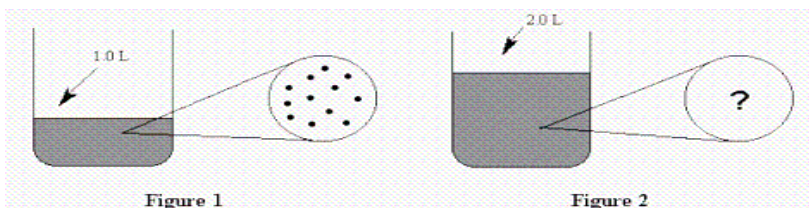


- a. The volume would not change. b. The volume would increase rapidly, then decrease. c. The volume would increase.
- d. The volume would decrease.
10. A researcher who wants to learn about the behavior of peroxide during a chemical reaction and examines the relationship between temperature and concentration when the reaction is held at a constant pressure. The graph below shows the data collected. What would the data show if the time were increased to eight seconds?

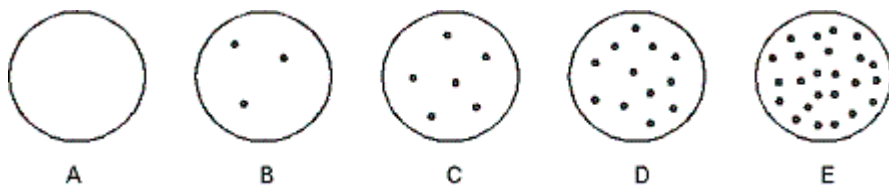


- a. The concentration would decrease b. The concentration would not change. c. The concentration would increase.
- d. The concentration would increase rapidly then decrease. e. None of the above answers are correct.
11. In a controlled experiment,
- a. one variable is fixed while all others are changed. d. results are obtained by computer models.
- b. one variable is changed while all others remain fixed. e. None of the above.
- c. the outcome is controlled.
12. Figure 1 represents 1.0 liter (L) of a solution of sugar dissolved in water. The dots in the magnification circle represent the sugar molecules. In order to simplify the diagram, *the water molecules have not been shown.*

Chem-H, Exam Study Guide, S1, 2013, 1



Which of the following represents the view after 1.0 L of water was added to the beaker? (Figure 2).

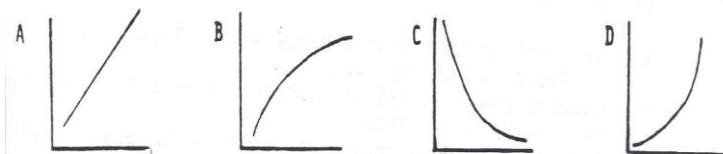


a. (a) b. (b) c. (c) d. (d) e. (e)

13. A physical science class was studying pressure and volume with balloons. They did an experiment to where they changed the pressure in a balloon. Then they measured its volume. The results are given in the table below.

Pressure on balloon, N/cm^2	Volume of balloon, mL
0.35	980
0.70	400
1.03	320
1.40	220
1.72	180

Which of the graphs shows the data correctly?



a. a b. b c. c d. d

14. The experimental group is
a. the part of an experiment that includes the dependent variable. b. the part of an experiment that has an independent variable. c. the part of an experiment that is deliberately changed. d. all the above. e. none of the above.
15. Variables are
a. conditions that do not change during an experiment b. conditions that include the control group. c. conditions that are used to control the experiment. d. conditions that do change during an experiment e. None of the above
16. All experiments involve a cause and an effect. Which variable is the “cause”?

Chem-H, Exam Study Guide, S1, 2013, 1

- a. The control. b. The independent variable. c. The dependent variable. d. All of the above. e. None of the above.
17. All experiments involve a cause and an effect. Which variable is the “effect”?
a. The dependent variable. b. The control. c. The independent variable. d. All of the above. e. None of the above.
18. Why are multiple trial used in an experiment?
a. To verify if the results are accurate. b. To verify that the results agree with the conclusion. c. To verify if the data is accurate. d. To verify that the results agree with the hypothesis. e. To verify the data of an experiment by obtaining precise measurements.

<u>Increasing</u> the amount of the <u>chemical compound</u> will cause <u>the height</u> of the <u>plants</u> to <u>increase</u> .
--

19. The independent variable causes the outcome or dependent variable in an experiment. What is the independent variable implied in the hypothesis above in the box?

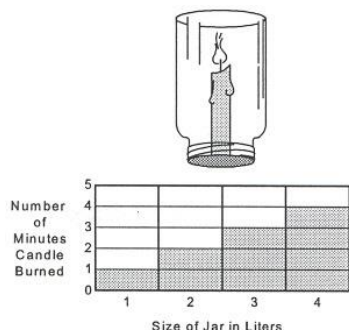
a. no chemical compound b. the height c. increasing d. plants e. chemical compound

Anita wants to know how different activities will affect her heart rate. First, she measures and records her heart rate while she is standing still. After walking quickly for two minutes, she measures and records her heart rate again. After letting her heart rate return to normal, Anita does jumping jacks for two minutes, then measures and records her heart rate again. After letting her heart rate return to normal, Anita jogs for two minutes, then measures and records her heart rate again.

20. Carefully read the description of Anita’s experiment above. Which of the following is a valid hypothesis regarding this experiment?
a. The longer Anita waits between exercises, the higher her heart rate will be. b. The longer Anita exercises, the more tired she will be. c. The more difficult the physical activity, the lower Anita’s heart rate will be. d. The more difficult the physical activity, the higher Anita’s heart rate will be.
21. Which of the following is a chemical change?
a. grating cheese b. melting cheese c. mold growing on cheese d. mixing two cheeses in a bowl
22. Which of the following is an example of a physical change?
a. dissolving salt in water b. cooking an egg c. burning wood into charcoal d. rusting iron
23. Identify the unit that would be most appropriate for expressing the length of a bacterial cell
a. centimeters b. kilometers c. micrometers d. nanometers
24. Identify the unit that would be most appropriate for expressing the mass of a car
a. grams b. kilograms c. micrograms d. kiloliters
25. Identify the unit that would be most appropriate for expressing the volume of five drops of water?
a. liter b. milligrams c. microliter d. milliliter

Chem-H, Exam Study Guide, S1, 2013, 1

26. Identify the unit that would be most appropriate for expressing the volume of a pitcher of ice tea?
a. liter b. milligrams c. microliter d. milliliter
27. The symbols for units of length in order from largest to smallest are
a. m, cm, mm, km. b. mm, m, cm, km. c. km, mm, cm, m. d. km, m, cm, mm.
28. The variable that is changed by the scientist and measured in the experiment is the
a. independent variable b. dependent variable c. controlled variable d. experimental variable



29. The graph shows what happened when a candle was burned in different jars. The results of this experiment show that the bigger the jar, the
a. faster the candle melted b. longer the candle burned c. brighter the candle's flame d. higher the candle's flame



In an experiment to determine the effect of a hormone on the growth of bean plants, group 1 receives different amounts of a hormone. Group two receives no hormones.

30. In the experiment above what is the independent variable.
a. The amount of hormones. b. The growth of the plant. c. The type of plant. d. All the above. e. None of the above.
31. In the experiment above what is the dependent variable.
a. The amount of hormones. b. The growth of the plant. c. The type of plant. d. All the above. e. None of the above.
32. In the experiment above which group is the control group?

Chem-H, Exam Study Guide, S1, 2013, 1

a. Group 1. b. Group 2. c. The plant group. d. All the above. e. None of the above