

## Practice Test 1

### Alchemy Units I-II

- Which is considered matter? (A) energy (B) rain (C) an idea (D) a dream
- Which is **NOT** considered matter? (A) air (B) sadness (C) salt (D) copper
- Which is **NOT** part of the definition of matter?  
(A) Something that you can see with your eyes. (B) Something that has mass.  
(C) Something that has volume. (D) Something that takes up space.
- What piece of lab equipment would you use to accurately measure the volume of a liquid?  
(A) beaker (B) test tube (C) graduated cylinder (D) hot plate
- What piece of lab equipment would you use to hold liquids?  
(A) beaker (B) spatula (C) graduated cylinder (D) hot plate
- Which of the following is **NOT** an appropriate lab safety rule?  
(A) Wear protective glasses or goggles for all laboratory work.  
(B) Check chemical labels twice to make sure that you have the correct substance.  
(C) Report any laboratory accident, no matter how small, to your teacher immediately.  
(D) Look directly down into a test tube when you are trying to view the contents.
- What is the density of a liquid sample if the volume is 25 mL and the mass is 20 grams?  
(A) 0.8 g/mL (B) 1.3 g/mL (C) 45 g/mL (D) 500 g/mL
- The density of brass is 8.4 g/mL. If you have a sample of brass with a mass of 306 grams, what volume of brass do you have?  
(A) 0.027 mL (B) 36.4 mL (C) 314.4 mL (D) 2570 mL
- A metal sample has a mass of 38.9 grams. If it is pure solid iron, what should the volume be? (The density of solid iron is 7.78 g/mL.)  
(A) 5.0 mL (B) 0.20 mL (C) 31.1 mL (D) There is no relationship between mass and volume.
- $\text{CaCl}_2$  (s) is an example of  
(A) an aqueous solution (B) an element (C) a metal (D) a compound
- The correct way to represent a solution of copper nitrate is  
(A) Cu (s) (B) Cu (aq) (C)  $\text{Cu}(\text{NO}_3)_2$  (s) (D)  $\text{Cu}(\text{NO}_3)_2$  (aq)
- Suppose you pour nitric acid on some copper powder in a beaker. A brown gas is produced, and some light blue liquid is left in the beaker. There is no solid remaining. What happened to the copper?  
(A) It escaped in the brown gas.  
(B) It was destroyed by the acid.  
(C) It is now in the light blue liquid in compound form.  
(D) It is now in the light blue liquid as an element.
- Which elements would you expect to have similar properties?  
(A) C and Si (B) Cu and Zn (C) N and O (D) H and He

14. The Group 8 elements are called

- (A) alkali metals                      (B) alkaline earth metals                      (C) noble gases                      (D) halogens

15. Which of the following is a transition metal?

- (A) Na                      (B) Sn                      (C) Al                      (D) Fe

16. Which of the following is a nonmetal?

- (A) Se                      (B) Sr                      (C) Sm                      (D) Sn

17. Bromine (Br)'s group is

- (A) 4                      (B) nonmetal                      (C) halogen                      (D) noble gas

18. Cobalt (Co)'s period is

- (A) 3                      (B) 4                      (C) transition metal                      (D) metal

19. The least reactive group of elements on the periodic table is the

- (A) alkali metals                      (B) noble gases                      (C) halogens                      (D) transition metals

**Short Answer**

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20. Which of the following can be classified as matter according to the definition? Explain why.

- a. Helium                      b. A shoe                      c. anger

21. A student found a piece of silver colored metal while walking through campus. She did an experiment to try to determine whether or not the metal was silver. She determined that the mass of the sample was 14.7 grams and the volume of the sample was 1.4 mL. The density of silver is 10.5 g/mL. Is the metal silver? Explain your thinking.

22. Suppose you dissolved sodium hydroxide, NaOH(s) in water, H<sub>2</sub>O(l). How would you write its new chemical formula?

23. Imagine you find a vial in the chemistry stockroom that is labeled Cu<sub>2</sub>SO<sub>4</sub> (aq). What would you expect to see inside the vial?

24. Potassium iodide, KI (aq), is added to lead nitrate, Pb(NO<sub>3</sub>)<sub>2</sub> (aq), resulting in KNO<sub>3</sub> (aq) and a yellow solid. Identify the yellow solid from the list below. Explain your thinking.

- a. PbI<sub>2</sub>(aq)                      b. PbI<sub>2</sub> (s)                      c. Pb(NO<sub>3</sub>)<sub>2</sub> (s)                      d. KI(s)

25. Which of the following elements would you expect to find in the same group on the periodic table? Explain your thinking.

Element Q	Violet, dark-gray, nonmetal solid.	Reacts slowly with water	Found in QCl (s)
Element R	Red-brown, liquid nonmetal	Reacts slowly with water	Found in RCl (g)
Element T	Yellowish-green, nonmetal gas	Reacts slowly with water	Found in TCl (g)
Element X	Colorless, nonmetal gas	Does not react with water	Found in XCl <sub>3</sub> (l)

26. Use a periodic table to answer the following questions.

- Is sulfur a metal, a nonmetal, or a metalloid?
- What is the number of the period for copper?
- What is the name of the group for lithium?

27. Create a card for Cs using the following information.

Potassium	Very soft, silvery Solid, metal
K 39.1	
Reacts violently with water	Found in solid KCl

Rubidium	extremely soft, silvery solid, metal
Rb 85.5	
Explodes upon contact with water	Found in solid RbCl

28. Which do you expect to be smaller—Al or In?

29. Which do you expect to be more reactive—Ca or Sr?

30. Which do you expect to be less reactive—Cl or I?

31. Which do you expect to be softer—Li or K?

32. Elements combine to form compounds. For each of the compounds listed below, specify whether two metals, a metal and nonmetal, or two nonmetals were combined.

- CuSn
- KI
- CH<sub>4</sub>

**Answers:**

1. B 2. B 3. A 4. C 5. A 6. D 7. A 8. B 9. A 10. D 11. D 12. C 13. A 14. C 15. D 16. A 17. C  
18. C 19. B  
20. a & b; they have mass and occupy space  
21. yes;  $14.7\text{g}/1.4\text{mL} = 10.5\text{g/mL}$   
22. NaOH(aq)  
23. blue liquid (or blue solution)  
24. b  
25. Q, R, T; They all are found in similar compounds and react slowly with water  
26. (a) nonmetal (b) 4 (c) alkali metal  
27.

Cesium	very extremely soft, silvery solid, metal
Cs 132.9	
Violently explodes upon contact with water	Found in CsCl

28. Al

29. Sr

30. Cl

31. K

32. (a) two metals (b) metal and a nonmetal (c) all nonmetals



