Name: _____ Class: _____ Date: _____ ID: A

Physical Science - Chapter 3

Multiple Choice

Identify the letter of the choice that best completes the statement or answers the question.

___ 1. **(1pt):** How much did you study? Be Honest! Close to...
   a. 0min
   b. 10min
   c. 20min
   d. 30min
   e. 40min
   f. 50min
   g. >1hr

A 2. In an atomic model that includes a nucleus, positive charge is
   a. concentrated in the center of an atom.
   b. spread evenly throughout an atom.
   c. concentrated at multiple sites in an atom.
   d. located in the space outside the nucleus.

A 3. Which subatomic particle has a negative charge?
   a. electron
   b. alpha particle
   c. neutron
   d. proton

D 4. Which statement about subatomic particles is NOT true?
   a. Protons and neutrons have almost the same mass.
   b. Protons and electrons have opposite charges.
   c. Unlike protons and electrons, neutrons have no charge.
   d. Protons and neutrons have the same charge.

D 5. Which statement about subatomic particles is true?
   a. Protons, neutrons, and electrons all have about the same mass.
   b. Unlike protons or neutrons, electrons have no mass.
   c. Neutrons have no charge and no mass.
   d. An electron has far less mass than either a proton or neutron.

C 6. Which of the following is unique for any given element?
   a. the number of neutrons
   b. the charge on the electrons
   c. the number of protons
   d. the mass of a neutron

C 7. The number of protons in one atom of an element is that element's
   a. mass number.
   b. balanced charge.
   c. atomic number.
   d. isotope.

D 8. In a periodic table, a set of properties repeats from
   a. element to element.
   b. group to group.
   c. column to column.
   d. row to row.

B 9. Moving from left to right across a row of the periodic table, which of the following values increases by exactly one from element to element?
   a. isotope number
   b. atomic number
   c. atomic mass unit
   d. mass number

B 10. Which list of elements contains only metals?
   a. carbon, iodine, tin
   b. tin, copper, cesium
   c. helium, iron, copper
   d. iodine, carbon, argon

D 11. At room temperature, none of the metals are
a. soft.
b. liquids.
c. malleable.
d. gases.

C 12. Which general statement does NOT apply to metals?
a. Most metals are ductile.
b. Most metals are malleable.
c. Most metals are brittle.
d. Most metals are good conductors of electric current.

A 13. Atoms of the most reactive elements tend to have
a. one or seven valence electrons.
b. eight valence electrons.
c. four or five valence electrons.
d. no valence electrons.

A 14. As you move from left to right across a period, the number of valence electrons
a. increases.
b. stays the same.
c. increases and then decreases.
d. decreases.

B 15. A member of the boron family has three valence electrons while a member of the nitrogen family has
a. none.
b. five.
c. four.
d. three.

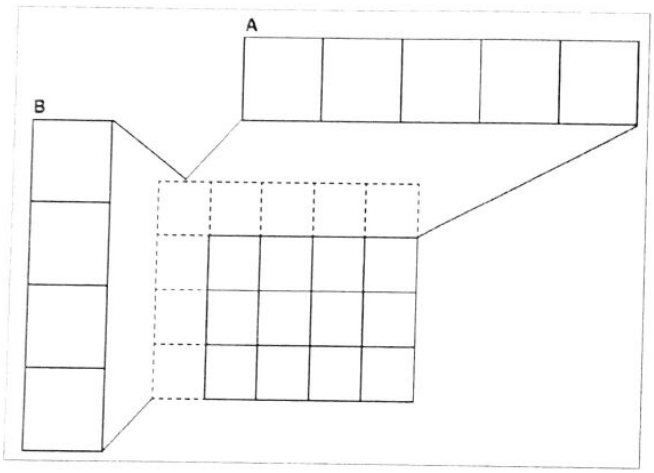


Figure 5-1

B 16. Figure 5-1 shows a portion of a blank periodic table. Identify the segments labeled A and B.
a. A and B are both periods.
b. A is a period and B is a group.
c. A and B are both groups.
d. A is a group and B is a period.

D 17. What is the name of the alloy that contains the following metals: Cu and Sn?
a. Steel
b. Strings
c. Brass
d. Bronze

Completion

Complete each sentence or statement.

18. Protons and neutrons are found in the nucleus of an atom.

19. Neutrons and protons have almost the same mass.

Name: ID: A

20. In Bohr's model of the atom, electrons move in fixed orbits around the nucleus.
21. Mendeleev organized elements in his periodic table in order of increasing atomic mass.
22. Boron is one block to the left of carbon in the periodic table. The atomic number of carbon is 6. The atomic number of boron is 5.
23. Elements can be classified as metals, nonmetals, and metalloids.
24. Reactive elements, such as alkali metals and halogens, are found in nature only as cmpds.
25. One way to demonstrate reactivity among the alkaline earth metals, Group 2A, is to observe what happens when they are placed in water.
26. An alloy is a mixture of metals.

Short Answer

27. Which of the three subatomic particles—proton, electron, or neutron—has the least mass?

28. What do the whole numbers on the periodic table represent?
atomic # (protons)

29. Selenium has six valence electrons, while rubidium has one valence electron. Identify each element as a metal or a nonmetal. nonmetal metal

30. On the periodic table, there are two numbers in the block for the element potassium, K: 19 and 39.098. What are these two numbers, and what do they represent?
a. # a. mass

31. Sodium chloride is a compound of sodium and chlorine. Which of these elements is the alkali metal, and which is the halogen?
alkaline metal halogen

32. Why is argon gas used instead of air in light bulbs that contain a filament that is heated to glowing?
doesn't react

Name: ID: A

Other

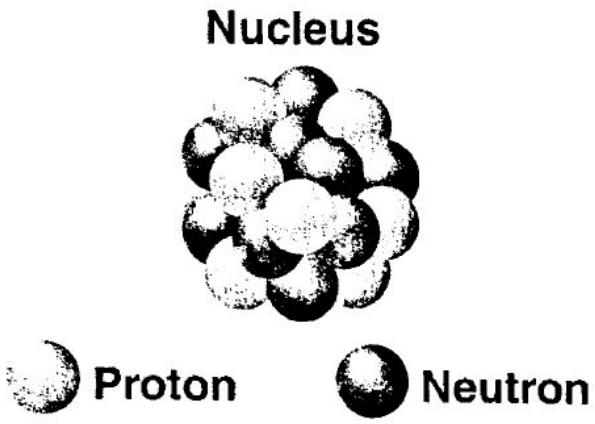


Figure 4-3

p+(+) n+(0)

33. **Analyzing Data** A) What is the charge on each individual subatomic particle represented in Figure 4-3?

B) What is the total charge of the nucleus? +8

C) Assuming all the particles in the nucleus are visible, what are the atomic number of the atom shown?

D) And, for 1 EC point, find the mass number of this atom.

(oxygen) [8]

17

USING SCIENCE SKILLS

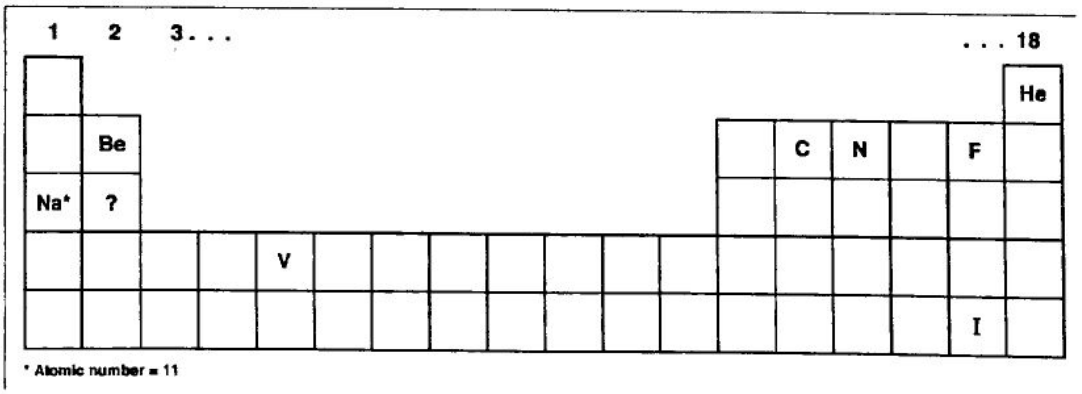


Figure 5-2

34. **Using Tables and Graphs** Which of the elements shown in Figure 5-2 are in the same period?

B, C, N, F

35. **Classifying** Which element in Figure 5-2 is a transition metal? Which is a noble gas?

V He

Name: _____ ID: A

36. **Using Tables and Graphs** Which elements in Figure 5-2 have the same number of valence electrons? How do you know?

F, I (same family group)

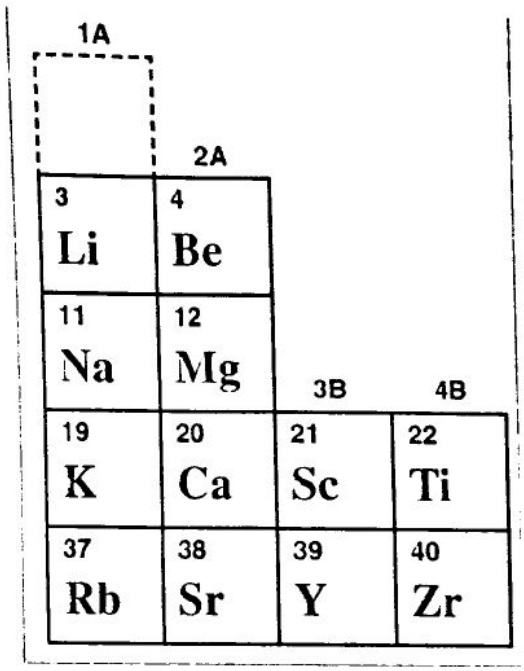


Figure 5-3

37. **Classifying** Classify the elements in Figure 5-3 as metals, metalloids, or nonmetals. Explain your answer.

left of steps

38. **Inferring** Identify the most reactive group shown in Figure 5-3. Identify the most reactive element and get a bonus point.

Li to Rb

Rb

39. **Using Tables and Graphs** What do the numbers in the boxes in Figure 5-3 represent? What is the importance of these numbers?

atomic # (protons

Name: _____

40. Draw the electron dot structure for the following elements:

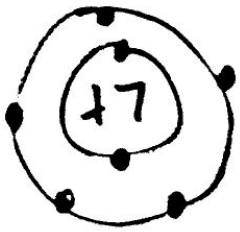
A) Mg Mg:

B) C ·Ċ·

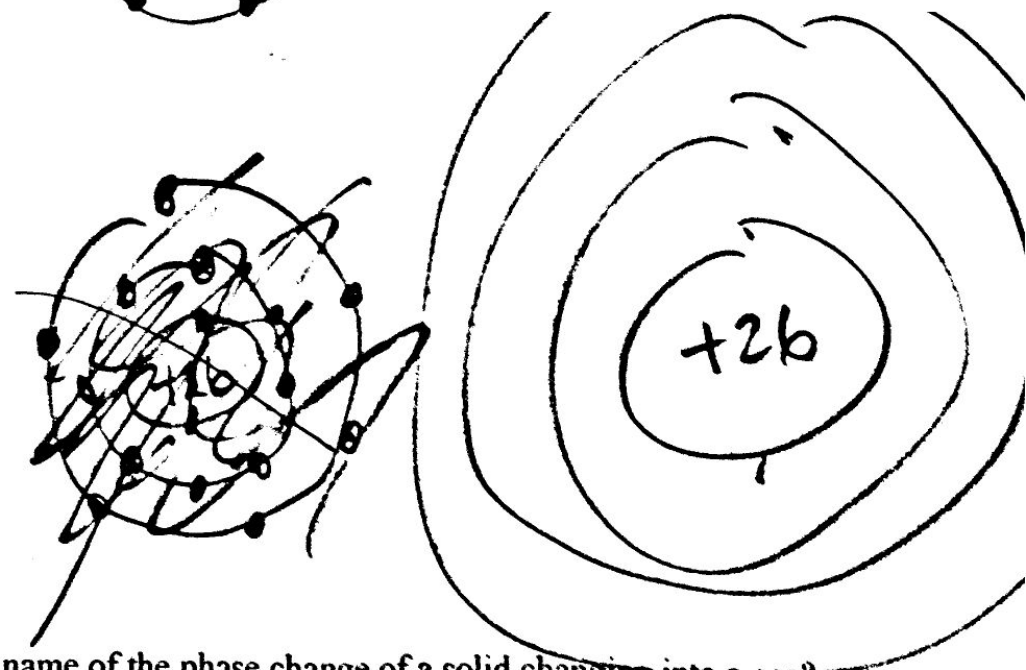
D) Kr :Kr:

41. Draw a Bohr Diagram of the following atoms:

A) Nitrogen (2,5)



B) Iron (2,8,14,2)



42. Extra Credit What is the name of the phase change of a solid changing ~~into a gas~~?

sublimation

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Chapter 3 Test - Inside the Atom

Multiple Choice

Choose the best answer. You may use good ole Flinny

G 1. **(1pt):** How much did you study? Be Honest! Close to...
   a. 0min
   b. 10min
   c. 20min
   d. 30min
   e. 40min
   f. 50min
   g. >1hr

A 2. Sulfur is a
   a. nonmetal
   b. metalloid
   c. metal
   d. a and c

C 3. How many elements are found in nature and are not man-made?
   a. 18
   b. 118
   c. 90
   d. 54

B 4. What is the mass of 1 atom of carbon-13 (6 protons, 7 neutrons)
   a. 7.00 amu
   b. 13.00 amu
   c. 6.00 amu
   d. none of the above

A 5. Which of the following is*NOT* a property of metals?
   a. low density
   b. luster
   c. ductile
   d. high conductivity

B 6. The size of the nucleus of an atom is comparable to
   a. a dime on the planet
   b. a marble in a stadium
   c. a pimple on your face
   d. a basketball in a house

C 7. The bohr model of gold would have how many electrons in the second ring?
   a. 2
   b. 32
   c. 8
   d. 18

D 8. Uranium is what kind of metal?
   a. alkaline earth metals
   b. alkali metals
   c. transition metals
   d. inner transition metals

D 9. Which of the following is**NOT** a property of nonmetals?
   a. low conductivity
   b. low boiling point
   c. brittle as solids
   d. typically solids

C 10. Alkali metals in nature are typically found as
   a. gases
   b. flammable solids
   c. ionic compounds
   d. molecules

B 11 Chlorine and Bromine have
   a. the same number of electrons
   b. similar properties
   c. the same number of protons
   d. a and b

C 12. A horizontal row in the periodic table is called a
   a. family
   b. group
   c. period
   d. a and c

C 13. Which of the following has a positive charge?
   a. electron
   b. neutron
   c. proton
   d. b and c

D 14. A vertical column in the periodic table are called
a. periods c. groups
b. families d. b and c

D 15. What element is found in compounds that have a rotten egg odor?
a. arsenic c. carbon
b. chlorine d. sulfur

A 16. Which of the following metals is the most reactive?
a. lithium c. nickel
b. gold d. iron

A 17. Ionic compounds _____ electrons while molecules _____ electrons
a. transfer, share c. ionize, polarize
b. share, transfer d. polarize, ionize

C 18. Which of the following has a charge of +2?
a. 11 protons, 13 neutrons, 13 electrons c. 9 protons, 9 neutrons, 7 electrons
b. 15 protons, 11 neutrons, 17 electrons d. 7 protons, 5 neutrons, 7 electrons

D 19. Lithium is what type of metal?
a. alkaline earth metals c. transition metals
b. inner transition metals d. alkali metals

B 20. Argon is typically found as a
a. liquid c. solid
b. gas d. compound

D 21. What does the atomic number tell you?
a. # electrons c. # neutrons
b. # protons + neutrons d. # protons

B 22. In nature, noble gases are found as
a. molecules c. compounds
b. monatomic gases d. diatomic gases

D 23. Which of the following is*NOT* a compound found naturally on earth
a. O_2 c. H_2
b. F_2 d. K_2

O 24. Potassium is a(n)
a. metalloid c. nonmetal
b. gas d. metal

B 25. What group of metals is the most reactive?
a. transition metals c. alkaline earth metals
b. alkali metals d. inner transition metals

A 26. Who first put the elements together in an organized manner with repeating properties?
a. Mendeleev c. Bohr
b. Lewis d. Einstein

B 27. What is the key element that every living thing has?
a. chlorine c. silicon
b. carbon d. sodium

A 28. What is the most abundant element in the universe?
a. hydrogen c. carbon
b. helium d. oxygen

Name: _____ ID: A

B 29. What element is found in computer chips?
a. nitrogen
b. silicon
c. boron
d. arsenic

A 30. What metal is responsible for the taste of blood?
a. iron
b. sodium
c. potassium
d. copper

C 31. Which of the following is *NOT* safe to breath?
a. CO_2
b. N_2
c. Cl_2
d. O_2

B 32. Boron is a
a. metal
b. metalloid
c. liquid
d. nonmetal

A 33. The modern periodic table is organized by
a. atomic number
b. atomic size
c. number of electrons
d. atomic mass

A 34. Families of elements have the same
a. number of valence electrons
b. mass numbers
c. number of protons
d. period

C 35. Alkaline Earth metals as atoms have
a. 3 valence electron
b. 8 valence electron
c. 2 valence electron
d. 1 valence electron

B 36. Almost all of the mass of an atom comes from the
a. electrons alone
b. nucleus alone
c. protons alone
d. neutrons alone

C 37 Silver is what kind of metal?
a. inner transition metals
b. alkaline earth metals
c. transition metals
d. alkali metals

D 38 Which of the following is a halogen?
a. nitrogen
b. oxygen
c. neon
d. chlorine

A 39. The electron dot structure of fluorine would have how many electrons around it?
a. 7
b. 9
c. 8
d. 2

A 40. Most of the air is made of
a. nitrogen
b. argon
c. carbon dioxide
d. oxygen

C 41. Which of the following has a negative charge?
a. proton
b. neutron
c. electron
d. a and b

B 42. Sodium has how many protons?
a. 10
b. 11
c. 1
d. 8

C 43. Which of the following is *NOT* a property of a metal?
a. malleable
b. typically a solid
c. dull color
d. often magnetic

Name: _____

A 44. All of the volume of an atom comes from the
a. electrons alone
b. nucleus alone
c. protons alone
d. neutrons alone

D 45. How many valence electrons does calcium have?
a. 8
b. 20
c. 1
d. 2

D 46. What is the main metal used in a typical car battery to hold its charge?
a. potassium
b. lithium
c. chromium
d. lead

D 47. The nucleus of an atom contains
a. protons
b. neutrons
c. electrons
d. a and b

A 48. What element is used in atomic bombs?
a. uranium
b. potassium
c. sodium
d. fluorine

A 49. The nucleus is surrounded by
a. electrons
b. neutrons
c. protons
d. a and c

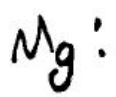
B 50. When metals rust or corrode, their atoms turn into
a. electrons
b. ions
c. molecules
d. water

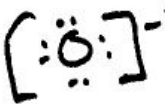
P 51. What is a alloy of copper and tin called?
a. steel
b. cupric zincate
c. brass
d. bronze

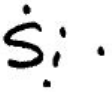
B 52. An atom with a charge is called a(n)
a. protron
b. ion
c. electron
d. a and c

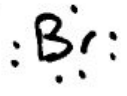
Other

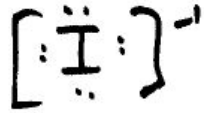
53. Draw the electron dot diagram for the following atoms/ions:

a. Mg 

b. O^{-2} 

c. Si 

d. Br 

e. I^{-1} 

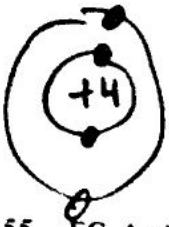
f. B 

Name: _____

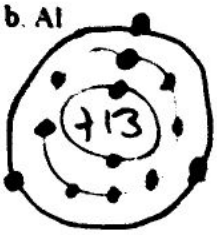
ID: A

54. Draw the Bohr model for the following atoms/ions:

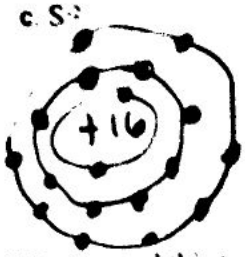
a. Be



b. Al



c. S-2



55. EC. An ice cube slowly shrinks over a few weeks in the freezer. What process caused this to happen?

sublimation