completed

Day 3a
1

Day 3 [redacted]: The Periodic Table ____/46 pts

#7 Periodic Table: The organization of the periodic table is based on the properties of the elements and reflects the structure of atoms

a. Know how to identify regions corresponding to metals, nonmetals, & inert gases. (noble)

b. Each element has a specific number of Protons in the nucleus (the atomic number) & each isotope of the element has a different but specific number of neutrons in the nucleus.

c. Substances can be classified by their Properties, including their melting temperature, density, hardness, and thermal & electrical conductivity.

1. Development of the Periodic Table Use chapter 13 (pages 326 – 343).

- Who was the chemist responsible for the first periodic table? Dimitri Mendeleev
- He arranged the table according to the element's properties. List some of these properties.

color density melting point

- Currently, the periodic table is arranged according to what? atomic number

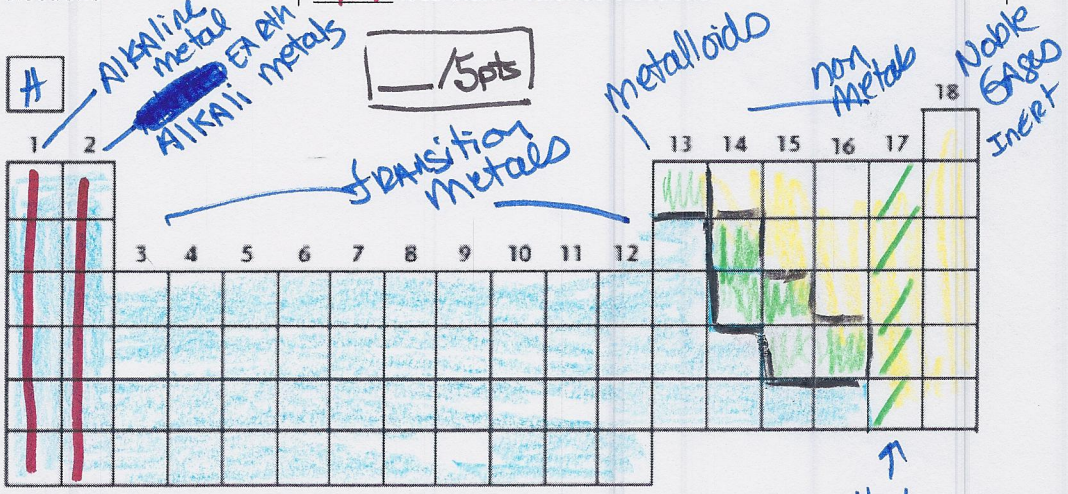
____/4pts

2. Metals, Nonmetals, & Metalloids: Label each property with a Metal (**M**), Nonmetal (**N**) or Metalloid (**D**).

M malleable	M metallic bonding	N receives electrons in chemical reactions
M ductile	N brittle	M gives away electrons in chemical reactions
D semiconductors	N covalent bonding	D possesses properties of both metals & nonmetals
M lustrous	N nonconductor	D typically have a half set of valence electrons
M conductive	N more than 4 valence electrons	N gaseous at room temperature
		M less than 4 valence electrons

On the periodic table to the right, color:

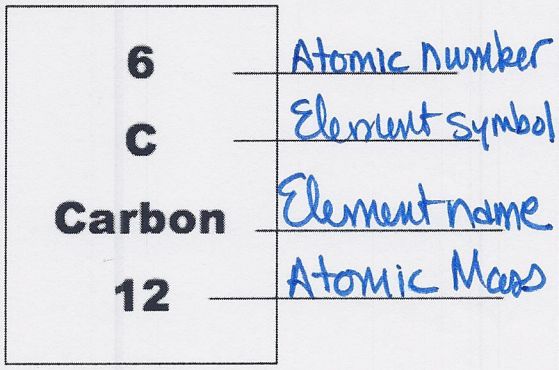
1. metals **blue** and label the 2 groups of very reactive metals red. Write their family names in each column
2. transition metals LIGHT blue.
2. metalloids **green**
3. nonmetals **yellow**.
4. Label the square for hydrogen with an H. Color it yellow.
5. Stripe & label the halogens in green.



6. Label the noble (also known as INERT) gases in green. Label the family "Noble Gas".
7. Using black, mark the zigzag line that shows the position of the metalloids

4. A closer look at the Periodic Table:

Label the parts with the following terms: atomic number, element name, element symbol, atomic weight



a) What is an isotope?
Same element – same # of protons, different # of neutrons

b) What is the atomic weight?
Protons + neutrons

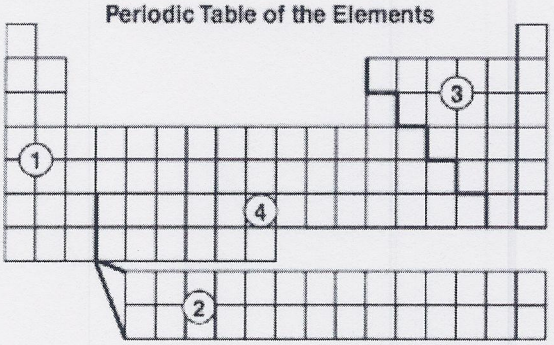
c) What does atomic weight have to do with isotopes?
Atomic weight will change because # of neutrons is changing

State Exam Questions: Circle the answer ½ Pt each: ____/35pts

1. What do the elements sulfur (S), nitrogen (N), phosphorus (P), and bromine (Br) have in common?
a. They are noble (inert) gases.
b. They are nonmetals.
c. They have the same thermal conductivity.
d. They have the same number of protons.

B

Periodic Table of the Elements



2. A diagram of the periodic table of the elements is shown. In which region of the table would nonmetals be found? a. 1 b. 2 c. 3 d. 4

C

3. What is the purpose of the zigzag line on the right side of the periodic table?
a. It marks the border between the alkali metals and the transition metals.
b. It indicates a family of elements that have the same chemical properties.
c. It connects the elements in the table that have the same atomic number.
d. It divides the metals and nonmetals, and shows where the metalloids are.

D

Isotope	Atomic Mass
Ca–40	40
Ca–42	42
Ca–43	43
Ca–44	44

4. The table shows the atomic mass of four stable calcium (Ca) isotopes. What characteristic is different in each isotope?
a. the position in the periodic table of the elements
b. the net charge of the nucleus
c. the mass of the protons in the nucleus
d. the number of neutrons in the nucleus

D

5. How can you determine the atomic number of an atom?
a. by counting its protons and neutrons
b. by determining the atomic mass of the atom
c. by counting the number of protons
d. by determining the number of electrons in its outermost energy level

C

6. Which class of elements best conducts electricity?
a. Metals b. nonmetals
c. semimetals d. noble (inert) gases

a

7. In a comparison of metals to nonmetals, metals tend to have
a. lower melting points and greater conductivity than nonmetals.
b. lower conductivity and lower density than nonmetals.
c. higher density and lower melting points than nonmetals.
d. greater conductivity and higher melting points than nonmetals.

D

8. A student divides several cubes into two groups, based on whether or not each cube can float in water. What property is the student using to classify the cubes?
a. weight b. density c. conductivity d. mass

B

9. Which of the following is a chemical property that describes copper?
a. conductive b. ductile c. soluble d. reactive

A

10. What properties do the metals aluminum, copper, silver, and gold have in common?
a. They conduct heat and electricity well.
b. They are brittle and do not bend easily.
c. They do not chemically react.
d. They are liquid at room temperature.

A

11. When two atoms have the same number of protons but different numbers of neutrons, they are called
a. isotopes. b. nuclei. c. ions. d. helium.

A

12. According to its location on the periodic table, sodium can be described as
a. an alkaline-earth metal. b. a transition metal.
c. an alkali metal. d. a metalloid.

C

13. Which of the following best describes the properties of metals?
a. hard, brittle, and unconductive
b. liquid, dark, and conductive
c. shiny, malleable, and conductive
d. soft, oily, and very reactive

C

14. In what order are the regions arranged on the periodic table, reading left to right?
a. inert gases, metals, nonmetals, metalloids
b. metalloids, metals, nonmetals, inert gases
c. metals, metalloids, nonmetals, inert gases
d. nonmetals, inert gases, metals, metalloids

C

15. Fluorine, chlorine, bromine, iodine, and astatine make up Group 17, the halogens. Why are these elements grouped together?
a. They are all very reactive nonmetals with similar chemical properties.
b. They are all nonreactive gases with similar physical properties.
c. Their atoms all have 8 electrons in their outer energy levels
d. They all have the same atomic number

A

16. What are most of the elements in the periodic table?
a. metals b. metalloids c. precious metals d. nonmetals

A

C 17. An old car's bumper that was coated with chromium does not rust because chromium is
a. malleable. c. not reactive with oxygen.
b. ductile. d. reactive with oxygen.

B 18. Metals are MALLEABLE. What does this mean?
a. You can melt metals
b. You can pound metals into a sheet without them breaking
c. Metals will break easily
d. Metals are heavy

B 19. Metals are ductile. What does this mean?
a. Metals can be pounded into a sheet without breaking.
b. Metals can be stretched into a wire without breaking.
c. Metals are heavy
d. Metals are more dense than air

B 20. Sulfur is NOT ductile, and NOT malleable.
Is sulfur a metal, nonmetal, or metalloid?
a. metal b. nonmetal c. metalloid d. tiny green aliens

D 21. Which is true about metals?
a. They are ductile
b. They are malleable
c. They are good conductors of electricity and heat
d. ALL OF THE ABOVE

C 22. Silicon (#14) can conduct electricity sometimes, but not other times. It is NOT malleable. What is true about silicon?
a. It is a metal c. It is a metalloid
b. It is a nonmetal d. It is not found anywhere on earth

D 23. What is true about HYDROGEN?
a. It is element #2 c. It has an atomic mass of 2.
b. It is a tiny bit heavier than helium. d. It is a gas.

B 24. What is O?
a. metal b. nonmetal c. metalloid d. none of the above

B 25. What is Si?
a. metal b. metalloid c. nonmetal d. liquid

B 26. How many electrons does F (#9) have?
a. 5 b. 9 c. 12 d. 4

A 27. How many neutrons does one atom of Helium have?
a. 2 b. 4 c. 3 d. 0

B 28. How many protons does one atom of H have?
a. 0 b. 1 c. 2 d. 20

D 29. Isotopes have the same number of:
a. electrons b. protons c. neutrons d. A and B ONLY!

D 30. What is atomic mass?
a. protons + electrons c. neutrons + electrons
b. electrons + neutrons d. protons + neutrons

B 31. What element is "H"?
a. aluminum b. hydrogen c. oxygen d. nitrogen

C 32. What is the ATOMIC MASS of one atom of CARBON-14?
a. 6 amu's, because it has 6 protons
b. 2 amu's, because that's what the periodic table says!
c. 14 amu's, because carbon-14 isotopes have 2 more neutrons than carbon-12!
d. none of the above

D 33. WHAT ELEMENTS are there in this chemical equation:
$2H_2 + O_2 \rightarrow 2H_2O$
a. hydrogen only c. oxygen only
b. nitrogen only d. both hydrogen & oxygen

A 34. TRUE or FALSE?:
There are three DIFFERENT elements in $C_6H_{12}O_6$
a. TRUE b. FALSE c. sometimes d. both a & b

A 35. Elements:
a. are made up of only ONE KIND of atom
b. are made up DIFFERENT kinds of atoms
c. are compounds
d. are all metals

A 36. Carbon-12 and Carbon-14 are examples of:
a. isotopes
b. different number of protons
c. different number of electrons
d. all of the above!

D 37. How much heavier is carbon-14 than carbon-12?
a. 6 protons c. 8 atomic mass units (amu's)
b. 8 neutrons d. 2 atomic mass units (amu's)

C 38. Why is carbon-12 called carbon-12?
a. It is #12 on the periodic table.
b. It has 12 electrons
c. It is an isotope and has an ATOMIC MASS of 12.
d. Because little green aliens from outer space that are less dense than us!

D 39. Why is hydrogen #1 on the periodic table?
a. It was the first element discovered c. It has one electron.
b. It is the lightest element d. It has one proton.

A 40. How many protons does the element Tin (Sn) have?
a. 50 b. 119 c. 20 d. 51

D 41. Which of the following is an example of ISOTOPES?
a. chlorine and sodium c. lead and osmium
b. nitrogen and helium d. hydrogen-1 and hydrogen-2

C 42. How many electrons in lithium?
a. 1 b. 2 c. 3 d. 1,045

D 43. The periodic table goes in order by number of:
a. electrons b. lightest to heaviest elements c. neutrons d. protons

C 44. How many elements are found in the chemical $Pb(NO_3)_2$?
a. 4 b. 2 c. 3 d. none...what's an element?

B 45. How many protons in Oxygen (#8)?
a. 4 b. 8 c. 1 d. 16

A 46. Which of the following is the chemical symbol for OXYGEN?
a. O b. Cl c. Ox d. S

C 47. What is the SYMBOL for MERCURY (#80)?
a. Mc b. Mt c. Hg d. MC

A 48. Potassium has 19 electrons. What is its SYMBOL?
a. K b. Pot. c. Po d.O

B 49. How many protons in Oxygen (#8)?
a. 4 b. 8 c. 1 d. 16

A 50. How many protons in Carbon (#6)?
a. 6 b. 12 c. 4.5 d. 13

D 51. What is the atomic mass of Carbon?
a. 6 b. 8.5 c. 4 d.12

B 52. Why is it that some atoms of chlorine are heavier than others?
a. One atom is not healthy
b.The atoms are ISOTOPES
c. Some chlorine atoms work out by lifting weights (more muscle mass = denser!)
d. What is an atom?

A 53. Hydrogen has 1 proton, and 1 electron. WHAT IS ITS ATOMIC MASS?
a. 1 b. 2 c. 0 d. more than 6

A 54. How many neutrons in Hydrogen?
a. 0 b. 1 c. 2 d. more than 90,000

D 55. Carbon has 12 amu's. WHAT IS CARBON-14?
a. a relative b. not a form of carbon! c. very expensive d. an isotope

D 56. What is an isotope?
a. same element, different # of electrons
b. same # of protons, different # of neutrons
c. same element, different # of neutrons?
d. BOTH B & C

D 57. In his right hand, Jackson holds an element that has 79 protons. In his left hand, Jackson holds an element that has 79 electrons. WHAT IS TRUE ABOUT THESE TWO ELEMENTS?
a. they are the same elements c. Jackson is right-handed
b. they are both gold d. both A & B

C 58. If, someday, we discover element #234, how many protons would be in it?
a.half as many as its atomic number (117)
b. twice as many as its atomic number (468)
c. the same as its atomic number (234)
d. What is an atomic number? I was passing notes during class and didn't get this!

D 59. Why is cesium (Cs) element #55?
a.It was discovered in 1955
b. It's found in the 55th state
c.The 55th congress named it
d. It has 55 protons

A 60. What kind of electrical charge does a PROTON have?
a. positive (+) b. negative (-) c. neutral d. both A & B

C 61. What kind of electrical charge does a NEUTRON have?
a. positive (+) b. negative (-) c. neutral d. both A & B

B 62. What kind of electrical charge does an ELECTRON have?
a. positive (+) b. negative (-) c. neutral d. both A & B

C 63. What is the MASS of ONE proton?
a. 0 amu's b. 1 gram c. 1 amu d. 4 pounds

A 64. What is the MASS of ONE ELECTRON?
a. so little, we say "zero" c. as many as 10,000 protons!
b. it's more than a proton d. both a and b

D 65. What is the mass of a NEUTRON?
a. 0 pounds b. 1 g. c. 1 kg. d. 1 amu

D 66. Imagine you have a sample of carbon, taken from a dinosaur bone. One of the atoms has 6 protons and 8 neutrons. What is its atomic mass?
a. 6 b. 8 c. 12 d. 14

C 67. Imagine you have a sample of carbon, taken from a dinosaur bone. One of the atoms has 6 protons and 6 neutrons. What is its atomic mass?
a. 6 b. 8 c. 12 d. 14

A 68. Imagine you have a sample of carbon, taken from a dinosaur bone. One of the atoms has 6 protons and 6 neutrons. What is its atomic number?
a. 6 b. 8 c. 12 d. 14

A 69.Imagine you have a sample of carbon, taken from a dinosaur bone. One of the atoms has 6 protons and 8 neutrons. What is its atomic number?
a. 6 b. 8 c. 12 d.14

D 70. What is the difference between an atom with 5 PROTONS and an atom with 6 PROTONS?
a. The one with 5 protons is heavier
b. One is Boron, and the other is Carbon
c. The one with 6 protons has ONE MORE proton than the one with 5 protons
d. both b & c

½ pt each

Day3/pg4