Things You Need to Know or Be Able to Do with the Periodic Table by Now!

1. Who developed the periodic table and how was/is it organized
    a) Mendeleev
        1. Organized by atomic mass and properties - Almost right, not quite
    b) Mosely
        1. Organized by atomic # (number of protons) The one we use today!
2. Groups versus Periods
    a) Groups/Families
        1. Vertical
        2. Everything in the same vertical group has same number of valence e- and will have similar behaviors
    b) Periods
        1. Horizontal
        2. Everything in same period has same number of energy levels
3. What are the three classes of elements?
    a) Metal
    b) Non-metal
    c) Metalloid/Semi-metal
4. Identify what class an element belongs to
5. What are the names of the groups?
    a) Alkali
    b) Alkaline
    c) Transition
    d) Other metals
    e) Metalloid/Semi-metal
    f) Non-metals
    g) Halogens
    h) Noble Gases
    i) Rare Earth
6. Identify which group name an element belongs to.
7. Know the properties of metals, non-metals, metalloids
    a) Metals
        1. Ductile
        2. Malleable
        3. Shiny
        4. Mostly solids at room temperature
        5. Good conductor of electricity/heat
        6. Mostly empty valence shells
        7. Lose electrons to make positively charged ions called cations
    b) Non-metals
        1. Not ductile
        2. Not malleable
        3. Not shiny
        4. Some solids but also some gases as room temperature
        5. Bad conductor
        6. Mostly full valence shells
        7. Gain electrons to make negatively charged ions called anions

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c) Metalloids/Semimetals
    1. Properties are somewhere in between a metal and a non-metal
    2. Depends on which specific element you are talking about
    3. About half full valence shell
    4. Can make cations and anions depending on the situation

8. Know how many valence e-elements make in the s and p block based on group #
    a) 1A has 1 valence electron
    b) 2A has 2 valence electrons
    c) 3A has 3 valence electrons
    d) 4A has 4
    e) 5A has 5
    f) 6A has 6
    g) 7A has 7
    h) 8A has 8
    i) d block and f block are too weird, you would have to be told how many
9. Know what charge the elements like to make based on the group they belong to
    a) 1A makes +1
    b) 2A makes +2
    c) 3A makes +3
    d) 4A makes +4 or -4
    e) 5A makes -3
    f) 6A makes -2
    g) 7A makes -1
    h) 8A makes no charge
10. <u>Don't forget how to:</u>
    a) Find the number of protons
        1. Same as the atomic number
        2. Tells you what the name is
    b) Find the number of electrons
        1. If it is as neutral atom then it is the same as the # of protons
        2. If it is a positive charge then take away that # of e from normal #
        3. If it is a negative charge then add that # of e- to the normal #
    c) Find the mass number
        1. Protons + neutrons = mass number
    d) Find the number of neutrons
        1. Mass number – protons = neutrons
    e) Find the average mass and the mass number of the most common isotope
        1. Average mass is the one written on the periodic table that takes into account all isotopes that exist
        2. The mass number of the most common isotope is the periodic table average mass rounded to the nearest whole number
    f) Use the periodic table to write electron configurations
        1. Read top to bottom, left to write
        2. List the following:
            1. Energy level (1-7)
            2. Orbital block (s,p,d,f)
            3. Number of electrons in that block (as an exponent)
11. Anything else I forgot to mention here – ha! ☺

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