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| Review #2  CλeMis+ry: http://genest.weebly.com  Review #1 was the Camouflage Sheet |  | Name\_\_\_\_\_\_\_\_\_  Period\_\_\_\_\_\_\_\_ |

1. For an atom with atomic number =9, charge of zero, and 10 neutrons…
   1. mass number \_\_\_\_\_\_\_
   2. number of protons? \_\_\_\_\_\_
   3. number of electrons \_\_\_\_\_\_
   4. symbol of the element, with highLow numbers \_\_\_\_\_\_

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|  | 1. For this atom,    1. how many **total** electrons ?    2. how many protons?    3. how many **valence** electrons? |

1. Which of the following elements has the greatest ionization energy?  
   a. Lithium  
   b. Calcium  
   c. Neon  
   d. Silicon
2. What is the high-low symbol of a neutral atom that has a mass of 44 and has 24 neutrons?
3. What is the charge of an atom with p = 5, n = 5, e = 8?

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| 1. for a NEUTRAL atom with the following electron configuration: | | |
| 1s22s22p63s23p6 | | |
| Write a ‘number-number-number’ diagram for this atom | Write a Lewis dot diagram (Letter and dots) for this atom | This atom has \_\_\_\_\_\_\_\_ valence e-  therefore it is (stable / unstable ) |

1. For an atom with 14 protons and 15 neutrons and 18 electrons
   1. mass number \_\_\_\_\_\_
   2. atomic number \_\_\_\_\_\_
   3. number of electrons \_\_\_\_\_\_
   4. symbol of the element \_\_\_\_\_\_
   5. charge of the atom \_\_\_\_\_\_
   6. symbol of the element, with highLow numbers \_\_\_\_\_\_

***How many valence electrons are in each of the following?***

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| 1s22s22p5 | a neutral atom of phosphorous | http://www.chemicalaid.com/assets/img/bohr.php?symbol=Ag |  |
| \_\_\_\_\_\_\_\_\_ | \_\_\_\_\_\_\_\_\_\_ | \_\_\_\_\_\_\_\_\_\_ | \_\_\_\_\_\_\_\_\_\_ |

1. Choose one of the three choices. “ In neutral atoms…”
   1. # of e > # of p
   2. # of e = # of p
   3. # of e < # of p
2. The Law of Conservation of Charge can help us spot wrongly written equations for ions.
   1. Ba + 2e- Ba2+ possible / impossible
   2. F F+ + e- possible / impossible
   3. S S2+ + 2e- possible / impossible
   4. I I+ + e- possible / impossible
   5. Ag + e- Ag+ possible / impossible
3. When we speak of ion radius, we speak of their most common ions.
4. The ions for metals are usually ( negative / postitive ). The common ions for nonmetals are ( negative / postitive ).

1. When metals form cations, the ion is ( smaller / larger ) than the neutral version of the same atom.
2. When nonmetals form anions, the ion is ( smaller / larger ) than the neutral version of the same atom.
3. Give the formula of the conjugate acid of each: NO3-, H2O, HSO4-
4. Draw a stable Lewis Dot structure for each molecule:

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| I2 | OF2 |
| CO2 | NI3 |

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| 1. for a NEUTRAL atom with the following electron configuration: | | |
| 1s22s22p63s23p64s23d10 | | |
| Write a ‘number-number-number’ diagram for this atom | Write a Lewis dot diagram (Letter and dots) for this atom | This atom has \_\_\_\_\_\_\_\_ valence e-  therefore it is (stable / unstable ) |

***Write Acid or Base under every substance in each of the following.***

1. HClO4(aq) + H2O(l) ⇄ H3O+(aq) + ClO4–(aq)
2. NH3(aq) + H2O(l) ⇄ OH-aq) + NH4+(aq)
3. Give the conjugate base of each: HCl, HBr, HI,
4. What is the conjugate acid of H2O ?
5. What is the conjugate base of H3O+?
6. What is the conjugate acid of OH-?
7. Write ACID or BASE for each of the following solutions:
   1. \_\_\_\_\_\_\_\_\_\_\_ litmus paper turns blue
   2. \_\_\_\_\_\_\_\_\_\_\_the solution feels slippery
   3. \_\_\_\_\_\_\_\_\_\_\_the pH = 6
   4. \_\_\_\_\_\_\_\_\_\_\_the pH = 0
   5. \_\_\_\_\_\_\_\_\_\_\_the solution conducts electricity but does not react with metal
   6. \_\_\_\_\_\_\_\_\_\_\_the solution has [OH-] < [H+]
   7. \_\_\_\_\_\_\_\_\_\_\_bromothymol blue is blue (use the table)
   8. \_\_\_\_\_\_\_\_\_\_\_methyl orange is red
   9. \_\_\_\_\_\_\_\_\_\_\_[H+] = 0.000999
   10. \_\_\_\_\_\_\_\_\_\_\_[OH-] = 4.4x10-8
   11. \_\_\_\_\_\_\_\_\_\_\_when mixed with base water and salt usually form

The Law of Conservation of Charge can help us spot wrongly written equations for ions. circle one answer in each of these reactions:

1. Ba + 2e- Ba2+ possible / impossible
2. F F+ + e- possible / impossible
3. S S2+ + 2e- possible / impossible

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| ***In reversible reactions there is sometimes a conjugated pair of acids and bases.***  ***In the two problems below, connect the conjugate pairs by drawing lines. Identify all four substances in each reaction as either ACID or BASE*** |  |
| 1. F–(aq) + H2SO3(aq) ⇄ HF(aq) + HSO3–(aq) 2. HNO2(aq) + HS–(aq) ⇄ NO2–(aq) + H2S (aq) | |

1. Write a balanced equation for neutral hydrogen atom gaining one electron:

\_\_\_\_ + \_\_\_\_ \_\_\_\_

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| 1. The pH scale looks like this (draw it like a number line, including the neutral point and where dangerous acids and dangerous bases start—see your notes from Tuesday): |

1. Water is right in the middle of being Acid or Base so the pH of pure water has a pH of about \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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|  | **Acids** | **Bases** |
| **Turns phenolphthalein what color?** |  |  |
| **pH** | **Acids have pH LESS than \_\_\_\_\_\_\_\_\_\_\_** | **Bases have pH GREATER than \_\_\_\_\_\_\_\_\_** |
| **Taste (if it’s food)** |  |  |