

1. The elements in column VIIIA on the periodic table are called the \_\_\_\_\_ gases or the \_\_\_\_\_ gases, because they do not tend to react. They are unreactive because they have a stable number and arrangement of electrons around the nucleus. Other elements often react in order to gain or lose electrons and obtain the same number of electrons as a noble gas.

If an element gains electrons, it will form a \_\_\_\_\_ ion called a/an \_\_\_\_\_.  
 If an element loses electrons, it will form a \_\_\_\_\_ ion called a/an \_\_\_\_\_.

| 2. Atom       | # of electrons in the atom | Nearest Noble Gas | # electrons the atom must gain/lose to form an ion | # electrons in the ion | Ion symbol |
|---------------|----------------------------|-------------------|--|------------------------|------------|
| Fluorine (F)  | _____                      | _____             | _____  | _____                  | _____      |
| oxygen (O)    | _____                      | _____             | _____  | _____                  | _____      |
| sulfur (S)    | _____                      | _____             | _____  | _____                  | _____      |
| sodium(Na)    | _____                      | _____             | _____  | _____                  | _____      |
| aluminum(Al)  | _____                      | _____             | _____  | _____                  | _____      |
| phosphorus(P) | _____                      | _____             | _____  | _____                  | _____      |
| strontium(Sr) | _____                      | _____             | _____  | _____                  | _____      |
| potassium(K)  | _____                      | _____             | _____  | _____                  | _____      |
| nitrogen(N)   | _____                      | _____             | _____  | _____                  | _____      |
| calcium(Ca)   | _____                      | _____             | _____  | _____                  | _____      |
| chlorine(Cl)  | _____                      | _____             | _____  | _____                  | _____      |
| magnesium(Mg) | _____                      | _____             | _____  | _____                  | _____      |

3a. Xenon (Xe) is a noble gas with \_\_\_\_\_ electrons.

b. Several ions are shown below, but they are missing their charges.

Write the correct charge on each element symbol. Each ion you write should have the same number of electrons as xenon!

I                      Cs                      La                      Ba                      Te                      Sb

4. List 6 ions that have the same number of electrons as the noble gas neon. Include 3 cations and 3 anions.

\_\_\_\_\_

5. Rubidium (Rb) is element #37. Rubidium ion is not on your ion sheet.

a. Based on its position on the periodic table, predict the formula (including the charge) of rubidium ion: \_\_\_\_\_

b. Write the formula for rubidium nitride: \_\_\_\_\_

c. Write the formula for rubidium carbonate: \_\_\_\_\_

6. Radium (Ra) is element #88. Radium ion is not on your ion sheet.

a. Based on its position on the periodic table, predict the formula (including the charge) of radium ion: \_\_\_\_\_

b. Write the formula for radium sulfate: \_\_\_\_\_

c. Write the formula for radium phosphate: \_\_\_\_\_

7. Write the formula for chromium (VI) ion: \_\_\_\_\_

b. Write the formula for chromium (VI) sulfide: \_\_\_\_\_

8. List 3 ions that have the same number of electrons as the noble gas Krypton(Kr).

Show the charge on each. Include at least one cation and at least one anion. \_\_\_\_\_

Each chemical equation below shows two elements reacting to form a compound. For each reaction:

a) classify the compound(s) that form as ionic or covalent.

b) name the compound(s) that form in the reaction.

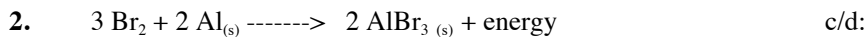
c) state whether the each reacting element will need to gain, lose, or share electrons to bond in the compound.

d) If electrons are lost or gained, indicate which element will gain electrons and which will lose electrons.



a. \_\_\_\_\_

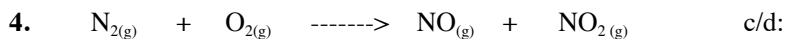
b. \_\_\_\_\_



a. \_\_\_\_\_ b. \_\_\_\_\_

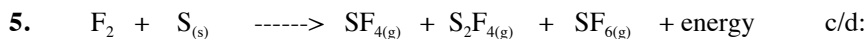


a. \_\_\_\_\_ b. \_\_\_\_\_



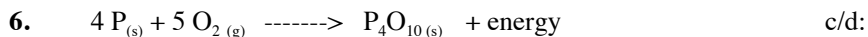
a. \_\_\_\_\_

b. \_\_\_\_\_



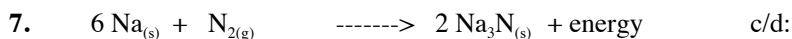
a. \_\_\_\_\_

b. \_\_\_\_\_



a. \_\_\_\_\_

b. \_\_\_\_\_



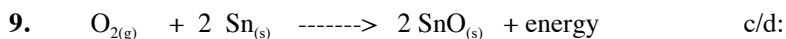
a. \_\_\_\_\_

b. \_\_\_\_\_



a. \_\_\_\_\_

b. \_\_\_\_\_



a. \_\_\_\_\_

b. \_\_\_\_\_