Name - Key

Science 10

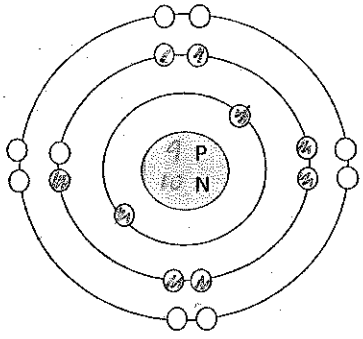
Review for SA: Chemistry #2 - Atoms to Compounds

1. Complete the table below. Read the headers carefully.

Element Name	Element Symbol	Atomic Number	Number of Protons	Number of Electrons in the Atom	Ion Name	Ion Symbol	Number of Electrons in the Ion
neon	Ne	10	10	10	N/A	N/A	N/A
Cadmium	Cd	48	48	48	Cadmium ion	Cd^{+2}	46
phosphorus	P	15	15	15	phosphide ion	P^{3-}	18

2. a) Is fluorine a metal, nonmetal or metalloid? nonmetal

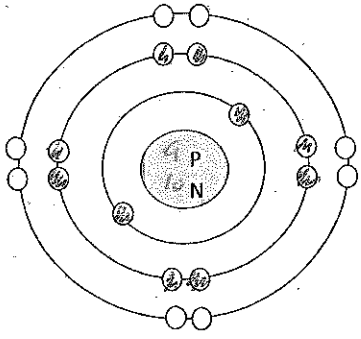
b) Draw the Bohr-Rutherford diagram for an atom of fluorine. The mass number of fluorine is 19.



19 F
9

P 9
E 9
N 10

c) Draw the Bohr-Rutherford diagram for an ion of fluorine.



F -1

P 9
E 10
N 10

d) Is the ion of fluorine a cation or anion? anion

3. Identify each of the following as a monatomic ion (MI), a polyatomic ion (PI), or the ion of a multivalent metal (IMM), by printing MI, PI or IMM on the line provided.

a) NH_4^+ PI

b) Ge^{4+} MI

c) Br^{1-} MI

d) cyanate ion PI

e) Bi^{3+} IMM

f) Ca^{2+} MI

g) iron (II) ion IMM

h) arsenide ion MI

i) peroxide ion PI

4. Identify each compound as ionic or molecular.

a) P_2O_5 (nm) — molecular

b) barium nitride (m) — ionic

c) ammonium fluoride (m + p) — ionic

d) sulfur trioxide — molecular

e) $Ca_3(PO_4)_2$ (m) — ionic

5. State the name of each compound. This list includes ionic and molecular compounds.

a) P_4H_{10} — tetraphosphorus decahydride

b) Ag_2S — Silver sulfide

c) TiN — Titanium (III) nitride

d) Br_3O_8 — tribromine octaoxide

e) $Al(CN)_3$ — aluminum cyanide

f) $Sn_3(AsO_3)_2$ — tin (II) arsenite

g) S_8 — Molecular sulfur

6. Write the formula for each chemical compound. This list includes ionic and molecular compounds.

a) strontium oxide — $Sr^{+2}O^{-2} \rightarrow SrO$

b) iodine heptafluoride — IF_7

c) aluminum thiosulfate — $Al^{3+}(S_2O_3)^{-2} \rightarrow Al_2(S_2O_3)_3$

d) chlorine ($^+$ molecule) ✓ — Cl_2

e) antimony (V) phosphide — $Sb^{+5}P^{-3} \rightarrow Sb_3P_5$

f) pentaboron nonahydride — B_5H_9

g) europium (III) orthosilicate — $Eu^{3+}(SiO_4)^{-4} \rightarrow Eu_4(SiO_4)_3$

7. Covalent bonds are formed when electron pairs are shared. Ionic bonds are formed when electrons are transferred.

8. Aotms and ionic compounds are electrically neutral. Ions are electrically charged