**Ions and Valency**

1. Which part of an atom can be gained or lost by the atom to form an ion? Electrons
2. If a neutral atom lost two electrons, what is the resulting charge? 2+
3. Explain why an aluminium ion has a valency of 3+. It loses 3 electrons to have a full outer shell, and becomes positively charged.
4. Explain why an oxide ion has a valency of 2-. It gains 2 electrons to fill its outer shell, and becomes negatively charged.
5. What are the names of the ions of the following elements?
   1. Sulfur Sulfide
   2. Sodium Sodium
   3. Chlorine Chloride
   4. Magnesium Magnesium
   5. Oxygen Oxide
   6. Bromine Bromide
6. State how many electrons have been gained or lost to form each of the ions.
   1. Zn2+ Lost 2
   2. S2- Gained 2
   3. O2- Gained 2
   4. Mg2+ Lost 2
   5. Al3+ Lost 3
   6. F- Gained 1
7. Explain how the periodic table can be used to predict the valency of some ions.

Metals lose electrons, non-metals gain electrons.

Group 1 loses 1, group 2 loses 2, group 13 loses 3

Group 14 metals lose 4 non-metals gain 4, group 15 gains 3, group 16 gains 2, group 17 gains 1

1. Write the ion symbols for
   1. Iron (II) and Iron (III) Fe2+ and Fe3+

Lead (II) and Lead (IV) Pb 2+ and Pb 4+

1. Write the symbol for each ion.
   1. Hydrogen H+
   2. Copper (II) Cu2+
   3. Sulfide S2-
   4. Iodide I-
   5. Lithium Li+
   6. Potassium K+
   7. Tin (II) Sn2+
   8. Magnesium Mg2+
   9. Chloride Cl-
   10. Oxide O2-
   11. Fluoride F-
   12. Calcium Ca2+
   13. Aluminium Al3+
   14. Bromide Br-
   15. Copper (I) Cu+
   16. Sodium Na+
   17. Manganese Mn2+
   18. Tin (IV) Sn4+