Predicting the charge on an ion

If you always get mixed up on predicting the charge on an ion, follow this step-by step procedure:

1. Determine the number of protons and electrons in the neutral atom.
2. Determine how many electrons the atom will gain or lose to become stable (full outer shell).
3. Determine how many electrons are in the ion by adding or subtracting from the original number of electrons.
4. Now, perform this calculation: Charge on ion = # of protons - # of electrons.

Example: chlorine

1. A neutral chlorine atom has 17 protons and 17 electrons.
2. Chlorine must gain 1 electron to become stable (draw a Bohr model if necessary to visualize this).
3. The chlorine ion has 18 electrons (the original 17 plus 1 gained).
4. Charge on chlorine ion = 17 – 18 = -1 This is written as Cl^{-1} or Cl^{-}.