

Physical and chemical trends in the group 7 elements

Part 1

1. Draw a table like the one below into your book.

Element	Symbol	Electronic configuration	Melting point (°C)	Boiling point (°C)	State at 20°C	Density (g/cm ³)
	F		-219.6	-188.1		0.0017
	Cl		-101.5	-34.0		0.0032
	Br	2,8,18,7	-7.3	59.0		3.119
	I	2,8,18,18,7	113.7	184.3		4.940

2. Fill in the element names for the first **four** elements of Group 7.
3. Work out the electronic configurations for F and Cl – you may need to look back in your notes. Fill in your table (note that Br and I have been done for you).
4. Work out the state (solid, liquid, gas) of each of the elements at room temperature (about 20°C), and fill in the appropriate boxes in your table.

Part 2 Questions and Problems

1. What is the common name given to Group 7 elements?
2. Are Group 7 elements metals or non-metals?
3. What sort of compound (ionic or covalent) would you expect Group 7 elements to form with:
 - a) metals, and
 - b) non-metals?
4. For each of the elements in your table, write down the name of the element, the name of the **ion** that it would form in ionic compounds, and the symbol for that ion.
5.
 - a) What do you notice about the trends in melting and boiling points as you go down Group 7?
 - b) What do you notice about these trend compared with the trends in melting and boiling points in Group 1 and Group 2? You may need to look back in your notes to help you.
6. Look at the density and state for each of the four Group 7 elements in your table. What do you notice – could you have decided upon the state of each of these elements just by looking at their density, and not at their melting and boiling points?
7. What do you expect the trend in reactivity to be in Group 7, and why?