

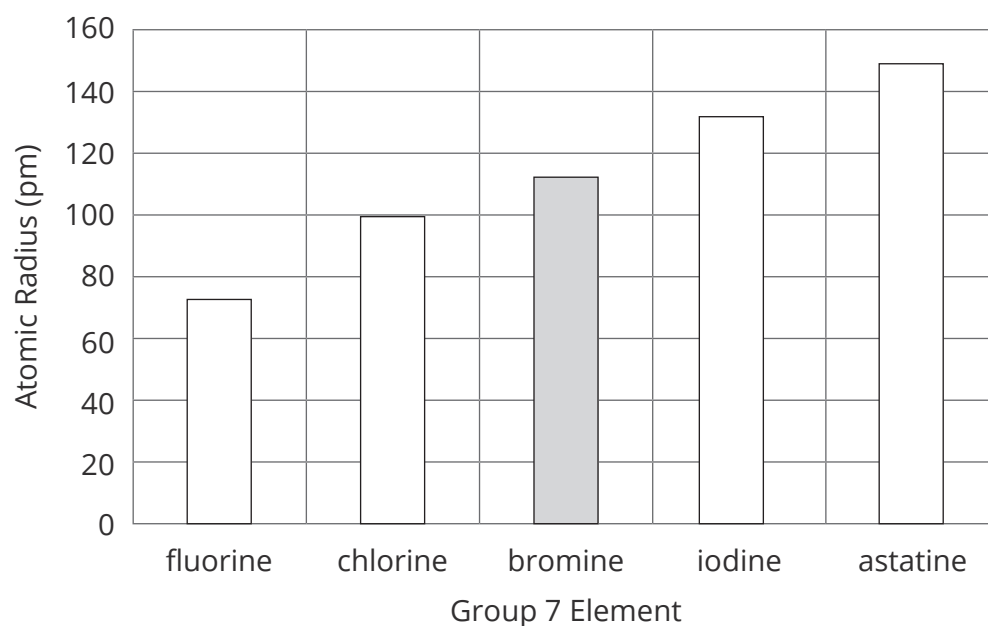


Trends in Group 7 Elements **Answers**

The halogens are found in Group 7 of the periodic table.

1	2											3	4	5	6	7	0	
		H																He
Li	Be											B	C	N	O	F	Ne	
Na	Mg											Al	Si	P	S	Cl	Ar	
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr	
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe	
Cs	Ba	La	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn	
Fr	Ra	Ac																

The graph shows the radius of an atom of each halogen. The bar for bromine is missing.



1. Complete the sentence to describe the trend in the size of the atoms of the halogens.
As you move down Group 7, the radius of the atoms **increases**.
2. Draw a bar on the graph to predict the radius of a bromine atom.
Allow any bar drawn on the graph that is taller than the bar for chlorine and shorter than the bar for iodine.

The table shows the melting and boiling points for the halogens.

Element	Melting Point (°C)	Boiling Point (°C)	State at Room Temperature
fluorine	-220	-188	gas
chlorine	-101		gas
bromine	-7	59	
iodine	114	184	solid
astatine	302	337	solid

3. Predict the state of bromine at room temperature (20°C).

Tick **one** box.

☐

solid

☒

liquid

☐

gas

4. Predict the boiling point of chlorine.

Any value above -101°C and below 20°C/room temperature.

The table shows what happens when halogens react with iron wool.

Element	Observations
fluorine	It reacts instantly, setting the iron wool on fire.
chlorine	It reacts very quickly with a bright glow and a flame.
bromine	The iron must be heated and the bromine warmed to start the reaction. There is a bright glow.
iodine	Both substances must be heated strongly to start the reaction which then proceeds slowly. There is a faint glow.

5. Compare the reactivity of the Group 7 halogens with the alkali metals in Group 1.

Tick **one** box.

☐

The elements get less reactive as you move down Group 7, the same as Group 1.

☒

The elements get less reactive as you move down Group 7, the opposite of Group 1.

☐

The elements get more reactive as you move down Group 7, the same as Group 1.

☐

The elements get more reactive as you move down Group 7, the opposite of Group 1.