

## Boiling Point Trends Activities

### I. Ionic compounds

Question	Response
Looking at a chemical formula, how do you know a compound is ionic?	
Ionic compounds are composed of ions. Identify two types of ions and explain their difference.	
Provide a definition of an ionic bond.	

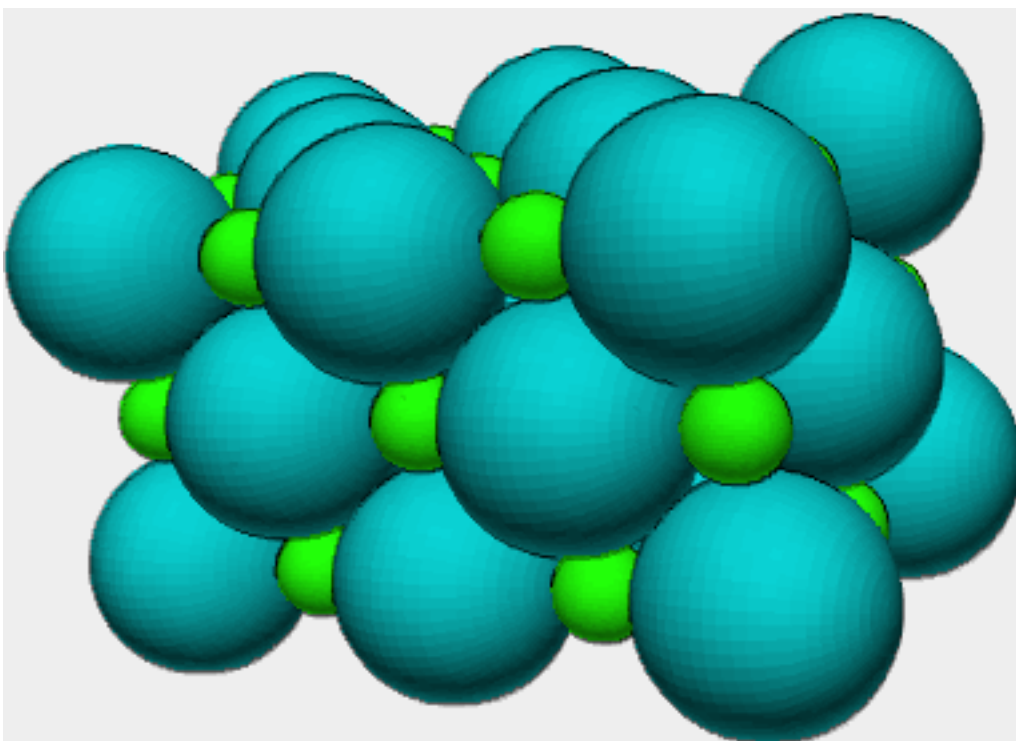


Figure I.

Question	Response
What do you see in the diagram in Figure I above?	

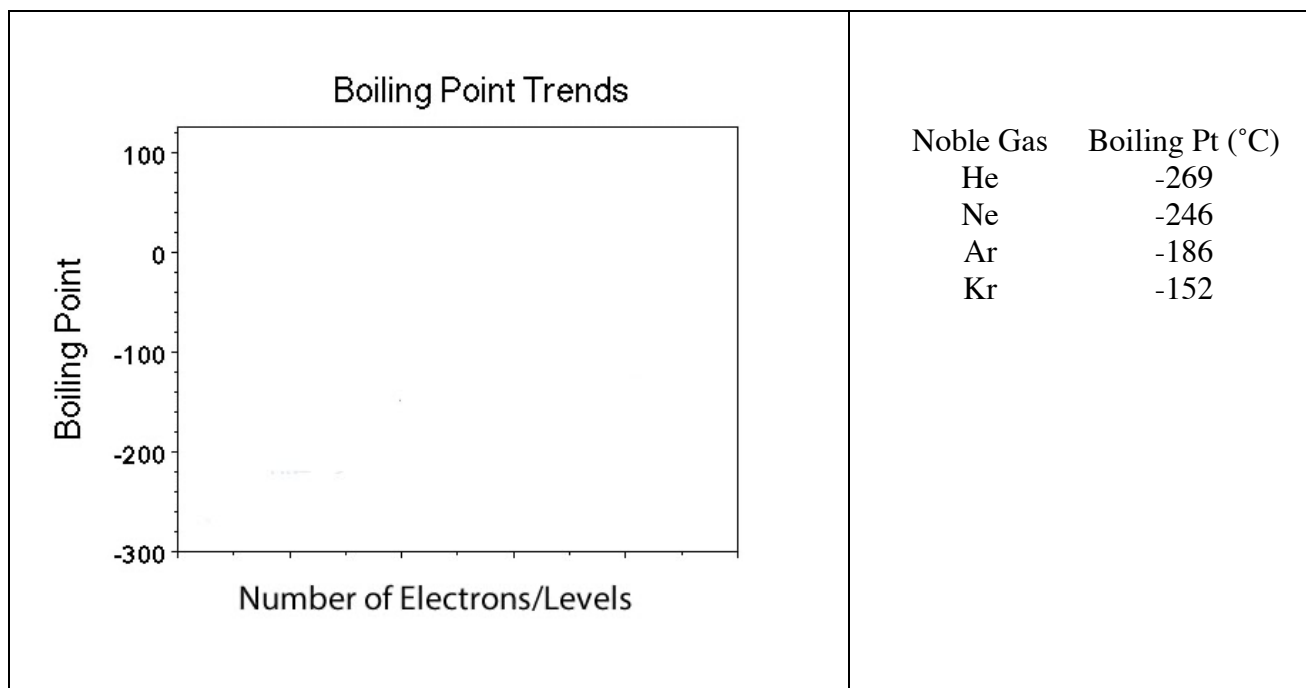
Looking at the diagram of an ionic compound, who is the cation and who is the anion?	
What is the phase of the ionic compound you are discussing/every ionic compound?	
What are some melting points for an ionic compound? Very high? Very low?	

## II. Covalent compounds

Question	Response
How do you recognize covalent compounds from their formulas?	
What kind of bonds are in covalent compounds?	
What is a covalent bond?	
What is/are the phase(s) of covalent compounds?	
What are some melting points and boiling points for covalent compounds? Very high? Very low?	

### III. Boiling points for the Noble Gases

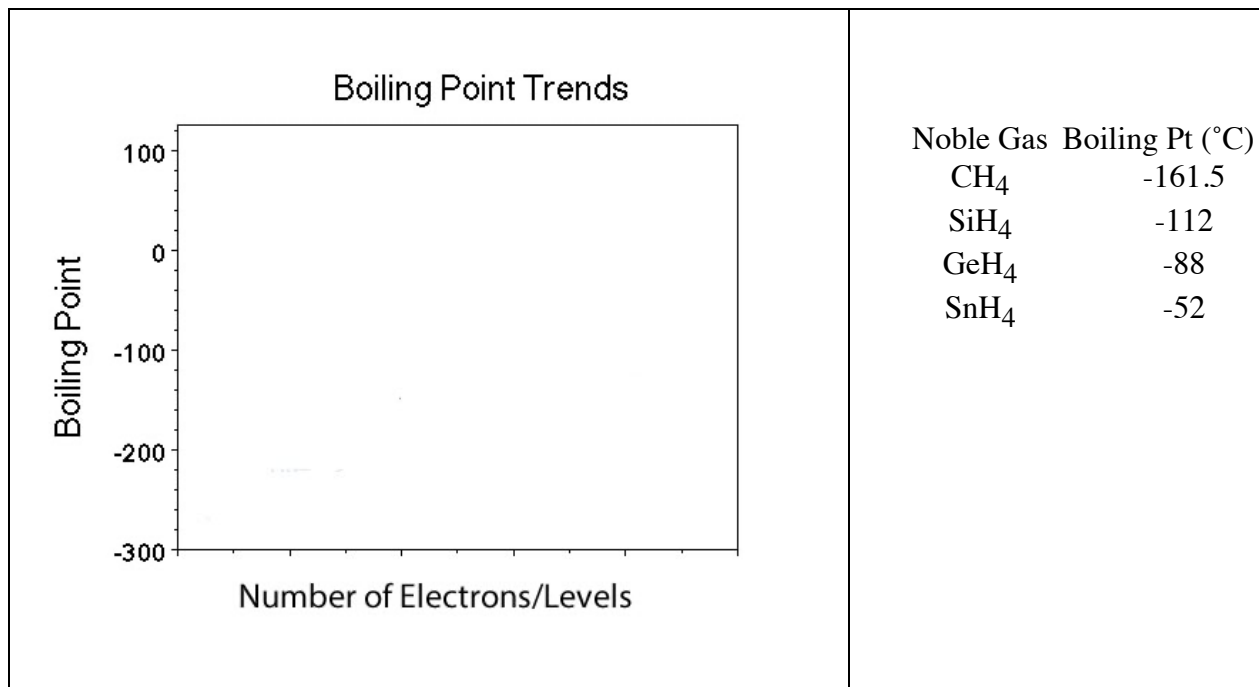
Plot the data found in the right most cell using the graph in the left most cell.



Answer the following questions based on your graph of the boiling point data.

Question	Response
What pattern is evident in the boiling points of the Group VIII elements?	
What trend do you see with electrons?	
What can you say about the polarity of the elements in this group?	

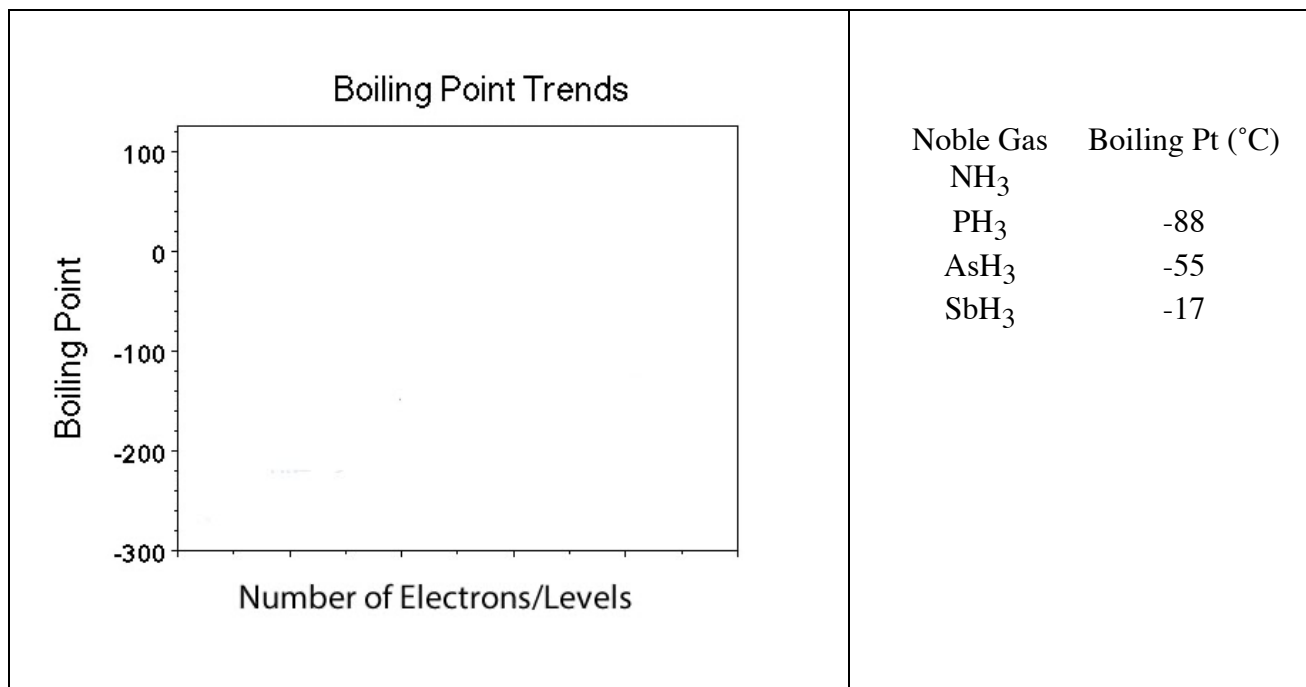
#### IV Boiling points for the Group IV hydrides



Answer the following questions based on your graph of the boiling point data.

Question	Response
What pattern is evident in the boiling points of the Group IV elements?	
What trend do you see with electrons?	
What can you say about the polarity of the compounds in this group?	

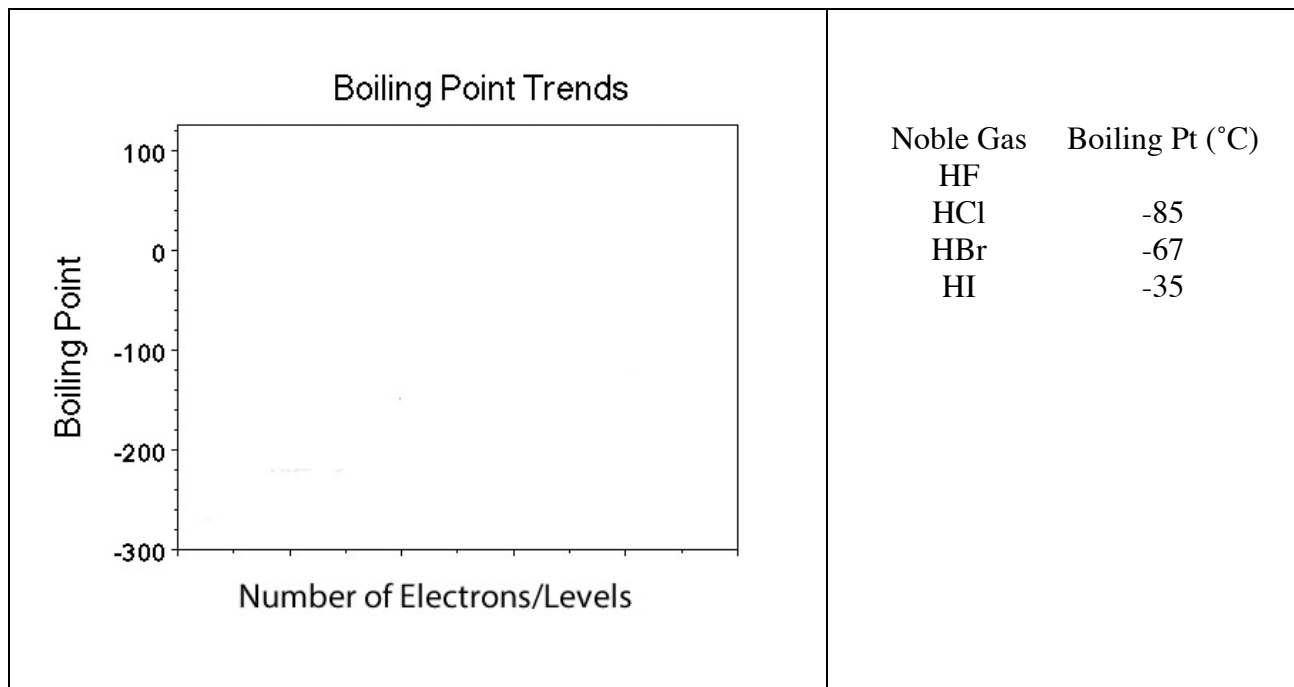
IV. Boiling points for the Group V hydrides



Answer the following questions based on your graph of the boiling point data.

Question	Response
Plot the boiling points for PH <sub>3</sub> , AsH <sub>3</sub> , SbH <sub>3</sub> .	
What pattern is evident in the boiling points of the Group V elements?	
What trend do you see with electrons?	
Estimate the boiling point for NH <sub>3</sub>	
What can you say about the polarity of the compounds in this group?	

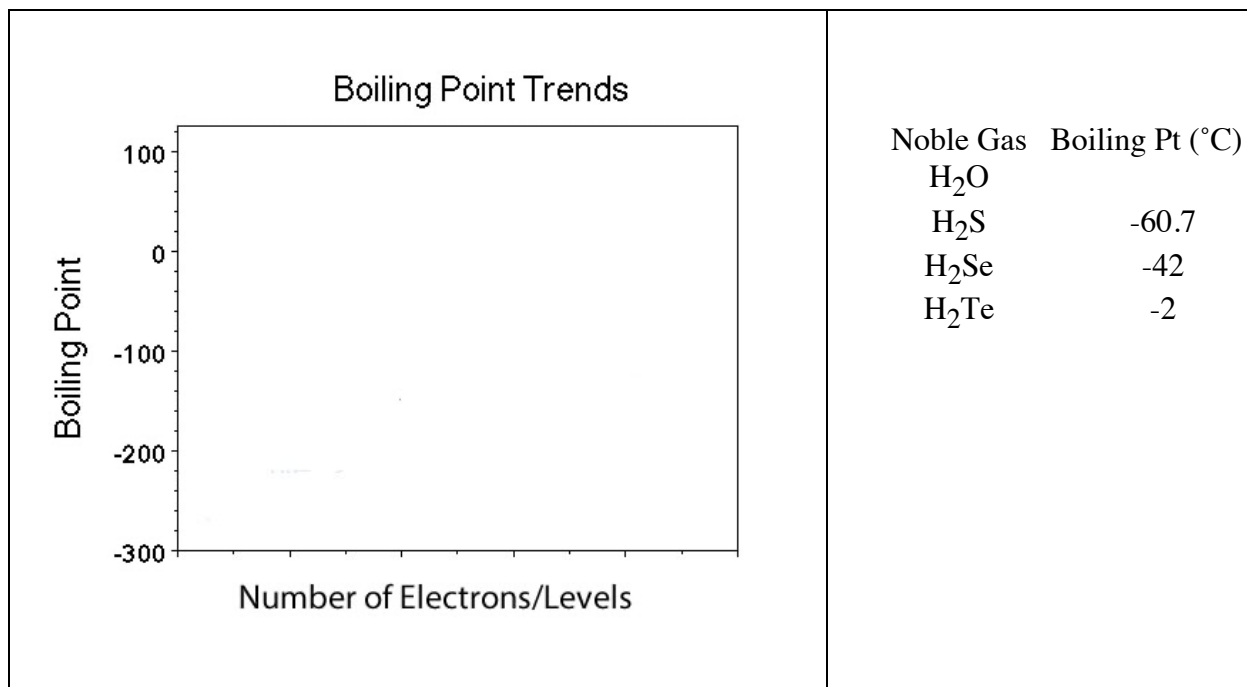
V. Boiling points for the Group VII hydrides



Answer the following questions based on your graph of the boiling point data.

Question	Response
Plot the boiling points for HCl, HBr, HI.	
What pattern is evident in the boiling points of the Group VII elements?	
What trend do you see with electrons?	
Estimate the boiling point for HF	
What can you say about the polarity of the compounds in this group?	

VI. Boiling points for the Group VI hydrides



Answer the following questions based on your graph of the boiling point data.

Question	Response
Plot the boiling points for H <sub>2</sub> S, H <sub>2</sub> Se, H <sub>2</sub> Te.	
What pattern is evident in the boiling points of the Group VI elements?	
What trend do you see with electrons?	
Estimate the boiling point for H <sub>2</sub> O	
What can you say about the polarity of the compounds in this group?	