

Evidence for hydrogen bonds
Boiling points of various compounds

Your task

The three tables below show the boiling points, T_b , for various compounds that contain hydrogen.

1. On **one** graph, plot T_b (vertical axis) against period number (horizontal axis) for each of the compounds listed:
 - label the three lines to distinguish between the compounds with the general formulae HX, H_2X or XH_3 ;
 - indicate the formulae of the compounds against their points on the graph.
2. Describe your graphs and give reasons for their shapes.

Period number	Formula	$T_b(^{\circ}\text{C})$
2	HF	20
3	HCl	-85
4	HBr	-67
5	HI	-35

Table 1 Compounds with the general formula HX

Period number	Formula	$T_b(^{\circ}\text{C})$
2	H_2O	100
3	H_2S	-61
4	H_2Se	-42
5	H_2Te	0

Table 2 Compounds with the general formula H_2X

Period number	Formula	$T_b(^{\circ}\text{C})$
2	NH_3	-33
3	PH_3	-88
4	AsH_3	-55
5	SbH_3	-17

Table 3 Compounds with the general formula XH_3