

CONCEPT: MAIN GROUP ELEMENTS: BOILING & MELTING POINTS

● **Boiling Point (BP)** and **Melting Point (MP)**: the energy used to change an element from ____ to ____ and ____ to ____.

- **Periodic Trend 1:** Group 1A to 4A, BP + MP ____ moving from left to right across a period and going up a group.
- **Periodic Trend 2:** Group 5A to 8A, BP + MP ____ moving from left to right across a period and going up a group.

Group 1A to 4A				
1A (1)	2A (2)	3A (13)	4A (14)	
1				
2	Li 1347 181	Be	B 3650 2180	C 4827 4100
3	Na 881 98	Mg	Al 2467 660	Si 3280 1420
4	K 766 63	Ca	Ga 2403 29.8	Ge 2850 945
5	Rb 688 39	Sr	In 2080	Sn 2623
6	Cs 671 28	Ba	Tl 1457	Pb 1751

Transition Metals

Boiling Point ____
Melting Point ____

Group 5A to 8A				
5A (15)	6A (16)	7A (17)	8A (18)	
1		H -253 -259	He -269 -272	
2	N -196 -210	O -183 -219	F -188 -219	Ne -246 -249
3	P 280 44.1	S 445 113	Cl -34.0 -101	Ar -186 -189
4	As 685 217	Se 685 217	Br 59.5 -7.2	Kr -153 -157
5	Sb 685 217	Te 685 217	I 185 114	Xe -108 -112
6	Bi 685 217	Po 685 217	At 185 114	Rn -62 -71

Boiling Point ____
Melting Point ____

EXAMPLE: Under standard conditions, which element would be most easily vaporized?

- a) Carbon, C b) Silicon, Si c) Potassium, K d) Rubidium, Rb e) Cesium, Cs

PRACTICE: Which of the following Group 5A elements would be expected to have the highest melting point?

- a) Nitrogen, N b) Phosphorus, P c) Oxygen, O d) Antimony, Sb e) Bismuth, Bi