Electron Arrangement

Successive ionisation energies for potassium

Ionisation energy is the energy needed to remove one mole of electrons from one mole of atoms or ions in the gaseous state, i.e. for potassium:

1st ionisation energy: $K(g) \rightarrow K^+(g) + e^-$ n=1

2nd ionisation energy: $K^+(g) \rightarrow K^{2+}(g) + e^-$ n=2

Your task

1. Complete the table below for the successive ionisation energies for potassium (proton number 19).
2. Plot a graph of $\log_{10}$(ionisation energy) against n (the number of the ionisation energy).
3. Describe the graph and explain it.

n	ionisation energy (kJ mol^{-1})	$\log_{10}$(ionisation energy)
1	419	
2	3051	
3	4412	
4	5877	
5	7975	
6	9649	
7	11343	
8	14942	
9	16964	
10	48577	
11	54433	
12	60701	
13	68896	
14	75950	
15	83152	
16	93403	
17	99771	
18	444911	
19	476075	