Graphing Periodic Trends:

Your table will be responsible for making graphs for each periodic trend. Plot the atomic number on the X-axis and the trend on the Y- axis. (The data is below. You will make graphs on Excel; there are instructions on the website.) Be sure to label your axis and give it a title. Add gridlines so your graph is easier to read. You will then need to **analyze** the graph and **conclude** what the trend is across a period and down a group.

Your group will make four graphs, and then your group will be responsible for putting them into a presentation on Google DRIVE. Your presentation will need to explain the trend to your classmates, what it does across a period and down a group. You should also explain **why** the property changes in such a manner across a period and down a group. Your explanation of why should include the *effective nuclear charge* and the *shielding effect.* You may need to research to help you. There are resources on my website. The last 15 minutes of class your group should be ready to share with each other.

Your presentation should answer the following questions:

1) Definition of property:

2) How does your assigned trend change across a period?

3) How does your assigned trend change down a group?

4) Explain what is changing at the subatomic level that causes the property to behave this way across a period.

5) Explain what is changing at the subatomic level that causes the property to behave this way down a group.

Selected Atomic Properties

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Element | Atomic # | Atomic Radius(pm) | Ionic Radius(pm) | 1st Ionization energy(kJ/mol) | Electronegativity |
| H | 1 | 37 | NA | 1312 | 2.1 |
| He | 2 | 32 | NA | 2372 | NA |
| Li | 3 | 134 | 60 | 520 | 1.0 |
| Be | 4 | 90 | 44 | 899 | 1.5 |
| B | 5 | 82 | 23 | 801 | 2.0 |
| C | 6 | 77 | 15 | 1086 | 2.5 |
| N | 7 | 75 | 146 | 1402 | 3.0 |
| O | 8 | 73 | 140 | 1314 | 3.5 |
| F | 9 | 71 | 133 | 1681 | 4.0 |
| Ne | 10 | 69 | NA | 2081 | NA |
| Na | 11 | 154 | 95 | 496 | 0.9 |
| Mg | 12 | 130 | 66 | 738 | 1.2 |
| Al | 13 | 118 | 51 | 578 | 1.5 |
| Si | 14 | 111 | 41 | 786 | 1.8 |
| P | 15 | 106 | 212 | 1012 | 2.1 |
| S | 16 | 102 | 184 | 1000 | 2.5 |
| Cl | 17 | 99 | 181 | 1251 | 3.0 |
| Ar | 18 | 97 | NA | 1521 | NA |
| K | 19 | 196 | 133 | 419 | 0.8 |
| Ca | 20 | 174 | 99 | 590 | 1.0 |
| Sc | 21 | 144 | 81 | 615 | 1.3 |
| Ti | 22 | 136 | 68 | 650 | 1.5 |
| V | 23 | 125 | 52 | 635 | 1.6 |
| Cr | 24 | 127 | 46 | 635 | 1.6 |
| Mn | 25 | 139 | 64 | 710 | 1.5 |
| Fe | 26 | 125 | 74 | 790 | 1.8 |
| Co | 27 | 126 | 72 | 775 | 1.9 |
| Ni | 28 | 121 | 72 | 715 | 1.9 |
| Cu | 29 | 138 | 74 | 715 | 1.9 |
| Zn | 30 | 131 | 74 | 900 | 1.6 |
| Ga | 31 | 126 | 62 | 579 | 1.6 |
| Ge | 32 | 122 | 53 | 762 | 1.8 |
| As | 33 | 119 | 222 | 947 | 2.0 |
| Se | 34 | 116 | 198 | 941 | 2.4 |
| Br | 35 | 114 | 196 | 1140 | 2.8 |
| Kr | 36 | 110 | NA | 1351 | NA |