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| **Atomic Radius** | **Ionization Energy** | **Electronegativity** | **Reactivity** |
| Measured from the nucleus of one atom to the nucleus of another atom in a molecule | The amount of energy required to remove the outermost electron | The ability of an atom to attract an electron (in a bond) on a scale of 0 – 4 | Decreases for metals from left to right, across a period, but increases for nonmetals across a period |
| Decreases from left to right across a period due to increasing number of protons, which pull in the outermost energy level | Increases from left to right across a period due to increasing number of protons, which makes it harder to remove the outermost electron | Increases from left to right across a period due to increasing number of protons, which makes it easier to attract an additional electron | Increases for metals down a family, but decreases for nonmetals down a family |
| Increases from top to bottom down a family due to increased number of energy levels | Decreases from top to bottom down a family, because the outermost electron becomes easier to remove as it is further away from the nucleus | Decreases from top to bottom down a family, because it is more difficult to add an electron to a shell further away from the nucleus. | Based on ionization energy for metals and electronegativity for nonmetals |
| Francium has the highest value, but helium has the lowest value | Francium has the lowest value, but helium has the highest value | No measurable value for the noble gas family |  |
|  |  | Francium has the lowest value, but fluorine has the highest value |  |