**Guided Reading 12.1**

**Integrated Science – Matter Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Per:\_\_**

1. Atoms are made of three basic components. Name these three particles.
2. One of two forces that hold atoms together is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
3. A particle with a negative charge that was discovered by English physicist \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, is called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
4. Several scientists, including Ernest Rutherford, performed an experiment that helped improve the model of the atom by realizing the inner core of the atom housed most of the mass. This core has a special name, the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
5. The two particles that make up most of the mass of the atom are called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
6. Which particle occupies the space outside the nucleus, in a “cloud”?
7. Complete the following table, comparing forces within atoms.

|  |  |  |
| --- | --- | --- |
| Electromagnetic force |  | Compared to our solar system –  planets don’t fall into the Sun |
|  | Attractive force between  the proton and the neutron | Stongest force known to  Science |
| Weak force | A force that is significant  when atoms break apart |  |
|  | The weakest force | An unsolved mystery in  science |

1. The number of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is different for each element and is known as the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ number.
2. The electric charge on an atom is neutral because the number of protons is the same as the number of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and each of their individual charges cancel out.
3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are atoms of the same element with a different number of neutrons.