PHYSICS CONTENT FACTS

The following is a list of facts related to the course of Physics. A deep foundation of factual knowledge is important; however, students need to understand facts and ideas in the context of the conceptual framework. This list is not intended to provide a comprehensive review for State and National Assessments. Its purpose is to provide a highlight of the factual material covered in Physics. This list is not all inclusive, be sure to check Nevada State Standards and your district syllabi.

MODERN PHYSICS

- Light behaves both like a wave and as a particle
- The particle behavior of light is proven by the photoelectric effect
- A photon is a particle of light {energy packet}
- Large objects have very short wavelengths when moving and thus can not be observed behaving as a wave (DeBroglie Waves)
- All electromagnetic waves originate from accelerating charged particles
- The frequency of a light wave determines its energy $E = hf$
- The lowest energy state of a atom is called the ground state
- Increasing light frequency increases the kinetic energy of the emitted photo-electrons
- As the threshold frequency increase for a photo-cell (photo emissive material) the work function also increases
- Increasing light intensity increases the number of emitted photo-electrons but not their KE
- All nuclei weigh less than their parts. This mass defect is converted into binding energy ($E=mc^2$)
- Geiger counters, photographic plates, cloud and bubble chambers are all used to detect or observe radiation
- Rutherford discovered the positive nucleus using his famous gold-foil experiment
- Nuclear fusion occurs when smaller atomic nuclei unite to make a larger atom
- Nuclear fission occurs when a neutron causes a large atomic nuclei to be split into smaller size atoms, producing extra neutrons
- Radioactive half-lives can not be changed by heat or pressure