

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.

ENERGY

- Mechanical energy is the sum of the potential and kinetic energy
- Gravitational potential energy (due to an object's vertical position) increases as height increases
 $PE = mgh$
- Kinetic energy (energy of motion) changes when velocity changes $KE = \frac{1}{2}mv^2$
- Mechanical energy (sum of PE + KE) does not change for a free falling mass or a swinging pendulum (ignoring air resistance/friction)
- Work occurs when a force causes something to move or change $W = Fd$
- The net work done by a force acting on an object is equal to the change in the total energy of the object
- Power is the rate at which energy is transferred $P = \frac{W}{\Delta t}$
- Momentum is a vector quantity defined as the product of an object's mass and velocity $p = mv$
- Impulse (for a constant external force) is the product of the force and the time interval over which it acts on an object $j = F\Delta t$
- Impulse = Change in momentum $F\Delta t = \Delta p$ or $F\Delta t = m\Delta v$
- Momentum is conserved in all collision systems – “The total of all objects interacting with one another remains constant regardless of the nature of the forces between the objects”