Review for Physical Science Test – Q1T3 – 6 October 2015

Old Stuff:

- The Metric Prefixes from Tera to pico.
- Be sure to know how to make the symbol μ.
- Unit conversions are done by multiplying by a fraction whose value is 1
- The significant figures in a number are used to indicate its precision.
- The formula for calculating the displacement (location) of an object with constant velocity is: $d_f = d_i + vt$.
- The formula for calculating the displacement (location) of an object with constant, non–zero acceleration is: $d_f = d_i + v_i t + \frac{1}{2} a t^2$.
- The slope of the displacement vs time graph is the velocity of the object.
- A slower object produces a smaller (lower) slope. A faster object produces a greater (higher) slope.
- Velocity is the rate of change of displacement (location).
- Acceleration is the rate of change of velocity.
- The correct metric unit for acceleration is m/s^2.
- The graph used to analyze data in Chrome Sheets is a scatter graph. This is also true in Excel.

New Stuff:

- An object in "free fall" has an acceleration of *g*, down. The value of *g* is 9.80665 m/s^2
- Free fall occurs when gravity is the only force acting on an object that is not "negligible".
- The formula for calculating the distance an object falls from rest and time is: $d_y = \frac{1}{2} g t^2$.
- The same formula solved to give the time of fall from a certain height:
$$t = \sqrt{\frac{2d_y}{g}}$$
- Velocity results in a change in location.
- Acceleration results in a change in velocity.
- Acceleration is caused by force.
- The correct metric unit for force is the newton.
- The symbol for a newton is "N".
- Usually, a single force does not, by itself, cause acceleration.
- Acceleration results from the sum of forces or the NET force acting on the object.
- The net force acting on an object is the sum of the forces acting on it.
- If the net force acting on an object is zero, its acceleration is also zero. This is Newton's First Law of Motion.
- If the net force acting on an object is not zero, the resulting acceleration is directly proportional to the magnitude of the net force and in the same direction as the net force. Additionally, the magnitude of the resulting acceleration is inversely proportional to the mass of the object. This is Newton's Second Law of Motion.
- The equations describing the Second Law are: $\mathbf{F_{NET}} = m\mathbf{a}$ and $\sum \mathbf{F} = m\mathbf{a}$. Notice that "sum of the forces" and "net force" mean the same thing here.
- Make sure you can solve all of the homework problems.