**2014 8th Grade Science Semester Exam REVIEW**

**Atomic Structure and Chemistry**

1. How do you determine the mass of an atom?
2. How do you determine the atomic number of an atom?
3. Describe the location, mass and charge for:

Proton:

Neutron:

Electron:

1. Which particles in an atom determine the chemical reactivity of the element?
2. Locate Metals, Non-Metals, Metalloids on the Periodic Table of the Elements.



1. Which direction do you move in the periodic table for increasing mass?
2. How do you know if an element reacts like another element?
3. What is the difference between an element and a compound?
4. List evidence that a chemical reaction has occurred

a.

b.

c.

d.

e.

1. What information can you get from a chemical formula? (Hint: Tell everything you can about this formula: C2O2H4)
2. Determine if the following equation is balanced (follows the Law of Conservation of Mass) using a RAP chart.

 light
C3H8 + 5 O2 🡪 3 CO2 + 4 H2O

**Physics**

1. How do you compute the density of an object?
2. What is the difference between Speed, Velocity and Acceleration? (Hint: list definitions to help you!)
3. What is inertia?
4. Illustrate and describe an example of when an object will move according to the forces acting on it. (Hint: Balanced and unbalanced forces, direction of movement.)
5. Given the force and acceleration of an object, how do you compute the object’s mass?
6. What is the equation for determining force?
7. What is the force on an object with a mass of 0.23kg, and an acceleration of 3.5m/s2?
8. If two objects with different masses travel down a hill at the same speed, which object will require more force to stop?

**Components of the Universe**

1. Why can people on Earth NOT see the shape of the Milky Way?
2. What information is available on a Hertzsprung-Russell diagram?
3. What is a light year?
4. What is the distance from the earth to the sun? What is the distance from the earth to the next closest star?
5. Write the following types of electromagnetic radiation in order from longest wavelengths to shortest.
X-rays Microwaves Gamma Rays Infrared Ultraviolet Visible Light Radio Waves
6. Write the following colors of the visible light spectrum in order from longest wavelengths to shortest.
Indigo Red Green Orange Blue Yellow Violet (Purple)
7. Astronomers use the visible spectrum to complete a spectral analysis of stars. What does the spectral analysis tell them?
8. Draw a diagram of the phases of the moon, including: New Moon, Full Moon, 1st Quarter Moon, 3rd Quarter Moon, Sun and Earth. Label the order of the appearance of each phase.