**Energy Calculations and Recap**

**The Math:**

**GPE = Mass\*gravity\*height KE = ½ mv2**

1. A hummingbird has a mass of 1.75 kg. How much potential energy does it have 2.4 meters off of the ground?
2. Miguel Cabrera hits a 130 meter homerun to straight away center (Go Tigers)! At the peak of the flight, the .45 kg baseball is traveling at a velocity 22m/s. What is the kinetic energy of that baseball at that moment?
3. A rocket is traveling at 130m/s at 24,000 meters above the Pacific Ocean. Assuming the rocket has a mass of 30,000 kg, what is the kinetic energy of the rocket?
4. Coach Warzynski lifts a 25kg barbell over his head, a distance on 3m, all in 2 seconds. How much potential energy is now stored above Coach Warzynski’s head?
5. What is the velocity of kicked soccer ball if the ball has a mass of 2.85kg and a kinetic energy of 42 joules?
6. What is the mass of a rock that has 102 joules of kinetic energy, knowing that it was thrown 10 meters in the air with a velocity of 3.1m/s?

**Fill in the Blank: Energy Types *(You will use each word only once)***

Potential Energy Kinetic energy Mechanical Chemical

Nuclear Electric Sound Light/Radiant Thermal

1. What type of energy has to do with energy stored due to the position or shape of an object? \_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. What type of energy has to do with bonds between atoms? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. What type of energy has to do with movement of sound waves? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. What type of energy has to do with electrical charges? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. What type of energy has to do with electromagnetic waves? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
6. What type of energy has to do with energy stored within the nucleus of an atom? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
7. What type of energy has to do with the heat and the movement of particles? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
8. What type of energy has to do with the energy of motion? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
9. What type of energy is the energy of position or motion? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**ENERGY TRANSFORMATIONS AND CONSERVATION**

1. Draw me a picture of a kid on a slide. Explain the child’s energy on the top of the slide, midway down the slide, and at the bottom of the slide. *You should be using numbers, and the words potential and kinetic energy.*
2. Was there a perfect conservation of energy from potential to kinetic? If not, where did the extra energy go?

**Classify the following examples as potential energy or kinetic energy.**

1. A bowling ball rolling towards the pins \_\_\_\_\_\_\_\_\_\_\_\_\_
2. A book sitting on a shelf \_\_\_\_\_\_\_\_\_\_\_\_\_
3. A plate gets knocked off the shelf and is halfway to the ground\_\_\_\_\_\_\_\_\_\_\_\_\_
4. A kid on a water slide that is at the very bottom of the water slide. \_\_\_\_\_\_\_\_\_\_\_\_\_