Name: _____ Physics 1 - Miguel Rocha Date:_____

Homework 1: Conversion of units

1. GN-z11 is the most distant galaxy we have observed, its distance from us is 9.8 Giga **parsecs** (Giga = 10^9). The **parsec** (symbol: **pc**) is a unit of length used to measure large distances to astronomical objects outside the Solar System.

If 1 **pc** = 3.26 light years (**ly**), and 1 **ly** = 9.45×10^{15} **m**.

a) How far is GN-z11 in **ly**?

b) How far is GN-z11 in **km**?

2. The size of protons have been measured to be about 1 **fm**. A **femtometer** (symbol: **fm**) is 10^{-15} **meters**. Compare the distance to GN-z11 (above) to the size of a proton. HINT: First convert the two measurements to the same units and then take the ratio between the two. I am looking for an answer telling me only the order of magnitude difference (powers of ten).

3. You use about 3×10^8 **kg (m/s)²** of energy every day. How much is that in **kWh** (**kilowatt hour**)? (Hint: look at the lecture slides for help but show the process to get to the answer)