

Name: _____ Date: _____

m_r^β **Physics Practice: Atomic scale**

We all know atoms are tiny. But how tiny? And how much smaller is the nucleus of an atom? In the problems below, list clearly the pieces of information you use, any assumptions you make, and make it clear how you computed your answer.

1. Compute the number of H_2O molecules in a liter of water.

2. Compute the number of liters of water on earth.

3. Imagine Archimedes drank a liter of wine to celebrate his Eureka moment. If you drink a liter of soda, estimate how many molecules of water in that liter are from Archimedes' celebratory liter of wine.

4. Sketch a cube that is 1cm on each side. This is the size of one gram of water. Compute the mass of the cube if it was composed of neutrons that are touching.

5. Compute the mass of a neutron star with a diameter of 20 miles. How many earth masses is this?