

# CSC 400 Estimation Questions

September 6, 2013

Document your sources and describe your reasoning and assumptions in answering the following questions. For uncertain quantities, it is wise to consult more than one source. Do your own calculation rather than looking up the answers (which might very well be wrong), that is, work from the most basic information you can find.

1. Estimate the total liquid surface area present in a modest-sized thunderstorm cell (say 5x5x5 miles). Hint: most of it is in the form of cloud droplets.
2. How many carbon atoms can a single olefin chain (the polyethylene backbone) suspend in earth's gravitational field without breaking? How many people could a human chain suspend without breaking?
3. If a large pan of gasoline were left open to the air in CSB room 632 how much would evaporate into the air at 70 degrees F, assuming no air circulation. What would happen if someone turned off the lights, providing a spark?
4. How many bytes of traffic pass over the global internet in a day? What would it cost the NSA to store a year's worth of this traffic?