

ChEE 201
Fall 2007
Homework Assignment 1

1) (10 points) Dr. Blowers did two loads of laundry on May 18th. He weighed the first load of laundry after removing it from the dryer and found that the scale read 18.8 pounds. After drying the laundry on a clothesline, the laundry now weighed 9.9 pounds. The second load of laundry weighed 20.1 pounds prior to drying and 11.1 pounds afterwards. Find the average amount of water that can be expected to evaporate from one load of laundry in:

- a) pounds
- b) moles
- c) molecules
- d) kg

2) (10 points) On July 4th at 11 am, the U of A weather station reported the following conditions:

Temperature = 36.6 °C, Pressure = 929.4 mBar, maximum gusts of wind 17 mph.

- a) Report the temperature in Kelvin, Rankine, and °F.
- b) Report the pressure in inches of mercury, torr, atmospheres, and Pa.
- c) Report the wind gusts in meters per second.

3) (10 points) The Economic Sciences Corporation reports the Tucson Electric Power is one of the 150 largest utility companies in the United States. According to their website (<http://www.econsci.com/rates/residential.html> - last accessed on 7-4-07), TEP generates 2,644,951 MWhr. TEP's website reports a residential rate of \$0.019131 per kWh.

- a) what is the revenue, in dollars, for this amount of electricity?

(10 points) There are several reports that home electronic entertainment systems (plasma screen televisions, digital radio, DVD players, telephones with support systems) will require between 3 and 7 times more electricity than current electronic systems. (Daily Mail Newspaper, 7-3-07, D. Derbyshire)

For this homework, we will assume an average of 5 times the current electricity usage.

- b) Find the number of pounds (English currency because the article was published in Britain) the increase in electricity would require if TEP was the electricity provider.