Homework

1. *How long would it take a sneeze to reach the Andromeda Galaxy? [Sam Leib]*

Given:
- there are 5,865,696,000,000 miles per light-year
- a sneeze travels at about 100 miles per hour
- the Andromeda Galaxy is 28 light-years away
- there are 8760 hours in one year

Estimate: # years / Andromeda

2. *Assuming that the universe is a giant cube, how many atoms would it take to fill it? [Mark Kelly]*

Given:
- there are 4×10^{33} light-years^3 / 1 Universe
- there are 2×10^{38} miles^3 / 1 light-years^3
- there are 1.5×10^{11} feet^3 / 1 mile^3
- there are 7.5×10^{12} atoms / 1 inch^3
- there are 1.7×10^{3} inch^3 / 1 feet^3

Estimate: # atoms / Universe

4. *How many **needles** were leaving St. Ives? [Sam Leib]*
   Given: Estimate: # needles / St. Ives
   "As I was walking to St. Ives, I met a man with 7 wives, the seven wives had seven children, the seven children had 7 baskets, the seven baskets had seven kittens, the seven kittens had seven balls of yarn, the seven balls of yarn had seven needles. *How many **needles** were leaving St. Ives?"*
   *[By the way, how many were **going** to St. Ives???]*

5. *How many people have lived on earth? [Deidre Banovich]*
   Given:
   - some estimate that people have lived on earth for roughly 2 million years
   - a median population for any given time is 20 million people / earth

6. *Estimate the total length of your hair in a lifetime. [Deidre Banovich]*
   Given:
   - hair grows ¾ of an inch in a month
   - assume 80 years per lifetime