MATH-CCTH 1080H - Mathematics for Everyday Life

TRENT UNIVERSITY, Winter 2018 in Peterborough

Assignment #2 Reach for the stars!? Due on Friday, 26 January.

One of Archimedes' (c. 287-212 B.C.) more whimsical works is *The Sand Reckoner* in which he computes an upper bound for the number of sand grains that would be required to fill the known universe, as it was then understood. This exercise required Archimedes to extend the number system then used in the Hellenistic world to handle the large numbers involved, and it may be that showing how one could so extend was the real point. Your task in this assignment will, in part, be something similar.

The *imperial minim* is the smallest official unit of volume in the imperial system of measures; one imperial minim is $0.0591938802083 \ mL$. (The minim of the United States customary system of measures is slightly larger at $0.061611519921875 \ mL$.)

- 1. Compute the number of minims required to fill the solar system we live in. This will require you to make one of several reasonable choices as to what the boundary of the solar system ought to be. [7]
- **2.** Compute the density of the solar system in g/L. [3]