Math 21 – Pointers for Section 1.4

- **Stratified Sample**
  This is the most reliable sampling technique, but does require the most work and preliminary information.
  Stratified comes from the word strata, which means layers. We divide the population into several overlapping layers, and then draw samples from each subgroup to match the makeup of the population.
  For example, suppose we divide the population of registered voters by party (Democrat/Republican/Other) and gender (Male/Female). Further suppose that the population follows this percentage distribution.

	Democrat	Republican	Other
Male	18%	25%	5%
Female	22%	20%	10%

  Our first subgroup is male Democrats, which makes up 18% of the population.
  We select individuals from this subgroup in such a way that it represents 18% of the sample.
  For example, if our sample size was going to be n = 400, then we would select 72 male Democrats for a sample (18% of 400).
  We repeat that for every other subgroup.
  We end up with a sample that looks just like the population, and is most likely to mirror the opinions of the population.

- **Systematic Sample**
  The main idea here is to select a starting value (p) and a step size (k).
  We start with individual #p, and then include every k^{th} individual from there.
  For example, suppose the starting value was 77 and the step size was 200.
  The sample would include individuals 77, 277, 477, 677, …
  To compute k, divide the population size N by the sample size n and round down.
  To compute p, select a random number between 1 and k.
  By the way, the formula for the last individual selected is $p + (n - 1) \cdot k$

- **Cluster Sample**
  Divide the population into clusters (geographical locations).
  Randomly select several of the clusters.
  Include each individual from the selected clusters.

- **Convenience Sample**
  A sample in which the individuals are easily obtained and not based on randomness.
  Examples: Standing at the mall and asking people questions as they walk by, posting an online poll where people choose to reply, …