Name: _____

MATH 100
Fall 2023
HW 12: Due 12/06

"Surveys show that surveys never lie."
–Natalie Angier

Problem 1. (10pt) For each of the following, determine whether the proposed survey method is systematic sampling, stratified sampling, cluster sampling, or convenience sampling. Be sure to justify your reasoning.

(a) A company surveys its employees by randomly surveying a few individuals from its list of managers, drivers, administrative staff, production staff, and custodial staff.

(b) A student asks neighbors about their political affiliation.

(c) A government agency sends surveys to every resident in three upstate New York villages.

(d) Every one hundred customers ordering an item are requested to fill out a customer satisfaction survey.

Problem 2. (10pt) Determine whether each of the following measurements are nominal, ordinal, interval, or ratio. Be sure to justify your answer. You need only indicate the 'highest' level of measurement.

(a) Placement in a race.

(b) Type of Pain: acute, chronic, aching, burning, stabbing, etc.

(c) The average temperature (°F) of a mountain range.

(d) The time taken to complete an assignment.

Problem 3. (10pt) Determine whether each of the variables underlined in the statements below are quantitative or categorical variables—be sure to justify your answer.

(a) A company creates groupings for the various types of coffee they sell.

(b) A professor rates the quality of a students work as 'above average', 'average', or 'below average.'

(c) A car manufacturer counts the number of defective products produced at a factory.

(d) Nurses measure the concentration of medication in a patients bloodstream.

Problem 4. (10pt) Being sure to fully justify your reasoning, complete the following:

(a) Explain the difference between a random sample and a simple random sample.

(b) If one finds a high correlation between study time and GPA, then it must be that one's study time (or lack thereof) causes one's GPA to be high or low.

(c) If one finds that regularly taking a medication has a statistically significant chance of increasing one's cholesterol levels, then there is clear practical significance to this medication.