SOLUTIONS

(1) If there is no sampling error then we expect a scatter diagram that will _____. **(A)**

(2) Which is the best example of a random variable that is clearly discrete and not continuous? **(D)**

(3) What is the chance that any Normally distributed random variable will take a value that is more than half a standard deviation below its average? **(B)**

(4) It is claimed that one third of Canadians watch the CBC news in a typical week. Is it statistically plausible that in a random sample of five Canadians more than half watch the CBC news? **(E)**

(5) In which of the following circumstances would the sample mean (X-bar) have the biggest variance and vary the most because of sampling error? **(C)**

(6) The distribution of profits for new restaurants is known to be positively skewed. A small random sample is collected. Which of these factors would affect the shape of the sampling distribution of the sample mean? **(D)**

(7) If f(-10) = 0.025 and f(4) = 0.040, what is P(-10 < X < 4)? **(E)**

(8) Which sample size makes P(-1 < X-bar < 1) smallest AND makes P(X-bar > 10) biggest? **(A)**

(9) Which are true statements about using a Monte Carlo Simulation to learn about the sampling distribution of the sample mean? **(C)**

(10) What is the probability of a value between 10 and 15 if you randomly draw one observation? **(C)**

(11) Suppose you standardize X to create Y: Y = (X – μ)/σ. What are the shape and parameters of the transformed variable? **(E)**

(12) Which of these statements comparing the variability of two samples are true? **(C)**

(13) If in fact people think that low and high sodium foods are equivalent in terms of taste, what is the chance that the high sodium foods would receive a higher average rating in the study above? **(E)**

(14) An industry representative claims that high sodium foods on average receive a substantially higher rating: an 8 point better rating on average. If that claim is true, what is the chance that sampling error explains getting a difference as small that found in the study above? **(D)**

(15) For n = 3, what is the chance that the sample mean is 8/3? **(D)**

(16) For n = 3, how can we calculate the standard error of the sample mean? **(B)**

(17) For n = 10, what is the best estimate of the probability that the sample mean is equal to 1.7? **(C)**

(18) For n = 10, which are important differences between the graph above that is generated by a computer and a graph that can be reasonably generated by hand (actually tossing coins)? **(B)**

(19) How many parameters does the *F* distribution have? **(C)**

(20) If the sample size is 11, what is the chance that the t statistic is less than -2.764? **(A)**

(21) If managers classify employees in the 99th percentile and higher as "exceptional," to the nearest integer which rating does an employee need to obtain to be exceptional? **(B)**

(22) For 3 randomly selected employees what is the chance that on average their June ratings are greater than 80? **(C)**

(23) For 3 randomly selected employees what is the chance that all three have a June ratings greater than 80? **(A)**

(24) If managers determine the end-of-year bonus by averaging the June and November performance ratings to obtain an "overall year rating," what is the standard deviation of the overall year rating? **(B)**