Statistics: Chapter 6 Solutions

Lesson 6.1.1

6-1. a. discrete

b. continuous

c. discrete

d. discrete

e. continuous

6-2. a. The outcomes are due to chance and are countable.

b. The table lists all possible outcomes with probabilities assigned to each outcome. The probabilities all add to 1.

c. The mean will be 3.9.

d. The mean will be 3.9.

e. $\sum X_i \cdot P(X_i)$

6-3. a. We are talking about an average response. While it is not possible for the spinner to take on the value of 3.9, after many spins, the average of these spins will be very close to 3.9.

b. He should use μ because the probability model represents *all* possible outcomes.

6-4. $\sigma^2{}_x = 1.69$, $\sigma_X = 1.3$, First, find the expected value (the mean). Write down how each possible outcome deviates from the mean, and square these. Multiply each squared deviation by the probability of that outcome, and add them all up: $\sum (X_i - \mu)^2 \cdot P(X_i)$

6-5. a.

Y	4	8
$P(Y)$	0.5	0.5

b. $\mu_Y = 6$, $\sigma^2{}_y = 4$, $\sigma_Y = 2$

6-6. a. $P(X > 15)$ = normalcdf(15, 10^99, 14.2, 0.5) = 0.0548

b. invnorm(0.99, 14.2, 0.5) = 15.36 grams

6-7. a. The probabilities all add to 1, and no probabilities are less than zero.

b. $E(X) = 8.2$, $\sigma = 2.713$

c. The median is 8. This is the first possible outcome where the cumulative probability reaches 0.5.

6-8. b. Theoretically, a streak of 4 or more has probability of about 48%, a streak of five or more about 25%, a streak of six or more 12%, and a streak of seven or more about 6%.

6-9. Sample response: A simple random sample could be obtained if the state superintendent obtained a list of all elementary school students in the state and randomly chose 500 names from the list to take a survey. A stratified random sample could be obtained if a list of all elementary schools was obtained, and 5 students were randomly selected from each school. A cluster sample could be obtained if a list of schools was obtained, and 5 schools were randomly chosen. All students in the chosen schools would be given a survey. The cluster sample would likely be the most viable choice due to the time involved in surveying every school in the state.

