

- Directions: For each question, do each of the following
 - a.) Identify the Population of Interest (POI)
 - b.) Identify the Variable of Interest (VOI)
 - c.) K (what do you know?)
 - d.) W (what do you want to know?)
 - e.) State and check assumptions (conditions) for the sampling distribution.
 - f.) Describe the appropriate sampling distrⁿ
 - g.) Draw a picture and shade the appropriate region of the sampling distribution.
 - h.) Calculate the z-score and find the probability
 - i.) L (what did you learn?) Write a statement in context of the situation.
1. **M&M's:** The candy company claims that 10% of M&M's it produces are green. Mr. Dobson bought a bag with 200 M&M's and found only 15 of them to be green. What is the probability that he would find at most 15 green M&M's in the bag he bought?
 2. **Gondola Safety:** A ski gondola in Vail, Colorado, carries skiers to the top of a mountain. It bears a plaque stating that the maximum capacity is 12 people or 2004 pounds. That capacity will be exceeded if 12 people have weights with a mean greater than $2004/12 = 167$ lbs. Because men tend to weigh more than women, a "worst case" scenario involves 12 passengers who are all men. Men have weights that are normally distributed with a mean of 172 lb and a standard deviation of 29 lb. What is the probability that 12 randomly selected men will have a mean that is greater than 167 pounds.
 3. **Coaching for SAT:** Scores for men on the verbal portion of the SAT-I test are normally distributed with a mean of 509 and a standard deviation of 112 (based on information from the College Board). If we randomly select 16 men what is the probability that their mean score is at least 590?
 4. **Overbooking Flights:** Air America is considering a new policy of booking as many as 400 persons on an airplane that can seat only 350. (past studies have revealed that 85% of the booked passengers actually arrive for the flight). Find the probability that if Air America books 400 persons, not enough seats will be available, in other words, at least 351 people show up.
 5. **Staying out of Hot Water:** In planning for hot water requirements, the manager of the Luxurion Hotel find that guests spend a mean of 11.4 min each day in the shower with a standard deviation of 2.6 min (based on data from the Opinion Research Corporation). The hotel has installed system that can provide enough hot water provided that the mean shower time for 84 guests is less than 12 min. If the hotel currently has 84 guests, find the probability that there will not be enough hot water. Does the current system appear to be effective?
 6. **Detecting Fraud:** When working for the Brooklyn District Attorney, investigator Robert Burton analyzed the leading digits of amounts on checks from companies that were suspected of fraud. Among 784 checks, 479 had amounts with leading digits of 5, but checks issued in the normal course of honest transactions were expected to have 7.9% of the checks with amounts having leading digits of 5. What is the probability that we would find at most 479 of these checks in our sample?