

Examining Sample Designs

1. A high school's class rings that were ordered have arrived and are ready to be given out. The principal must determine whether students would prefer to receive their rings at an assembly during school or at a dance in the evening. The principal does not have time to contact every member of the class, so she will obtain a sample of 50 students to survey.
 - Describe a method the principal should use to select the students to survey. Use principles of simple random sampling to justify your answer.
2. Every Sunday night a popular radio station plays new music performed by local bands. At the end of the segment the deejay asks listeners to call in with their reactions: "Dump it" or "Pump it." One Sunday night 60% of the 100 callers voted to "Dump it" after hearing a song performed by a particular band.
 - Do you think 60% is a reasonable estimate for the percentage of all listeners who did not like the music? Use mathematics to justify your answer.
3. Ten randomly selected adults were asked the following question: "Do you feel fulfilled in your present career?" Three of the adults responded, "no."
 - Based on this data, what is the probability that a randomly selected adult would respond no to the question?
 - Is this probability a reasonable estimate of the percent of the population that would respond no? Use mathematics to justify your answer.

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Answer Key

1. Answers will vary. One possible sampling technique would be to assign all students, who ordered rings, a number label. Then select these numbers using a random device. This method would work because each student that ordered a ring is equally likely to be chosen and the students are chosen independently of each other
2. 60% is probably *not* a good estimate because the station will most likely get the responses of listeners with very strong opinions from the voluntary response survey. This group may be very small compared to a group of listeners with moderate views, who may actually like the music.
3.
 - a. $3/10 = 0.30$
 - b. The sample size is very small compared to the population of working adults, so the probability is not a good estimate.