

1. **What type of data** set follows the Empirical Rule, which is that nearly all the data will fall within three standard deviations of the mean?
  
2. Draw a sketch of a data set that is skewed right, skewed left, and symmetric.
  
3. Which method would produce a random sample? (least bias)
  - a. A student stands outside an expensive restaurant and asks customers whether they are for or against welfare.
  - b. A magazine for bird lovers asks subscribers how many cats they own.
  - c. A researcher asks students in Hawaii whether they own snowmobiles.
  - d. A researcher stands outside a grocery store and asks shoppers whether they spend more or less than \$100/wk on groceries.
  
4. A class of 200 students takes an exam. The students' scores are normally distributed with a mean of 72 and a standard deviation of 10. Find the number of students with scores in each interval. Sketch a curve.
  - a. Between 72 and 82
  - b. more than 92
  - c. less than 72
  - d. between 62 and 92
  
5. A set of data with a mean of 58 and a standard deviation of 6.3 is normally distributed. Find the values that are 2 standard deviations from the mean. Sketch a curve.
  
6. In a survey, participants were asked their opinion of a new government program. The response scale ranged from 1 to 4, with 4 being a favorable response to the program. Which sample was largest? Explain.

Sample	Score	Standard Deviation
A	3.0	1.1
B	2.8	1.3
C	2.9	0.8

**Identify any bias in each sampling method. When appropriate, suggest a sampling method that is more likely to produce a random sample.**

7. A committee wants to find how much time students spend reading each week. They ask the students as they enter the library.
  8. The students planning the junior class party want to know what kinds of pizza to buy. They asked the pizza restaurant what kinds sell the most.
  9. The country road department wants to know which roads cause the most concern among the residents on the county. They ask the local restaurant to hand out survey forms.
  10. A politician wants to know what issues are most important to the voters in his district. He spends all day Tuesday talking to people as they enter the grocery store.
  11. A politician wants to know the voters' views on an important issue. She has her campaign workers call people randomly from the phone book.
12. Find the sample size that produces each margin or error.
- a.  $\pm 15\%$       b.  $\pm 2\%$       c.  $\pm 0.9\%$       d.  $\pm 0.6\%$

**For each sample find the sample proportion, the margin of error, and an interval likely to contain the true population proportion. Round to the nearest percent.**

13. In a survey of 38 parents of preschool children, 20 would like to have their local school district provide play group sessions at least one evening a month.
14. In a random sample of 526 visitors to the craft center, 378 want the craft center to be open later in the evenings.
15. In a survey of 165 visitors to the library, 102 want the library to have more novels available.
16. In one lake, 98 of the last 323 fish caught have a certain chemical present in their body.
17. In a traffic survey, 537 of the 1287 drivers passing through the checkpoint were traveling more than 100 miles from home.