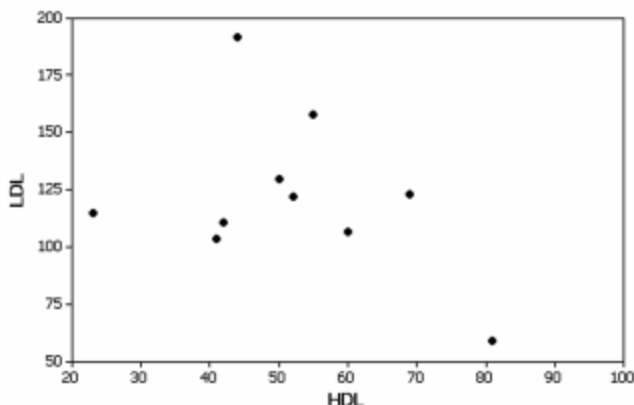


**8. Cholesterol** Listed below are HDL and LDL cholesterol measurements (all in mg/dL) from 10 randomly selected women (based on Data Set 1 in Appendix B). Also shown is a scatterplot of the paired data. Based on the scatterplot does there appear to be a correlation between HDL cholesterol levels and LDL cholesterol levels in women?

HDL	42	81	44	60	52	50	69	41	55	23
LDL	111	59	192	107	122	130	123	104	158	115



**9. Designing Gloves** In designing gloves for women, it is found that the lengths of their hands are normally distributed with a mean of 175 mm and a standard deviation of 9 mm (based on anthropometric survey data from Gordon, Churchill, et al.).

- What percentage of women have hands longer than 185 mm? If no gloves are made to fit hands longer than 185 mm, would a large percentage of the market be lost?
- Find the 5th percentile and 95th percentile for the lengths of women's hands.

**10. Pick 3 Lottery** Ohio and several other states have a Pick 3 lottery in which you select three digits, each between 0 and 9. Winning requires that you get the same three digits that are drawn, and they must be in the same order.

- What is the probability of winning a Pick 3 lottery if you buy a single three-digit ticket?
- What is the probability of *not* winning a Pick 3 lottery if you buy a single three-digit ticket?
- What is the probability of not winning on each of 10 different tickets if each ticket has a single three-digit selection?

## Technology Project

**Bootstrap Resampling** The *bootstrap resampling method* can be used to construct confidence intervals when the sample data suggest that the requirement of a normally distributed population is not satisfied. Listed below are 10 values randomly selected from a population with a distribution that is very far from normal. First, use technology to generate a normal quantile plot and write a brief statement interpreting that graph.

14 29 36 36 47 48 180 513 676 5642

Because methods requiring a normal distribution cannot be used, we will use **bootstrap resampling**, which has no requirements about the distribution of the population. This method typically requires a computer to repeatedly sample with replacement from the original sample. In this way, we pull the original sample up “by its own bootstraps” to simulate the original