**6. Forward Grip Reach and Ergonomics** When designing cars and aircraft, we must consider the forward grip reach of women. Women have normally distributed forward grip reaches with a mean of 686 mm and a standard deviation of 34 mm (based on anthropometric survey data from Gordon, Churchill, et al.)

**a.** If a car dashboard is positioned so that it can be reached by 95% of women, what is the shortest forward grip reach that can access the dashboard?

**b.** If a car dashboard is positioned so that it can be reached by women with a grip reach greater than 650 mm, what percentage of women cannot reach the dashboard? Is that percentage too high?

**c.** Find the probability that 16 randomly selected women have forward grip reaches with a mean greater than 680 mm. Does this result have any effect on the design?

**7. Honesty Is the Best Policy** In a *USA Today* survey of 456 subjects, 269 agreed that honesty is always the best policy. Assume that we plan to use the survey results to estimate the proportion of the population who believe that honesty is always the best policy.

**a.** Is the sample proportion of 269/456 a statistic or a parameter?

**b.** Are frequency counts such as 269 categorical data or quantitative data?

**c.** Are frequency counts such as 269 discrete or continuous?

**d.** What does it mean for a sample, such as the 456 surveyed subjects, to be a simple random sample?

**e.** The *USA Today* survey was conducted as follows: A question was posted on the *USA Today* web site and Internet users could choose to respond. In statistics, is this a valid sampling plan?

**8. Probability and Honesty** Based on the sample described in the preceding exercise, assume that when someone is randomly selected, there is a 0.6 probability that the selected person believes that honesty is always the best policy.

**a.** If four people are randomly selected, find the probability that they all believe that honesty is always the best policy.

**b.** If someone is randomly selected, what is the probability that he or she does *not* believe that honesty is always the best policy?