b. Physicians want to select a minimum temperature for requiring further medical tests. What should that temperature be, if we want only 5.0% of healthy people to exceed it? (Such a result is a *false positive,* meaning that the test result is positive, but the subject is not really sick.)

29. Earthquakes Based on Data Set 16 in Appendix B, assume that Richter scale magnitudes of earthquakes are normally distributed with a mean of 1.184 and a standard deviation of 0.587.

a. Earthquakes with magnitudes less than 2.000 are considered "microearthquakes" that are not felt. What percentage of earthquakes fall into this category?

b. Earthquakes above 4.0 will cause indoor items to shake. What percentage of earthquakes fall into this category?

c. Find the 95th percentile. Will all earthquakes above the 95th percentile cause indoor items to shake?

30. Aircraft Seat Width Engineers want to design seats in commercial aircraft so that they are wide enough to fit 99% of all males. (Accommodating 100% of males would require very wide seats that would be much too expensive.) Men have hip breadths that are normally distributed with a mean of 14.4 in. and a standard deviation of 1.0 in. (based on anthropometric survey data from Gordon, Clauser, et al.). Find P_{99}. That is, find the hip breadth for men that separates the smallest 99% from the largest 1%.

31. Chocolate Chip Cookies The Chapter Problem for Chapter 3 includes Table 3-1, which lists the numbers of chocolate chips in Chips Ahoy regular cookies. Those numbers have a distribution that is approximately normal with a mean of 24.0 chocolate chips and a standard deviation of 2.6 chocolate chips. Find P_1 and P_{99}. How might those values be helpful to the producer of Chips Ahoy regular cookies?

32. Quarters After 1964, quarters were manufactured so that the weights had a mean of 5.67 g and a standard deviation of 0.06 g. Some vending machines are designed so that you can adjust the weights of quarters that are accepted. If many counterfeit coins are found, you can narrow the range of acceptable weights with the effect that most counterfeit coins are rejected along with some legitimate quarters.

a. If you adjust vending machines to accept weights between 5.64 g and 5.70 g, what percentage of legal quarters are rejected? Is that percentage too high?

b. If you adjust vending machines to accept all legal quarters except those with weights in the top 2.5% and the bottom 2.5%, what are the limits of the weights that are accepted?

Large Data Sets. ***In Exercises 33 and 34, refer to the data sets in Appendix B and use computer software or a calculator.***

33. Appendix B Data Set: Pulse Rates of Males Refer to Data Set 1 in Appendix B and use the pulse rates of males.

a. Find the mean and standard deviation, and verify that the pulse rates have a distribution that is roughly normal.

b. Treating the unrounded values of the mean and standard deviation as parameters, and assuming that male pulse rates are normally distributed, find the pulse rate separating the lowest 2.5% and the pulse rate separating the highest 2.5%. These values could be helpful when physicians try to determine whether pulse rates are unusually low or unusually high.

34. Appendix B Data Set: Weights of Diet Pepsi Refer to Data Set 19 in Appendix B and use the weights (pounds) of Diet Pepsi.