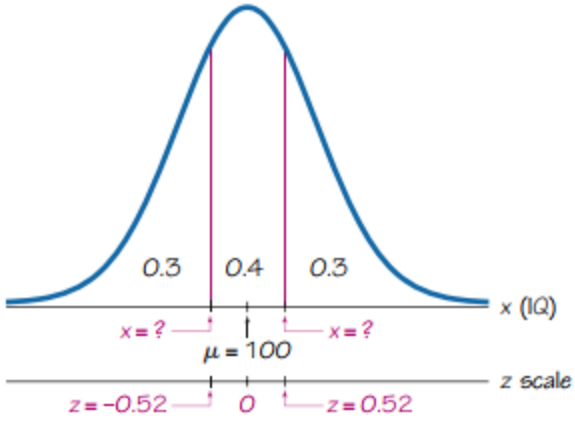

Figure 6-15 IQ Scores for Ability Grouping

Step 3: We now solve for the two values of x by using Formula 6-2 directly or by using the following version of Formula 6-2:

$$\text{Leftmost value of } x: \quad x = \mu + (z \cdot \sigma) = 100 + (-0.52 \cdot 15) = 92.2$$

$$\text{Rightmost value of } x: \quad x = \mu + (z \cdot \sigma) = 100 + (0.52 \cdot 15) = 107.8$$

Step 4: Referring to Figure 6-15, we see that the leftmost value of $x = 92.2$ is reasonable because it is less than the mean of 100. Also, the rightmost value of 107.8 is reasonable because it is above the mean of 100.

There is a small discrepancy between the results from technology and the results from Table A-2, and that discrepancy is due to the fact that Table A-2 requires that we first round z scores to two decimal places. The results from technology are more accurate.

Interpretation

The Wechsler IQ scores of 92.2 and 107.8 can be used as cutoff values separating the three groups. Those in the lowest group have IQ scores below 92.2, those in the middle group have IQ scores between 92.2 and 107.8, and those in the highest group have IQ scores above 107.8.

For the methods of this section, we should carefully consider the following:

- We should *always* draw a graph to visualize the information.
- We should determine whether we want to find an area or a value of x.
- Regardless of the situation, we must usually work with a cumulative area from the *left*.
- We should know that a z score and x value are *distances* along horizontal scales, but percentages or probabilities correspond to *areas* under a curve.

using TECHNOLOGY

When working with a nonstandard normal distribution, a technology can be used to find areas or values of the relevant variable, so technology can be used instead of Table A-2. The following instructions describe the use of technology.

STATDISK Select **Analysis, Probability Distributions, Normal Distribution.** Either enter the z score to find corresponding areas or enter the cumulative area from the left to find the

continued