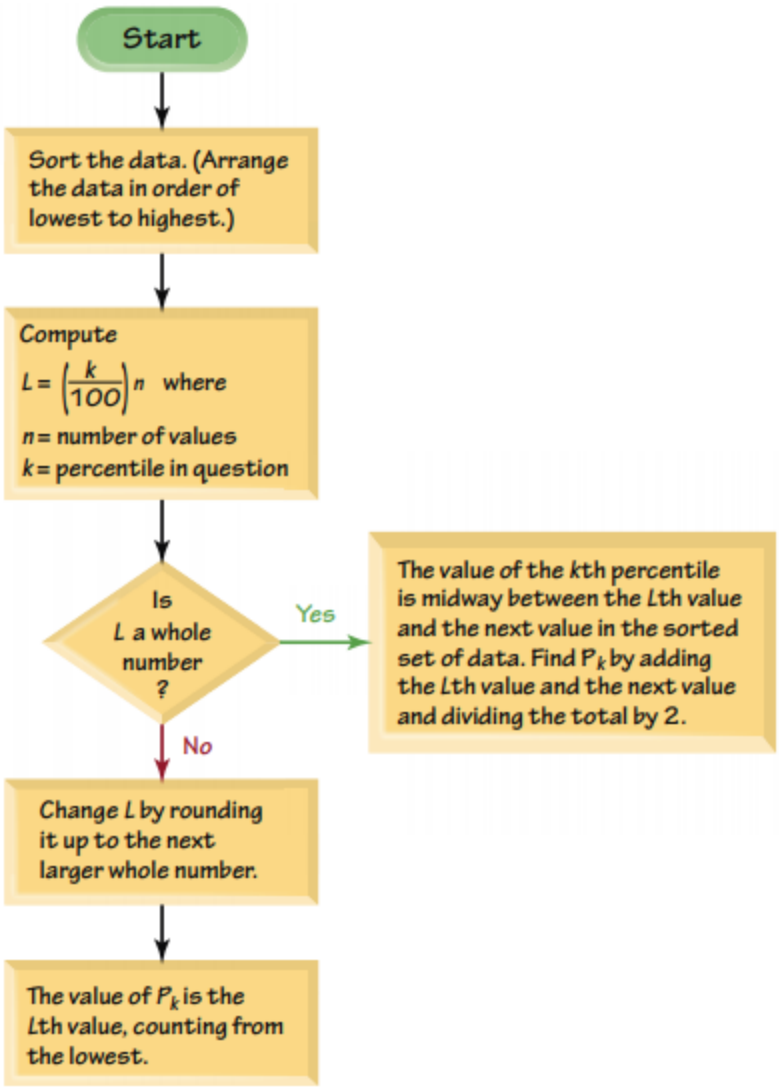
Figure 3-5
Converting from the *k*th percentile to the corresponding data value



Solution

From Figure 3-5, we see that the sample data are already sorted, so we can proceed to find the value of the locator L. In this computation we use $k = 18$ because we are trying to find the value of the 18th percentile. We use $n = 40$ because there are 40 data values.

$$L = \frac{k}{100} \cdot n = \frac{18}{100} \cdot 40 = 7.2$$

Since $L = 7.2$ is not a whole number, we proceed to the next lower box where we change L by rounding it up from 7.2 to 8. (In this book we typically round off the usual way, but this is one of two cases where we round *up* instead of rounding *off*.) From the last box we see that the value of P_{18} is the 8th value, counting from the lowest. In Table 3-4, the 8th value is 22. That is, $P_{18} = 22$ chocolate chips. Roughly speaking, about 18% of the cookies have fewer than 22 chocolate chips and 82% of the cookies have more than 22 chocolate chips.

Example 5 Converting a Percentile to a Data Value

Refer to the sorted chocolate chip counts in Table 3-4. Use Figure 3-5 to find the 25th percentile, denoted by P_{25}.