

**1. Solution**

The sample size,  $n$ , is 12. We determine the indices and values of Q1, Q2, and Q3.

| Quartile | Formula for $i$                | $i$ | $x$    |
|----------|--------------------------------|-----|--------|
| Q1       | $\lceil 0.25 \times 12 \rceil$ | 3   | 83.15  |
| Q2       | $\lceil 0.5 \times 12 \rceil$  | 6   | 92.09  |
| Q3       | $\lceil 0.75 \times 12 \rceil$ | 9   | 102.85 |

We determine the IQR.

$$\begin{aligned} \text{IQR} &= Q3 - Q1 \\ &= 102.85 - 83.15 \\ &= 19.7 \end{aligned}$$

We determine the outlier boundaries.

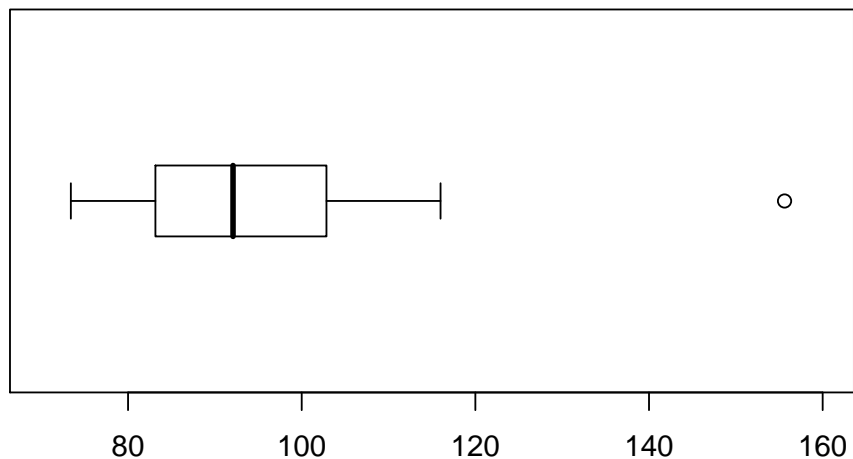
$$\begin{aligned} \text{lower boundary} &= Q1 - 1.5 \times \text{IQR} \\ &= 83.15 - 1.5 \times 19.7 \\ &= 53.6 \end{aligned}$$

$$\begin{aligned} \text{upper boundary} &= Q3 + 1.5 \times \text{IQR} \\ &= 102.85 + 1.5 \times 19.7 \\ &= 132.4 \end{aligned}$$

We determine the outliers.

$$\text{outliers} = \{155.61\}$$

We identify the ends of the whiskers: 73.41 and 115.99. We plot the boxplot.



**2. Solution**

The sample size,  $n$ , is 72. We determine the indices and values of Q1, Q2, and Q3.

| Quartile | Formula for $i$                | $i$ | $x$   |
|----------|--------------------------------|-----|-------|
| Q1       | $\lceil 0.25 \times 72 \rceil$ | 18  | 29.19 |
| Q2       | $\lceil 0.5 \times 72 \rceil$  | 36  | 36.46 |
| Q3       | $\lceil 0.75 \times 72 \rceil$ | 54  | 53.68 |

We determine the IQR.

$$\begin{aligned}
 \text{IQR} &= Q3 - Q1 \\
 &= 53.68 - 29.19 \\
 &= 24.49
 \end{aligned}$$

We determine the outlier boundaries.

$$\begin{aligned}
 \text{lower boundary} &= Q1 - 1.5 \times \text{IQR} \\
 &= 29.19 - 1.5 \times 24.49 \\
 &= -7.545
 \end{aligned}$$

$$\begin{aligned}
 \text{upper boundary} &= Q3 + 1.5 \times \text{IQR} \\
 &= 53.68 + 1.5 \times 24.49 \\
 &= 90.415
 \end{aligned}$$

We determine the outliers.

$$\text{outliers} = \{96.3\}$$

We identify the ends of the whiskers: 20.57 and 80.15. We plot the boxplot.

