

1. 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 | 92.55 |
| Q2 | $\lceil 0.5 \times 72 \rceil$ | 36 | 107.62 |
| Q3 | $\lceil 0.75 \times 72 \rceil$ | 54 | 120.44 |

We determine the IQR.

$$\begin{aligned}
 \text{IQR} &= Q3 - Q1 \\
 &= 120.44 - 92.55 \\
 &= 27.89
 \end{aligned}$$

We determine the outlier boundaries.

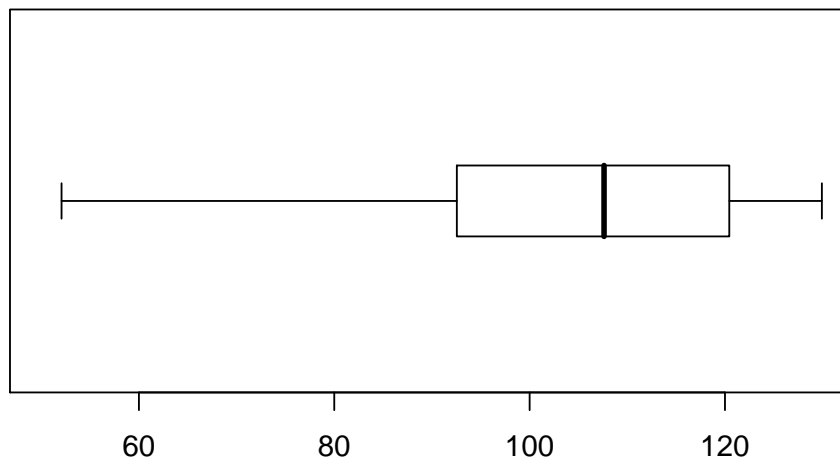
$$\begin{aligned}
 \text{lower boundary} &= Q1 - 1.5 \times \text{IQR} \\
 &= 92.55 - 1.5 \times 27.89 \\
 &= 50.715
 \end{aligned}$$

$$\begin{aligned}
 \text{upper boundary} &= Q3 + 1.5 \times \text{IQR} \\
 &= 120.44 + 1.5 \times 27.89 \\
 &= 162.275
 \end{aligned}$$

We determine the outliers.

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

We identify the ends of the whiskers: 52.08 and 129.92. We plot the boxplot.



2. Solution

The sample size, n , is 56. We determine the indices and values of Q1, Q2, and Q3.

| Quartile | Formula for i | i | x |
|----------|--------------------------------|-----|-------|
| Q1 | $\lceil 0.25 \times 56 \rceil$ | 14 | 11.94 |
| Q2 | $\lceil 0.5 \times 56 \rceil$ | 28 | 12.41 |
| Q3 | $\lceil 0.75 \times 56 \rceil$ | 42 | 12.74 |

We determine the IQR.

$$\begin{aligned} \text{IQR} &= Q3 - Q1 \\ &= 12.74 - 11.94 \\ &= 0.8 \end{aligned}$$

We determine the outlier boundaries.

$$\begin{aligned} \text{lower boundary} &= Q1 - 1.5 \times \text{IQR} \\ &= 11.94 - 1.5 \times 0.8 \\ &= 10.74 \end{aligned}$$

$$\begin{aligned} \text{upper boundary} &= Q3 + 1.5 \times \text{IQR} \\ &= 12.74 + 1.5 \times 0.8 \\ &= 13.94 \end{aligned}$$

We determine the outliers.

$$\text{outliers} = \{10.51, 10.56\}$$

We identify the ends of the whiskers: 10.75 and 12.99. We plot the boxplot.

