

**1. Solution**

The sample size,  $n$ , is 48. We determine the indices and values of Q1, Q2, and Q3.

Quartile	Formula for $i$	$i$	$x$
Q1	$\lceil 0.25 \times 48 \rceil$	12	31.48
Q2	$\lceil 0.5 \times 48 \rceil$	24	33.49
Q3	$\lceil 0.75 \times 48 \rceil$	36	36.71

We determine the IQR.

$$\begin{aligned}
 \text{IQR} &= Q3 - Q1 \\
 &= 36.71 - 31.48 \\
 &= 5.23
 \end{aligned}$$

We determine the outlier boundaries.

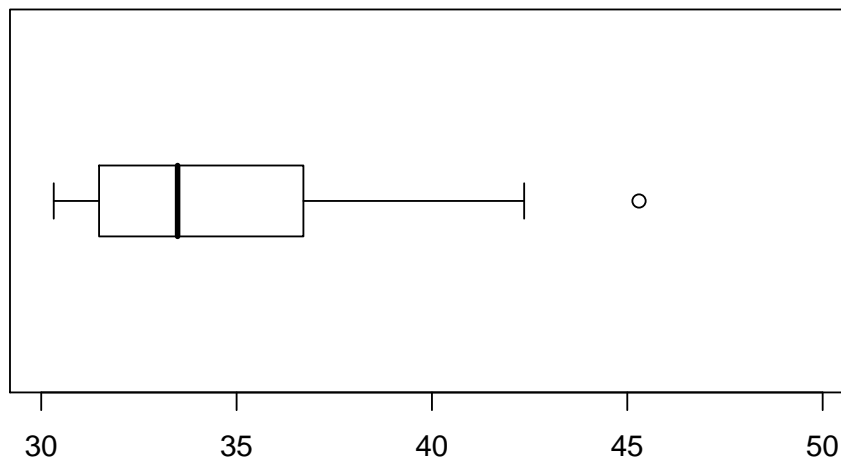
$$\begin{aligned}
 \text{lower boundary} &= Q1 - 1.5 \times \text{IQR} \\
 &= 31.48 - 1.5 \times 5.23 \\
 &= 23.635
 \end{aligned}$$

$$\begin{aligned}
 \text{upper boundary} &= Q3 + 1.5 \times \text{IQR} \\
 &= 36.71 + 1.5 \times 5.23 \\
 &= 44.555
 \end{aligned}$$

We determine the outliers.

$$\text{outliers} = \{45.3\}$$

We identify the ends of the whiskers: 30.32 and 42.36. We plot the boxplot.



**2. Solution**

The sample size,  $n$ , is 25. We determine the indices and values of Q1, Q2, and Q3.

Quartile	Formula for $i$	$i$	$x$
Q1	$\lceil 0.25 \times 25 \rceil$	7	83.17
Q2	$\lceil 0.5 \times 25 \rceil$	13	85.78
Q3	$\lceil 0.75 \times 25 \rceil$	19	87.76

We determine the IQR.

$$\begin{aligned} \text{IQR} &= Q3 - Q1 \\ &= 87.76 - 83.17 \\ &= 4.59 \end{aligned}$$

We determine the outlier boundaries.

$$\begin{aligned} \text{lower boundary} &= Q1 - 1.5 \times \text{IQR} \\ &= 83.17 - 1.5 \times 4.59 \\ &= 76.285 \end{aligned}$$

$$\begin{aligned} \text{upper boundary} &= Q3 + 1.5 \times \text{IQR} \\ &= 87.76 + 1.5 \times 4.59 \\ &= 94.645 \end{aligned}$$

We determine the outliers.

$$\text{outliers} = \{74.09, 74.98\}$$

We identify the ends of the whiskers: 76.87 and 89.21. We plot the boxplot.

