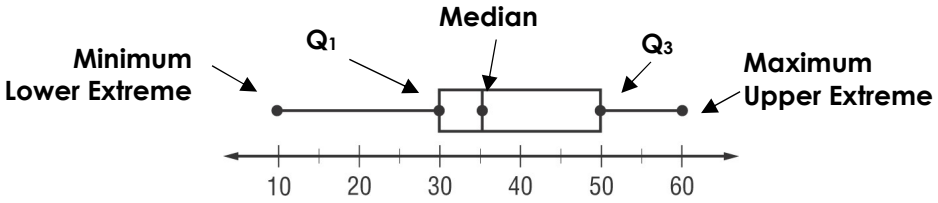
Box Plot (Box & Whiskers Plot)

A box plot (a.k.a. "box and whisker plot") uses a **number** line to show how data is distributed. It shows the **minimum**, and the **maximum** values, which are also called the **upper extreme** and **lower extreme**, the **median** and the **upper** and **lower quartiles**.

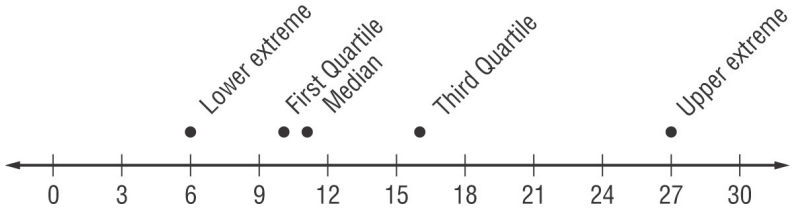


Example:

The list below shows the number of model airplanes owned by the members of the aviation club. Draw a box plot of the data.

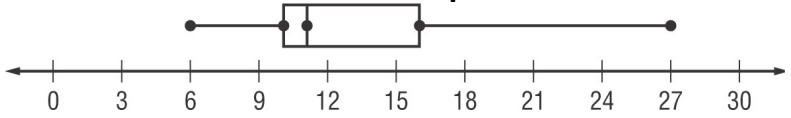
6, 8, 10, 10, 10, 11, 12, 14, 16, 18, 27

1) Order the numbers from least to greatest. Then draw a number line that covers the range of the data.
2) Find the median, the extremes, and the first and third quartiles. Mark these points above the number line.



3) Draw the box so that it includes the quartile values. Draw a vertical line through the median value. Extend the whiskers from each quartile to the extreme data points.
4) Title your box plot!

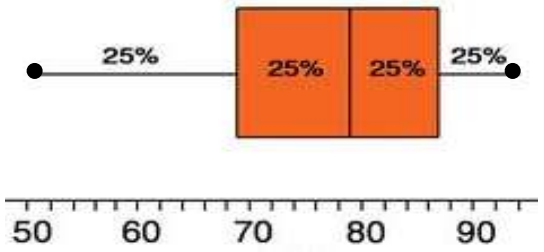
Numbers of Model Airplanes Owned



Tip:

One key understanding about box plots is that each section represents 25% of the data. If one section is large, that tells you that the numbers in that section are more spread out. If the section is small, that tells you the data is closer together.

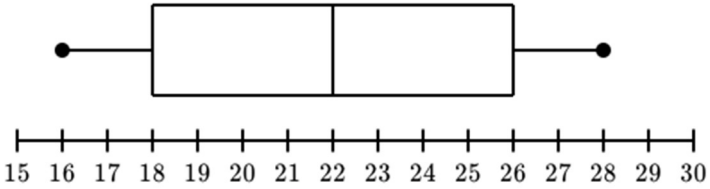
In the box plot below, you can see that the whisker for the upper quartile is much smaller than the whisker for the lower quartile. However, they both have the same number of data values. What does this tell you?



You Try:

1) Use the box and whiskers plot to answer the following questions:

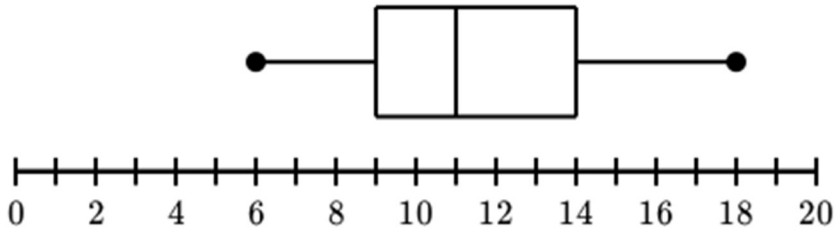
Student Cell Phones per 6th Grade Class



a) What is the lowest number of students with cell phones in the data? _____
b) What is the highest number of students with cell phones in the data? _____
c) What is the median number of students with cell phones? _____
d) What is the range of students with cell phones? _____

2) Use the box and whiskers plot to answer the following questions:

Total Points Scored by Basketball Players in 2018



a) Median = _____ b) Lower Quartile (Q1) = _____

c) Maximum = _____ d) Minimum = _____

e) Range = _____ f) Upper Quartile (Q3) = _____

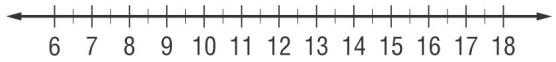
Use the data given for each problem to find the requested information and make a box plot.

1) The number of pencils students have at school:
{4, 7, 5, 3, 12, 6, 5}

Median: _____
Q_1: _____
Q_3: _____
Lower Extreme (Minimum): _____
Upper Extreme (Maximum): _____

2) Number of books read by the 6th grade teachers:
{13, 8, 17, 10, 6, 11, 18}

Median: _____
Q_1: _____
Q_3: _____
Lower Extreme (Minimum): _____
Upper Extreme (Maximum): _____



3) The heights of students on the soccer team, in inches, are: 56, 69, 60, 64,63, 68, 68 and 66. Make a box plot for this data.

Median: _____
Q_1: _____
Q_3: _____
Lower Extreme (Minimum): _____
Upper Extreme (Maximum): _____

4) The Young Fashionistas Club tallied up the total pairs of shoes that each member owns. Make a box plot of this data:
5, 6, 7, 7, 7, 8, 9, 9, 11, 11, 12, 12, 12, 12, 12,
13, 13, 14, 14, 14, 14, 18, 19, 20, 20

Median: _____
Q_1: _____
Q_3: _____
Lower Extreme (Minimum): _____
Upper Extreme (Maximum): _____