

**Box and Whisker Plots**

Statistics assumes that your data points (the values in your list) are clustered around some central value. The "box" in the box-and-whisker plot contains, and thereby highlights, the middle half of these data points.

There are 20 values in this data set.

2, 3, 4, 5, 5, 7, 8, 9, 9, 11, 13, 14, 17, 17, 17, 19, 22, 22, 22, 22

Find the following values for the data.

Least Value: \_\_\_\_\_

Greatest Value: \_\_\_\_\_

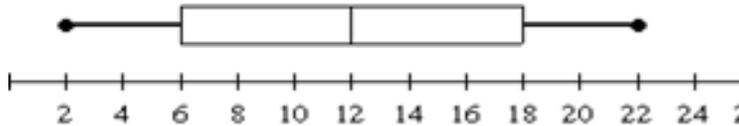
Range: \_\_\_\_\_

Mean: \_\_\_\_\_

Median: \_\_\_\_\_

Mode: \_\_\_\_\_

Which of these are featured in the Box and Whisker graph?



**5-Number Summary:**

Min =

$Q_1 =$

Med =

$Q_3 =$

Max =

Range =

IQR =

$IQR \cdot 1.5 =$

Fences:

$Q_1 - 1.5(IQR) =$

$Q_3 + 1.5(IQR) =$

Outlier = \_\_\_\_\_

Mean: \_\_\_\_\_

**5-Number Summary :**

(Significant features on a Box and Whisker Graph):

**Minimum** = Least value in data.  
 Starting point of *whisker*.

**1<sup>st</sup> Quartile ( $Q_1$ )** = Median of the first half of data.  
 Starting point of *box*.

**Median** = Middle of data. Could be called  $Q_2$ .  
 Vertical line in *box*.

**3<sup>rd</sup> Quartile ( $Q_3$ )** = Median of the last half of data.  
 Ending point of *box*.

**Maximum** = Greatest value in data  
 Ending point of *whisker*.

**Other Information:**

**Inner Quartile Range (IQR)** =  $Q_3 - Q_1$   
 The range of the *box*.

**Fences:**  $Q_1 - 1.5(IQR)$  and  $Q_3 + 1.5(IQR)$

**Outlier:** Any value outside the fence.

**Make your own box and whisker plot:**

The owner of a restaurant wants to find out more about where his patrons are coming from so she can target that area with advertising and coupons. She surveyed some patrons throughout the day. Each person told her how many miles away from the restaurant they live. The following distances were reported.

14, 6, 3, 2, 4, 15, 11, 8, 1, 7, 2, 1, 3, 4, 10, 30, 20



a) Sort the data, complete the **5-Number Summary**, make a *Box and Whisker* graph, then complete the additional information.

**5-Number Summary:**

Min = \_\_\_\_\_

$Q_1$  = \_\_\_\_\_

Med = \_\_\_\_\_

$Q_3$  = \_\_\_\_\_

Max = \_\_\_\_\_

Range = \_\_\_\_\_

IQR = \_\_\_\_\_

$IQR \cdot 1.5$  = \_\_\_\_\_

Fences:

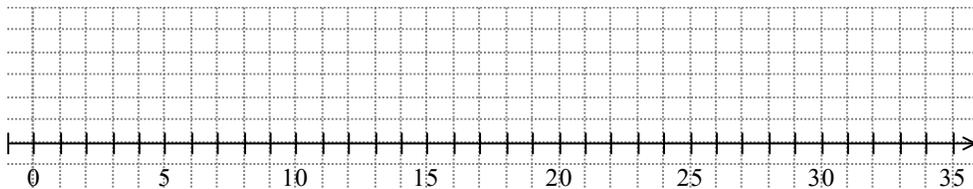
$Q_1 - 1.5(IQR)$  = \_\_\_\_\_

$Q_3 + 1.5(IQR)$  = \_\_\_\_\_

Outlier = \_\_\_\_\_

Mean: \_\_\_\_\_

b) How far from the restaurant should the owner concentrate the advertising? Justify.



What graphical feature shows why the mean is greater than the median in this data?