

Name _____
Date _____

Period _____
Box Plots

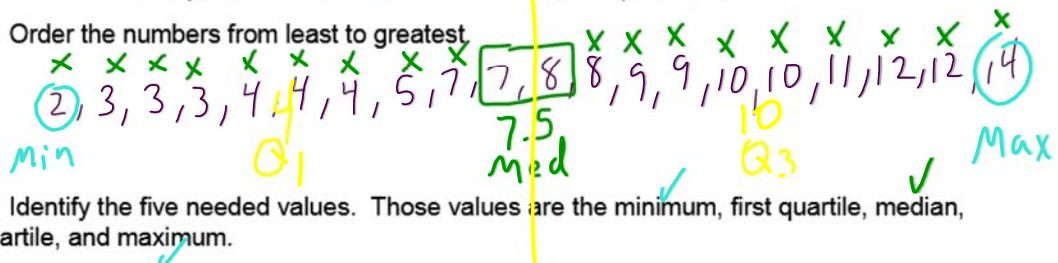
What you will learn.... How to interpret and create box plots.

A **box plot** can be used to show the values in a data set are distributed. You need five values to make a box plot: the minimum (or least value), first quartile, median, third quartile, and maximum (or greatest value).

For example: 1) The number of runs scored by a softball team in 20 games is given. Use the data to make a box plot.

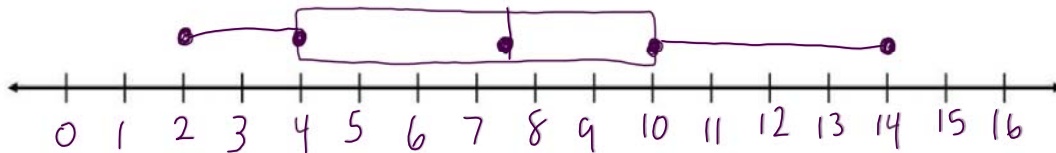
~~3, 4, 8, 12, 7, 5, 4, 12, 3, 9, 11, 4, 14, 8, 2, 10, 3, 10, 9, 7~~

Step 1: Order the numbers from least to greatest.



Step 2: Identify the five needed values. Those values are the minimum, first quartile, median, third quartile, and maximum.

Step 3: Draw a number line and plot a point above each of the five needed values. Draw a box whose ends go through the first and third quartiles, and draw a vertical line through the median. Draw horizontal lines from the box to the minimum and maximum.



a) The lines that extend from the box in a box plot are sometimes called "whiskers". What part (lower, middle, or upper) and about what percent of the data does the box represent? What part and about what percent does each "whisker" represent?

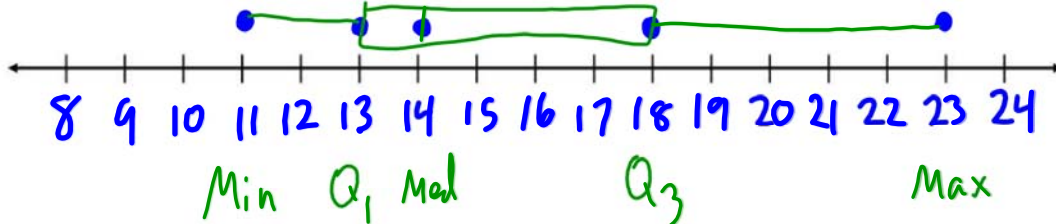
minX=11
Q1=13
Med=14
Q3=18
maxX=23

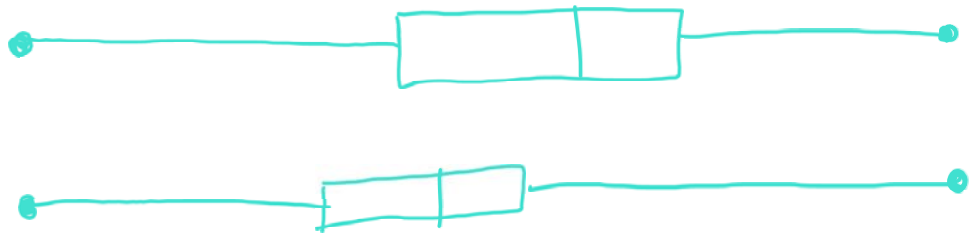
b) Which measures of spread can be determined from the box plot, and how are they found? Calculate each measure.

2) Use the data to make a box plot.

13, 14, 18, 13, 12, 17, 15, 12, 13, 19, 11, 14, 14, 18, 22, 23

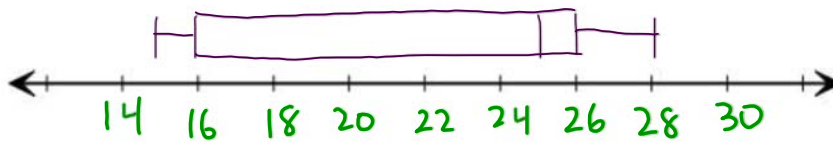
Min-
Q1-
Med-
Q3-
Max-





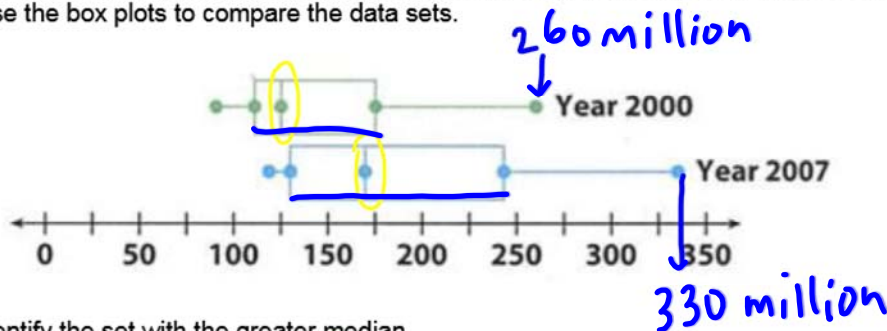
3) Use the data to make a box plot. 25, 28, 26, 16, 18, 15, 25, 28, 26, 16

minX=15
 Q₁=16
 Med=25
 Q₃=26
 maxX=28



Identify the: median 25 First Quartile 16 Third Quartile 26
 minimum 15 maximum 28

4) The box plots show the ticket sales, in millions of dollars, for the top 25 movies of 2000 and 2007. Use the box plots to compare the data sets.



a) Identify the set with the greater median.

Year 2007

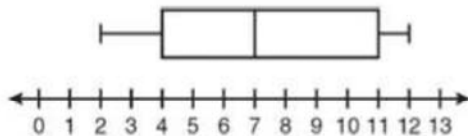
b) Identify the set with the greater interquartile range.

Year 2007

c) About how much greater were the ticket sales for the top movie in 2007 than the top movie in 2000?

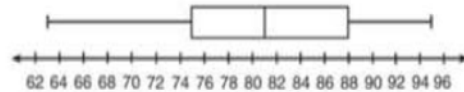
330m - 260m = about 70 million

5) Based on the box-and-whisker plot below, which statement is *false*?



- 1) The median is 7.
- 2) The range is 12.
- 3) The first quartile is 4.
- 4) The third quartile is 11.

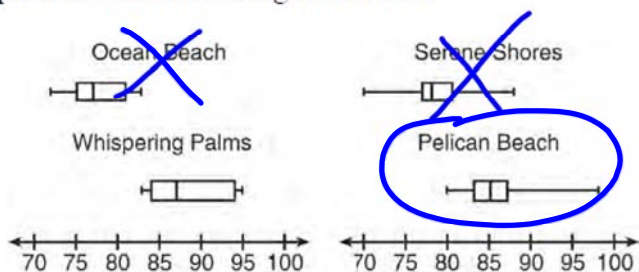
6) The box-and-whisker plot below represents a set of grades in a college statistics class.



Which interval contains exactly 50% of the grades?

- 1) 63-88
- 2) 63-95
- 3) 75-81
- 4) 75-88

Corinne is planning a beach vacation in July and is analyzing the daily high temperatures for her potential destination. She would like to choose a destination with a high median temperature and a small interquartile range. She constructed box plots shown in the diagram below.



Which destination has a median temperature above 80 degrees and the smallest interquartile range?

- 1) Ocean Beach
- 2) Whispering Palms
- 3) Serene Shores
- 4) Pelican Beach