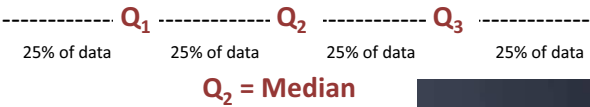


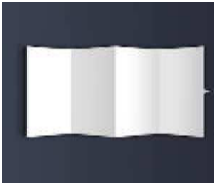
Unit 8

L5 Box and Whiskers plot

How do you fold a paper into 4 equal parts?



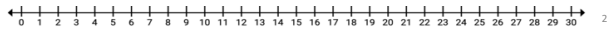
Quartiles Q_1, Q_2, Q_3 divide a set of ordered data into four groups with an equal amount of data in each.



Ex 1: Consider the ordered set of $n = 13$ data

1 4 7 8 9 9 11 16 17 19 25 30 30

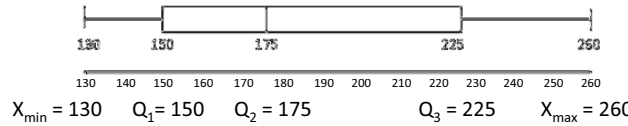
$Q_2 =$
 $Q_1 =$
 $Q_3 =$



A Box and Whiskers Plot:

- Shows only the min, Q_1 , Q_2 , Q_3 , and max.
- Vertical lines at Q_1, Q_2, Q_3 (Hinges) form a box with 50% of the data, lines to min and max are called whiskers
- There is the same number of data entries (25%) in each section, but they may be spread out (dispersed) in some sections more than others.
- Gives information on the concentration and dispersion of the data.

Ex 2: Weights of athletes on a men's rowing team.



Variation Interval : The interval with the lowest and highest data: $[X_{\min}, X_{\max}]$
Interquartile Interval: The interval $[Q_1, Q_3]$
50% of the data lies in this interval

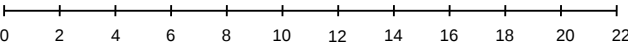
Range (R): The difference between the highest and lowest value. $R = X_{\max} - X_{\min}$
Interquartile Range (I): The difference between Q_3 and Q_1 $I = Q_3 - Q_1$

Note that **range** and **interquartile range** refer to single numerical values

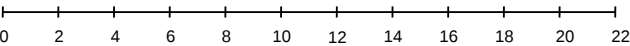
Ex 3: A group of 11 friends are playing a game of bowling. Here are their scores
123 99 139 100 88 86 133 100 153 112 93

$n =$ $\min =$ $\max =$
 $Q_1 =$ $Q_2 =$ $Q_3 =$
Variation interval = **R** =
Interquartile interval = **I** =
Which score is less than the median but more than Q_1 ?

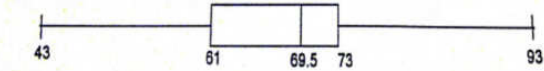
Case 1 - Odd # of Items
Ex 4: # of Visits to [Mrs. Botros website](#)/ day



Case 2 - Even # of items
Ex 5: Number of _____ / day



2. The marks on a history test for a class of 30 students are represented by the following box-and-whisker plot.



The following are the marks for 26 of the 30 students:

43 54 55 56 58 60 61 65 66 66 66 67 68
70 71 71 71 71 71 71 74 77 77 79 86 88

Find the four missing marks. Explain why you chose each mark.

Practice:
8.5 1-5

