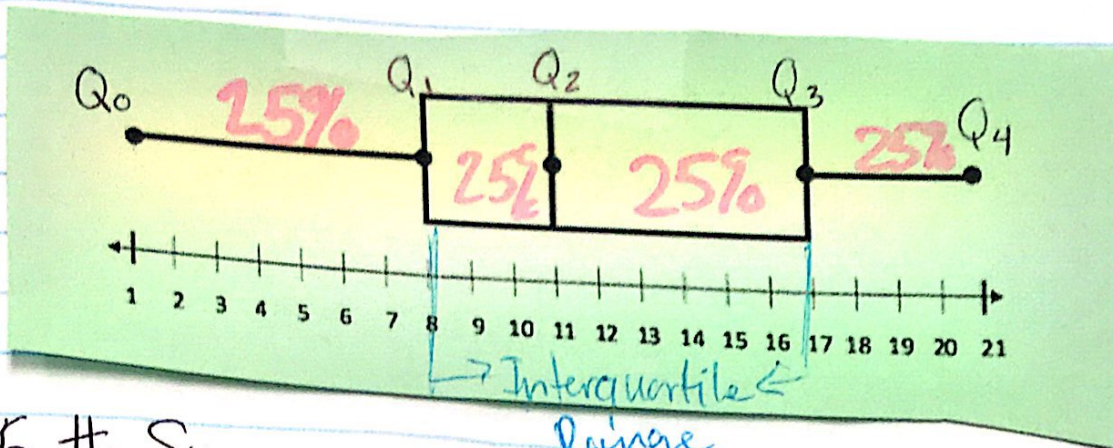


# #4 Box plots

1/28/16



## 5 # Summary

## Example

$Q_0$  - minimum

$Q_1$  - lower quartile

$Q_2$  - median

$Q_3$  - upper quartile

$Q_4$  - maximum

$$Q_0 = 1$$

$$Q_1 = 8$$

$$Q_2 = 11$$

$$Q_3 = 17$$

$$Q_4 = 21$$

\* A Box plots breaks the data up into quartiles with section having 25% of data.

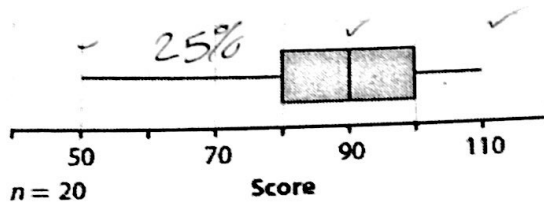
\* IQR = ~~Interquartile~~ Interquartile Range

is the the box in the Box plots. It goes from  $Q_1$  to  $Q_3$  or the lower to upper quar

\* It represent the middle 50% of data

## Box Plots

- 11 Consider the box plot below.



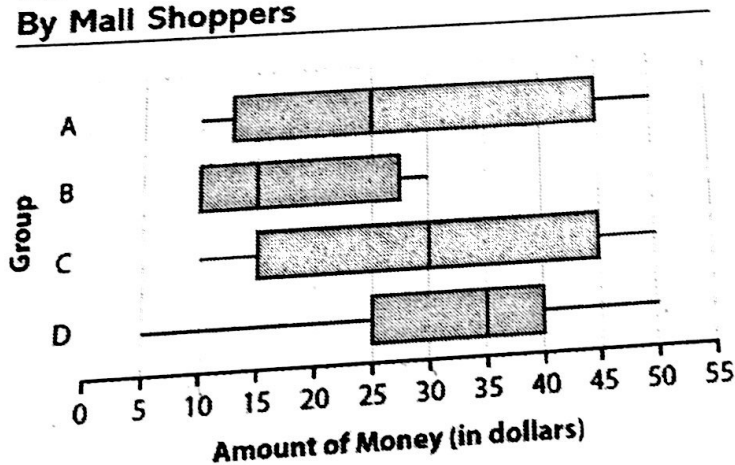
- a. What does the " $n = 20$ " below the plot mean? *20 datapoints*  
 b. About how many scores are between 50 and 80? Between 80 and 100? Greater than 100? *25%, 50%, 75%*  
 c. Is it possible for the box plot to be displaying the scores below? Explain your reasoning.

50, 60, 60, 75, 80, 80, 82, 83, 85, 90, 90,  
 91, 91, 94, 95, 95, 98, 100, 106, 110

*upper quartile doesn't match*

- 12 The box plots below represent the amounts of money (in dollars) carried by the people surveyed in four different places at a mall.

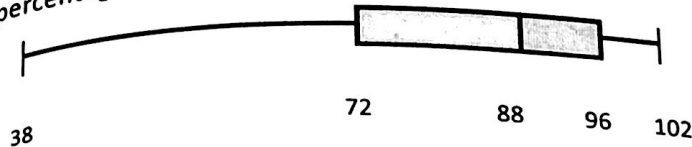
**Amounts of Money Carried  
By Mall Shoppers**



- a. Which group of people has the smallest range? The largest? *B, D*  
 b. Which group of people has the smallest interquartile range? The largest?  
 c. Which group of people has the largest median amount of money? *D, A*  
 d. Which distribution is most symmetric? *C*  
 e. Which group of people do you think might be high school students standing in line for tickets at a movie theater on Saturday night? Explain your reasoning. *D*

*Various answers*

3. The box and whisker graph below shows the test results of a math class as percentages.



- a. What was the high score on the test? *102*
- b. What percent of the class scored above a 72? *75%*
- c. What was the median score on the test? *88*
- d. What percent of the class scored between 88 & 96? *25%*
- e. Do you think that this test was too hard for the students? Explain.
- f. Would you expect the mean to be above or below the median? Explain. *No, 75% made > 72/c. Mean skewed by tail so it would be lower than median.*

4. The box & whisker graph below that shows how much time was spent per night on homework for sophomore class at a certain high school during September.



- a. What percent of the sophomores spend more than 60 minutes on homework per night? *25%*
- b. What is the range of times that the middle 50% of the sophomores spend on homework per night? *20 - 60 min.*
- c. What percent of the sophomores spend less than 20 minutes per night on homework? *25%*
- d. Would you expect the mean number of minutes per night to be higher or lower than the median? Explain. *Mean skewed by tail ... so higher*