

## 12.3 Analyzing Data

3 Measures of Central Tendency

① Mean (Average) =  $\frac{\text{sum of the data}}{\# \text{ of data values}}$   
 $\bar{X}$

② Median (Middle) = middle # or the  
 $Q_2$  • • mean of the 2 middle #'s

③ Mode = Most Occuring Value

A bimodal data set has 2 modes.  
 Any more than 2 modes is probably  
 not statistically useful.

Box and Whisker Plot

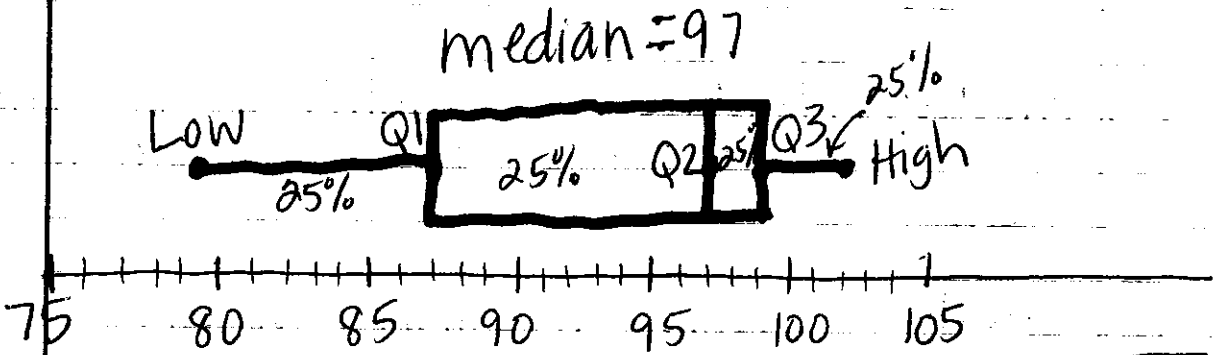
To make one, 1st: put #'s in increasing  
 (ascending) order

2nd: Find the median ( $Q_2$ ) quartile 2

3rd: Find  $Q_1$ : middle of lower half data  
 Find  $Q_3$ : middle of upper half data.

\* Outliers are way higher or lower  
 than the rest of the data.

(ex) 98, 87, 79, 82, 101, 99, 97, 97, 102, 91, 93  
 79, 82, (87) 91, 93 (97) 97, 98 (99), 101, 102  
                   Q1                  ↑                  Q3  
   Q2



3 quartiles  $\div$  the data into 4 parts  
 each part represents 25% of the data.

mode: 97 mean: 93.27

- [Stat] edit
- enter the data
- [2nd] [mode]
- [Stat]  $\rightarrow$  calc 1:1 Var Stats

clear out entries in  $\boxed{Y=}$

- (stat plot) [2nd]  $\boxed{Y=}$
- turn on  
box + whisker.
- [zoom] 9: stat

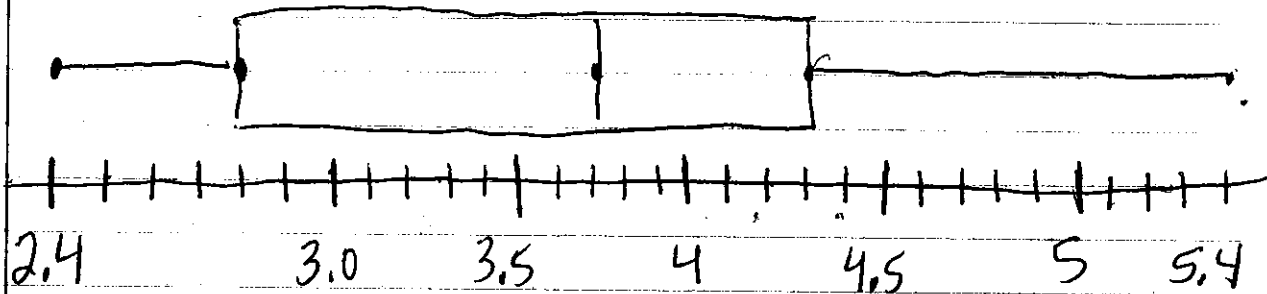
quick #1 p.660

$$\text{Mean} = 3.614$$

$$\text{Median} = 3.7$$

$$\text{Mode} = 2.8$$

Box + Whisker Plot



A percentile is a # from 0 to 100 that you can associate with  $x$  to indicate the percent of the data that are less than or equal to  $x$ .

\*  $x$  is a value from the data set.

(ex) 

1	2	3	4	5	6	7	8	9	10
21	24	31	45	47	54	61	62	64	65
11	12	13	14	15	16	17	18	19	20
65	71	82	87	87	93	97	98	98	98

0<sup>th</sup> percentile = 21 (Low) 100<sup>th</sup> = 98

Find the 45<sup>th</sup> percentile.  $20(.45) = 9$

$$x = 65$$

55<sup>th</sup> percentile:  $20(.55) = 11$

$$x = 71$$

p.664(1-19)