

## Stats Starter 11/20

1.2 (page 47)

#62, 68, 70, 71

## 1.3

### Measures of Center:

1. Mean :  $\bar{x}$  "x-bar" - add all #'s and divide by how many there are  
(of a sample of data)

$$\bar{x} = \frac{x_1 + x_2 + \dots + x_n}{n} = \frac{\sum x_i}{n}$$

★ Not resistant to outliers or strong skewness

(influenced by outliers)

2. Median : M - midpoint - half of data is above and half is below

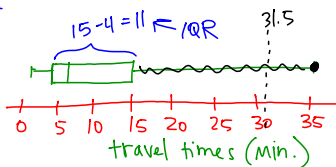
list in increasing order  
 find middle # or average of 2 middle #'s

★ Resistant to outliers

ex: travel time to school

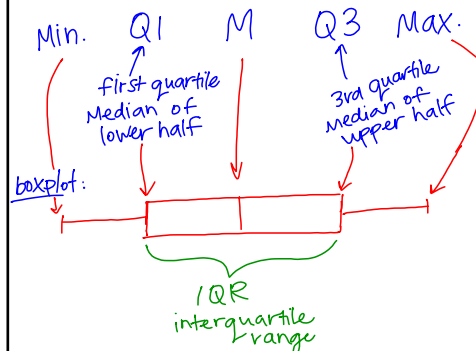
min 2 4 4 5 5 7 10 15 15 35 max

$\bar{x} = 10.2$   
 $M = 6$



$Q3 + 1.5IQR = 15 + 16.5 = 31.5$   
 $Q1 - 1.5IQR = 4 - 16.5 = -12.5$  } cutoff points for outliers

### 5 Number Summary & Boxplots:



## Measures of Spread:

1. Standard Deviation: average distance the values are from the mean

$$S = \sqrt{\frac{\sum(x_i - \bar{x})^2}{n-1}} \quad \text{*use calc!}$$

- \* Not Resistant to outliers or strong skewness

2. IQR:  $Q3 - Q1$  (Interquartile Range)

- \* Resistant to outliers

Use  $\bar{x}/s$  for approx. symmetrical data w/ no outliers

Use  $M/IQR$  for skewed data or if there are outliers.

## Rule for Outliers:

A value is an outlier if:

it is further away from the box than  $1.5(IQR)$

↓  
above  $Q3$   
below  $Q1$

## On Calculator:

First enter data into list:  $\boxed{\text{stat}}$  → edit

- To find  $\bar{x}, s, M, Q1, \dots$  etc...

$\boxed{\text{stat}}$  → calc → 1: 1-var stats → enter →  $L_1$   
↓  
enter

which list??

- To make a histogram/boxplot:

$\boxed{2nd}$  →  $\boxed{y=}$  → statplot on  
choose type  
tell it which list ( $L_1$ )  
(freq: 1)  
hit  $\boxed{\text{graph}}$

- \* if your graph is not showing everything - which will happen often, hit  $\boxed{\text{zoom}}$  →  $\boxed{9}$ .