

Algebra 1 0.12

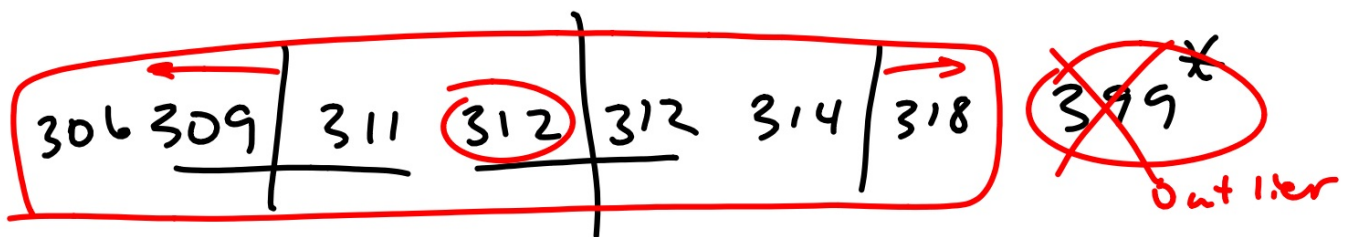
Find measures of central tendency, variation, and position

variation  
range  
quartile  
IQR  
outlier  
5-number summary

odds success: failure  
1 : 5  
4 = parts 3 : 3  
1.5 IQR  $\pm$   $Q_3$   
 $Q_1$

$P_5 = \frac{1}{6}$   
1:1  
min  
 $Q_1$   
med( $Q_2$ )  
 $Q_3$   
max

Grab (different) cubes for data



min 306

$Q_1$  310 <sup>301</sup>

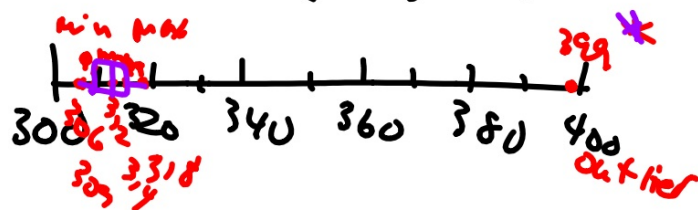
med. 312

$Q_3$  316 <sup>+9 325</sup>

max 399

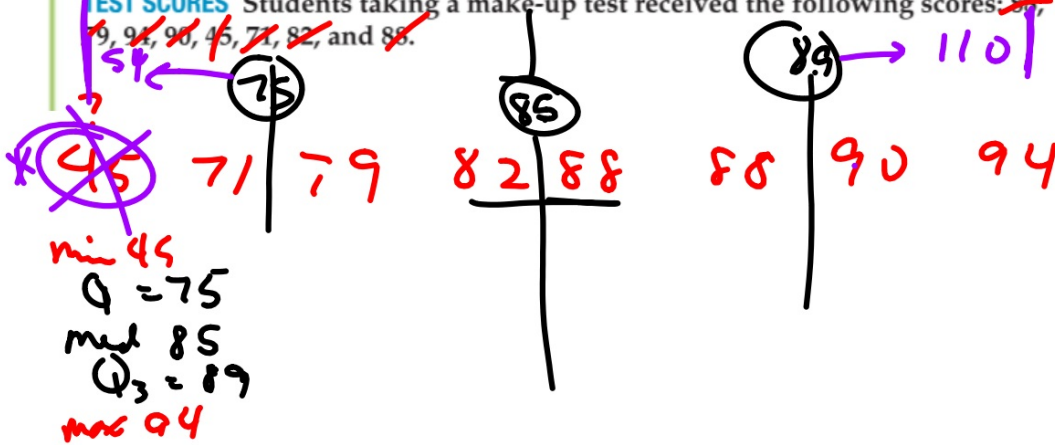
$$IQR: Q_3 - Q_1 = 6$$

$$Outlier (IQR)(1.5) = 9$$



#### Example 4 Effect of Outliers

**TEST SCORES** Students taking a make-up test received the following scores: 89, 94, 90, 45, 71, 82, and 88.



5 number  
summary  
IQR  $(1.5) = 21$   
Outlier  
yes 45

- b. Find the mean and median of the data set with and without the outlier.  
Describe what happens.

| Data Set          | Mean                           | Median |
|-------------------|--------------------------------|--------|
| → with outlier    | $\frac{637}{8} = \approx 79.6$ | 85     |
| → without outlier | $\frac{592}{7} \approx 84.6$   | 88     |

+ 5                      + 3

extreme value (outlier) affects mean more than med,

