



Lesson 1.3: Where Do I Stand?



How does my height compare with other AP Stats students?

In pairs, measure each other's height, rounded to the nearest inch.

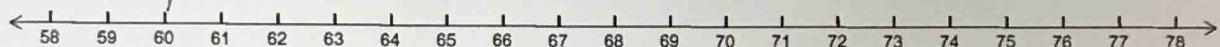
Record your height on the dotplot at the front of the room (girls use green, boys use red).

Make a line at the front of the room, shortest to tallest.

1. Record the dotplot

- identify the median, split line into two groups (what % in each group?)
- identify the Q_1 & Q_3 , split line into four groups (what % in each group?)
- record the minimum, Q_1 , median, Q_3 , & maximum.

Answers vary.



2. What is the median height? Describe how you found it.

If odd number of values, find the middle value!

"cross off" method

If even number of values, find the average of the two middle values.

3. What is Q_1 and Q_3 ? Describe how you found them.

Q_1 is median of lower half of data.

Note: If the median is one of the values in the data set (odd number of values) do not include the median as part of the lower half or upper half of data.

Q_3 is median of upper half of data

4. Record the following values and then use them to make a boxplot.

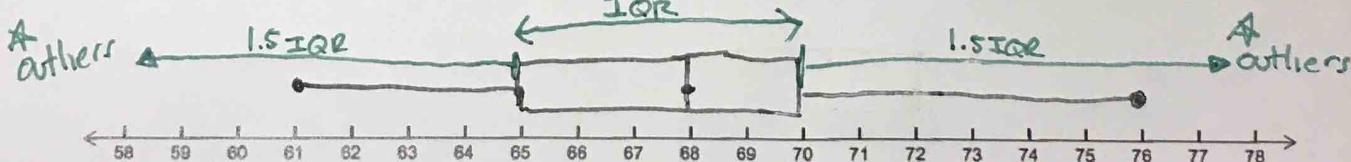
Minimum:

Q_1 :

Median:

Q_3 :

Maximum:



4. The interquartile range (or IQR) is defined as $Q_3 - Q_1$. Find the IQR. Where do you see the IQR in the boxplot?

$$IQR = Q_3 - Q_1 =$$

The IQR is the length of the box.

5. An outlier is a data value that is way too small or way too big (using the rules below). Are there any outliers? Show your work.

Way too small $< Q_1 - 1.5IQR$

Way too big $> Q_3 + 1.5IQR$

If outliers are present change boxplot to show outliers as *

6. Now we will separate our data into two groups, girls and boys.

Heights for girls – find the following values and then make a boxplot.

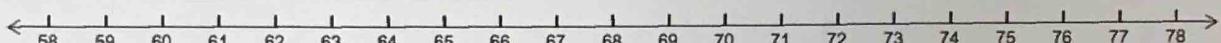
Minimum:

Q_1 :

Median:

Q_3 :

Maximum:



Heights for boys – find the following values and then make a boxplot.

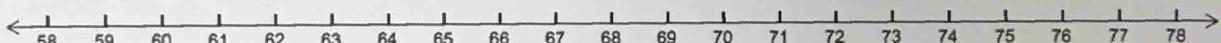
Minimum:

Q_1 :

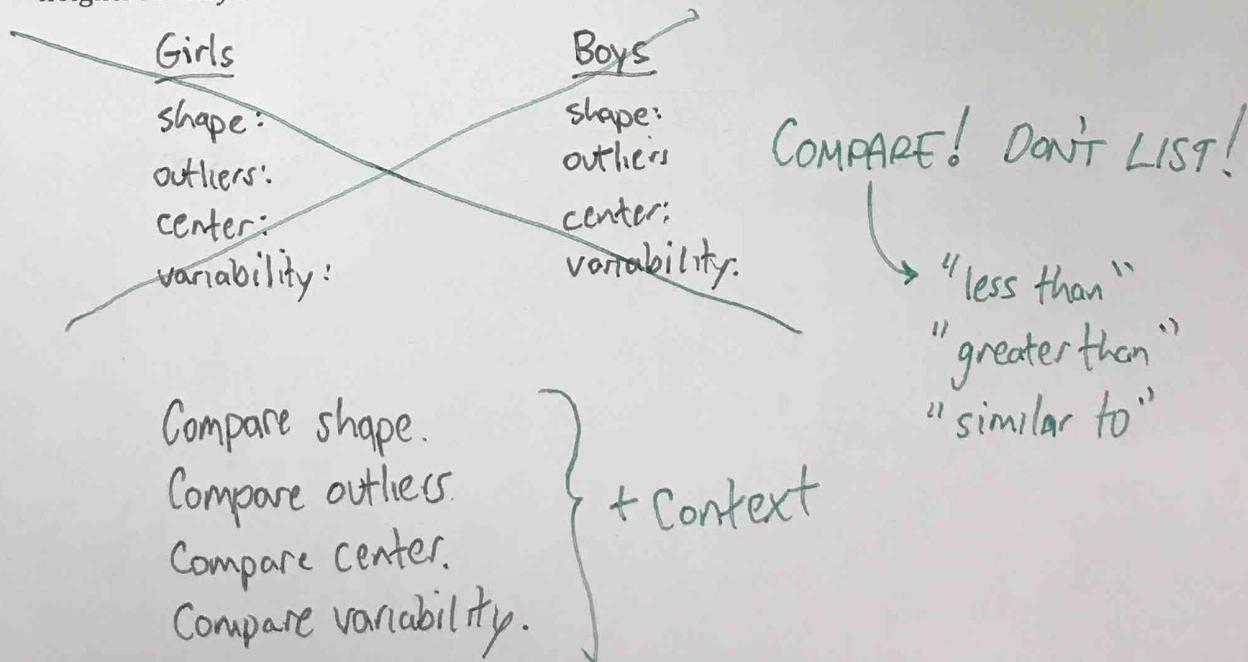
Median:

Q_3 :

Maximum:



Write a few sentences comparing the distribution of heights for girls with the distribution of heights for boys.



Lesson 1.3 – Describing Quantitative Data with Numbers

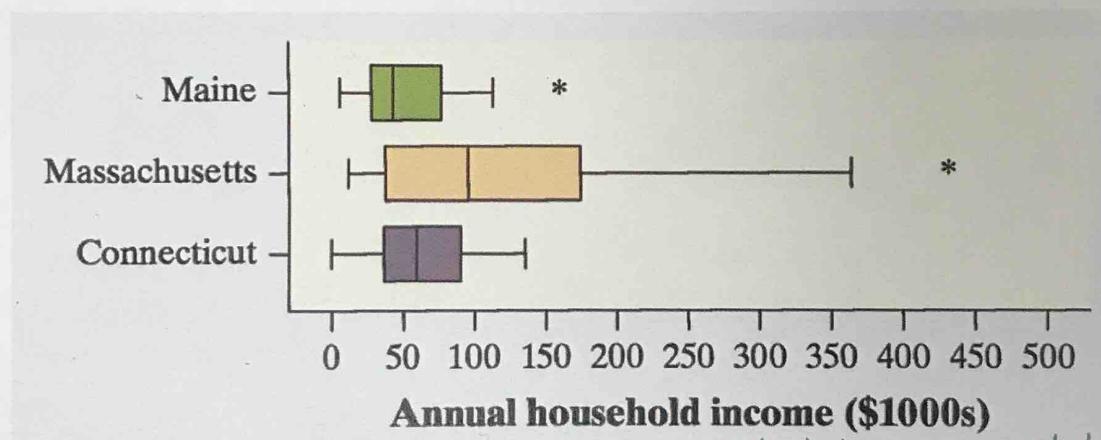
Big Ideas: 5 # summary: MIN Q1 MED Q3 MAX → use to make boxplot

OUTLIERS: way too small $< Q_1 - 1.5 \text{ IQR}$, way too big $> Q_3 + 1.5 \text{ IQR}$

Remember SOCV + context. Compare, don't list.

Check Your Understanding:

The following boxplots show the total income of 40 randomly chosen households each from Connecticut, Maine, and Massachusetts, based on U.S. Census data from the American Community Survey. Compare the distributions of annual incomes in the three states.



SOCV & Context
The shape of the distribution of income for Connecticut is roughly symmetric while Maine incomes are slightly skewed right, and Massachusetts incomes have a stronger right skew (note: hard to tell total shape with boxplot) → context is now established

The center is highest for Massachusetts, followed by Connecticut, then Maine with the lowest.

The variability is highest for Massachusetts, with Maine & Connecticut having similar variability

Maine & Massachusetts each have a high outlier, while Connecticut has none.

Homework: Pg 77 – 109, 111, 113, 115, 123-126