

## Notes 4.1 – One Variable Statistical Models

## Lesson – Histograms &amp; Box Plots

Refer to the Statistical Models reference sheet for what Histograms and Box Plots should look like.

Word	Meaning/Notation	Example
Median	The middle value of an <u>ordered</u> set of data (average of middle two)	1, 4, 9   1, 3, 6, 8 4   4.5
Range	The difference between the largest value and the smallest value	3, 7, 12, 12, 15, 16 Range: $16 - 3 = 13$
Outlier	A data point outside the main set of data (doesn't fit/make sense)	1, 30, 32, 34, 34, 37 outlier: 1
IQR	The range of the middle half of the data $IQR = Q3 - Q1$	$Q1: 2$ $Q3: 6$ $IQR: 6 - 2 = 4$

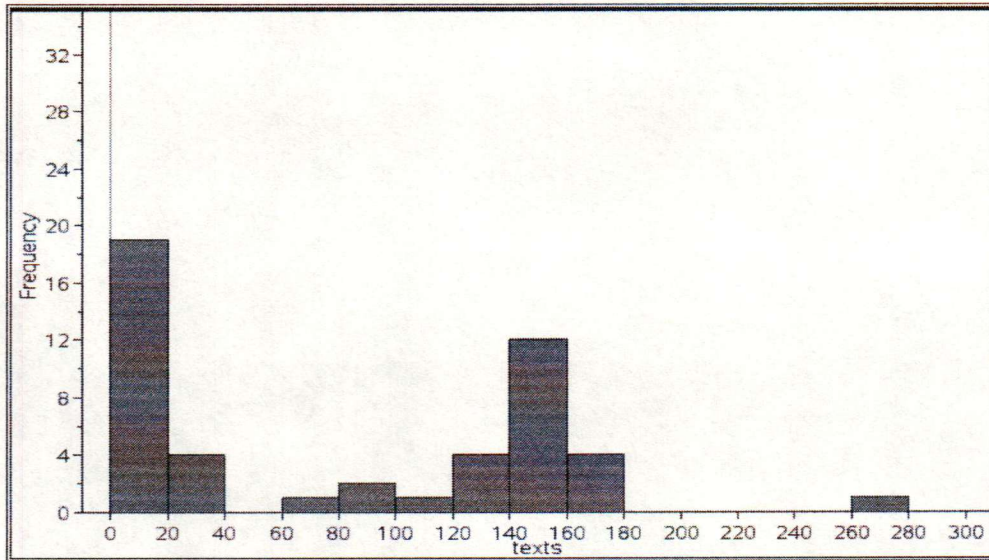
Not that long ago, most people were on phone plans where you paid for how many texts you sent. These plans prompted many conversations between parents and teens about how much texting was too much, because parents would get huge phone bills due to lots of texting.

Rachel and her mom had a conversation about how many texts are appropriate to send each day. Each of them collected texting data from 24 friends. They asked this question: "What is the average number of texts you send each day?"

How would you respond to Rachel's question?

Here is the raw data and a histogram of the data:

0, 2, 3, 3, 5, 5, 5, 5, 5, 5.5, 6, 6, 6, 10, 12, 13, 15, 15, 16, 20, 25, 35, 36, 70, 80, 85, 110, 130, 137, 138, 138, 140, 142, 143, 145, 150, 150, 150, 150, 150, 150, 150, 155, 162, 164, 165, 175, 275

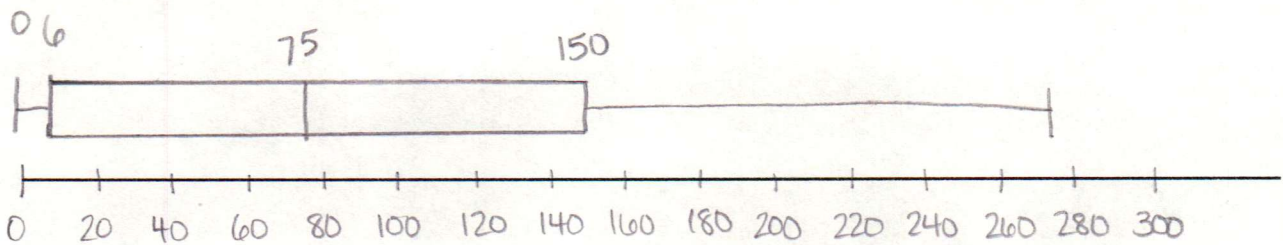


1. Give some observations about the given histogram.

Make your observations as specific as possible.

What do you notice?

2. Create a Box Plot of the data.

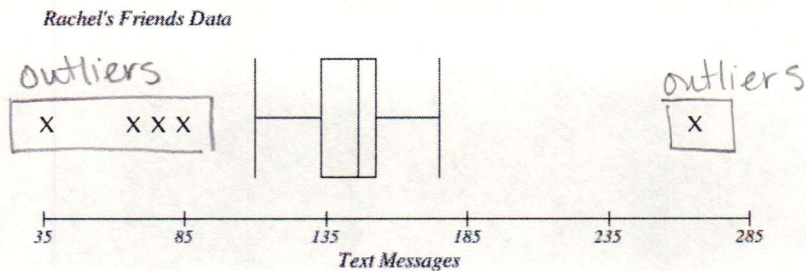


3. Give some observations about the box plot.

4. Compare the histogram and the box plot

How do they show the data differently?

- 5.



What do you notice about Rachel's data from her friends from her box plot?

6. Compare the two box plots.

7. Rachel has been averaging 100 texts per day. She would like to continue this level of texting, her mom would like her to cut that number in half. Using the data, what argument would you use if you were her to convince her mom that her texting is reasonable. You must refer back to the models.

Being able to use facts from the data to support your argument is an important skill