Math 21 – Pointers for Section 3.5

In this section we learn about the 5-number summary. The section ends with a new graph called the boxplot, which displays the 5-number summary.

5-Number Summary

The 5-number summary is a list of 5 numbers that describe a set of data. The 5 numbers are the minimum, Q1, median, Q3, and the maximum. We learned how to find each of those in sections 3.2 & 3.4.

Boxplot

To create a boxplot, you must first find the 5-number summary, as well as any outliers.

Start with a number line that covers all of the values from the minimum to the maximum.

Draw a box above the number line that goes from Q1 to Q3. This box represents the middle 50% of the data.

Draw a line inside the box that corresponds to the median.

Next come the whiskers and the outliers.

If there are no low outliers, draw a line (or whisker) out to the minimum value. If there are low outliers, put an asterisk or a point at the location of each outlier, then draw the whisker out to the last value inside the lower fence.

If there are no high outliers, draw a line (or whisker) out to the maximum value. If there are high outliers, put an asterisk or a point at the location of each outlier, then draw the whisker out to the last value inside the upper fence.

You can use a boxplot to examine the shape of a distribution. Stretched to the left? Left skewed. Stretched to the right? Right skewed.

You can also use a boxplot to compare one set of data to another by examining the center and spread of the boxplots.

StatCrunch

- Enter all of the data in one column, 1 value per line.
- Press the Graph button, and select Boxplot.
- Select the column containing your data.
- Under "Other options:" always check "Use fences to identify outliers" and "Draw boxes horizontally".
- Click on Compute!