**Slide 12:**

On the bar graph of the average mean versus the number of tested numbers, it shows a weak linear positive correlation. Thereafter, from 5,000 to one hundred thousand tested numbers, the averages began to plateau towards π. The average mean graph is skewed to the left. A noticeable difference is that the average mean decreases at 50,000 numbers tested.

On the bar graph of the average medians of the tested numbers, the average median demonstrated a sharp drop from tested numbers 50 to 100. From 500 to 5,000 tested numbers, the average median showed a strong positive correlation. Thereafter, from 5,000 to one hundred thousand tested numbers, the averages began to plateau towards π. The average median graph is bimodal. Looking at the median averages from 5000 to 100,000, the data shows a major drop at 50,000. Line graphs have been included to illustrate the drop at 100 and 50,000.

**Slide 13:** Progression of Average Median as Tested Numbers Increased on Line Graphs

**Slide 14:** Closer look at mean vs number of points tested from numbers up to 10,000

**Slide 15**:In the line graphs for the standard deviation from π, the standard deviation shows a weak linear negative correlation. Looking at tested numbers from 10,000 to 100,000, the standard deviation from π increased and showed a moderate positive correlation. It is smallest when only 10,000 numbers are tested. Two lines graphs are shown below: the first shows the standard deviation from numbers tested up to 5,000, and the second shows the numbers tested above 10,000.

Slide 16:

The bar graphs of the percent error of the average mean from π as the number tested numbers up to 10,000 showed a moderate linear positive correlation. Interestingly, from the tested numbers higher than 10,000, the percent error decreased towards zero with 50,000 tested numbers being the closest to zero percent error (0.000207346041% off).

The bar graphs of the percent error of the average mean from π as the number tested numbers above ten thousand showed a moderate linear negative correlation. When 100,000 numbers were tested, the percent error is actually negative. The percent error is lowest at fifty thousand tested numbers.

Slide 17:

In the bar graph of the average median of percent error, there is no linear side correlation. As the number of tested numbers increase, the average percent error approaches zero. From ten to one hundred numbers tested, it shows a strong linear negative correlation (R^2 = 1). From one hundred to five thousand tested numbers, it shows a moderate linear positive correlation (R^2 = 0.846).

Slide 18:

In the bar graph of the standard deviation of percent error, the graph shows a negative correlation and approaches zero as the number of tested numbers increases.

Slide 19:

For the line graph of the average mean time of execution for the data as the number of tested points increased, it showed a weak linear positive relationship. The line had a strong exponential positive correlation (R^2 = 1). An exponential equation can be created that models the data: Average Mean = 0.215e^(6.62E-5)x, which shares a similar equation to the exponential relationship of the average median time of execution as the number of points increased.

Slide 20:

For the line graph of the average median time of execution for the data versus the number of points tested, it shows a strong exponential positive correlation (R^2 = 1). An exponential equation can be created that models the data: Average Mean = 0.21e^(6.62E-5)x, which shares a similar equation to the exponential relationship of the average median time of execution as the number of points increased.

Slide 21:

In the graph of the standard deviation of the execution time, it shows a strong linear positive correlation (R^2 = 0.99). Looking closely, the standard deviation of the execution time at 5,000 tested numbers is greater than the standard deviation for 10,000 tested numbers. The linear equation that models the data: Standard Deviation of Execution time (s) = (4.23 \* 10^ - 5)(Numbers of points tested) - 0.816.

Slide 22:

Interestingly, from the tested numbers higher than 10,000, the percent error of the average median from pi decreased towards zero

This was true for the percent error of the average median from pi throughout, it also approached zero, as well as, in both data, 50,000 tested numbers was the closest to zero percent error (0.000207346041% off) from pi.

Generally, as more numbers were tested, the averages plateaued towards pi, even though the average median did have some bumps.

Slide 23:

As more numbers were tested, the execution time increased exponentially, and a one to one equation could be formulated to predict results.