

Shelly Steinert
Mathematic Melody

My Science Fair project used experimentation to test if Johann Sebastian Bach used mathematical patterns when he was composing his Praeludiums and Fugens. I hypothesized that there would be mathematical patterns within his compositions. To conduct this experiment, I used three Praeludiums and Fugens. I examined each piece by counting the number of notes in each measure, finding the ratios per measure, figuring the square roots of the ratios, and configuring the frequency of notes per measure. When I combined the data, I discovered the r value (correlation coefficient). This information provided me the line regression which showed if there were any mathematical patterns. From this experiment, I concluded that my hypothesis was incorrect. I was not able to discover any definite mathematical patterns in the compositions I examined. Although I did not discover any mathematical patterns, the results could depend on the selections of music you examine. My results showed 55% of the regressions were linear, 32.5% were quartic, 10% were quadratic, and 2.5% were cubic.