Flipping a Coin over the Phone
Beth Matys
Flipping a coin is a simplistic way to decide between two equally likely options. Two people, Bob and Alice, could easily flip a coin to decide who is going to drive when they go out later. However, imagine that they are at opposite ends of the city and have to decide who will drive to the other’s house. While on the phone discussing plans, Alice offers to flip a coin to decide, but Bob is worried that she might lie about the outcome. Manuel Blum created a way to securely flip a coin over the phone based in cryptographic methods. We will explore Blum’s protocol and also how to securely ‘flip a coin’ over the phone with different odds or more than two people.

Ranked FYS Assignment at Gettysburg College
Kyle Furlong
The process of enrolling in a First-Year Seminar (FYS) at Gettysburg College is stressful and anxiety-producing. That being said, changes are underway to transform this archaic system into one grounded in applied mathematics and, specifically, operations research. In this presentation, we present our model for the FYS program at Gettysburg College, detail the advantages of implementing this type of optimization, and highlight the numerous administrative dilemmas that are both resolved and created by instituting this new quantitatively driven system.

Costas Arrays: How Not to Start a Band
Calvin Baxter
The Costas Array is a 2-dimensional, pattern-less structure represented with a square matrix. We will explore the existence, construction methods, and applications of Costas Arrays. Although common and useful applications of the Costas Array include Sonar and Radar, we focus our attention towards implementing this structure in a piece of music. This magnum opus will be completely pattern-less, thoroughly horrible, yet utterly beautiful.