**Supercomputing Proposal**

**Subject:** Finding a missing card to complete a set of cards using mathematics

**School:** Los Lunas High School

**Area of Science:** Mathematics

**Title:** Game SET Match

**Initial Issue**

In the game of SET, 12 cards at random are dealt from a shuffled deck. Each card has 4 different attributes — a different color, shape, number, and fill. The goal of the game is to find a set of 3 cards that either all share characteristics or all differ in characteristics. The problem that we are trying to explore is what happens if there is a missing card — can we find out which card it is? How long will it take before we realize a card is missing? Can we use the completed sets to find out which card it is?

**Purpose of the Project**

Being able to find the ‘missing card’ will be useful in other fields such as cybersecurity in finding ‘unknown’ variables using ‘known’ variables. It can also be useful in accounting or logistics in finding or helping to fill in missing information based on what we have.

**Plan of Action**

Using the program NetLogo, we will be modeling the game of SET. We are aware that an algorithm exists to find what card is missing if only 1 card has been lost. Using that as our base, we will explore what will happen if 2 or 3 cards have gone missing.

**Team Members:** Jen Marie Phifer, Zach Collins

**Sponsoring Teacher(s):** Anne Loveless

**Project Mentors Will Be:** Creighton Edington, Annette Hatch,Nick Bennet, James Taylor