

**LAB PROJECT:  
DIFFICULTY OF PARTITIONS**

A partition of an integer  $N$  is a way of writing  $N$  as a sum of positive integers. For example,  $2+2$  and  $3+1$  are two different partitions of the number 4. Partitions are fundamental objects in mathematics that appear in many diverse subjects, including combinatorics, number theory, representation theory, and geometry.

In this project, we will seek bounds on a recently defined invariant of a partition, known as the difficulty. Such bounds would have implications for the geometry of curves. As part of our exploration of the difficulty of partitions students can expect to learn how to read research articles in mathematics and how to conduct experimental math investigations with the aid of a computer.