1085-11-1   **Ken Ono*** (`ono@mathcs.emory.edu`), Dept Math and Computer Science, Emory University, Atlanta, GA 30322. *Adding and Counting.*

One sees that

$$4 = 3 + 1 = 2 + 2 = 2 + 1 + 1 = 1 + 1 + 1 + 1,$$

and so we say that $p(4) = 5$. This is the "stuff" of partitions. Underlying this simple task of adding and counting, one finds some difficult (but simple to state) problems. Some of these problems have fascinated many leading mathematicians: Euler, Ramanujan, Hardy, Rademacher, Dyson, to name a few. And as is typical in number theory, some of these fundamental questions have remained open. In 2010, the speaker, with the support of the American Institute for Mathematics and the National Science Foundation, assembled a team of researchers to attack some of these problems. The speaker will describe their findings: new theories which solve some of the famous old questions. (Received February 13, 2012)