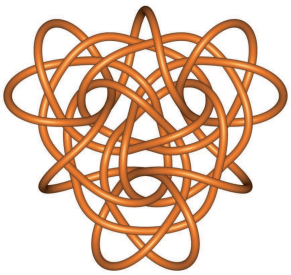
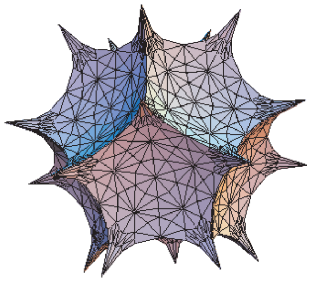
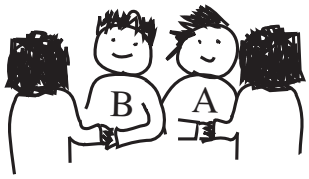


Willamette Math Problem of the Week



November 12 2007

A Fair Shake

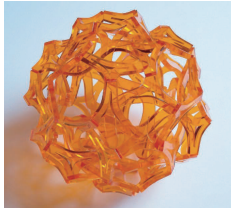


Alexei and Bindi went to a dinner party with 4 other couples. Each person at the party shook hands with all the people she had never met before. Surprisingly, all 9 people at the party other than Alexei shook hands with a different number of people. How many people did Bindi shake hands with?

Submit all solutions before the appearance of the next problem to Josh Laison in person, by e-mail (jlaison@willamette.edu), or by telepathy. The first correct solution gets a prize; all correct solutions get fame and glory. Preference for the prize goes to problem-solvers who haven't won one yet.

Solution to *What's My Polynomial?*:
Congratulations to **Kyle Evans**, who solved the problem and won set of "Mag Links."
Benicio gives Adele the integer 1, and Adele gives Benicio $p(1)$. This is an upper bound on the coefficients of p. Suppose that $p(1)$ has d digits. Then Benicio gives Adele 10^d. The number $p(10^d)$ has the coefficients of p displayed every d digits, and Benicio can just read them off.
The same basic idea will work for the second integer q, for any prime q bigger than $p(1)$.

Extra Challenge: Kyle poses the following variation of the problem: Suppose Adele has k polynomials, and for each of his guesses, she gives Benicio the value of one of the polynomials evaluated at his guess. How many guesses will it take for Benicio to determine all of the polynomials?



Past problems of the week, solutions, and solvers can be found at http://www.willamette.edu/~jlaison/problem.html