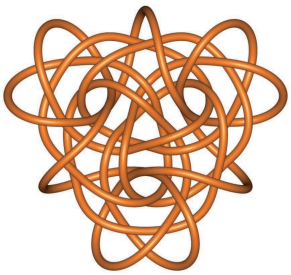
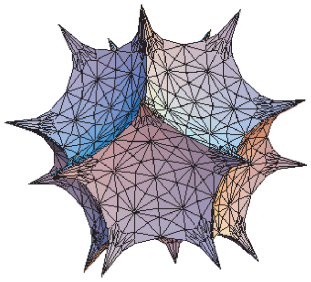


Willamette Math Problem of the Week



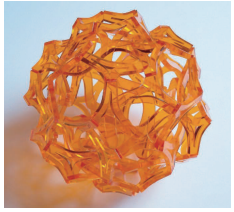
April 14 2008
Stringing Along

You have two pieces of string, each of which will burn for exactly one minute, but not uniformly along its length. How can you use them to measure 45 seconds?

Submit all solutions before the appearance of the next problem to Josh Laison in person, by e-mail (jlaison@willamette.edu), or by megaphone. 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 *Pocket Change*: Congratulations to Matt Polzin, who solved the problem first and won a slinky, and to Jai Salzwedel, Jared Nishikawa, and Aaron Silverbook, who also solved the problem.

They each have 30 cents. Aston has a quarter and 5 pennies, and Belinda has 6 nickels. To see that they could not have less than 30 cents, note that no solution exists with only nickels and dimes, since with the same number of coins, one person would always have more money. Also note that neither of them can have a number of pennies not divisible by 5, since we could then take away a penny from each and obtain a smaller solution. So one of them (say Aston) must have 5 pennies. If they both have 5 pennies, they would have the same set of coins, so Belinda must have at least 5 nickels, giving her 25 cents. But Aston only has 5 cents, so he has at least one more coin. So Belinda must also have at least one more coin, giving her at least 30 cents.



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