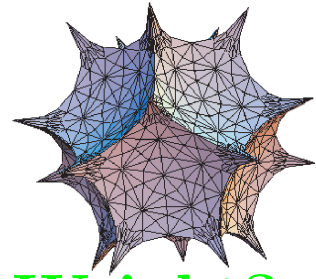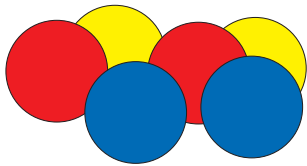# Willamette Math Problem of the Week

February 18 2008
Which Weight Weighs Which Weight?

You have a red stone, a blue stone, and a yellow stone that all weigh a pounds, and a red stone, a blue stone, and a yellow stone that all weigh b pounds, $a < b$. You have an equal-arm balance. Find which stone weighs which weight in two weighings.
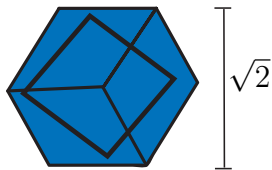
Submit all solutions before the appearance of the next problem to Josh Laison in person, by e-mail (jlaison@willamette.edu), or by blimp message. The first correct solution gets a prize; all correct solutions get fame and glory. Preference for the prize goes to problem-solvers who haven't won one yet.

I'm also still accepting solutions to **Jumping Mad** from last week.

Solution to *Big Cube Little Cube*:
Congratulations to **Jared Nishikawa**, who solved the problem.

It is possible! Looking at the little cube from one of its corners, it looks like a regular hexagon:

$\sqrt{2}$

If we say that the little cube has side length 1, then the distance between two opposite sides of the hexagon is $\sqrt{2}$, the same as the distance between two opposite corners of a face. So a slight twist will allow a bigger cube to fit through, as shown above.

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