Problem of the Week

Since November 22 is Thanksgiving Day, the deadline for these problems is November 29. Feel free to take them home and try them on your friends and family.

48. Four golfballs can be positioned in such a way that each golfball touches the other 3. This can be done by making a "traiangle" of touching golfballs and placing the fourth ball on top of the triangle. Let's see how you do on these:

a) How many soup cans can you arrange so that each one touches each of the others?

b) How many half dollar coins can you arrange so that each one touches each of the others?

c) How many cigarettes can you arrange so that each one touches each of the others?

Of course you may not bend, cut, melt or otherwise distort the shapes of the objects involved.

Notice that each the objects above is a cylinder. If a cylinder has radius r and length l, call $\frac{r}{l}$ the *stoutness* of the cylinder.

d) For what range of stoutnesses will your solutions above work?

Submit your best efforts for each of the three problems. Feel free to give credit to Aunt Gladys if she helps you out.

How the Problem of the Week works:

1. Any Calvin student is invited to participate in the Problem of the Week on any week. Solutions (or partial solutions) may be submitted by individual students or by groups of students.
2. Copies of the Problem of the Week will be hung on the bulletin board outside the Department office and in various locations around the Department of Mathematics and Statistics. Additional copies are available in one of the boxes outside the office and on the web at `http://www.calvin.edu/~rpruim/pow/`
3. Solutions to this problem are due on **November 29**. Solutions should be turned in to Professor Pruim (NH 284). Be sure to include your name(s) on your paper.
4. A list of solvers and example solutions will be posted on the bulletin board outside the Mathematics Department office.