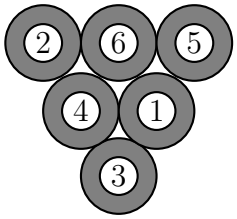
# Problem of the Block - Block 1

## Subtraction—Right Here in River City!

In the figure at right, six balls numbered $1, 2, 3, 4, 5, 6$ are arranged in three rows to form what we will call a "difference triangle". Each row below the top row is the difference of the two numbers just above it.




**Task 1:** Are there other ways to form a difference triangle using the six balls numbered $1, 2, 3, 4, 5, 6$ arranged in three rows? If so, find them all.

**Task 2:** Find every possible way in which ten balls numbered $1, 2, 3, \ldots, 10$ can be arranged into a difference triangle using four rows.

**Task 3:** Find every possible way in which fifteen balls numbered $1, 2, 3, \ldots, 15$ can be arranged into a difference triangle using five rows.

There is no **Task 4**, but if there was, you know what it would be.

Turn in solutions to Dr. Bean in Law 206E or by email at sbean@cornellcollege.edu by Wednesday, September 19th. You may ask any Mathematics and Statistics faculty member about the questions, but Dr. Bean wrote them (and therefore at one time at least knew the answer to them) so that might be your best bet.

Solutions for only one/some questions or partial solutions will receive credit (and are encouraged!). Submitting solutions for the Problem of the Block can earn culture points toward the major in mathematics.

For more information about the Problem of the Block, including the current leader board for the yearly competition, and to print off your own copy visit http://www.cornellcollege.edu/mathematics/problem-of-the-block/index.shtml.