Answers to "AHA" Problems

1. In an elimination tournament, when a player loses, he is out of the tournament. If there are 37 entrants, there will be 36 matches (36 losers).

2. There is only one way for two babies to be tagged incorrectly, so the task is to find the number of ways two babies out of four can be tagged correctly. A simple list will solve this problem. If we identify the babies as A, B, C, D, the correctly tagged babies can be any of the following: AB, AC, AD, BC, BD, CD. There are six ways.

   Using permutations, $_4P_2 = \frac{4*3}{2*1} = \frac{12}{2} = 6$

3. There are many ways to solve this problem. One way is to assume that 30 eyes represent 15 animals. Assuming all of the animals are ostriches (2 legs), 44 legs represents 22 animals. Since we have 7 "extra" animals, the 7 "extra" pairs of legs must be attached to the giraffes. Thus, there are 7 giraffes and 8 ostriches.

4. For 11 coins, there are several possibilities. 1, 1, 9 or 1, 3, 7 or 1, 5, 5 or 3, 3, 5. For 10 coins, there is a trick. You have to put one cup inside another. One possible solution is shown at the right. The cup on the left contains 5 coins. The cup on the top at the right contains 3 coins. The cup at the bottom right contains 5 coins.