

Solution to Othello Problem

By Philip Thomas, January 2011

Separate the chips into two piles, one with 23, and the other with 994. Flip all of the chips in the pile with 23 chips.

More generally, consider the problem with n chips, of which k are initially placed with the black side facing up. If we make a pile with k and another $n - k$, and flip all the chips in the pile with k , then both piles will always have the same number of black chips. Let b_1 be the number of black chips in the first pile, with k chips, after we initially create the two piles. Because we know there are a total of k chips with the black side up, we know that there are $k - b_1$ chips with the black side up in the other pile (the one with $n - k$ chips). If we flip the pile with k chips, it now contains $k - b_1$ black chips, because exactly b_1 are now white. Both piles now have $k - b_1$ black chips facing up.