

First name: _____ Last name: _____

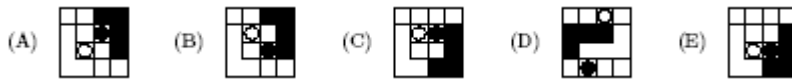
Student ID: _____

Games Homework

Game 1

Wot th'ell is a game played on a 4×4 checker board. Both players have an L-shaped piece which covers four squares and a disc which covers one. The players alternate moves, one playing white pieces and the other playing black. A move consists of picking up the L-shaped piece, possibly turning it over, and placing it back on the board in a new position. Then the player removes his disk and puts it back on the board (the disk may be returned to where it came from.) Neither the L-shaped piece nor the disc can be placed so that it covers any square that is already occupied by a disc or an L-shaped piece. A player who is unable to move loses.

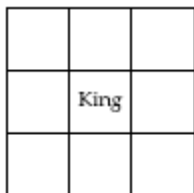
The one of the following boards on which white can play and win is:



Game 2

King Henry took twenty-four of his knights on a hunting expedition. They stayed in one of Henry's hunting lodges which had nine rooms, three on each side and one central room where Henry slept, as shown. The knights were assigned three to a room, but they were allowed to move among the rooms leaving more or less than three knights to a room, so long as there were always exactly nine knights on each side of the lodge. One night four friends of the knights came to the lodge disguised as knights. That night Henry made the rounds of the lodge and found that there appeared to be nine knights on each side of the lodge. The total number of knights and, possibly, disguised friends in the corner rooms was:

- (A) 0 (B) 4 (C) 6 (D) 8 (E) 12

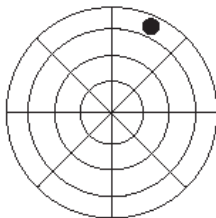


Game 3

You play a game in which two six-sided dice are rolled. You win if the product of the two numbers rolled is odd or a multiple of 5. What is the probability that you win?

Game 4

A and B play a game by alternately moving a disk on a circular board. The game starts with the disk already on the board as shown. A player may move either clockwise one position or one position toward the centre but cannot move to a position that has been previously occupied. The last person who is able to move wins the game. If player A is the first to move, who will win the game?



Game 5

Two players, Alicia (A) and Bettina (B) begin a game with 33 toothpicks in a pile. On each player's turn, she must take from 1 to 4 toothpicks away. Whoever takes the last toothpick wins. Show that Alicia has a winning strategy assuming she plays first.