

MATH 222

Project

Due: 5pm on the date stated in the course outline.
Hand in to the assignment box on the 3rd floor of CAB.

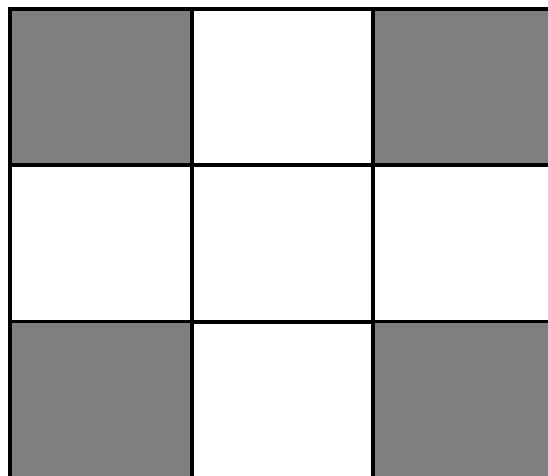
Option 1: Two Games

In the following two games state who can always win: the first player or the second player. If the first player can always win, state the first move that he or she needs to make. If the second player can always win, state the first move he or she must make in response to every way the game may be begin.

You may work in groups of up to 3; when your group has found the answer, fill in the template on the course web page. Only hand in one template per group with your answers, nothing more.

Game 1

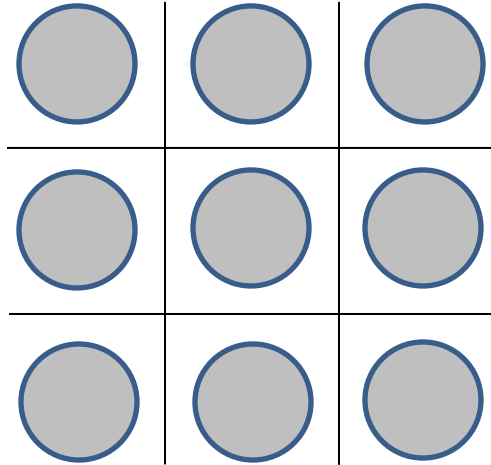
Turnablock



Turnablock is played on a 3 by 3 square board with 9 counters that are black on one side and white on the other. The game starts with all the counters flipped to the white side except for the corners which are flipped to the black side. Players take turns reversing all the pieces in a block from black to white or white to black. A block can be any size (1×1 , 1×2 , 1×3 , 2×1 , 2×2 , 2×3 , 3×1 , 3×2 , 3×3) but the lower right corner of the block must be black in order to flip it. Both players play on the same side of the board and therefore have the same view point of the lower right corner. Whoever first turns the whole board white is the winner.

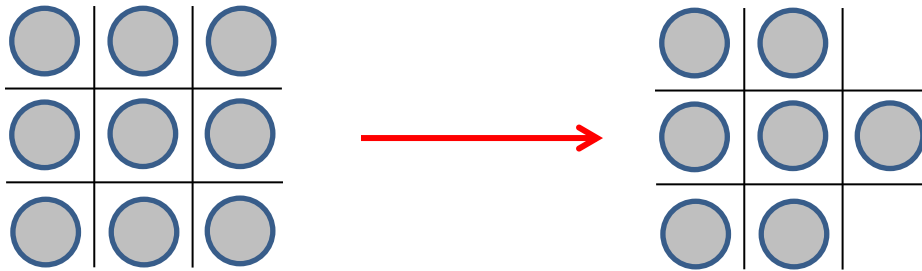
Game 2

Tac Tix



How to play: Place 9 markers in the grid. Players take turns removing any one, any two or any three markers, provided they are all in the same row or column. The player who picks up the last marker is the winner.

Note: Two markers do not have to be side-by-side to take them in a single move. For example, a valid starting move is:



Grading

Game 1	Stating the player that can always win this game	25%
	Correctly stating the winning player's first move	25%
Game 2	Stating the player that can always win this game	25%
	Correctly stating the winning player's first move	25%

Option 2: Outreach

In groups of up to 3, organize and facilitate an outreach presentation for kids. If you choose this option please send an email before the due date of the Assignment 2 to Trevor Pasanen:

tpasanen@ualberta.ca

This email should contain the following information:

- Subject: Math 222 Outreach.
- The names of all the members in your group.
- Which days and times your group is available to present (or suggest a time that works)

Scheduling

Often the Math 222 outreach presentation is scheduled through Uschool:

<http://www.senate.ualberta.ca/USchool.aspx>

If your outreach project is scheduled through Uschool the kids will already be on campus, and you will not have to travel to a local school. Uschool has already booked the following dates for Math 222 presentations - if these dates work for you please email Trevor.

March 7	12:30 - 1:30 pm	25 Grade 9's
March 13	1:00 - 2:00 pm	30 Grade 9's
March 21	12:30 - 1:30 pm	30 Grade 9's
March 22	12:30 - 1:30 pm	30 Grade 9's

(other dates may still be possible)

Preparation & Presentation

Your job is to facilitate a “fun math session” with the group of kids. This could include (but is not limited to) two player games, puzzles, brain teasers and mathematical magic tricks. The main purpose of this 1 hour session is to get kids engaged in mathematics and having fun. Sharing your knowledge and giving ideas/hints about the problem(s) is ideal; though it is not necessary to give a complete solution to the problem(s). Try to be creative with your session; if you're having fun, the kids will too! Before your outreach date, please send Trevor a “**presentation outline**”. The presentation outline is a brief description of your plan for the one hour session. Only send in one outline per group.

Reflecting

Reflecting upon your experience can be helpful for your own future presentations and for future students doing similar presentations. After your presentation, send Trevor a “**reflection**”. The reflection should briefly describe what went well and what you would change for next time. Only send in one reflection per group.

Grading

Presentation Outline (Due: 5pm 2 weekdays prior to your presentation date)	20%
Presentation	60%
Presentation Reflection (Due: 5pm 2 weekdays after to your presentation date)	20%