

Week 1

Let's play some games!

While you're playing, think about the following questions:

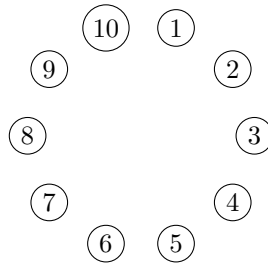
- *Is it better to play first or second?*
- *Will there always be a winner? Or is it possible for the game to end in a draw, or go on forever?*
- *Is there a good strategy?*
- *What variations can you make to these games to create new games?*

Fifteens

In this game, each player takes turns to pick one of the numbers from 1 to 9. You can't pick a number that has already been picked earlier in the game. If one player's collection of numbers includes **three numbers** that **add to 15**, that player wins.

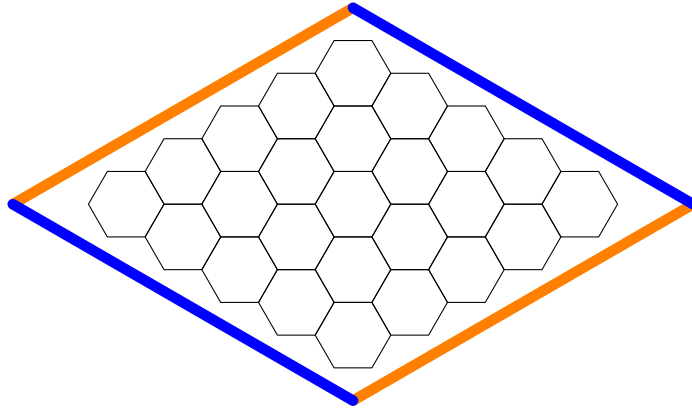
Mad Hatter's Tea Party

The Mad Hatter has arranged 10 cups of tea, labelled 1 to 10, around a circular table. On each player's turn, they pick one cup of tea to drink. If you drink a cup of tea that's adjacent to one that's already been drunk, you lose.



Hex

Here is the board for Hex:



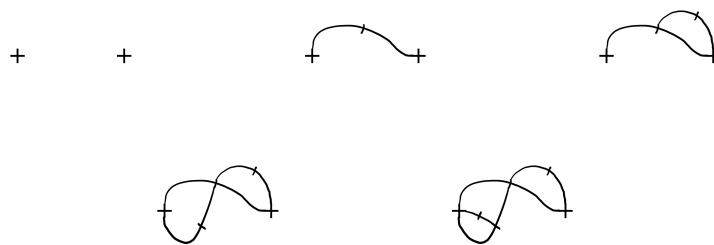
One player is Blue, the other is Orange. On each turn, colour in one of the hexagons with your colour. If you can build an unbroken path in your colour between your two sides of the board, you win.

Brussels Sprouts

Here are two crosses:



On each player's turn, draw a curve connecting one point of a cross to another, and add a short line in the middle of your curve to make a new cross, whose points can be used on later turns. See the example game below.



Curves may not cross over each other. You can only use each point of a cross once. The first player who cannot draw a new line on their turn loses the game.

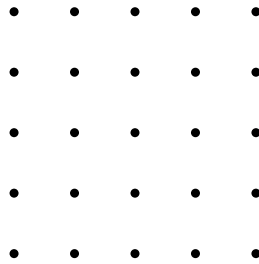
Subtraction Game

The game starts with a pile of 10 coins. On each turn, you can take 1, 2 or 3 coins from the pile. The player who takes the last coin loses.

Variation: What if there are two piles of coins instead of one, and you're only allowed to take 1, 2 or 3 coins from a single pile each turn?

Dots and Boxes

Here is a grid of dots:



Each player takes it in turns to add a line between a pair of adjacent dots (horizontal or vertical). If your line creates a 1×1 square, you can write your initial in the middle of that square, and you get to skip the other player's turn and play again. Once all possible lines have been drawn, count how many squares have your initial in them — the player with the most squares wins.