

CARREAUX

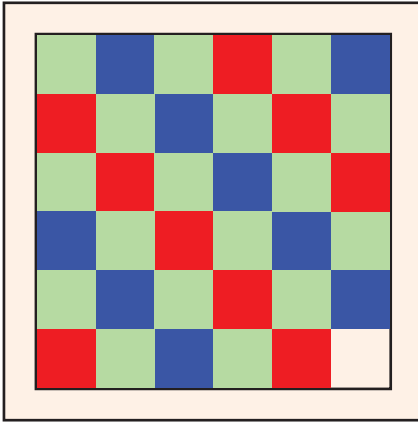


Figure 1

INTRODUCTION

Carreaux is a two-player, tile sliding game. It's played on an even sided, square grid, such as 6x6. The two players, Red and Blue, have an equal number of tiles on the board, such as nine tiles each. The remainder of the squares are occupied by neutral, green tiles, except for one corner square - the “**bubble**” - which is unoccupied. The red, blue, and green tiles are initially arranged in the pattern shown in **Figure 1**.

Only moves which advance the game toward a conclusion are allowed.

Carreaux really has to be played on a computer, as the calculations to determine legal moves are elaborate. Mark Steere designed Carreaux in October 2025.

OBJECT OF THE GAME

To win, you must form an orthogonally (horizontally and/or vertically) interconnected group of all your tiles.

SLIDE

A slide moves a tile, which is orthogonally adjacent to the bubble, onto the bubble.

PLAY

Players take turns sliding a tile of any color, one slide per turn, starting with Red.

LEGAL MOVES

For completeness, and to satisfy the curiosity of the mathematically inclined, the following sections explain how legal moves are determined. **Legal moves would normally be calculated by a computer program.** The tiles you could choose from to move on your turn would be highlighted in the user interface.

SLIDE DISTANCE

The slide distance from tile A to tile B is the number of slides required to move tile A adjacent to tile B. **This includes the number of slides required to first move the bubble adjacent to tile A.**

COMBINATION VALUE

Each player has N tiles. There are $N \times (N-1)/2$ ways to select two of them. The **value** of each combination (A, B) is the minimum slide distance between them. The minimum slide distance depends on the initial location of the bubble. The bubble must first be moved to be adjacent to the nearer of the two tiles in order to facilitate the minimum slide distance between them (which includes the bubble move).

GROUP VALUE

First, calculate the combination values for all possible combinations of a player's tiles. His **group value** is the sum of his N-1 smallest combination values. When his group value reaches zero, all of his tiles will have formed a group. The **total group value** is Red's group value plus Blue's group value.

MOVE RESTRICTION

Only moves which decrease the total group value are allowed. The move restriction should ensure that every turn bring the game closer to a conclusion and prevent board positions from repeating themselves. There should always be a legal move available. These assumptions have not been proven mathematically.

DESIGN NOTES

I've long wanted a two-player version of the classic, sliding tile puzzle. The breakthrough that enabled this was the inclusion of neutral tiles. If there were only the two player colors, you'd need an odd size board, and there'd be no way to arrange the tiles symmetrically. Also, the neutral tiles gives the two armies a little space from each other. Final outcomes are too close for comfort without neutral tiles to break up the close race.

I would have preferred a simple calculation to determine legal moves, not requiring a computer. But a two-player, tile sliding game is so juicy that it's well worth the sacrifice. And there is a bright side. The legal move calculation is roughly equivalent to a luck element, such as a dice roll, which I consider to be a bonus. The legal move calculation injects previously unknown information into the game.

AUTHOR'S NOTE

Feel free to publish this rule sheet and to program the game of Carreaux. No licensing fee or royalties are expected. However, please don't change the name or the rules, and please attribute the game to me, Mark Steere. My other games can be found at marksteeregames.com.