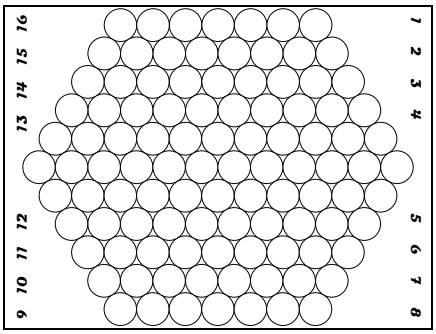
Papagra™

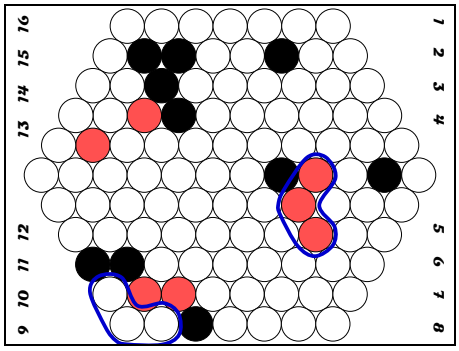
In this game for two, each player creates groupings of stones on a board. The goal is to create the largest ***matched-group*** (described below). The game is played with stones of 2 colors, on a board that looks like this:



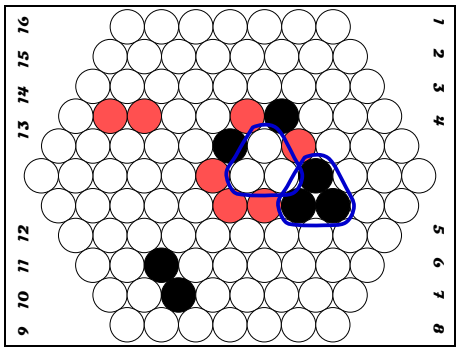
In order to understand the rules, the reader should understand a few terms:

Definitions: a ***matched-group*** is a group of connected stones on the board, all in the same color, the size and shape of which matches the size and shape of an ***enclosed*** group of connected empty spaces somewhere on the board (a group of empty spaces is ***enclosed*** when it is surrounded on all sides by stones and/or the edge of the board). The group of stones and the matching group of empty spaces need not have the same orientation. In addition, a matched-group may be part of the border surrounding the enclosed empty spaces that matches it. The ***size*** of a matched-group is the number of stones that make it up.

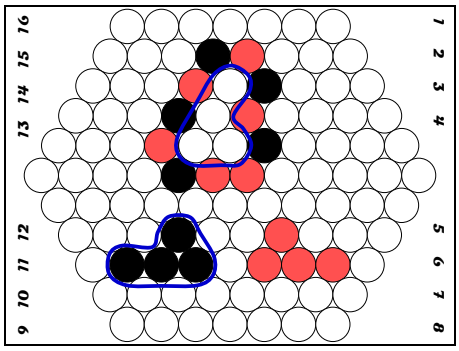
Below are some examples of matched-groups. In each example, matched-groups and corresponding groups of empty spaces are circled in blue so they are easy to see.



Above is a simple example. Here there is a pink matched-group of size 3. This figure illustrates that the group and its matching empty spaces need not have the same orientation. Notice also that there is a group of four black pieces on the board (upper left) containing a subset of three that has the same shape. This *does not* count as a matched-group.



Above is a black matched-group, also of size 3. This illustrates that a matched-group can be part of the border that encloses the matching group of empty spaces.



The example above illustrates a matched-group of four black stones. Note that there is a very similar group of four pink stones to its right. At first glance, the shape seems to be sufficient for a match, but in fact it is not. You can see this by rotating the group

in your mind to try to make it fit into the group of empty spaces. You will find that there is no way to do so. In general, you can always determine if any group matches a group of enclosed empty spaces by rotating it in your mind to see if it fits.

Rules of Papagra:

1. One player plays pink stones, the other black, and the players alternate turns.
2. Initially, the board is empty.
3. Pink starts the game by placing a single stone on any space.
4. From then on, starting with black, each player must take two actions on his turn. Each action must consist either of removing a stone of his color from the board, or adding a stone of his color to any empty space.
5. Numbers are printed on the edge of the board. This is the scoring track, and the numbers represent the sizes of matched-groups. Each player indicates the size of the largest matched-group created in his color so far (regardless of whether it was created during his or his opponent's turn, and even if it is destroyed on subsequent turns), by keeping a stone of his color (called his "mark") on top of the number equal to that size.
6. No number on the scoring track may be covered by both marks. If a matched-group of a player's color is created, his mark may not move to the corresponding number on the scoring track if his opponent's mark is already there.
7. Occasionally, on his turn, a player's action will simultaneously create matched-groups of the same size in both colors. In that case, only his mark may move to the corresponding number on the scoring track (unless the other player's mark is already there).
8. Occasionally, a player may create a matched-group with his first action, and then destroy it with his second. It is still a valid matched-group.
9. The leader is the player whose mark occupies the largest number on the scoring track.
10. The game ends either when the current leader fills up the board with his own stones and thereby makes it impossible for his opponent to retake the lead, or when the trailing player resigns (in practice, nearly all games end with a resignation). The leader wins.

Notes:

1. Although we have not yet encountered it, it may be possible for contestants to achieve a cycle of stone placements and removals such that the same arrangements of stones repeat themselves over and over. If this should ever happen in a game, apply the following rule: if the exact same arrangement of stones repeats itself three times, the current leader wins the game. If there is not yet a leader because no matched-group has been formed yet, then the game is a draw.

2. If you would like the game to last longer, try the following variant: all rules are the same, except that each player may have an optional third action on his turn. As his third action a player may remove between 1 and x of his stones from the board. The larger is the value of x, the longer the game will last, and the larger the winning score will tend to be.