

Five or More Group Analysis

Matt Forbes
Nick Fitzgerald
KC Faulkner
Chris LOL

October 21, 2010

Definitions

- Queue: List of marbles dropping on the board in the next turn.
- Group: A set of same-color marbles on the board that are in a row.
- Attach: Moving a marble to a group's edge.
- Completed: When a group gets five marbles in a row and is taken off the board.
- Connected: Two marbles are connected if there is a non-blocked path on the board.

Group Selection

Ranked in order of highest priority. When multiple color groups match a rule, the use the list of tie breaking rules, or continue to the next rule if no rules break the tie.

- 1) Choose a group that has the possibility of being completed with one available move.
- 2) Group with the most marbles in a row. Break ties by:
 - a) Has the most same-colored connected marbles on the board.
 - b) Has the most same-colored marbles in the queue.
- 3) If no groups have connected marbles, then we should start a new group, rules for which color and where to start it are discussed below.

Actual Marble Selection

After deciding which group to move, these are the rules on how to pick which marble should be moved to the group if there are multiple options. These rules also discuss which side of the group the marble should be attached to.

- 1) Pick the marble that would open up the most paths on the board when moved.
- 2) Prioritize marbles that open up paths to other large groups.

- 3) When attaching marbles to the group, attach to the side that is more blocked off, unless that move will impede access to the group. The reason for this is because after your move it will be harder to move marbles to that group, so you should take advantage of the crowded areas before they are blocked.

Starting a group

These are guidelines about when no groups are ideal or available, so we need to start a new one.

- 1) Pick the color that has the most same-color connected marbles on the board.
- 2) Pick a base marble which has the connected marbles of the same color. Then pick the most blocked-off marble (and thus more likely to be locked next round) to attach to the base marble.
- 3) Avoid starting diagonal groups if possible because they can be more likely to block paths on the board. Starting groups close to the edges of the board tend to keep the most paths open because they don't run in to the middle of the board.