

# Roam Solitaire

Chuck Rosselli – 12/26/19

You play solitaire against 3 AI opponents.

## 1. Setup

- a. Set up the game as normal for 4 players.  
For the 3 AI players, set up their initial characters left to right with the character with 3 blocks on the left, the character with 2 vertical blocks on the right.
- b. You (the human player) go first.

## 2. Game play

- a. **AI turns** - Take turns as normal with the following restrictions for the AIs:
  - i. An AI always uses the active character on the left side of its row of characters first. Eventually all characters will be used at which point they are all flipped to active again. The AI then continues using the left-most active character first.
  - ii. AIs never pay for early rest.
  - iii. AIs never pay to activate the "shadow boxes" for characters that have shapes including these.
- b. **AI placement of character patterns** – AIs place patterns as follows:
  - i. Roll 1 6-sided die to choose which card the AI will play their character's pattern on.
  - ii. The AI "prime directive" is as follows:
    1. Play the uppermost & then leftmost box of their character's pattern on an empty card square.
    2. If the play would be illegal, keep trying to find an empty/legal square on the card by going left to right and then top to bottom on the card.
    3. If none of the empty squares on a card allow the AI to play, roll the die again for a new card and go back to step 1 (2.b.ii.1).  
*Note: See example at the end of these rules for how "AI placement of character patterns" works.*
- c. **If an AI fills a card:**
  - i. **No ties** - If one player (AI or human) has a majority on the card:  
Simply give the card to them, give back the player markers, and replace with a new card.
  - ii. **Ties** - If two or more players are tied:
    1. Bid as normal going clockwise from the current player. Current player bids first if part of the tie.
    2. An AI player will bid ALL of its coins assuming this is enough for a legal bid.
    3. After the bidding is over, give the card to the winner, give back the player markers, and replace with a new card.
- d. **AI receives a card** - If an AI receives a card, it goes to the right of the AI's row of characters - face-up. The AI will then play that active character just like any other character card when it gets to it.

3. **End of game** - When any player, AI or human has 10 cards total, play out the round so that all players have had the same number of turns. (This is exactly like the end of game rules for the normal game).

#### 4. Scoring

- a. **Determine points** - You total up your points as normal. The AIs TOTAL their points together in an attempt to beat you.
- b. **Determine winner** - There are 3 ways of determining if you win. Feel free to try for a win in any or all categories:
  - i. **Margin of points** - You win at various levels depending on your ratio of points to the AIs' total points.
    - You lose** - You have < AI total points or you have = but have <= total coins than all the AIs.
    - Minor victory** - You have > AI total points or you have = and have more total coins than all the AIs.
    - Medium victory** - You have 1.5x or more AI points
    - Major victory** - You have 2x or more AI points

*(For the next two types of victory determination, you need to track your previous games playing against the AIs. After each game, record your score, the AI score, the date of the game for later comparison).*

- ii. **Personal best - Biggest gap**
  1. **Minor victory check** - Check that you have won at least a minor victory (as above) by checking to see if your points are >= total AI points. If you tied, you win if you have more coins.
  2. **Compute the "gap"** - Subtract the AI's points from your points.
  3. **Compare to your previous "gaps"** - See if your new "gap" is larger your previous high gap.
- iii. **Personal best - Highest score**
  1. **Minor victory check** - Do the same check as for "Personal best - Biggest gap".
  2. **Compare to your previous scores** - See if your new score is higher than your previous high score.

**Table for tracking your scores**

Game #	Date	Your score	AI score	Victory (Margin of Points) (Loss (<) (Minor (>=) (Medium (1.5x>=) (Major (2x >=)	Personal best - Biggest gap	Personal best - Highest score
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

## Example of section 2.b. "AI Placement of Character Patterns":

Start with the following card grid representation:

```
1a 1b | 2a 2b | 3a 3b
1c 1d | 2c 2d | 3c 3d
1e 1f | 2e 2f | 3e 3f
-----+-----+-----
4a 4b | 5a 5b | 6a 6b
4c 4d | 5c 5d | 6c 6d
4e 4f | 5e 5f | 6e 6f
```

Typical card pattern for the AI to place:

```
      S1
 *1 S2
S3 *2
```

S= Solid square; \*= Optional "shadow box" (which AI never pays for)

Let's say the 6-sided die is rolled and you get a "4".

So, try to position the AI's card pattern on the part of the grid holding spaces 4a..4f.

First, try to position box S1 (box that is FIRST uppermost and SECOND leftmost) onto 4a.

This won't work because box S3 will hang off the grid to the left as per the diagram below.

Card grid with pattern positioned on top of it:

```
1a 1b | 2a 2b | 3a 3b
1c 1d | 2c 2d | 3c 3d
1e 1f | 2e 2f | 3e 3f
-----+-----+-----
      S1 4b | 5a 5b | 6a 6b
 *1 S2 4d | 5c 5d | 6c 6d
S3 *2 4e | 5e 5f | 6e 6f
```

Next, move the card pattern to the next box to the right and see if it will fit.

```
1a 1b | 2a 2b | 3a 3b
1c 1d | 2c 2d | 3c 3d
1e 1f | 2e 2f | 3e 3f
-----+-----+-----
4a S1 | 5a 5b | 6a 6b
 *1 S2 | 5c 5d | 6c 6d
S3 *2 4f | 5e 5f | 6e 6f
```

This won't fit either and neither will moving box S1 to align with 4c, 4d, 4e, or 4f because the card pattern will hang off the bottom.

So, roll the die again. This time the result is a 3.

Overlay box S1 on top of grid position 3a and get the following layout.

```
1a 1b | 2a 2b | S1 3b
1c 1d | 2c *1 | S2 3d
1e 1f | S3 *2 | 3e 3f
-----+-----+-----
4a 4b | 5a 5b | 6a 6b
4c 4d | 5c 5d | 6c 6d
4e 4f | 5e 5f | 6e 6f
```

The card pattern fits within the grid and so this will be the AI's card play.