

## ACCORDION SOLITAIRE STRATEGY

### Overview

There are a number of versions of a game called Accordion Solitaire. The one discussed here lays fifty-two standard cards out in a line, all face-up. (The line usually wraps back and forth so it can fit into available space.) The goal is to reduce the array to a single stack. The rules are simple: cards may be moved only toward the beginning, and only to a position one or three spaces above that is occupied by a card of matching suit or value. The covering cards are simply stacked on top of the previous ones, or the previous ones discarded.

It is not a pastime for the faint-hearted. An early version was called *The Idle Year* “because with a well-shuffled pack, it will require about that length of time to accomplish it.” The rules have since been loosened to make things more approachable, and some clever person found a way to make the game winnable nearly all of the time. The clever trick is to assemble, as early as possible, four cards of the same value at the end of the sequence. These four are commonly called *sweepers*, because they may be used to sweep away all cards before them. Three in a row is almost as good as four. The player selects the value to use for the sweepers after reviewing the deal.

Despite progress, the game is still challenging and takes much concentration. At a minimum, it requires an ability to divide problems into solvable subtasks, an capacity to think a few moves ahead, and understanding that a move isn’t necessarily *good* simply because it is *allowed*. After a few weeks’ practice, I find it takes me half an hour to complete a set, which will probably shorten. (As a comparison, it takes me about two minutes to finish a deal of the popular game Klondike Solitaire.) An online version with an “undo” button may be good for learning. I prefer a miniature deck of physical patience cards as a routine.

My aim here is to lay out specific approaches I have found to be helpful, play by play, with discussion of key phases, using a relatively easy sample game. I started with the thought, “I am going to win this game, and then I am going to share what I have learned.” Got it right the first time: I did, and I am. Perhaps another day I will come back with an approach for more difficult deals. And I’m sure others will see possibilities that I didn’t.

### Sample Game: Initial Deal

5♦	5♣	6♣	J♣	10♣	7♣	K♦	K♣	3♣	Q♠	Q♦	8♥	2♠	3♦		
														6♦	
	Q♣	♦10	♦8	♦9	♦4	4♥	10♥	10♠	7♦	J♠	A♥	Q♥	2♦		
6♠															
	9♠	4♣	9♥	8♠	7♠	8♣	5♥	J♦	4♠	K♥	7♥	9♣	2♣	A♣	
						→	J♥	A♠	6♥	2♥	A♦	3♠	3♥	5♠	K♠

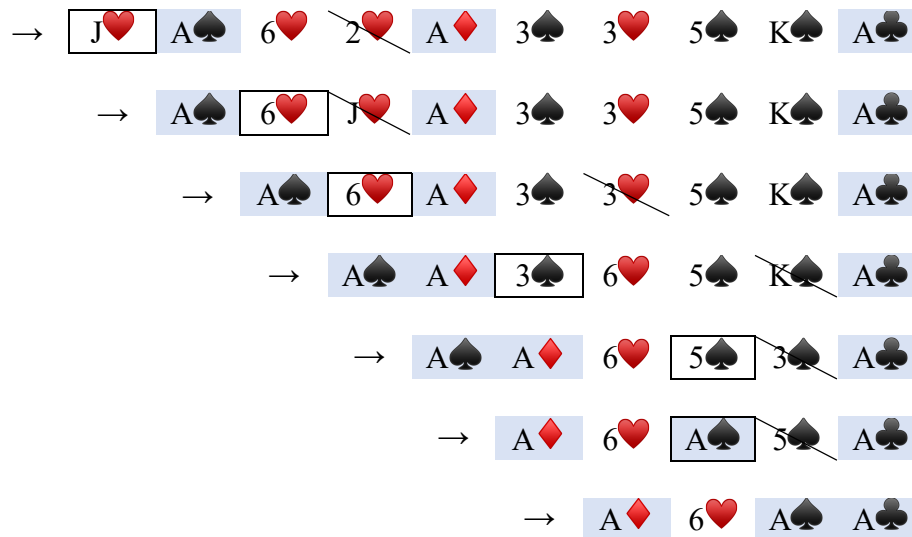
## Getting started

Before doing anything, it is wise to scan the overall layout of the cards. Is there anything in the mixture that seems unusual? Here, there are long streaks of clubs and diamonds at the top. That isn't troublesome; it will turn out that the streaks will make it easier to collapse the line at the end of the game. An isolated card far from any others of its suit could well be problematic, because there will be none of its kind nearby to help as needed.

The first action is to select the sweeper value. Obviously, the more kings (or nines, or threes, or other chosen value) cluster toward the end of the deal, the easier things will be. Some days are lucky, and some aren't. I have learned that it works out much better to pick a sweeper value that has a card (or two) *very* close to the tail. Usually it is very difficult to get cards *past* two or three sweepers, but relatively easy to remove cards *in front* of them. There is no reverse gear! Clearly, selection of a sweeper value with cards very close to the beginning of the stack would be like painting one's self into a corner.

In the example game, aces are the obvious choice for sweeper value, because there are three of them not far apart toward the end. The first order of business will be to move forward the cards behind them, and then those between them. The extraneous cards will have to *jump* to the *third* position ahead of them.

The initial moves are shown below, using my own notation. In the illustrations, I have highlighted the cards with the chosen sweeper value, and included an arrow directed toward the beginning, which will sometimes be left, sometimes right. The card that is being eliminated is shown with a diagonal line through it, the card being moved outlined.

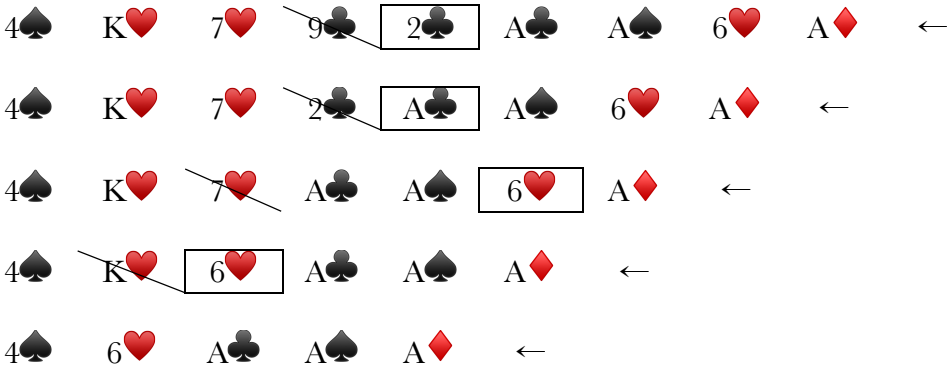


In very short order, we have eliminated several extraneous cards and have three aces nearly together, with the interruption of the six of hearts. That last exception, it turns out, won't be so easy to deal with.

Another approach would have led to the sequence 6H – AS – AD – AC, which may seem appealing because the aces are all together. Unfortunately, 6H is allowed to move *three* spaces forward but cannot move *four*, so to make progress it would be necessary to re-separate the aces in some suitable way. To make a long story short, that doesn't appear to be an easy task. So the earlier sequence AD – 6H – AS – AC looks preferable because 6H can jump ahead of the aces, if it can find another six or heart to match.

**Moving forward**

We will be able to get the 6H out of the middle of the sweeper aces using moves like those we began with. To get it within the jumping range of three, we need to declutter the interval between it and the target 7H. Because we have three clubs in a row between, it is a simple matter to collapse those, putting 6H in a position to jump over the two aces. We now have three sweepers adjacent, which is a very strong position. We can then work toward the fourth ace twenty-some cards ahead, beginning by eliminating KH while we're working right there. (Note in the figure that the direction toward the beginning has reversed from the example above, which is routine given the wraparound form of the line.)



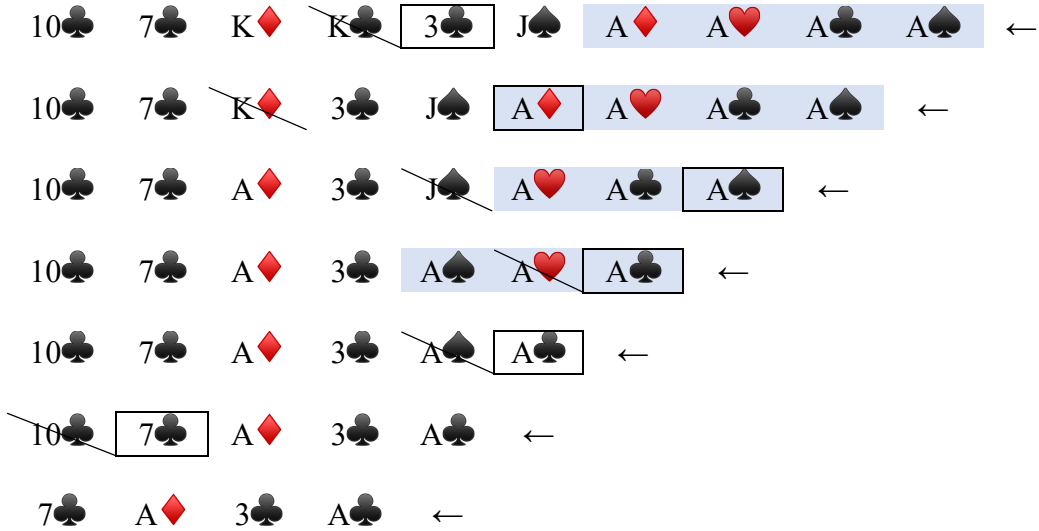
Since much of the next part of the game is like the first parts, I won't dissect it in excruciating detail. A list of all of the successive states of the game is included as an appendix. I will offer observations about a few practices I have found useful. (1) Keep the sweepers together, unless there is some very specific reason not to and a plan to regroup them. (2) Always be deliberate about steering moves toward a goal, which is most often simply finding a place for the first card in front of the sweepers. Divide and conquer: if things are complex, work may need to be divided into subtasks. (3) Think first about moves three places ahead, and about moves to adjacent positions only as part of a larger tactical plan. Jumps over the roadblocks are the only alternative to gridlock. – As with all rules, there will be unusual situations and exceptions, with uneven success.

**Endgame**

It is wise to consider the configuration of the first cards as the end of the game approaches. Some sequences are unsolvable, as the one below where the order of the desired target suits exactly matches that of the sweepers. The suit order of both parts is known quite a bit ahead of the end of the game, and probably one or both sequences could have been adjusted.

4♠ 8♣ K♥ 10♦ x♠ x♣ x♥ x♦ ←

Note in the middle of the sequence below that sweeper cell cards AH and AS do not need to be preserved until the end of the game. Once there are no other cards of their suit left, they have completed their function and so may be eliminated if there is no other reason to retain them.



### Conclusion

I am sure that others will see things that I haven't, and be able to win games much more difficult than the example I've used here. This first effort may well be revised over time. I invite your comments.

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## Appendix: the complete game

*The layout of the cards is shown for each step of the sample game, from the original deal (move zero) forward. Cards being moved are shown in **BOLD**, cards being eliminated (discarded or covered) with **STRIKEOUT**.*

- 0 5D, 5C, 6C, JC, 10C, 7C, KD, KC, 3C, QS, QD, 8H, 2S, 3D, 6D, 2D, QH, AH, JS, 7D, 10S, 10H, 4H, 4D, 9D, 8D, 10D, QC, 6S, 9S, 4C, 9H, 8S, 7S, 8C, 5H, JD, 4S, KH, 7H, 9C, 2C, AC, KS, 5S, 3H, 3S, AD, 2H, 6H, AS, JH
- 1 5D, 5C, 6C, JC, 10C, 7C, KD, KC, 3C, QS, QD, 8H, 2S, 3D, 6D, 2D, QH, AH, JS, 7D, 10S, 10H, 4H, 4D, 9D, 8D, 10D, QC, 6S, 9S, 4C, 9H, 8S, 7S, 8C, 5H, JD, 4S, KH, 7H, 9C, 2C, AC, KS, 5S, 3H, 3S, AD, ~~2H~~, 6H, AS, **JH**
- 2 5D, 5C, 6C, JC, 10C, 7C, KD, KC, 3C, QS, QD, 8H, 2S, 3D, 6D, 2D, QH, AH, JS, 7D, 10S, 10H, 4H, 4D, 9D, 8D, 10D, QC, 6S, 9S, 4C, 9H, 8S, 7S, 8C, 5H, JD, 4S, KH, 7H, 9C, 2C, AC, KS, 5S, 3H, 3S, AD, ~~3H~~, **6H**, AS
- 3 5D, 5C, 6C, JC, 10C, 7C, KD, KC, 3C, QS, QD, 8H, 2S, 3D, 6D, 2D, QH, AH, JS, 7D, 10S, 10H, 4H, 4D, 9D, 8D, 10D, QC, 6S, 9S, 4C, 9H, 8S, 7S, 8C, 5H, JD, 4S, KH, 7H, 9C, 2C, AC, KS, 5S, ~~3H~~, 3S, AD, **6H**, AS
- 4 5D, 5C, 6C, JC, 10C, 7C, KD, KC, 3C, QS, QD, 8H, 2S, 3D, 6D, 2D, QH, AH, JS, 7D, 10S, 10H, 4H, 4D, 9D, 8D, 10D, QC, 6S, 9S, 4C, 9H, 8S, 7S, 8C, 5H, JD, 4S, KH, 7H, 9C, 2C, AC, ~~KS~~, 5S, 6H, **3S**, AD, AS
- 5 5D, 5C, 6C, JC, 10C, 7C, KD, KC, 3C, QS, QD, 8H, 2S, 3D, 6D, 2D, QH, AH, JS, 7D, 10S, 10H, 4H, 4D, 9D, 8D, 10D, QC, 6S, 9S, 4C, 9H, 8S, 7S, 8C, 5H, JD, 4S, KH, 7H, 9C, 2C, AC, ~~3S~~, **5S**, 6H, AD, AS
- 6 5D, 5C, 6C, JC, 10C, 7C, KD, KC, 3C, QS, QD, 8H, 2S, 3D, 6D, 2D, QH, AH, JS, 7D, 10S, 10H, 4H, 4D, 9D, 8D, 10D, QC, 6S, 9S, 4C, 9H, 8S, 7S, 8C, 5H, JD, 4S, KH, 7H, 9C, 2C, AC, ~~5S~~, 6H, AD, **AS**
- 7 5D, 5C, 6C, JC, 10C, 7C, KD, KC, 3C, QS, QD, 8H, 2S, 3D, 6D, 2D, QH, AH, JS, 7D, 10S, 10H, 4H, 4D, 9D, 8D, 10D, QC, 6S, 9S, 4C, 9H, 8S, 7S, 8C, 5H, JD, 4S, KH, 7H, ~~9C~~, **2C**, AC, AS, 6H, AD
- 8 5D, 5C, 6C, JC, 10C, 7C, KD, KC, 3C, QS, QD, 8H, 2S, 3D, 6D, 2D, QH, AH, JS, 7D, 10S, 10H, 4H, 4D, 9D, 8D, 10D, QC, 6S, 9S, 4C, 9H, 8S, 7S, 8C, 5H, JD, 4S, KH, 7H, ~~2C~~, **AC**, AS, 6H, AD
- 9 5D, 5C, 6C, JC, 10C, 7C, KD, KC, 3C, QS, QD, 8H, 2S, 3D, 6D, 2D, QH, AH, JS, 7D, 10S, 10H, 4H, 4D, 9D, 8D, 10D, QC, 6S, 9S, 4C, 9H, 8S, 7S, 8C, 5H, JD, 4S, KH, ~~7H~~, AC, AS, **6H**, AD

- 10 5D, 5C, 6C, JC, 10C, 7C, KD, KC, 3C, QS, QD, 8H, 2S, 3D, 6D, 2D, QH, AH, JS, 7D, 10S, 10H, 4H, 4D, 9D, 8D, 10D, QC, 6S, 9S, 4C, 9H, 8S, 7S, 8C, 5H, JD, 4S, ~~KH~~, **6H**, AC, AS, AD
- 11 5D, 5C, 6C, JC, 10C, 7C, KD, KC, 3C, QS, QD, 8H, 2S, 3D, 6D, 2D, QH, AH, JS, 7D, 10S, 10H, 4H, 4D, 9D, 8D, 10D, QC, 6S, 9S, 4C, 9H, 8S, 7S, 8C, ~~5H~~, JD, 4S, **6H**, AC, AS, AD
- 12 5D, 5C, 6C, JC, 10C, 7C, KD, KC, 3C, QS, QD, 8H, 2S, 3D, 6D, 2D, QH, AH, JS, 7D, 10S, 10H, 4H, 4D, 9D, 8D, 10D, QC, 6S, 9S, 4C, 9H, ~~8S~~, **7S**, 8C, 6H, JD, 4S, AC, AS, AD
- 13 5D, 5C, 6C, JC, 10C, 7C, KD, KC, 3C, QS, QD, 8H, 2S, 3D, 6D, 2D, QH, AH, JS, 7D, 10S, 10H, 4H, 4D, 9D, 8D, 10D, QC, 6S, 9S, 4C, ~~9H~~, 7S, 8C, **6H**, JD, 4S, AC, AS, AD
- 14 5D, 5C, 6C, JC, 10C, 7C, KD, KC, 3C, QS, QD, 8H, 2S, 3D, 6D, 2D, QH, AH, JS, 7D, 10S, 10H, 4H, 4D, 9D, 8D, 10D, QC, 6S, 9S, 4C, 6H, ~~7S~~, 8C, JD, **4S**, AC, AS, AD
- 15 5D, 5C, 6C, JC, 10C, 7C, KD, KC, 3C, QS, QD, 8H, 2S, 3D, 6D, 2D, QH, AH, JS, 7D, 10S, 10H, 4H, 4D, 9D, 8D, 10D, QC, 6S, ~~9S~~, ~~4C~~, 6H, 4S, **8C**, JD, AC, AS, AD
- 16 5D, 5C, 6C, JC, 10C, 7C, KD, KC, 3C, QS, QD, 8H, 2S, 3D, 6D, 2D, QH, AH, JS, 7D, 10S, 10H, 4H, 4D, 9D, 8D, 10D, QC, 6S, ~~9S~~, 8C, 6H, **4S**, JD, AC, AS, AD
- 17 5D, 5C, 6C, JC, 10C, 7C, KD, KC, 3C, QS, QD, 8H, 2S, 3D, 6D, 2D, QH, AH, JS, 7D, 10S, 10H, 4H, 4D, 9D, 8D, 10D, QC, ~~6S~~, 4S, 8C, **6H**, JD, AC, AS, AD
- 18 5D, 5C, 6C, JC, 10C, 7C, KD, KC, 3C, QS, QD, 8H, 2S, 3D, 6D, 2D, QH, AH, JS, 7D, 10S, 10H, 4H, 4D, 9D, 8D, 10D, QC, 6H, 4S, 8C, ~~JD~~, AC, AS, **AD**
- 19 5D, 5C, 6C, JC, 10C, 7C, KD, KC, 3C, QS, QD, 8H, 2S, 3D, 6D, 2D, QH, AH, JS, 7D, 10S, 10H, 4H, 4D, 9D, 8D, 10D, ~~QC~~, 6H, 4S, **8C**, AD, AC, AS
- 20 5D, 5C, 6C, JC, 10C, 7C, KD, KC, 3C, QS, QD, 8H, 2S, 3D, 6D, 2D, QH, AH, JS, 7D, 10S, 10H, 4H, 4D, 9D, 8D, 10D, 8C, 6H, **4S**, AD, AC, **AS**
- 21 5D, 5C, 6C, JC, 10C, 7C, KD, KC, 3C, QS, QD, 8H, 2S, 3D, 6D, 2D, QH, AH, JS, 7D, 10S, 10H, 4H, 4D, 9D, ~~8D~~, **10D**, 8C, 6H, AS, AD, AC
- 22 5D, 5C, 6C, JC, 10C, 7C, KD, KC, 3C, QS, QD, 8H, 2S, 3D, 6D, 2D, QH, AH, JS, 7D, 10S, 10H, 4H, 4D, ~~9D~~, **10D**, 8C, 6H, AS, AD, AC
- 23 5D, 5C, 6C, JC, 10C, 7C, KD, KC, 3C, QS, QD, 8H, 2S, 3D, 6D, 2D, QH, AH, JS, 7D, 10S, ~~10H~~, 4H, 4D, **10D**, 8C, 6H, AS, AD, AC

- 24 5D, 5C, 6C, JC, 10C, 7C, KD, KC, 3C, QS, QD, 8H, 2S, 3D, 6D, 2D, QH, AH, JS, 7D, 10S, 10D, ~~4H~~, **4D**, 8C, 6H, AS, AD, AC
- 25 5D, 5C, 6C, JC, 10C, 7C, KD, KC, 3C, QS, QD, 8H, 2S, 3D, 6D, 2D, QH, AH, JS, 7D, 10S, 10D, 6H, 4D, ~~8C~~, AS, AD, AC
- 26 5D, 5C, 6C, JC, 10C, 7C, KD, KC, 3C, QS, QD, 8H, 2S, 3D, 6D, 2D, QH, AH, JS, 7D, 10S, 10D, 6H, ~~4D~~, AC, AS, **AD**
- 27 5D, 5C, 6C, JC, 10C, 7C, KD, KC, 3C, QS, QD, 8H, 2S, 3D, ~~6D~~, **2D**, QH, AH, JS, 7D, 10S, 10D, 6H, AD, AC, AS
- 28 5D, 5C, 6C, JC, 10C, 7C, KD, KC, 3C, QS, QD, 8H, 2S, ~~3D~~, **2D**, QH, AH, JS, 7D, 10S, 10D, 6H, AD, AC, AS
- 29 5D, 5C, 6C, JC, 10C, 7C, KD, KC, 3C, QS, ~~QD~~, 8H, 2S, **2D**, QH, AH, JS, 7D, 10S, 10D, 6H, AD, AC, AS
- 30 5D, 5C, 6C, JC, 10C, 7C, KD, KC, 3C, QS, 2D, 8H, ~~2S~~, QH, AH, **JS**, 7D, 10S, 10D, 6H, AD, AC, AS
- 31 5D, 5C, 6C, JC, 10C, 7C, KD, KC, 3C, QS, 2D, 8H, JS, QH, AH, 7D, ~~10S~~, **10D**, 6H, AD, AC, AS
- 32 5D, 5C, 6C, JC, 10C, 7C, KD, KC, 3C, QS, 2D, 8H, JS, QH, AH, ~~7D~~, **10D**, 6H, AD, AC, AS
- 33 5D, 5C, 6C, JC, 10C, 7C, KD, KC, 3C, QS, 2D, 8H, JS, ~~QH~~, **AH**, 10D, 6H, AD, AC, AS
- 34 5D, 5C, 6C, JC, 10C, 7C, KD, KC, 3C, QS, 2D, 8H, JS, 6H, AH, ~~10D~~, **AD**, AC, AS
- 35 5D, 5C, 6C, JC, 10C, 7C, KD, KC, 3C, QS, 2D, 8H, JS, ~~6H~~, **AH**, AD, AC, AS
- 36 5D, 5C, 6C, JC, 10C, 7C, KD, KC, 3C, ~~QS~~, 2D, 8H, **JS**, AH, AD, AC, AS
- 37 5D, 5C, 6C, JC, 10C, 7C, KD, KC, 3C, JS, ~~2D~~, 8H, AH, **AD**, AC, AS
- 38 5D, 5C, 6C, JC, 10C, 7C, KD, KC, 3C, JS, AD, ~~8H~~, **AH**, AC, AS
- 39 5D, 5C, 6C, JC, 10C, 7C, KD, ~~KC~~, **3C**, JS, AD, AH, AC, AS
- 40 5D, 5C, 6C, JC, 10C, 7C, ~~KD~~, 3C, JS, **AD**, AH, AC, AS
- 41 5D, 5C, 6C, JC, 10C, 7C, AD, 3C, ~~JS~~, AH, AC, AS

42 5D, 5C, 6C, JC, 10C, 7C, AD, 3C, AS, ~~AH~~, **AC**

43 5D, 5C, 6C, JC, 10C, 7C, AD, 3C, ~~AS~~, **AC**

44 5D, 5C, 6C, JC, ~~10C~~, **7C**, AD, 3C, AC

45 5D, 5C, 6C, ~~JC~~, **7C**, AD, 3C, AC

46 5D, 5C, ~~6C~~, **7C**, AD, 3C, AC

47 ~~5D~~, 5C, 7C, **AD**, 3C, AC

48 AD, 5C, 7C, 3C, **AC**

49 AD, 5C, ~~7C~~, **AC**

50 AD, ~~5C~~, **AC**

51 ~~AD~~, **AC**

52 AC