



1 Solitaire Rules

Players may also wish to play Al-Jabar alone. The solitaire game is designed to provide a similar experience to the full game for a single player, while also letting players track their “high score” from game to game. While the arithmetic and main mechanisms of the solitaire game are identical to when the game is played with multiple people, all of the rules necessary to play Solitaire Al-Jabar are listed here, excepting the arithmetic detailed in the “Concepts” section.

1. Solitaire Al-Jabar is played by 1 person. The object of the game is to reduce the pieces in one’s hand as quickly as possible while also causing cancellations in the Center, thus minimizing the final score.
2. Draw during the game from a bag of 70 game pieces (10 each of the colors white, red, yellow, blue, orange, green, and purple), and place 30 black pieces in a location accessible to all players.
3. Deal the player’s initial hand of 13 pieces at random from the bag.
4. To initiate gameplay, one colored game piece, drawn at random from the bag, and one black piece are placed on the central game surface (called the “Center”).
5. On the player’s turn, the player exchanges any combination of 1, 2 or 3 pieces from his or her hand for a set of 1, 2 or 3 pieces from the Center having an equal sum of colors. The exception to this rule is the combination of 4 pieces $\bullet + \bullet + \bullet + \bullet$ (called a “spectrum”), which may be exchanged for a black piece. If the player has more than 3 game pieces in hand but cannot make a valid move in a given turn, then he or she must draw additional pieces at random from the bag into his or her hand until a move can be made.
6. If a player’s turn results in one or more pairs of pieces of the same color (such a pair is called a “double”) occurring in the Center, then each such double is removed from the Center and discarded (or “cancelled”), to be replaced by a black piece. Set aside the pairs of pieces cancelled this way. There are two exceptions to this rule:
 - (a) Pairs of black pieces are never cancelled from the Center;

- (b) If a player's turn includes a double in the set of pieces placed from his or her hand to the Center, then place the cancelled pair back in the bag instead of setting it aside, although a black piece is still placed in the Center.
7. After the player's turn, the "game" takes a turn as follows:
 - (a) Remove black pieces from the Center until there are at most two black pieces. Do not perform this step if there are two or fewer black pieces in the Center.
 - (b) Randomly take one-third of the pieces in the Center (rounded up) and return them to the bag.
 - (c) Draw a number of pieces from the bag equal to the number of pieces removed in the previous step and place them in the Center.
 - (d) Cancel any non-black pairs of pieces in the Center and replace them with a black piece, and give the player a black piece for each pair cancelled this way. However, the player does not receive black pieces for any pairs of a color for which a pair was included in the pieces placed in the Center from the bag in the previous step, or for pairs of black pieces, just like how cancellations occur in the multiplayer game and during the player's turn.
 8. The player may draw additional pieces as desired at random from the bag during his or her turn.
 9. The game ends when either of these situations occur
 - (a) The player, immediately after his or her turn, has reduced his or her hand to one piece;
 - (b) The player has 3 or fewer pieces in hand but is unable to make a move resulting in a decrease the total number of pieces in his or her hand. The player is not forced to draw additional pieces from the bag to make their move, and only turns taken before this are counted in the player's final score. In both cases, the game is immediately over.
 10. The player's score is $2T - R - C$, where T is the total number of turns taken by the player, R is the number of pieces remaining in the player's hand, and C is the number of cancellations caused by the player during the game. Players may set a score as their goal before playing, compare their scores with others, or track their low score. Remember that the object is to minimize one's score.

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