FACTOR 24

Learning Objective: Use knowledge of number and order of operations, to identify matching factors of 24.

Intended Outcome: To develop number partitioning skills and order of operations to build flexible number strategies.

Game Objective: To collect a higher number of cards than your opponent.

Materials:

- A pack of cards with Jokers and Kings

Summary:

This game works in a way similar to that of the traditional game of 'Memory', only players need to find matching sets of factors of 24.

Card values match the numbers on the cards, with the Aces equal to '1s', the Jacks equal to '11s' and the Queens equal to '12s'.

So, all matching pairs of factors for 24 available in the game are:

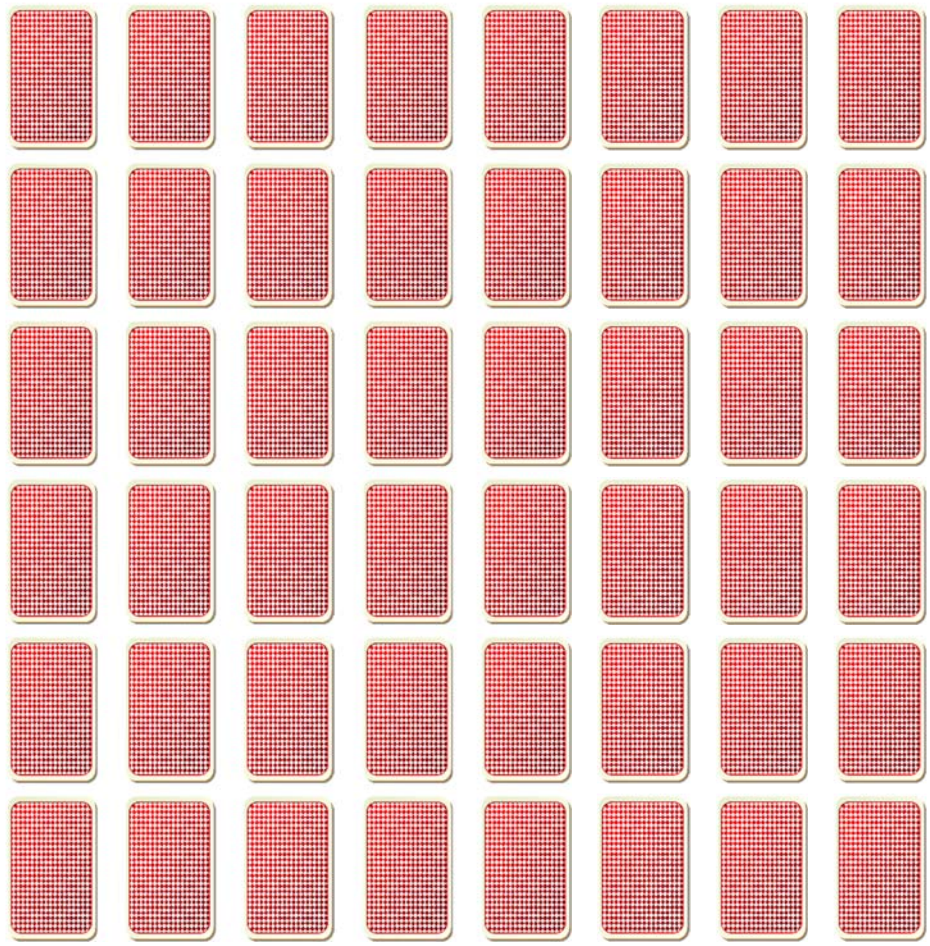
- 2 and 12 (Queen);
- 3 and 8; and
- 4 and 6.

(Obviously, as there is no card value of '24', 24 and 1 won't work in the game as a pair).

However, there are some ways in which players can use non-factor card values (eg. 5, 7, 9, 10, 11) to build factors of 24 and so win a set of cards…

Instructions

Between 2 and 4 players is ideal. Set the cards out in an array that's 8 x 6 cards (so, 48 cards in total), face down:



Just as in 'Memory', Player 1 starts by turning over two cards. If the two cards happen to be a matching set of factors of 24 (eg. a '3' and then and '8'), Player 1 takes these cards for their own. It is then Player 2's turn, and so on.

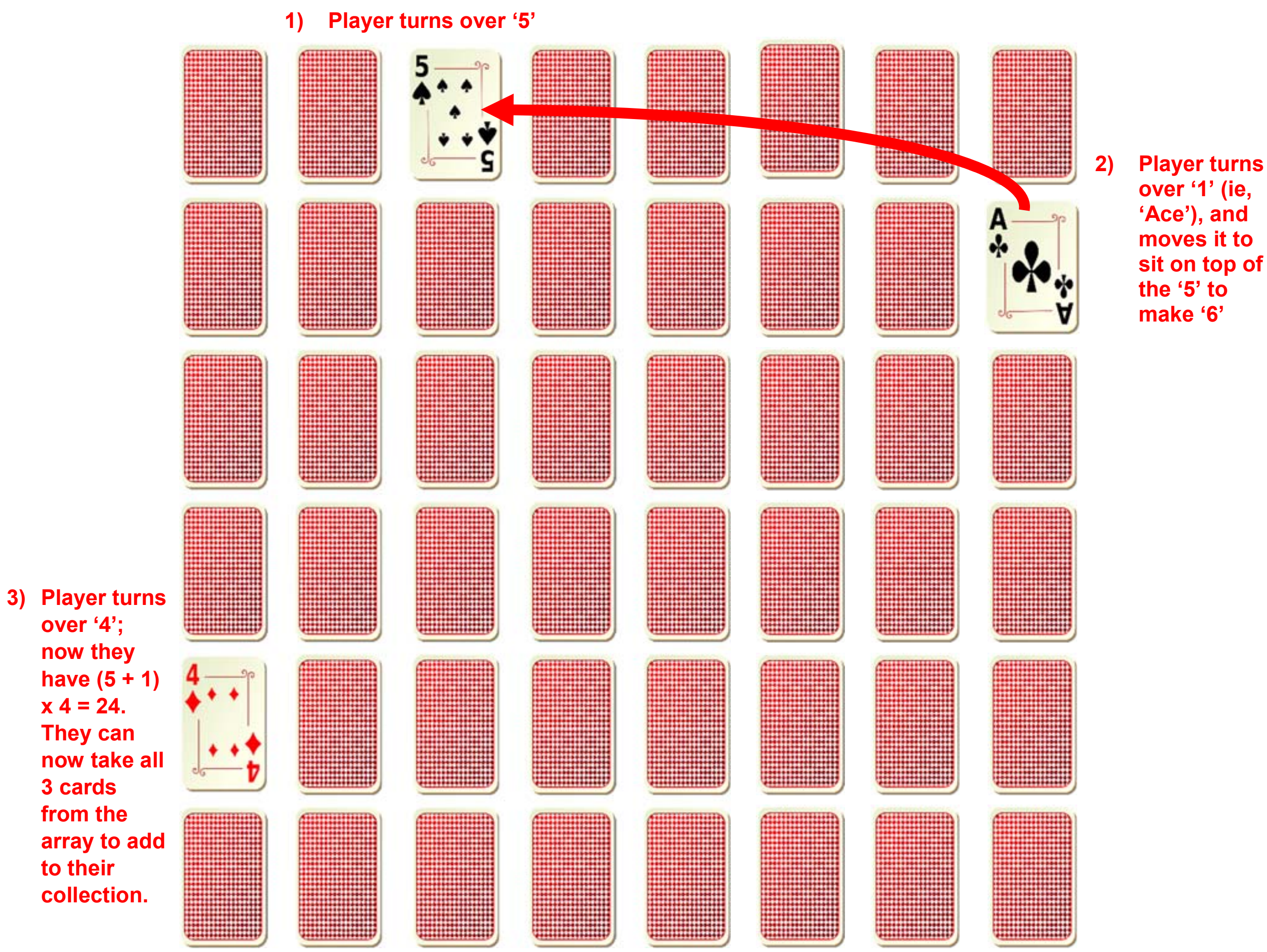
The strong chances are that the two cards **won't** be a set of factors of 24 (eg. a 3 and then a 'Jack' or 11), and so that player then turns the cards face down again and it is then the next Player's turn.

However, it may be that if the first card turned can be *combined* with another card turned to add to a factor of 24. If then this combination is matched with the missing factor, that Player can then take all the cards turned to add to their collection.

For example, a Player might turn over a '5', but might also know where there's and 'Ace' and a '4' in the array (because he or she has been observant during the game and watched where various numbers lie hidden in the array). In this case, this Player will:

- Turn over the ‘5’ card;
- Locate and turn over the ‘Ace’ (‘1’), then pick it up and place it on top of the ‘5’ – which of course adds to ‘6’; then
- Locate and turn over a ‘4’ (see below).

In this case, that Player has found **(5 + 1) x 4 = 24**. The Player can then take all 3 cards from the array to add to their collection!



Note that if the third number turned is **not** a matching factor of 24, ***all cards must be returned face down to their original position in the array*** and the next Player takes their turn.

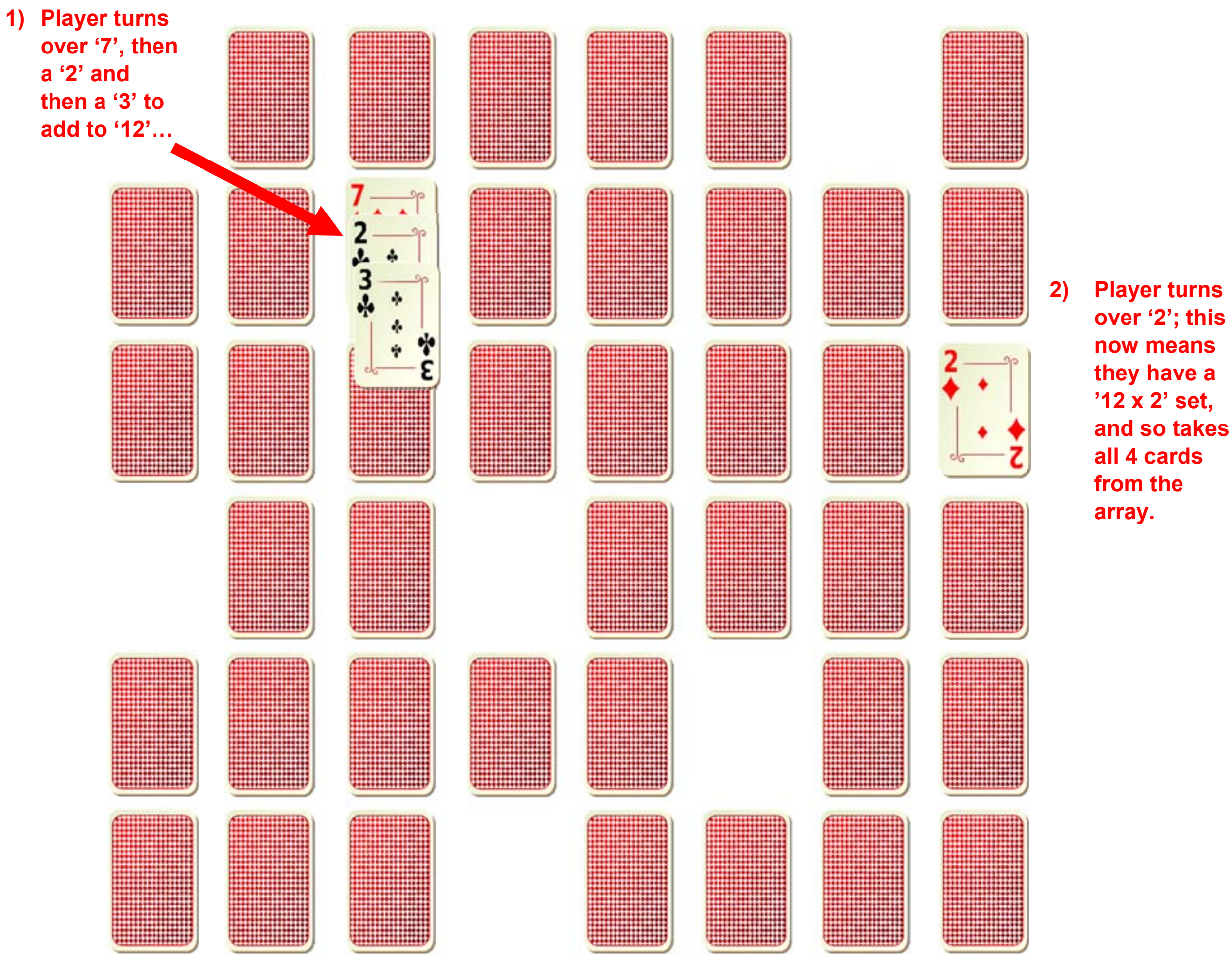
This ‘building’ of numbers to make a factor of 24 can occur several times, for both the **starting** factor (the ‘multiplicand’) and the finishing factor (the ‘multiplier’). For example, in the example above, if this Player had turned over the ‘5’ and the ‘Ace’ to make ‘6’, but then turned over a ‘3’ (instead of a 4), if they were able to find another Ace (‘1)’, they could then make:

(5 + 1) x (3 + 1) = 24

…and so they take all 4 cards from the array!

Note again that if the Player ***can't*** make matching factors successfully, ***all cards must be returned face down to their original position in the array***, and the next Player takes their turn.

Here's another possible (successful) turn for a Player:



The Player above has effectively made:

(7 + 2 + 3) x 2 = 24

…and so is able to add these 4 cards to their collection.

The 'Factor 24' Game finishes when it is apparent that all combinations for making or building factor combinations of 24 are exhausted (because there are too few cards left). **Players count their card collections at the end and whoever has the most cards, wins.**

(In situations where two or more players have the same number of cards in their collection, the winner is the person with the largest total in the collection, by adding the value of all the cards together.)