



## Decimal Game

**Materials:** Pack of playing cards

**Players:** 2-4

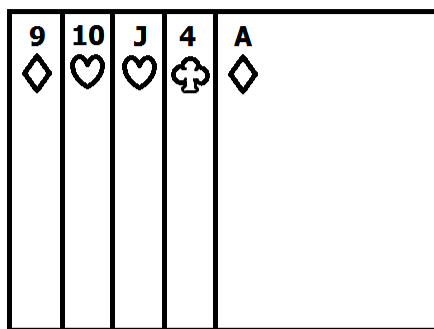
**Time:** 5-10 minutes per game

**Topics:** Decimals, place values

**Rules:** Each player is initially dealt 7 cards from the deck. Players will each build a number on a “stack” in front of them as follows:

1. Players will take turns playing one card from their hand on a stack (their own or their opponent's) and then draw a new card from the deck.
2. Numerical cards are used as digits. Aces are 1's. Tens are 0's. These cards can only be placed on the top of a stack.
3. Face cards (jack, queen, king) are used as decimals. Face cards can be placed anywhere in the stack BUT must be placed directly on top of a card of matching suit.
4. If a second face card is played on a stack, the original face card is discarded.

Play continues until any player has eight cards in their stack. Players then each read off their number. An empty stack (no cards played) is a 0. The player with the largest number is the winner. Let the player with the smallest number go first during the next game.



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Figure 1: An example of a small stack





**Extensions:** Some strategies are immediate:

- Larger numbers should be played in front of you early. Small numbers should be played in front of an opponent early.
- Decimal cards should be used strategically as they can drastically change the value of someone's stack, but have an important restriction on where in the stack they can be played.
- If an inconvenient decimal is placed in your stack, you can overwrite it by placing a decimal on yourself.

Stacks serve as a manipulative to discuss place values, decimals, and the concept of scientific notation. Shifting face cards left or right is essentially dividing or multiplying by 10, respectively, with each move. The way we write a number in scientific notation respects this idea of multiplying by powers of 10.

