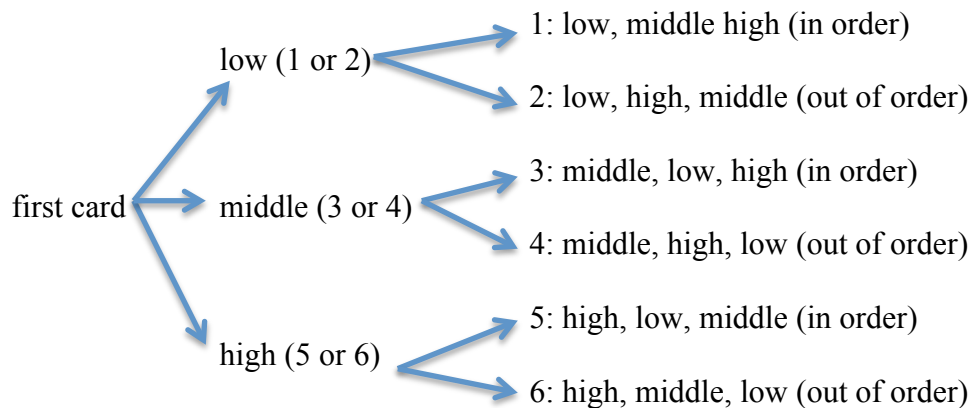


# Making Codes with Cards

## How to encode a 1 through 6 with three cards

We have to have rules for how the cards are ordered. You can use the rank as the primary way to figure this out. If we assume ace is low, then the cards go ace, 2, 3, 4, 5, 6, 7, 8, 9, 10, jack, queen, king. If two cards have the same rank, then we have to use the suit to decide. We can use the name of the suit and just go alphabetically, so we get clubs, diamonds, hearts, and then spades.

Look at the three cards and figure out which one is low, middle, and high. We use the first card to indicate whether the number is in the low part of the range (1 or 2), the middle part of the range (3 or 4), or the high part of the range (5 or 6). Then we put the other two cards in increasing order if we want to indicate the lower number of the range and we put the cards out of order if we want to indicate the higher number of the range. This chart summarizes the six possibilities:



## Card Trick Solution

Pick a pair of cards of the same suit. One of these will be the hidden card and one will be the first card of the sequence. You want to hide a card that is within 6 of the card that you end up showing (one card will work, and the other will not). Then use the other three cards to encode a 1 through 6 to indicate how much to add to the card that is showing to get the hidden card. Remember that it can wrap around (e.g., queen plus 4 is a 3).