

**The 27 Card Trick**  
BY CHARLES SCHWARTZ  
RIDER UNIVERSITY  
schwartz@rider.edu

DESCRIPTION:

You fan a deck of 27 cards, so that your partner can see them. Ask your partner to memorize one of the cards and keep it secret; also, ask your partner to pick a whole number between 1 and 27, inclusive, and tell it to you. Then you deal out the cards into three piles, and ask which of the piles the the card is in; then pick up the three stacks of cards. Deal out the cards into piles a second time, ask where the card is, and pick up the three piles. Deal into piles, ask where it is, and pick up the piles of cards one last time. Now count as you deal the cards face up: the card will come up when you get to the number chosen.

INSTRUCTIONS:

1. Subtract one from the number.
2. Convert the resulting number from base 10 to base 3. It will have a 9's digit, a 3's digit, and a 1's digit. (Each of these will be a number equal to 0, 1, or 2. These digits tell you how to pick up the cards.)
3. Deal out the cards into 3 piles: be careful to deal the cards into piles in order. Ask your partner to tell you which of the three piles the card is in *after you have finished dealing*.
4. The first time:
  - If the 1's digit is a zero, put the pile with the card on the bottom of the other two piles, *before you turn the deck over*;
  - If the 1's digit is a 1, put the pile with the card between the other two piles;
  - If the 1's digit is a 2, put the pile with the card on top of the other two piles.
5. Turn the deck over and deal the cards into piles again. Ask where the card is.
6. The second time:
  - If the 3's digit is a zero, put the pile with the card on the bottom of the other two piles, *before you turn the deck over*;
  - If the 3's digit is a 1, put the pile with the card between the other two piles;
  - If the 3's digit is a 2, put the pile with the card on top of the other two piles.
7. Turn the deck over and deal the cards into piles one last time. Ask where the card is.
8. The last time:
  - If the 9's digit is a zero, put the pile with the card on the bottom of the other two piles, *before you turn the deck over*;
  - If the 9's digit is a 1, put the pile with the card between the other two piles;
  - If the 9's digit is a 2, put the pile with the card on top of the other two piles.
9. Now turn the deck over and count the cards as you deal. The card you turn over when you say the number you were given should be the secret card.