Epidemic Cards

Directions:

1. Sort your pack of cards into 26 red and 26 black. We only care about colors for this so the suit and number do not matter. It's a bit counterintuitive, but red cards represent both susceptible people (when they are face down in the population) and infected people (when they are face up in the most recently picked hand). Black cards represent immune people always.
2. Put the pile of black cards to one side, face up. They will be used to replenish the population later. Put the pile of red cards face down. This is your population of size 26. This pile must always have 26 cards. ***What assumption will this require for our model?***
3. Start the epidemic by picking one from the population (the 26 face down cards). Of course it is going to be red, so it represents the first case. Put the card on the table face up and then put a black card into the population pile to indicate that that person can't be infected again.
4. Now count your number of infected/infectious people face up (should just be one) and count the number of susceptible people in the population pile. These are the red cards in the population pile, and there should be 25. Now fill these entries into Trial 1, Timestep 1 on your datasheet (we've already done the first row for you).
5. Now move the face-up cards to a discard pile. In our epidemic, infected individuals are only infected for the duration of one timestep, such that by the time we reach the next timestep, they have become immune (hence the black card added to the pile).
6. Now repeat the following steps (a-g) below until there are no new infections (i.e. you pick all black cards) or you run out of cards:
    a. Shuffle the 26 card population.
    b. Count how many infecteds (red cards) you had the previous round and double it.
    c. Take that many cards from your population.
    d. If any of the cards you have just picked are black, put them back into the population pile, as they are resistant to infection. Red cards indicate people who become infected this round.
    e. Put infecteds on the table in a new pile next to the previous round.
    f. REPLENISH the population with as many black cards as there were red cards.
    g. Fill in the corresponding row in your datasheet, and add a point to your graph.
7. When the game has ended, play one more round under "Trial 2." Plot the curve on the same graph. ***Does your epidemic look the same as before? Why or why not?***
8. When the second trial has ended, play yet another round under "Trial 3," except this time, allow every infected person to infect a possible three susceptible individuals each round (instead of two previously). ***How does this change the course of the epidemic? In terms of disease dynamics, what has changed?***