## CHI-SQUARE PRACTICE PROBLEMS

(Answers are also on this page at the bottom)

1. A poker-dealing machine is supposed to deal cards at random, as if from an infinite deck.

In a test, you counted 1600 cards, and observed the following:
Spades 404
Hearts 420

Diamonds 400
Clubs 376

Could it be that the suits are equally likely? Or are these discrepancies too much to be random?
2. Same as before, but this time jokers are included, and you counted 1662 cards, with these results:

| Spades | 404 |
| :--- | ---: |
| Hearts | 420 |
| Diamonds | 400 |
| Clubs | 356 |
| Jokers | 82 |

a. How many jokers would you expect out of 1662 random cards? How many of each suit?
b. Is it possible that the cards are really random? Or are the discrepancies too large?
3.A genetics engineer was attempting to cross a tiger and a cheetah. She predicted a phenotypic outcome of the traits she was observing to be in the following ratio 4 stripes only: 3 spots only: 9 both stripes and spots. When the cross was performed and she counted the individuals she found 50 with stripes only, 41 with spots only and 85 with both. According to the Chi-square test, did she get the predicted outcome?

