

Critical Thinking
Homework #2

Your Name: _____

Student ID# _____

Problem #1

Here are two sequences of coin-flips. X is one side of the coin, O is the other. XXO, for example, means that the coin landed on side X, then side X again, then side O.

1. XXOXXXOXOXOOOXXOOXOO

2. XOXOXOXOXOOXXOXOOXOXO

Which of the two was generated randomly by me flipping a coin, and which is a non-random sequence that I made up? Make sure to tell me how you know the answer.

Problem #2

If I flip a fair coin and ten times in a row it lands heads, which of the following should I most likely expect for the next ten flips? Circle one:

- A. It will “regress to the mean” and land tails more than heads to balance things out.
- B. Since it’s a fair coin, it is most likely to land heads half the times and tails the other half.

Problem #3

Suppose that the government conducts a survey of traffic intersections to find out which had the most accidents in the past month. At every intersection where there was a large number of accidents, the government installs cameras. Next month they do a survey again and notice that on average there are fewer accidents at the locations where cameras are installed. The government claims:

Claim: Installing the cameras reduced the number of accidents.

Suppose that this claim is false. Which cognitive bias/ fallacy (that we learned about in class) might be responsible for the government falsely believing the claim, in light of the evidence they have about the reduced number of accidents?

Problem #4

Suppose that I present you with four cards. On each card there is a number on one side and a letter on the other. I claim:

Claim: If a card has a vowel on one side then it has an even number on the other side.

Which of the four cards do you need to turn over to tell whether this claim is true? Circle all that apply:

1. Card #1: 6
2. Card #2: 7
3. Card #3: E
4. Card #4: F

Problem #5

Consider the following contingency table. I claim that I can predict which students will get an A in my course (Prediction = Yes = student will get an A) and which will not get an A (Prediction = No = student will not get an A). Here is a table of the results of my predictions:

	Observation = Yes	Observation = No
Prediction = Yes	37	12
Prediction = No	52	24

Am I good predictor of which students will get an A or not? Make sure to tell me why you think so.