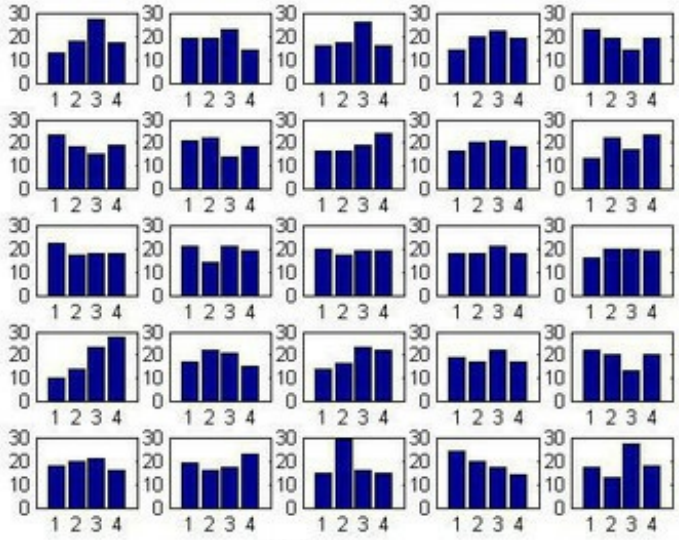
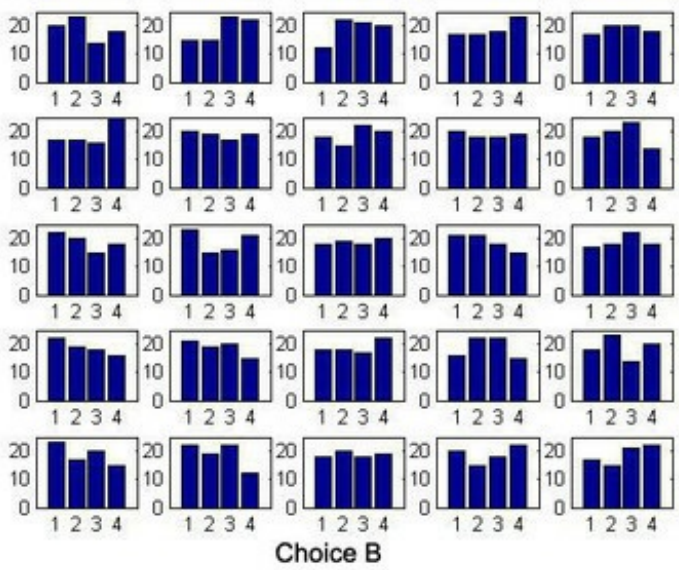
1.

The figures below show two sets of 25 histograms. One set was generated with random draws from the uniform discrete discrete distribution (i.e. 1,2,3 or 4 with equal probability); for the other set, some of the histograms were "tweaked" a little. Which set of histograms contains the tweaked data?





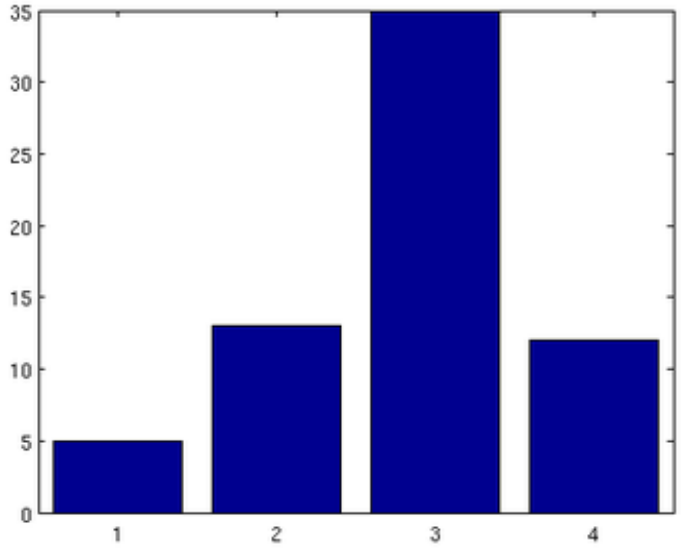
A. A

B. B

C. I can't tell.

2.

On August 11, 2014, 65 people picked a random number from 1 to 4 (inclusive). Here is the distribution of responses:



5 people picked 1, 13 picked 2, 35 picked 3, 12 picked 4.

Do students prefer the number 3 over other numbers? (See Step 2.) What is your (approximate) p value?

A. p=0

B. p = 0.001

C. $p = 0.05$

D. $p = 1e\text{-}4$

E. $p < 1e\text{-}5$

3.

What is your conclusion?

A. Our class is biased toward the number 3.
B. There is no bias in our class
C. Our class is biased toward the number 3, but the result is not significant.
D. We cannot draw a definite conclusion.

4.

What if we are not interested in the number 3 in particular, but in the question of whether any number gets picked more often than the others? What is your p-value then?

A. 0
B. 0.5
C. 0.01
D. 0.001
E. <=1e-5

5.

What is your conclusion?

A. Our class is biased towards one number
B. There is no bias in our class
C. Our class is biased toward one number, but the result is not significant.
D. We cannot draw a definite conclusion.

6.

For 65 people "randomly" picking a number from 1 to 4 (inclusive) what is the smallest number of picks of any given number which would cause you to reject the null hypothesis (randomness) at $p < 0.05$?

7.

Which formulation of H0 and HA would you have picked? Can you think of another way to phrase H0 and HA that would affect the p value? What are the advantages and disadvantages?