In [1]:
runfile('/Users/waynesnyder/Dropbox/Documents/Teaching/cs237/Web/Labs/Lab03Sol.py',
wdir='/Users/waynesnyder/Dropbox/Documents/Teaching/cs237/Web/Labs')

Problem 1:

(a):
There are gaps between the bins because dividing the range
by the number of bins gives us a bin width of (12-2)/20 = 0.5
and so the values, which are all integers, are put in
alternate bins.

(b):
bins = [1.5, 2.5, 3.5, 4.5, 5.5, 6.5, 7.5, 8.5, 9.5, 10.5, 11.5, 12.5]
Frequencies: [1. 2. 3. 4. 5. 6. 5. 4. 3. 2. 1.]
Bin boundaries: [1.5 2.5 3.5 4.5 5.5 6.5 7.5 8.5 9.5 10.5 11.5 12.5]

(c):

\[ \text{bins} = [x-0.5 \text{ for } x \text{ in range}\left(\text{min}(X),\text{max}(X)+2\right)] \]

(d):
Frequencies: [1. 2. 3. 4. 5. 6. 5. 4. 3. 2. 1.]

Boundaries: [1.5 2.5 3.5 4.5 5.5 6.5 7.5 8.5 9.5 10.5 11.5 12.5]
Problem 2
Problem 3

**N = 10**

![Coin Flips Until First Head (CDF)](image)

Analytical/Experimental Distribution for Two Dice

**N = 100**
N = 1000

N = 10000
$N = 100000$

$N = 1000000$
Answer: $N = 100,000$ produced a nearly perfect fit, and $N = 1,000,000$ appeared to fit perfectly.

Problem 4
$N = 10$
$N = 100$

Analytical/Experimental Distribution for Card Problem

Probability

Outcome

$N = 1000$

Analytical/Experimental Distribution for Card Problem

Probability

Outcome

$N = 10000$
Answer: N = 10,000 produced a nearly perfect fit, and N = 100,000 appeared to fit perfectly.

In [2]: