

You are allowed one 8 1/2" x 11" sheet of paper with hand-written notes on both sides.

- 1) A pharmaceutical company claims it has an improved drug for treating a disease. The current best drug cures 80% of patients. The company has data showing that their new drug cured 482 out of 580 patients in a clinical trial.
 - (a) Which of the following could be the null hypothesis?
 - (i) The new drug performs better than the current drug.
 - (ii) The new drug performs worse than the current drug.
 - (iii) The new drug performs the same as the current drug.
 - (b) Write code to simulate 10,000 samples of 580 patients, where each patient has a 80% chance of being cured. The number of cured patients in each sample should be stored in a list.

- (c) Suppose the histogram of the number of cured patients each of the 10,000 samples is below. Based on this histogram and the results of the clinical trial, do you think the new drug is an improvement on the current drug? Why or why not?

