Homework 16 Chapter 26 (Problems 1 to 6)

Due on December 5

Math 125 *Kovitz* Fall 2025

1. In order to test a null hypothesis, you need

   (i) data

   (ii) a box model for the data

   (iii) both of the above

   (iv) none of the above

2. The _____ hypothesis says that the difference is due to chance but the _____ hypothesis says that the difference is real.

   Fill in the blanks. Options: null, alternative.

3. True or false, and explain.

   (a) If P is 43%, the null hypothesis looks plausible.

   (b) If P is 0.43 of 1%, the null hypotheis looks implausible.

   (c) The alternative hypothesis is another way of explaining the results; it says the difference is due to chance.

4. A die is rolled 18,000 times.

   (a) Someone figures the expected number of fours as $18{,}000 \times 1/6 = 3{,}000$, and the SE as $\sqrt{18{,}000} \times \sqrt{1/6 \times 5/6} = 50$.

   Is this right? Answer yes or no, and explain.

   (b) The 18,000 rolls resulted in 3,105 fours.
   Does this die appear to be fair?
   (Decide which test applies, show all calculations, and state the decision.)

5. A coin was tossed 150 times and got 89 heads.
   Find P and decide if the coin is fair or gets too many heads.

6. Other things being equal, which is stronger evidence for the null hypothesis: $P = 3\%$ or $P = 27\%$?