

1. Abby and Raquel like to eat sub sandwiches. However, they noticed that the lengths of the “6-inch sub” sandwiches they get at their favorite restaurant seemed shorter than the advertised length. To investigate, they randomly selected 24 different times during the next month and ordered a “6-inch” sub. Here are the actual lengths of each of the 24 sandwiches (in inches):

4.50	4.75	4.75	5.00	5.00	5.00	5.50	5.50
5.50	5.50	5.50	5.50	5.75	5.75	5.75	6.00
6.00	6.00	6.00	6.00	6.50	6.75	6.75	7.00

- (a) Calculate the sample mean. What are the two explanations for why \bar{x} is less than 6 inches?
(b) Do these data provide convincing evidence at the $\alpha = 0.10$ level that the sandwiches at this restaurant are shorter than advertised, on average?
(c) Given your conclusion in part (a), which kind of mistake—a Type I or a Type II error—could you have made? Explain what this mistake would mean in context.

2. According to an article in the San Gabriel Valley Tribune (February 13, 2003), “Most people are kissing the ‘right way.’” That is, according to a study, the majority of couples prefer to tilt their heads to the right when kissing. In the study, a researcher observed a random sample of 124 kissing couples and found that 83/124 of the couples tilted to the right. What are the two explanations for this result? Is this convincing evidence that couples really do prefer to kiss the right way?