

1. In the mornings, it takes Ms. Weinstein an average of 41.6 minutes to commute from her home to school, with a standard deviation of 4.5 minutes. On average, Ms. Weinstein takes 47 minutes to prepare to leave her house each morning from the time she wakes up, with a standard deviation of 5.37 minutes. On any given day, what is the probability that Ms. Weinstein will arrive at school within 90 minutes of waking up? Assuming that both stated distributions are Normal. Show all work.
  
2. Ms. Weinstein likes to make small origami boxes for giving gifts. With the new paper she bought, the square bottoms measure an average of 3.044 inches per side, with a standard deviation of 0.1873 inches. The square tops measure an average of 3.548 inches per side, with a standard deviation of 0.1896 inches. If the top is less than 0.2 inches larger than the bottom, it will not fit. Likewise, if the top is more than 0.8 inches larger than the bottom, it will also not fit. Ideally it should be 0.5 inches larger than the bottom. What is the probability that Ms. Weinstein will construct a box where the top fits the bottom? Assuming that both stated distributions are Normal. State the assumptions you are making to answer this question and show all work.