Rady Tasty Pastry[†]

Selling Pastries

Rady Tasty Pastry had a successful grand opening last year, and it has been a hit! Rady students love their selection of pastries and often purchase the Quant Croissant because it is super tasty but, at times, hard to digest. You are one of many being considered for a consulting opportunity to help Rady Tasty Pastry make better, informed decisions with regard to how many Quant Croissants to make each morning. The problem is that, during the past year, it seemed like there were always either leftover Quant Croissants at the end of the day or Rady Tasty Pastry would actually run out of them. They just couldn't seem to be on target on any given day because the number of Rady students eager to get a bite of that Quant Croissant was highly variable.

A Quant Croissant costs approximately $1.25 due to materials and labor. However, Rady management has determined that the fair price to sell them at within Rady is $5 each. Rady has also secured a local charitable organization who has agreed to purchase all leftover Quant Croissants for only $0.50 each. Obviously, Rady Tasty Pastry would prefer to sell all of them during the day and earn a $5-$1.25 = $3.75 profit margin rather than losing $0.50-$1.25 = -$0.75 each by selling them to the charitable organization. But, losing $0.75 is still better than losing the full $1.25 so Rady Tasty Pastry is generally happy about having this discounted sales channel.

From historical data, you have learned that demand is uncertain (and can be modeled by the random variable D) and seems to be well-modeled by a normal distribution with mean 535.279 and standard deviation 144.571. Your job is to determine the quantity (q) of Quant Criossants to stock each morning.