EX-SET#3 - YIELD MANAGEMENT

Exercise 1

The Easy - Fly is an airline company that is introducing new air routes to the United States.
In particular, the management is evaluating the variable rate for the route from Milan to New York. The company aims to maximize the profit with 3 different classes of tickets.
The plane can host 500 people. The seats on the plane are undifferentiated, so the class of customers can't be recognized once a customer has bought the ticket.

Rate	price	From	To
Easy	500 €	Booking start	90 days before the flight
Premium	700 €	89 days before the flight	20 days before the flight
Executive	1000 €	19 days before the flight	Flight day

The available data indicates that the different demands are described by a normal distribution with the parameters in the following table.

	average	variance
Executive Rate	100	70
Premium Rate	250	50
Easy Rate	400	100

The company's management is evaluating to include in the flight ticket sale some services.
The company's management does not intend to provide a service of prestige because it understood that the customer perception of the air service has changed over time, customers prefer price over service. For this reason, to keep costs to a minimum, it has decided to include in the service only a blanket and a small pillow. For this service, the company has stipulated a flat contract with a company that provides the washing service for blankets and pillows.
Easy-Fly pays an amount of 2 € / set for the expected use of pillows and blankets at the beginning of the year for all the quantities you expect to order during the year. The contract is already paid. In addition to this service, but already very common among airline service offers, the management gives to customers the chance to eat lunch for a fee on the plane. For this reason, just before the departure of the flight, once passengers and luggage boarded, airline staff orders to the catering company about 300 meals. This estimate is made based on the experience of the hostesses and no one has ever studied how many meals are consumed. The average revenue for this service is 35 € / meal. All revenues belong to the catering company. The airline company does not have earnings from this sale. However, it collaborates on meal demand forecasting because the lunch service must be provided to the passenger.

1. How many seats do you allocate to each rate?
2. Analyze and show the impact on the protection level of a decrease in the Easy rate (other things being equal, assuming that a reduction in the Easy rate does not mean a change of rate for any values of the mean and variance).

Optional question

A colleague of the chief operating officer is considering the possibility of using the 3 rates differently. In particular, she thinks to sell the Easy-tickets only shortly before the start (last-minute ticket), if she realizes that he cannot sell all the seats allocated at the Executive-rate:

Rate	Price	from	to
Premium	700 €	Booking start	15 days before the flight
Executive	1000 €	14 days before the flight	2 days before the flight
Easy	500 €	1 day before the flight	Flight day

With this pricing system, he would be sure to sell all the seats without any problem at a price less than or equal to 700 €. The distribution of the demand for places at 1000 € in this circumstance is described by a normal distribution, with a mean 100 and 70% of probability that the value of the demand stays in the range between 40 seats and 160 seats. How many seats do you allocate to the Executive rate in this circumstance?