15.11 The Supermart Store is about to place an order for Valentine's Day candy. The candy can be bought for $1.40 per box, and it is sold for $2.90 per box up to Valentine's Day. After Valentine's Day, any remaining boxes are sold for $1.00 each. All surplus candy can be sold at this reduced price. Demand at the regular retail price is a random variable with the following discrete probability distribution:

Demand (Boxes)	Probability
8	0.15
9	0.15
10	0.30
11	0.30
12	0.10

(a) Determine **the expected demand** for boxes of candy at the regular retail price.

(b) Determine the optimal number of boxes to stock using **the critical fractile** approach.

(c) What is **the expected profit** for your order in part b?

Reconsider Example 11.5 (Blackjack Airline). After initial success with the Los Angeles-to-Las Vegas route, Blackjack Airline's demand for full-fare tickets has increased to an average of 75, with the standard deviation remaining at 15. Consequently, Blackjack has decided to raise all ticket prices by $10 (i.e., full-fare coach ticket $79 and "gamblers fare" at $59). Under these new conditions,

(a) What is the critical fractile? List Co, Cu and Critical fractile.

(b) How many full-fare seats should Blackjack reserve?

11.9 Town and Country has experienced a substantial increase in business volume because of recent fare wars between the major air carriers. Town and Country operates a single office at a major international airport, with **a fleet of 60 compact and 30 midsize cars**. Recent developments have prompted management to rethink the company's reservation policy. The table below contains data on the rental experience of Town and Country:

Car	Rental Rate	Discount Rate	Daily Demand	Standard Deviation
Compact	$30	$20	50	15
Midsize	$40	$30	30	10

The daily demand appears to **follow a normal distribution**; however, it has been observed that midsize-car customers do not choose to rent a compact when no midsize car is available. **The discount rate is available to persons who are willing to reserve a car at least 14 days in advance.** The current reservation policy is that **40 compact cars** are held for customers who are willing to pay the full rate and **25 midsize cars** are held for full rate-paying customers.

a. Using yield management, determine the optimal number of **compact and midsize cars** to be held for customers paying the full rate.