Answer on Question #62521 – Math – Statistics and Probability

Question

Suppose that a shop has N boxes of chocolates, which will expire in a week's time. The chocolates are priced at $4 per box. The shop owner is wondering if he should offer a 25% discount and price these chocolates at $3 instead. The probability of selling D boxes of chocolates in a week depends on the price as follows:

$4:
P(D=1) = 0.5

P(D=2) = 0.4

P(D=3) = 0.1

$3:

P(D=1) = 0.25

P(D=2) = 0.25

P(D=3) = 0.5
Determine the values of N where the shop owner should price the chocolates at $4 and $3, respectively.

Solution

If Price = $4, then

P(D=1) = 0.5, P(D=2) = 0.4, P(D=3) = 0.1,

E(D) = 1 · 0.5 + 2 · 0.4 + 3 · 0.1 = 1.6 boxes.

If Price = $3, then

P(D=1) = 0.25, P(D=2) = 0.25, P(D=3) = 0.5,

E(D) = 1 · 0.25 + 2 · 0.25 + 3 · 0.5 = 2.25 boxes.

If $N \leq 1.6$, then the price of $4 suits him.

If $1.6 < N \leq 2.25$, then the price of $3 will be OK.

If $N > 2.25$, then he should give a greater discount than 25%.