

STT200

Additional Homework due at end of recitation 3-18-08.

From Chapter 16 of your textbook:

7. MODIFIED FROM THE TEXT. The problem assumes that contract 1 is either awarded or not with probabilities 0.3 and 0.7 respectively. Contract 2 is awarded or not with probabilities 0.6 and 0.4 respectively. Profit from contract 1 is random variable X . Profit from contract 2 is random variable Y .

x	0	50 (thousand)
$p(x)$	0.3	0.7

y	0	20 (thousand)
$p(y)$	0.6	0.4

Calculate $E X$, $E Y$, $E(X + Y)$ (for which independence of X , Y is NOT needed).

Additionally, calculate $\text{Var } X$, $\text{VAR } Y$, $\text{Var}(X + Y)$ (for which independence of X , Y IS needed).

Calculate $\text{sd}(X + Y)$ and $\text{sd}(X - Y)$ under the independence assumption.

19.

31.

38. In this problem several time-consuming steps are needed to get a bike ready. The random times needed to perform these tasks are assumed to be independent. It is also assumed that each of these times is normally distributed. Sketch each of the three densities for the information given in the problem. Using the fact that THE SUM OF INDEPENDENT NORMAL R.V. IS AGAIN A NORMAL R.V. sketch the normal distribution governing the total time T to get the bike ready. For (b) use

$$P(T < 0.5 \text{ (hours)}) = P(Z < (0.5 - E T) / (\text{sd } T))$$

to determine the probability the bike will be ready in less than one half of an hour.

I will go over similar problems on Monday.