

Due Tuesday, Jan 29

Solve the following problems and staple your solutions to this cover sheet.

1. Exercise 5.60
2. Exercise 5.63
3. Exercise 5.64
4. Exercise 5.65
5. Exercise 5.72
6. Exercise 5.75
7. Exercise 5.81
8. Exercise 5.87
9. Let  $Y_1$  be the number of ones and  $Y_2$  the number of twos and threes when a pair of fair dice are rolled. Find the joint probability function of  $Y_1$  and  $Y_2$ . What is the probability  $P(Y_1 = 1, Y_2 = 1)$ ? Find the variances of  $Y_1$  and  $Y_2$  and the covariance of  $Y_1$  and  $Y_2$ .
10. Let  $Y_1, Y_2, \dots, Y_n$  be independent random variables with  $E(Y_i) = \mu$  and  $V(Y_i) = \sigma^2$ , for  $i = 1, 2, \dots, n$ . Prove that  $E(\bar{Y}) = \mu$  and  $V(\bar{Y}) = \frac{\sigma^2}{n}$ .