

Statistics 341
Fall 2008 - Homework Assignment #7
Due Friday, December 5

1. Roll two dice. Let Y_1 be the sum of the two dice and Y_2 be the number on the second die rolled.
 - (a) Find the joint probability distribution function for Y_1 and Y_2 .
 - (b) Find the marginal probability distribution functions for Y_1 and Y_2 .
 - (c) Are Y_1 and Y_2 independent? Explain your answer.
 - (d) Find the conditional probability distribution function for Y_2 when $Y_1 = 7$.
 - (e) Find the conditional probability distribution function for Y_1 when $Y_2 = 3$.
 - (f) Find the covariance between Y_1 and Y_2 .
 - (g) Find the correlation between Y_1 and Y_2 .

2. A playlist contains 15 songs, 5 songs from Artist 1, 5 songs from Artist 2, and 5 songs from Artist 3. Shuffle the playlist (randomly) and listen to the first 6 songs on the playlist. Let Y_1 be the number of songs from Artist 1 in the first 6 songs played and let Y_2 be the number of songs from Artist 2 in the first 6 songs played.
 - (a) Find the joint probability distribution function for Y_1 and Y_2 .
 - (b) Find the marginal probability distribution functions for Y_1 and Y_2 . Both distributions are the same as one we have studied in the past. What is the distribution and parameters?
 - (c) Are Y_1 and Y_2 independent? Explain your answer.
 - (d) Find the conditional probability distribution function for Y_2 when $Y_1 = 3$.
 - (e) Find the conditional probability distribution function for Y_1 when $Y_2 = 2$.
 - (f) Find the covariance between Y_1 and Y_2 .
 - (g) Find the correlation between Y_1 and Y_2 .