Baylor University
Hankamer School of Business
Department of Finance, Insurance & Real Estate

Risk Management   Name: _____
Dr. Garven
Problem Set 2

In the following problems, assume that returns and risks are annualized.

Problem 1 (50 points). Suppose you are interested in forming a portfolio consisting of two risky securities, securities A and B. Here are their respective return distributions (note: p_s corresponds to the probability that state s occurs, whereas r_{as} and r_{bs} correspond to the state-contingent returns on securities A and B):

p_s	r_{as}	r_{bs}
20%	0%	8%
20%	5%	0%
20%	8%	5%
20%	10%	10%
20%	20%	0%

A. (10 points) What are the expected returns for securities A and B?

B. (10 points) What are the standard deviations for the returns on securities A and B?

C. (5 points) What is the correlation between returns on securities A and B?

D. (10 points) What is the expected return and standard deviation for an equally weighted portfolio consisting of securities A and B?

E. (10 points) Suppose securities C and D have the same expected returns and standard deviations as securities A and B, but are uncorrelated. What is the expected return and standard deviation for an equally weighted portfolio consisting of securities C and D?

F. (5 points) Explain why the portfolio consisting of securities C and D is riskier than the portfolio consisting of securities A and B.

Problem 2 (50 points).

A. (15 points) Suppose that a security's returns are normally distributed with an expected return of 10% and standard deviation of 20%. What is the probability that an investor won't lose money during the coming year if she invests all of her money in this risky security?

B. (15 points) Suppose our investor forms a portfolio in which half of her money is allocated to the risky security described in part A and the other half of her money is allocated to a riskless asset with an expected return of 3%. What is the probability she won't lose money during the coming year if she were to invest in this portfolio (hint: the expected return for this portfolio is 6.5%, and its standard deviation is 10%).

C. (20 points) What is the probability that our investor will earn at least 6% during the coming year if 1) she invests all her money in the risky security described in part A, and 2) she invests all her money in the portfolio described in part B.