

**Short Answer (15 points each)**

1. If you submit a limit order to sell shares of stock, will your order show up as a bid or ask price?
2. Assume two annuities have the same present value. All characteristics of the annuities are identical except for interest rate and initial cash flow. What must be true about the initial cash flow of the annuity that earns a lower interest rate?
3. Assume the corporate tax rate is 35% and that your firm's depreciation expense falls by \$500 per year. Calculate how your firm's operating expenses need to change so that unlevered net income remains unchanged.
4. Set up the calculations needed to determine the expected return on Barnes & Noble (BN) in 2013 if you believe that in 2013 there is a 25% chance that BN will fall 45%, a 60% chance that BN will rise 10%, and a 15% chance that BN will rise 50%.
5. You have invested \$200,000 in Green Mountain Coffee Roasters (GMCR) and \$300,000 in Express (EXPR). The beta of GMCR equals 0.27 and the beta for EXPR equals 1.29. What additional information do you need to calculate the beta of your portfolio?
6. Assume the market value of Martin Marietta's (MLM) stock is \$4.17 billion and of its bonds is \$1.10 billion. Assume also that the beta of MLM's stock is 1.33 and of its bonds is 0.25. If markets are perfect, set up the calculations needed to determine the beta of MLM's stock if it were to issue enough equity to retire all of its debt?
7. Based on our discussions of capital structure, how would you expect stock and bond prices to react to a firm announcing its plans to undertake projects that are riskier than expected? Note: You only need to state what you expect to happen, not why it would happen.
8. Calculate your total profit or loss if you buy 5 put contracts on Dow Chemical with a \$35 strike price for \$5.75 per share and Dow's stock price equals \$30 per share when the puts expire.
9. Assume two calls on Netflix are equivalent except that option A expires after option B. Which option will always have a value that equals or exceeds the other? Note: Your answer will be "A" or "B".
10. Assume that when using the Black-Scholes Option Pricing Model to value a put, you calculate  $d_1$  as 0.907,  $d_2$  as 0.817, and  $PV(K)$  as \$24.93. Set up the calculations needed to determine the beta of the put if the beta of the stock is 1.9 and the price of the stock is \$28.

**Problems (75 points each)**

1. Assume that Barnes and Knights Booksellers' stock price currently equals \$54 but that its stock price will either climb to \$65 or fall to \$45 next year. Assume also that you can buy a put on Barnes and Knights with a strike price of \$55 for \$4. Alternatively, you can build an equivalent portfolio by short-selling 0.5 shares and buying \$31.8627 of risk-free bonds earning a 2% interest rate. Set up a table that shows the transactions required to create an arbitrage profit and which demonstrates that the conditions of arbitrage are met. Note: calculations required.

2. Assume you invest \$100,000 in Kroger and \$300,000 in Deere. Set up all of the calculations needed to determine the following:
- the correlation between the returns on Kroger and Deere.
  - the expected return on your portfolio.

<u>Year</u>	<u>Return on:</u>	
	<u>Kroger</u>	<u>Deere</u>
2012	+13%	+7%
2011	+10%	- 3%
2010	+11%	+56%
2009	-21%	+45%

Use the following to answer questions 3 and 4

Assume that Falling Apple Inc. is considering whether or not to build a new factory at a cost of \$150 million. The firm has already spent \$5 million on the land on which the factory will be built. This land could be sold today for an after-tax cash flow of \$4 million. If it is built, the factory will generate net cash flows of \$1 million four months from today. After this initial cash flow, cash flows will occur monthly and will grow by 0.5% each. The final cash flow will occur 30 years from today.

The factory can be expanded at any time over the next 4 years at a cost of \$50 million. The expansion is expected generate net cash flows of \$4.5 million per year through 30 years from today. In addition, the factory can be sold for \$75 million any time over the next 5 years.

The standard deviation of returns on the factory will equal 30% and on the expansion will equal 40%. This exceeds the standard deviation of returns of 25% on Falling's existing assets. The beta of the factory and the expansion will be 1.2. This exceeds the beta of Falling's existing assets which equals 1.1.

The expected return on the market equals 8% and the risk-free rates vary by maturity as follow:  
 1 month = 0.12%; 2 months = 0.07%; 3 months = 0.10%; 4 months = 0.13%; 5 months = 0.14%;  
 6 months = 0.15%; 1 year = 0.21%; 2 years = 0.29%; 3 years = 0.35%; 4 years = 0.47%;  
 5 years = 0.64%; 10 years = 1.73%; 20 years = 2.74%; 30 years = 3.04%

- Set up the calculations needed to determine the net present value of building the factor ignoring the impact of any options on the value of the project. Note: No need to solve anything.
- Set up the calculations needed to determine the impact being able to sell the factory on the value of the factory to the firm. Note: No need to solve anything.
- Assume that the corporate tax rate is 35%, that the personal tax rate on equity income is 20%, and that the personal tax rate on interest income equals 40%. Assume also that Snews Corp. has a 30% chance of earning \$20 million, a 50% chance of earning \$40 million, and a 20% chance of earning \$55 million. Determine the optimal level of leverage for Snews. Note: calculations required.
- WEAir Inc.'s stock price currently equals \$50 per share. Over each of the next two years, WEAir's stock will rise by 20% or fall by 10%. Calculate the value of a call with a \$45 strike price that expires two years from today if the risk-free interest rate equals 2%.