

**Short Answer 1 (15 points):** Set up the calculations to determine the required return on Cutlucent Inc. if the correlation between Cutlucent and the market is +.4, the standard deviation of returns on Cutlucent is 34%, the standard deviation of returns on the market is 15%, the expected return on the market is 8%, and the risk-free interest rate is 3%.

$$r = 3 + \beta(8-3); \beta = \frac{(+.4)(34)(15)}{(15)^2}$$

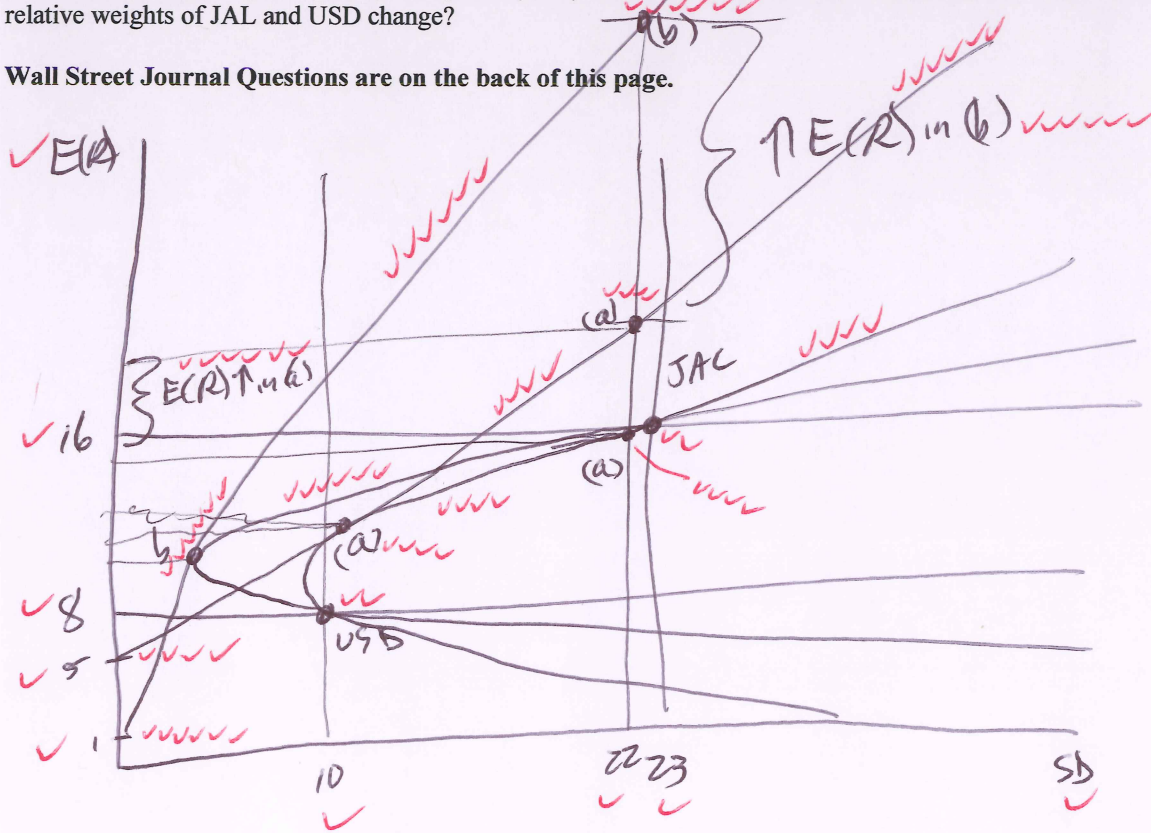
**Short Answer 2 (15 points):** Assume you invest \$200,000 in Starbucks which has a beta of 0.8 and \$600,000 in Hewlett-Packard which has a beta of 1.65. Set up the calculations to determine the beta of your portfolio.

$$\left(\frac{200}{200+600}\right)(0.8) + \left(\frac{600}{200+600}\right)(1.65)$$

**Problem (75 points):** Assume the expected return on USDefault (USD) Inc. is 8% and on Japan Airbus Lines (JAL) is 16%. Assume also that the correlation between USD and JAL is 0.2 and that the standard deviation of returns on USD is 10% and on JAL is 23%. Assume also that the return on T-bills is 5%. Assume also that you wish to construct a portfolio with a standard deviation of returns of 22%.

- Show your optimal portfolio of USD, JAL, and T-bills and show how much better off you are than if there were no risk-free asset.
- On the same graph, show how your expected return changes if the correlation between USD and JAL falls to -0.3 and the rate on T-bills falls to 1%. Note: Be sure to clearly indicate which part of the graph answers part a) and which answers part b).
- Because of the changes in part b), will you buy, buy and return, sell, or short-sell additional T-bills? How will the relative weights of JAL and USD change?

Wall Street Journal Questions are on the back of this page.



c. Short sell more T-bills  
weight of USD will rise & of JAL will fall (Answer depends on graph)