**11. Stocks offer an expected rate of return of 18 percent, with a standard deviation of 22 percent. Gold offers an expected return of 10 percent with a standard deviation of 30 percent.**

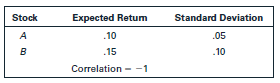
**a. In the light of the apparent inferiority of gold with respect to both mean return and volatility, would anyone hold gold? If so, demonstrate graphically why one would do so.**

Although gold is clearly inferior to the stocks when placed side by side, gold may prove to be useful if included in a portfolio – if gold and stocks have low correlation, it may be wise to partially invest in gold alongside stocks.

**b. Given the data above, re-answer problem (a) with the additional assumption that the correlation coefficient between gold and stocks equals 1. Draw a graph illustrating why one would or would not hold gold in one’s portfolio. Could this set of assumptions for expected returns, standard deviations, and correlation represent an equilibrium for the security market?**

Because gold and stocks have a positive correlation of +1, the portfolio will not include cold as it has both inferior deviation and return. The portfolio will consist of purely stocks and potentially bills as well.

**12. Suppose that there are many stocks in the market and that the characteristics of stocks A and B are as follows:**



**Suppose that it is possible to borrow at the risk-free rate, rf. What must be the value of the risk-free rate? (Hint: Think about constructing a risk-free portfolio from stocks A and B.)**

Because the two stocks are perfectly negatively correlated, it is possible to create a portfolio that is risk free.

Therefore, if we want to determine the return on the risk-free portfolio, we must apply the formula:

**14. “The standard deviation of the portfolio always is equal to the weighted average of the standard deviations of the assets in the portfolio.” True or false?**

In the case that the assets of the portfolio are all positively correlated by +1, this is true. In reality, this is not the case and, therefore, the standard deviation of the portfolio is not necessarily equal to the weighted average of standard deviations. Correlation between the assets must be taken into account.

**16. Suppose that you have $1 million and the following two opportunities from which to construct a**

**portfolio:**

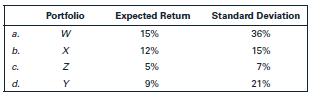
**a. Risk-free asset earning .12 per year**

**b. Risky asset earning .30 per year with a standard deviation of .40.**

**If you construct a portfolio with a standard deviation of .30, what will be the rate of return?**

Therefore, the rate of return on the portfolio is:

**31. Which one of the following portfolios cannot lie on the efficient frontier as described by Markowitz?**



Portfolio Y. This is because Portfolio X dominates Portfolio Y with a higher expected return while simultaneously having a lower standard deviation.

**32. Which of the following statements about portfolio diversification is correct?**

**a. Proper diversification can reduce or eliminate systematic risk.**

**b. Diversification reduces the portfolio’s expected return because diversification reduces a portfolio’s total risk.**

**c. As more securities are added to a portfolio, total risk typically would be expected to fall at a decreasing rate.**

**d. The risk-reducing benefits of diversification do not occur meaningfully until at least 30 individual securities are included in the portfolio.**

The answer is C

**33. The measure of risk for a security held in a diversified portfolio is**

**a. Specific risk**

**b. Standard deviation of returns**

**c. Reinvestment risk**

**d. Covariance**

Answer: D

**34. Portfolio theory as described by Markowitz is most concerned with**

**a. The elimination of systematic risk**

**b. The effect of diversification on portfolio risk**

**c. The identification of unsystematic risk**

**d. Active portfolio management to enhance return**

Answer: B