49 PORTFOLIO RISK AND RETURN PART I

1. If two stocks have positive covariance:
   (A) they exhibit a strong correlation of returns.
   (B) they are likely to be in the same industry.
   (C) their rates of return tend to change in the same direction.

2. A line that represents the possible portfolios that combine a risky asset and a risk free asset is most accurately described as a:
   (A) capital allocation line.
   (B) capital market line.
   (C) characteristic line.

3. Which of the following portfolios falls below the Markowitz efficient frontier?

Portfolio	Expected Return	Expected Standard Deviation
A	12.1%	8.5%
B	14.2%	8.7%
C	15.1%	8.7%

   (A) Portfolio A.
   (B) Portfolio B.
   (C) Portfolio C.

4. A bond was purchased exactly one year ago for $910 and was sold today for $1,020. During the year, the bond made two semi-annual coupon payments of $30. What is the holding period return?
   (A) 12.1%.
   (B) 18.7%.
   (C) 6.0%.

5. Using the following correlation matrix, which two stocks would combine to make the lowest-risk portfolio? (Assume the stocks have equal risk and returns.)

Stock A	A	B	C
A	+1	–	–
B	-0.2	+1	–
C	+0.6	0.1	+1

   (A) C and B.
   (B) A and C.
   (C) A and B.

6. Which of the following inputs is least likely required for the Markowitz efficient frontier? The:
   (A) level of risk aversion in the market.
   (B) expected return of all securities.
   (C) covariation between all securities.

7. A stock has an expected return of 4% with a standard deviation of returns of 6%. A bond has an expected return of 4% with a standard deviation of 7%. An investor who prefers to invest in the stock rather than the bond is best described as:
   (A) risk averse.
   (B) risk neutral.
   (C) risk seeking.

8. Smith has more steeply sloped risk-return indifference curves than Jones. Assuming these investors have the same expectations, which of the following best describes their risk preferences and the characteristics of their optimal portfolios? Smith is:
   (A) more risk averse than Jones and will choose an optimal portfolio with a lower expected return.
   (B) less risk averse than Jones and will choose an optimal portfolio with a lower expected return.
   (C) more risk averse than Jones and will choose an optimal portfolio with a higher expected return.

9. An investor begins with a $100,000 portfolio. At the end of the first period, it generates $5,000 of income, which he does not reinvest. At the end of the second period, he contributes $25,000 to the portfolio. At the end of the third period, the portfolio is valued at $123,000. The portfolio's money-weighted return per period is closest to:
   (A) 1.20%.
   (B) 0.94%.
   (C) -0.50%.

10. On January 1, Jonathan Wood invests $50,000. At the end of March, his investment is worth $51,000. On April 1, Wood deposits $10,000 into his account, and by the end of June, his account is worth $60,000. Wood withdraws $30,000 on July 1 and makes no additional deposits or withdrawals the rest of the year. By the end of the year, his account is worth $33,000. The time-weighted return for the year is closest to:
   (A) 5.5%.
   (B) 10.4%.
   (C) 7.0%.

11. Which of the following portfolios falls below the Markowitz efficient frontier?

Portfolio	Expected Return	Expected Standard Deviation
A	7%	14%
B	9%	26%
C	15%	30%
D	12%	22%

(A) B.
(B) C.
(C) D.

12. Time-weighted returns are used by the investment management industry because they:
(A) result in higher returns versus the money-weighted return calculation.
(B) are not affected by the timing of cash flows.
(C) take all cash inflows and outflows into account using the internal rate of return.

13. Which of the following is most accurate with respect to the relationship of the money-weighted return to the time-weighted return? If funds are contributed to a portfolio just prior to a period of favorable performance, the:
(A) money-weighted rate of return will tend to be depressed.
(B) money-weighted rate of return will tend to be elevated.
(C) time-weighted rate of return will tend to be elevated.

14. Stock A has a standard deviation of 4.1% and Stock B has a standard deviation of 5.8%. If the stocks are perfectly positively correlated, which portfolio weights minimize the portfolio's standard deviation?

	Stock A	Stock B
(A)	0%	100%
(B)	100%	0%
(C)	63%	37%

15. An investor buys a non-dividend paying stock for $100 at the beginning of the year with 50% initial margin. At the end of the year, the stock price is $95. Deflation of 2% occurred during the year. Which of the following return measures for this investment will be greatest?
(A) Nominal return.
(B) Real return.
(C) Leveraged return.

16. An investor's portfolio currently has an expected return of 11% with a variance of 0.0081. She is considering replacing 20% of the portfolio with a security that has an expected return of 12% and a standard deviation of 0.07. If the covariance between the returns on the existing portfolio and the returns on the added security is 0.0058, the variance of returns on the new portfolio will be closest to:

(A) 0.00545.

(B) 0.00724.

(C) 0.00984.

17. An investor buys one share of stock for $100. At the end of year one she buys three more shares at $89 per share. At the end of year two she sells all four shares for $98 each. The stock paid a dividend of $1.00 per share at the end of year one and year two. What is the investor's time-weighted rate of return?

(A) 0.06%.

(B) 11.24%.

(C) 6.35%.

18. If the standard deviation of returns for stock A is 0.40 and for stock B is 0.30 and the covariance between the returns of the two stocks is 0.007 what is the correlation between stocks A and B?

(A) 17.14300.

(B) 0.00084.

(C) 0.05830.

19. A portfolio manager invests 40% of a portfolio in Asset X, which has an expected standard deviation of returns of 15%, and the remainder in Asset Y, which has an expected standard deviation of returns of 25%. If the covariance of returns between assets X and Y is 0.0158, the expected standard deviation of portfolio returns is closest to:

(A) 2.7%.

(B) 18.4%.

(C) 16.3%.

20. According to Markowitz, an investor's optimal portfolio is determined where the:

(A) investor's highest utility curve is tangent to the efficient frontier.

(B) investor's lowest utility curve is tangent to the efficient frontier.

(C) investor's utility curve meets the efficient frontier.

21. Assume an investor makes the following investments:
    - Today, she purchases a share of stock in Redwood Alternatives for $50.00.
    - After one year, she purchases an additional share for $75.00.
    - After one more year, she sells both shares for $100.00 each.

    There are no transaction costs or taxes. The investor's required return is 35.0%.
    During year one, the stock paid a $5.00 per share dividend. In year two, the stock paid a $7.50 per share dividend.
    The time-weighted return is:
    (A) 23.2%.
    (B) 51.4%.
    (C) 51.7%.

22. Of the six attainable portfolios listed, which portfolios are not on the efficient frontier?

Portfolio	Expected Return	Standard Deviation
A	26%	28%
B	23%	34%
C	14%	23%
D	18%	14%
E	11%	8%
F	18%	16%

    (A) A, B, and C.
    (B) B, C, and F.
    (C) C, D, and E.

23. Which one of the following portfolios cannot lie on the efficient frontier?

Portfolio	Expected Return	Standard Deviation
A	20%	35%
B	11%	13%
C	8%	10%
D	8%	9%

    (A) Portfolio C.
    (B) Portfolio D.
    (C) Portfolio A.

24. Which of the following statements about portfolio theory is least accurate?
    (A) Assuming that the correlation coefficient is less than one, the risk of the portfolio will always be less than the simple weighted average of individual stock risks.
    (B) For a two-stock portfolio, the lowest risk occurs when the correlation coefficient is close to negative one.
    (C) When the return on an asset added to a portfolio has a correlation coefficient of less than one with the other portfolio asset returns but has the same risk, adding the asset will not decrease the overall portfolio standard deviation.

25. Stock 1 has a standard deviation of 10. Stock 2 also has a standard deviation of 10. If the correlation coefficient between these stocks is -1, what is the covariance between these two stocks?
    (A) -100.00.
    (B) 1.00.
    (C) 0.00.

26. An investor buys one share of stock for $100. At the end of year one she buys three more shares at $89 per share. At the end of year two she sells all four shares for $98 each. The stock paid a dividend of $1.00 per share at the end of year one and year two. What is the investor's money-weighted rate of return?
    (A) 0.06%.
    (B) 5.29%.
    (C) 6.35%.

27. Assets A (with a variance of 0.25) and B (with a variance of 0.40) are perfectly positively correlated. If an investor creates a portfolio using only these two assets with 40% invested in A, the portfolio standard deviation is closest to:
    (A) 0.5795.
    (B) 0.3742.
    (C) 0.3400.

28. According to the CAPM, a rational investor would be least likely to choose as his optimal portfolio:
    (A) a 130% allocation to the market portfolio.
    (B) the global minimum variance portfolio.
    (C) a 100% allocation to the risk-free asset.

29. Historically, which of the following asset classes has exhibited the smallest standard deviation of monthly returns?
    (A) Large-capitalization stocks.
    (B) Long-term corporate bonds.
    (C) Treasury bills.

30. Over long periods of time, compared to fixed income securities, equities have tended to exhibit:
    (A) higher average annual returns and higher standard deviation of returns.
    (B) higher average annual returns and lower standard deviation of returns.
    (C) lower average annual returns and higher standard deviation of returns.

31. The basic premise of the risk-return trade-off suggests that risk-averse individuals purchasing investments with higher non-diversifiable risk should expect to earn:
    (A) lower rates of return.
    (B) higher rates of return.
    (C) rates of return equal to the market.

32. The optimal portfolio in the Markowitz framework occurs when an investor achieves the diversified portfolio with the:
    (A) highest return.
    (B) highest utility.
    (C) lowest risk.

33. Which of the following statements regarding the covariance of rates of return is least accurate?
    (A) Covariance is positive if two variables tend to both be above their mean values in the same time periods.
    (B) If the covariance is negative, the rates of return on two investments will always move in different directions relative to their means.
    (C) Covariance is not a very useful measure of the strength of the relationship between rates of return.

34. Calculating the variance of a two-asset portfolio least likely requires inputs for each asset's:
    (A) beta.
    (B) standard deviation.
    (C) weight in the portfolio.

35. An analyst gathered the following data for Stock A and Stock B:

Time Period	Stock A Returns	Stock B Returns
1	10%	15%
2	6%	9%
3	8%	12%

What is the covariance for this portfolio?
    (A) 3.
    (B) 6.
    (C) 12.

36. What is the variance of a two-stock portfolio if 15% is invested in stock A (variance of 0.0071) and 85% in stock B (variance of 0.0008) and the correlation coefficient between the stocks is -0.04?

(A) 0.0007.

(B) 0.0020.

(C) 0.0026.

37. If the standard deviation of returns for stock X is 0.60 and for stock Y is 0.40 and the covariance between the returns of the two stocks is 0.009, the correlation between stocks X and Y is closest to:

(A) 26.6670.

(B) 0.0020.

(C) 0.0375.

38. If an investor bought a stock for $32 and sold it nine months later for $37.50 after receiving $2 in dividends, what was the holding period return on this investment?

(A) 32.42%

(B) 23.44%.

(C) 17.19%.

39. Computing the internal rate of return of the inflows and outflows of a portfolio would give the:

(A) money-weighted return.

(B) net present value.

(C) time-weighted return.

40. On a graph of risk, measured by standard deviation and expected return, the efficient frontier represents:

(A) all portfolios plotted in the northeast quadrant that maximize return.

(B) the group of portfolios that have extreme values and therefore are "efficient" in their allocation.

(C) the set of portfolios that dominate all others as to risk and return.

41. As the correlation between the returns of two assets becomes lower, the risk reduction potential becomes:

(A) greater.

(B) decreased by the same level.

(C) smaller.

42. If the standard deviation of stock X is 7.2%, the standard deviation of stock Y is 5.4%, and the covariance between the two is -0.0031, their correlation coefficient is closest to:

(A) -0.64.
(B) -0.80.
(C) -0.19.

43. Risk aversion means that an individual will choose the less risky of two assets:

(A) in all cases.
(B) if they have the same expected return.
(C) even if it has a lower expected return.

44. An investor makes the following investments:

- She purchases a share of stock for $50.00.
- After one year, she purchases an additional share for $75.00.
- After one more year, she sells both shares for $100.00 each.
- There are no transaction costs or taxes.

During year one, the stock paid a $5.00 per share dividend. In year 2, the stock paid a $7.50 per share dividend. The investor's required return is 35%. Her money-weighted return is closest to:

(A) 48.9%.
(B) -7.5%.
(C) 16.1%.

45. An investor has a two-stock portfolio (Stocks A and B) with the following characteristics:

- $\sigma_A = 55\%$
- $\sigma_B = 85\%$
- $\text{Covariance}_{A,B} = 0.09$
- $W_A = 70\%$
- $W_B = 30\%$

The variance of the portfolio is closest to:

(A) 0.25.
(B) 0.39.
(C) 0.54.

46. There are benefits to diversification as long as:

(A) the correlation coefficient between the assets is less than 1.
(B) there is perfect positive correlation between the assets.
(C) there must be perfect negative correlation between the assets.

47. Which one of the following statements about correlation is NOT correct?

(A) Potential benefits from diversification arise when correlation is less than +1.

(B) If the correlation coefficient were 0, a zero variance portfolio could be constructed.

(C) If the correlation coefficient were -1, a zero variance portfolio could be constructed.

48. Stock A has a standard deviation of 0.5 and Stock B has a standard deviation of 0.3. Stock A and Stock B are perfectly positively correlated. According to Markowitz portfolio theory how much should be invested in each stock to minimize the portfolio's standard deviation?

(A) 100% in Stock B.

(B) 30% in Stock A and 70% in Stock B.

(C) 50% in Stock A and 50% in Stock B.

49. Adding a stock to a portfolio will reduce the risk of the portfolio if the correlation coefficient is less than which of the following?

(A) +0.50.

(B) +1.00.

(C) 0.00.

50. Three portfolios have the following expected returns and risk:

Portfolio	Expected return	Standard deviation
Jones	4%	4%
Kelly	5%	6%
Lewis	6%	5%

A risk-averse investor choosing from these portfolios could rationally select:

(A) Jones or Lewis, but not Kelly.

(B) Jones, but not Kelly or Lewis.

(C) Lewis, but not Kelly or Jones.

51. Which of the following possible portfolios is least likely to lie on the efficient frontier?

Portfolio	Expected Return	Standard Deviation
X	9%	12%
Y	11%	10%
Z	13%	15%

(A) Portfolio Y.

(B) Portfolio X.

(C) Portfolio Z.

52. The correlation coefficient between stocks A and B is 0.75. The standard deviation of stock A's returns is 16% and the standard deviation of stock B's returns is 22%. What is the covariance between stock A and B?

(A) 0.3750.

(B) 0.0264.

(C) 0.0352.

53. An investor with a buy-and-hold strategy who makes quarterly deposits into an account should most appropriately evaluate portfolio performance using the portfolio's:

(A) arithmetic mean return.

(B) geometric mean return.

(C) money-weighted return.

54. An investor has identified the following possible portfolios. Which portfolio cannot be on the efficient frontier?

Portfolio	Expected Return	Standard Deviation
V	18%	35%
W	12%	16%
X	10%	10%
Y	14%	20%
Z	13%	24%

(A) Z.

(B) X.

(C) Y.

55. A security portfolio earns a gross return of 7.0% and a net return of 6.5%. The difference of 0.5% most likely results from:

(A) inflation.

(B) taxes.

(C) fees.

56. The efficient frontier is best described as the set of attainable portfolios that gives investors:

(A) the highest expected return for any given level of risk.

(B) the highest diversification ratio for any given level of expected return.

(C) the lowest risk for any given level of risk tolerance.

57. The covariance of the market's returns with the stock's returns is 0.008. The standard deviation of the market's returns is 0.1 and the standard deviation of the stock's returns is 0.2. What is the correlation coefficient between the stock and market returns?

(A) 0.00016.

(B) 0.40.

(C) 0.91.

58. A 10% coupon bond was purchased for $1,000. One year later the bond was sold for $915 to yield 11 %. The investor's holding period yield on this bond is closest to:

(A) 18.5%.

(B) 1.5%.

(C) 9.0%.

59. A bond analyst is looking at historical returns for two bonds, Bond 1 and Bond 2. Bond 2's returns are much more volatile than Bond 1. The variance of returns for Bond 1 is 0.012 and the variance of returns of Bond 2 is 0.308. The correlation between the returns of the two bonds is 0.79, and the covariance is 0.048. If the variance of Bond 1 increases to 0.026 while the variance of Bond 2 decreases to 0.188 and the covariance remains the same, the correlation between the two bonds will:

(A) decrease.

(B) increase.

(C) remain the same.

60. An asset manager's portfolio had the following annual rates of return:

Year	Return
20X7	+6%
20X8	-37%
20X9	+27%

The manager states that the return for the period is -5.34%. The manager has reported the:

(A) arithmetic mean return.

(B) geometric mean return.

(C) holding period return.

61. Which of the following statements about the optimal portfolio is NOT correct? The optimal portfolio:

(A) lies at the point of tangency between the efficient frontier and the indifference curve with the highest possible utility.

(B) may be different for different investors.

(C) is the portfolio that gives the investor the maximum level of return.

62. A portfolio manager adds a new stock that has the same standard deviation of returns as the existing portfolio but has a correlation coefficient with the existing portfolio that is less than +1. Adding this stock will have what effect on the standard deviation of the revised portfolio's returns? The standard deviation will:

(A) decrease only if the correlation is negative.

(B) decrease.

(C) increase.

63. A portfolio currently holds Randy Co. and the portfolio manager is thinking of adding either XYZ Co. or Branton Co. to the portfolio. All three stocks offer the same expected return and total risk. The covariance of returns between Randy Co. and XYZ is +0.5 and the covariance between Randy Co. and Branton Co. is -0.5. The portfolio's risk would decrease:

(A) more if she bought Branton Co.

(B) more if she bought XYZ Co.

(C) most if she put half your money in XYZ Co. and half in Branton Co.

64. In the Markowitz framework, risk is defined as the:

(A) variance of returns.

(B) probability of a loss.

(C) beta of an investment.

65. In a two-asset portfolio, reducing the correlation between the two assets moves the efficient frontier in which direction?

(A) The efficient frontier is stable unless return expectations change. If expectations change, the efficient frontier will extend to the upper right with little or no change in risk.

(B) The efficient frontier is stable unless the asset's expected volatility changes. This depends on each asset's standard deviation.

(C) The frontier extends to the left, or northwest quadrant representing a reduction in risk while maintaining or enhancing portfolio returns.

66. A stock is currently worth $75. If the stock was purchased one year ago for $60, and the stock paid a $1.50 dividend during the year, what is the holding period return?

(A) 27.5%.

(B) 22.0%.

(C) 24.0%.

67. Which of the following statements best describes an investment that is not on the efficient frontier?

(A) There is a portfolio that has a lower return for the same risk.

(B) The portfolio has a very high return.

(C) There is a portfolio that has a lower risk for the same return.

68. An investor buys a share of stock for $200.00 at time t = 0. At time t = 1, the investor buys an additional share for $225.00. At time t = 2 the investor sells both shares for $235.00. During both years, the stock paid a per share dividend of $5.00. What are the approximate time-weighted and money-weighted returns respectively?

(A) 10.8%; 9.4%.

(B) 7.7%; 7.7%.

(C) 9.0%; 15.0%.

69. Betsy Minor is considering the diversification benefits of a two stock portfolio. The expected return of stock A is 14 percent with a standard deviation of 18 percent and the expected return of stock B is 18 percent with a standard deviation of 24 percent. Minor intends to invest 40 percent of her money in stock A, and 60 percent in stock B. The correlation coefficient between the two stocks is 0.6. What is the variance and standard deviation of the two stock portfolio?

(A) Variance = 0.02206; Standard Deviation = 14.85%.

(B) Variance = 0.03836; Standard Deviation = 19.59%.

(C) Variance = 0.04666; Standard Deviation = 21.60%.

70. An investor expects a stock currently selling for $20 per share to increase to $25 by year-end. The dividend last year was $1 but he expects this year's dividend to be $1.25. What is the expected holding period return on this stock?

(A) 24.00%.

(B) 28.50%.

(C) 31.25%.

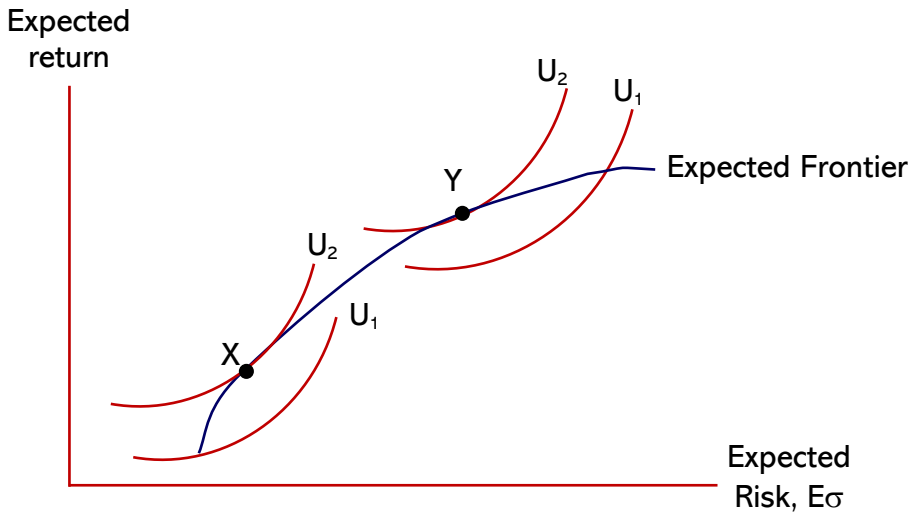
71. The most appropriate measure of the increase in the purchasing power of a portfolio's value over a given span of time is a(n):

(A) after-tax return.

(B) holding period return.

(C) real return.

72. The graph below combines the efficient frontier with the indifference curves for two different investors, X and Y.



Which of the following statements about the above graph is least accurate?

(A) The efficient frontier line represents the portfolios that provide the highest return at each risk level.

(B) Investor X's expected return will always be less than that of Investor Y.

(C) Investor X is less risk-averse than Investor Y.

73. The particular portfolio on the efficient frontier that best suits an individual investor is determined by:

(A) the individual's asset allocation plan.

(B) the current market risk-free rate as compared to the current market return rate.

(C) the individual's utility curve.

74. Which of the following statements about the efficient frontier is least accurate?

(A) A portfolio that plots above efficient frontier is not attainable, while a portfolio that plots below the efficient frontier is inefficient.

(B) The efficient frontier is the set of portfolios with the greatest expected return for a given level of risk.

(C) The slope of the efficient frontier increases steadily risk increases.

75. If the standard deviation of stock A is 10.6%, the standard deviation of stock B is 14.6%, and the covariance between the two is 0.015476, what is the correlation coefficient?

(A) 0.0002.

(B) +1.

(C) 0.

76. Kendra Jackson, CFA, is given the following information on two stocks, Rockaway and Bridgeport.

- Covariance between the two stocks = 0.0325
- Standard Deviation of Rockaway's returns = 0.25
- Standard Deviation of Bridgeport's returns = 0.13

Assuming that Jackson must construct a portfolio using only these two stocks, which of the following combinations will result in the minimum variance portfolio?

(A) 100% in Bridgeport.
(B) 50% in Bridgeport, 50% in Rockaway.
(C) 80% in Bridgeport, 20% in Rockaway.

77. Two assets are perfectly positively correlated. If 30% of an investor's funds were put in the asset with a standard deviation of 0.3 and 70% were invested in an asset with a standard deviation of 0.4, what is the standard deviation of the portfolio?

(A) 0.426.
(B) 0.370.
(C) 0.151.

78. Which of the following statements about the efficient frontier is least accurate?

(A) Investors will want to invest in the portfolio on the efficient frontier that offers the highest rate of return.
(B) Portfolios falling on the efficient frontier are fully diversified.
(C) The efficient frontier shows the relationship that exists between expected return and total risk in the absence of a risk-free asset.

79. Investors who are less risk averse will have what type of indifference curves for risk and expected return?

(A) Flatter.
(B) Inverted.
(C) Steeper.

80. Which one the following Portfolios does not lie on the efficient frontier?

Portfolio	Expected Return	Standard Deviation
A	7	5
B	9	12
C	11	10
D	15	15

(A) B.
(B) C.
(C) A.

81. An investor sold a 30-year bond at a price of $850 after he purchased it at $800 a year ago. He received $50 of interest at the time of the sale. The annualized holding period return is:

(A) 6.25%.

(B) 15.0%.

(C) 12.5%.

82. Becky Scott and Sid Fiona have the same expectations about the risk and return of the market portfolio; however, Scott selects a portfolio with 30% T-bills and 70% invested in the market portfolio, while Fiona holds a leveraged portfolio, having borrowed to invest 130% of his portfolio equity value in the market portfolio. Regarding their preferences between risk and return and their indifference curves, it is *most* likely that:

(A) Scott is willing to take on more risk to increase her expected portfolio return than Fiona is.

(B) Fiona's indifference curves are flatter than Scott's.

(C) Scott is risk averse but Fiona is not.

83. An analyst gathers the following data about the returns for two stocks.

	Stock A	Stock B
E(R)	0.04	0.09
σ^2	0.0025	0.0064

CovA,B= 0.001

The correlation between the returns of Stock A and Stock B is closest to:

(A) 0.25.

(B) 0.50.

(C) 0.63.

84. An investor calculates the following statistics on her two-stock (A and B) portfolio.

- σ_A = 20%
- σ_B = 15%
- $r_{A,B}$ = 0.32
- W_A = 70%
- W_B = 30%

The portfolio's standard deviation is closest to:

(A) 0.0256.

(B) 0.1832.

(C) 0.1600.

85. If the standard deviation of asset A is 12.2%, the standard deviation of asset B is 8.9%, and the correlation coefficient is 0.20, what is the covariance between A and B?

(A) 0.0001.

(B) 0.0022.

(C) 0.0031.

86. Over the long term, the annual returns and standard deviations of returns for major asset classes have shown:

(A) a negative relationship.

(B) a positive relationship.

(C) no clear relationship.