

Question #1 of 66

Question ID: 1573189

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

- The efficient frontier is stable unless return expectations change. If expectations

A) 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. ✓

Explanation

Reducing correlation between the two assets results in the efficient frontier expanding to the left and possibly slightly upward. This reflects the influence of correlation on reducing portfolio risk.

(Module 20.4, LOS 20.g)

Question #2 of 66

Question ID: 1573142

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

- A)** the individual's utility curve. ✓
- B)** the current market risk-free rate as compared to the current market return rate. ✗
- C)** the individual's asset allocation plan. ✗

Explanation




The *optimal portfolio* for each investor is the highest indifference curve that is tangent to the efficient frontier. The optimal portfolio is the portfolio that gives the investor the greatest possible utility.

(Module 20.2, LOS 20.c)

Question #3 of 66

Question ID: 1573196

According to the CAPM, a rational investor would be *least likely* to choose as his optimal portfolio:

- A) a 100% allocation to the risk-free asset. 
- B) the global minimum variance portfolio. 
- C) a 130% allocation to the market portfolio. 

Explanation

According to the CAPM, rational, risk-averse investors will optimally choose to hold a portfolio along the capital market line. This can range from a 100% allocation to the risk-free asset to a leveraged position in the market portfolio constructed by borrowing at the risk-free rate to invest more than 100% of the portfolio equity value in the market portfolio. The global minimum variance portfolio lies below the CML and is not an efficient portfolio under the assumptions of the CAPM.

(Module 20.4, LOS 20.g)

Question #4 of 66

Question ID: 1573162

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) 0.0375. 
- C) 0.0020. 

Explanation

$\text{Cov}_{X,Y} = (r_{X,Y})(s_X)(s_Y)$, where r = correlation coefficient, s_X = standard deviation of stock X, and s_Y = standard deviation of stock Y

Then, $(r_{X,Y}) = \text{Cov}_{X,Y} / (SD_X \times SD_Y) = 0.009 / (0.600 \times 0.400) = 0.0375$

(Module 20.3, LOS 20.d)

Question #5 of 66

Question ID: 1573193

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.



Explanation

Portfolio B is not on the efficient frontier because it has a lower return, but higher risk, than Portfolio D.

(Module 20.4, LOS 20.g)

Question #6 of 66

Question ID: 1573176

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

A) decreased by the same level.



B) greater.



C) smaller.



Explanation

Perfect positive correlation ($r = +1$) of the returns of two assets offers no risk reduction, whereas perfect negative correlation ($r = -1$) offers the greatest risk reduction.

(Module 20.4, LOS 20.f)

Question #7 of 66

Question ID: 1573169

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.



Explanation

The *variance* of the portfolio is found by:

$$[W_1^2 \sigma_1^2 + W_2^2 \sigma_2^2 + 2W_1 W_2 \sigma_1 \sigma_2 r_{1,2}], \text{ or } [(0.15)^2(0.0071) + (0.85)^2(0.0008) + (2)(0.15)(0.85)(0.0843)(0.0283)(-0.04)] = 0.0007.$$

(Module 20.3, LOS 20.e)

Question #8 of 66

Question ID: 1573149

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) Scott is risk averse but Fiona is not.



C) Fiona's indifference curves are flatter than Scott's.



Explanation

Even risk-averse investors will prefer leveraged risky portfolios if the increase in expected return is enough to offset the increase in portfolio risk. Scott's portfolio selection implies that she is more risk averse than Fiona, has steeper indifference curves, and is willing to take on less additional risk for an incremental increase in expected returns than Fiona.

(Module 20.2, LOS 20.c)

Question #9 of 66

Question ID: 1573154

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) 0.00.



B) -100.00 .



C) 1.00.



Explanation

Covariance = correlation coefficient \times standard deviation_{Stock 1} \times standard deviation_{Stock 2}
 $= (-1.00)(10.00)(10.00) = -100.00$.

(Module 20.3, LOS 20.d)

Question #10 of 66

Question ID: 1573148

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.



Explanation

The optimal portfolio for each investor is the *highest indifference curve that is tangent to the efficient frontier*.

(Module 20.2, LOS 20.c)

Question #11 of 66

Question ID: 1573135

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.



Explanation

Based on data for securities in the United States from 1926 to 2008, Treasury bills exhibited a lower standard deviation of monthly returns than both large-cap stocks and long-term corporate bonds.

(Module 20.1, LOS 20.a)

Question #12 of 66

Question ID: 1573198

In the Markowitz framework, risk is defined as the:

A) variance of returns.



B) probability of a loss.



C) beta of an investment.



Explanation

The Markowitz framework assumes that all investors view risk as the variability of returns. The variability of returns is measured as the variance (or equivalently standard deviation) of returns. The capital asset pricing model (CAPM) employs beta as the measure of an investment's systematic risk.

(Module 20.4, LOS 20.g)

Question #13 of 66

Question ID: 1573166

Calculating the variance of a two-asset portfolio *least likely* requires inputs for each asset's:

A) beta.



B) weight in the portfolio.



C) standard deviation.



Explanation

Beta is not an input to calculate the variance of a two-asset portfolio. The formula for calculating the variance of a two-asset portfolio is:

$$\sigma_P^2 = w_A^2 \sigma_A^2 + w_B^2 \sigma_B^2 + 2w_A w_B \text{Cov}_{AB}$$

(Module 20.3, LOS 20.e)

Question #14 of 66

Question ID: 1573191

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 C.



C) Portfolio B.



Explanation

Portfolio B is inefficient (falls below the efficient frontier) because for the same risk level (8.7%), you could have portfolio C with a higher expected return (15.1% versus 14.2%).

(Module 20.4, LOS 20.g)

Question #15 of 66

Question ID: 1573195

Which of the following inputs is *least likely* required for the Markowitz efficient frontier? The:

A) level of risk aversion in the market.



B) covariation between all securities.



C) expected return of all securities.



Explanation




The level of risk aversion in the market is not a required input. The model requires that investors know the expected return and variance of each security as well as the covariance between all securities.

(Module 20.4, LOS 20.g)

Question #16 of 66

Question ID: 1573180

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. 

Explanation




There are benefits to diversification as long as the correlation coefficient between the assets is less than 1.

(Module 20.4, LOS 20.f)

Question #17 of 66

Question ID: 1573190

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

- A) the set of portfolios that dominate all others as to risk and return. 
- B) the group of portfolios that have extreme values and therefore are "efficient" in their allocation. 
- C) all portfolios plotted in the northeast quadrant that maximize return. 

Explanation

The efficient set is the set of portfolios that dominate all other portfolios as to risk and return. That is, they have highest expected return at each level of risk.

(Module 20.4, LOS 20.g)

Question #18 of 66

Question ID: 1573187

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 D.



B) Portfolio C.



C) Portfolio A.



Explanation

Portfolio C cannot lie on the frontier because it has the same return as Portfolio D, but has more risk.

(Module 20.4, LOS 20.g)

Question #19 of 66

Question ID: 1573188

Which one of 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) C.



B) B.



C) A.



Explanation

Portfolio B has a lower expected return than Portfolio C with a *higher* standard deviation.

(Module 20.4, LOS 20.g)

Question #20 of 66

Question ID: 1573155

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) 0.0352.



B) 0.3750.



C) 0.0264.

**Explanation**

$\text{cov}_{1,2} = 0.75 \times 0.16 \times 0.22 = 0.0264 = \text{covariance between A and B.}$

(Module 20.3, LOS 20.d)

Question #21 of 66

Question ID: 1573179

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.

**Explanation**




A correlation coefficient of zero means that there is no relationship between the stock's returns. The other statements are true.

(Module 20.4, LOS 20.f)

Question #22 of 66

Question ID: 1573192

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 as risk increases. 

Explanation

The slope of the efficient frontier *decreases* steadily as risk and return increase.


The efficient frontier is the set of portfolios with the greatest expected return for a given level of risk as measured by standard deviation of returns. That is, for a given level of risk, an expected return greater than that of the portfolio on the efficient frontier is not attainable, and a portfolio with a lower expected return is inefficient.

(Module 20.4, LOS 20.g)

Question #23 of 66

Question ID: 1573133

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. 

Explanation

In most markets and for most asset classes, higher average returns have historically been associated with higher risk (standard deviation of returns).

(Module 20.1, LOS 20.a)

Question #24 of 66

Question ID: 1573157

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) 6.



B) 3.



C) 12.



Explanation

The formula for the covariance for historical data is:

$$\text{cov}_{1,2} = \{\sum[(R_{\text{stock A}} - \text{Mean } R_A)(R_{\text{stock B}} - \text{Mean } R_B)]\} / (n - 1)$$

$$\text{Mean } R_A = (10 + 6 + 8) / 3 = 8, \text{Mean } R_B = (15 + 9 + 12) / 3 = 12$$

$$\text{Here, } \text{cov}_{1,2} = [(10 - 8)(15 - 12) + (6 - 8)(9 - 12) + (8 - 8)(12 - 12)] / 2 = 6$$

(Module 20.3, LOS 20.d)

Question #25 of 66

Question ID: 1573164

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%.



Explanation

$$(0.40)^2(0.18)^2 + (0.60)^2(0.24)^2 + 2(0.4)(0.6)(0.18)(0.24)(0.6) = 0.03836.$$

$$0.03836^{0.5} = 0.1959 \text{ or } 19.59\%.$$

(Module 20.3, LOS 20.e)

Question #26 of 66

Question ID: 1573175

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.



Explanation

If the correlation coefficient is less than 1, there are benefits to diversification. Thus, adding the stock will reduce the portfolio's standard deviation.

(Module 20.4, LOS 20.f)

Question #27 of 66

Question ID: 1573186

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.



Explanation

Portfolio B cannot lie on the frontier because its risk is higher than that of Portfolio A's with lower return. Portfolio C cannot lie on the frontier because it has higher risk than Portfolio D with lower return. Portfolio F cannot lie on the frontier because its risk is higher than Portfolio D.

(Module 20.4, LOS 20.g)

Question #28 of 66

Question ID: 1573140

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) rates of return equal to the market.



C) higher rates of return.



Explanation

Investors are *risk averse*. Given a choice between two assets with equal rates of return, the investor will always select the asset with the lowest level of risk. **This means that there is a positive relationship between expected returns (ER) and expected risk (Eσ)** and the risk return line (capital market line [CML] and security market line [SML]) is upward sweeping.

(Module 20.2, LOS 20.c)

Question #29 of 66

Question ID: 1573151

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.



Explanation

$P_{1,2} = 0.048 / (0.026^{0.5} \times 0.188^{0.5}) = 0.69$ which is lower than the original 0.79.

(Module 20.3, LOS 20.d)

Question #30 of 66

Question ID: 1573150

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) less risk averse than Jones and will choose an optimal portfolio with a lower expected return.



B) more risk averse than Jones and will choose an optimal portfolio with a higher expected return.



- C) more risk averse than Jones and will choose an optimal portfolio with a lower expected return.



Explanation

Steeply sloped risk-return indifference curves indicate that a greater increase in expected return is required as compensation for assuming an additional unit of risk, compared to less-steep indifference curves. The more risk-averse Smith will choose an optimal portfolio with lower risk and a lower expected return than the less risk-averse Jones's optimal portfolio.

(Module 20.2, LOS 20.c)

Question #31 of 66

Question ID: 1573185

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 lowest risk for any given level of risk tolerance.
- C) the highest diversification ratio for any given level of expected return.



Explanation

The efficient frontier is the set of efficient portfolios that gives investors the highest expected return for any given level of risk, or the lowest risk for any given level of expected return. Efficient portfolios have *low* diversification ratios.

(Module 20.4, LOS 20.g)

Question #32 of 66

Question ID: 1573147

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

- A) is the portfolio that gives the investor the maximum level of return.
- B) may be different for different investors.
- C) lies at the point of tangency between the efficient frontier and the indifference curve with the highest possible utility.



Explanation

This statement is incorrect because it does not specify that risk must also be considered.

(Module 20.2, LOS 20.c)

Question #33 of 66

Question ID: 1573171

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) 0.151.



B) 0.370.



C) 0.426.

**Explanation**

$\sigma_{\text{portfolio}} = [W_1^2\sigma_1^2 + W_2^2\sigma_2^2 + 2W_1W_2\sigma_1\sigma_2r_{1,2}]^{1/2}$ given $r_{1,2} = +1$

$\sigma = [W_1^2\sigma_1^2 + W_2^2\sigma_2^2 + 2W_1W_2\sigma_1\sigma_2]^{1/2} = (W_1\sigma_1 + W_2\sigma_2)^2]^{1/2}$

$\sigma = (W_1\sigma_1 + W_2\sigma_2) = (0.3)(0.3) + (0.7)(0.4) = 0.09 + 0.28 = 0.37$

(Module 20.3, LOS 20.e)

Question #34 of 66

Question ID: 1573161

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) -0.80.



B) -0.19.



C) -0.64.

**Explanation**

Correlation = (covariance of X and Y) / [(standard deviation of X)(standard deviation of Y)]

= -0.0031 / [(0.072)(0.054)] = -0.797.

(Module 20.3, LOS 20.d)




Question #35 of 66

Question ID: 1573183

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. 

Explanation

First, calculate the correlation coefficient to check whether diversification will provide any benefit.

$$r_{\text{Bridgeport, Rockaway}} = \text{COV}_{\text{Bridgeport, Rockaway}} / [(\sigma_{\text{Bridgeport}}) \times (\sigma_{\text{Rockaway}})] = 0.0325 / (0.13 \times 0.25) = 1.00$$




Since the stocks are perfectly positively correlated, there are no diversification benefits and we select the stock with the lowest risk (as measured by variance or standard deviation), which is Bridgeport.

(Module 20.4, LOS 20.g)

Question #36 of 66

Question ID: 1573134

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. 

Explanation

Based on data for securities in the United States from 1926 to 2008, both small-cap stocks and large-cap stocks have exhibited higher average annual returns and higher standard deviations of returns than long-term corporate bonds and long-term government bonds. Results over long periods of time have been similar in other developed markets.

(Module 20.1, LOS 20.a)

Question #37 of 66

Question ID: 1573158

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.

**Explanation**

$\text{Cov}_{A,B} = (r_{A,B})(SD_A)(SD_B)$, where r = correlation coefficient and SD_x = standard deviation of stock x

Then, $(r_{A,B}) = \text{Cov}_{A,B} / (SD_A \times SD_B) = 0.008 / (0.100 \times 0.200) = 0.40$

Remember: The correlation coefficient must be between -1 and 1.

(Module 20.3, LOS 20.d)

Question #38 of 66

Question ID: 1573173

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.

**Explanation**




$0.8^2(0.0081) + 0.2^2(0.07^2) + 2(0.8)(0.2)(0.0058) = 0.00724.$

(Module 20.3, LOS 20.e)

Question #39 of 66

Question ID: 1573156

If two stocks have positive covariance:

- A)** they are likely to be in the same industry. 
- B)** they exhibit a strong correlation of returns. 
- C)** their rates of return tend to change in the same direction. 

Explanation

For two stocks with positive covariance, their prices will tend to move together over time and they will tend to produce rates of return greater than their mean returns at the same time and produce rates of return less than their mean returns at the same time.




Positive covariance does not necessarily imply strong positive correlation. Two stocks need not be in the same industry to have a positive covariance.

(Module 20.3, LOS 20.d)

Question #40 of 66

Question ID: 1573181

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. 

Explanation

Since the stocks are perfectly correlated, there is no benefit from diversification. So, invest in the stock with the lowest risk.

(Module 20.4, LOS 20.f)

Question #41 of 66

Question ID: 1573139

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, but not Kelly or Lewis.



B) Jones or Lewis, but not Kelly.



C) Lewis, but not Kelly or Jones.



Explanation

Risk aversion means that to accept greater risk, an investor must be compensated with a higher expected return. A risk-averse investor will not select a portfolio if another portfolio offers a higher expected return with the same risk, or lower risk with the same expected return. Thus a rational investor would always choose Lewis over Kelly, because Lewis has both a higher expected return and lower risk than Kelly. Neither Lewis nor Kelly is necessarily preferable to Jones, because although Jones has a lower expected return, it also has lower risk. Therefore, either Jones or Lewis might be selected by a rational investor, but Kelly would not be.

(Module 20.2, LOS 20.b)

Question #42 of 66

Question ID: 1573168

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) 0.39.



B) 0.25.



C) 0.54.



Explanation

The formula for the *variance* of a 2-stock portfolio is:

$$s^2 = [W_A^2 \sigma_A^2 + W_B^2 \sigma_B^2 + 2W_A W_B \sigma_A \sigma_B r_{A,B}]$$

Since $\sigma_A \sigma_B r_{A,B} = \text{Cov}_{A,B}$, then

$$s^2 = [(0.7^2 \times 0.55^2) + (0.3^2 \times 0.85^2) + (2 \times 0.7 \times 0.3 \times 0.09)] = [0.1482 + 0.0650 + 0.0378] = 0.2511.$$

(Module 20.3, LOS 20.e)

Question #43 of 66

Question ID: 1573163

An investment advisor is considering a portfolio that is 60% invested in a broad-based stock index fund with the remainder invested in a taxable bond fund. The stock index fund has an expected return of 7% and variance of 0.04, while the bond fund has an expected return of 3% and a variance of 0.0081. If the covariance of returns between the bond and index funds is 0.0108, the standard deviation of returns for the overall portfolio is *closest* to:

A) 1.58%.



B) 14.45%.



C) 12.56%.



Explanation

The standard deviation of returns for the overall portfolio is as follows:

$$\sqrt{0.6^2 (0.04) + 0.4^2 (0.0081) + 2 (0.6) (0.4) (0.0108)} = 14.4499\%$$

(Module 20.3, LOS 20.d)

Question #44 of 66

Question ID: 1573167

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) 0.3400.



B) 0.3742.



C) 0.5795.



Explanation

The portfolio standard deviation = $[(0.4)^2(0.25) + (0.6)^2(0.4) + 2(0.4)(0.6)1(0.25)^{0.5}(0.4)^{0.5}]^{0.5}$
= 0.5795

(Module 20.3, LOS 20.e)

Question #45 of 66

Question ID: 1573160

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) +1.



B) 0.



C) 0.0002.



Explanation

The formula is: $(\text{Covariance of A and B}) / [(\text{Standard deviation of A})(\text{Standard Deviation of B})] = (\text{Correlation Coefficient of A and B}) = (0.015476) / [(0.106)(0.146)] = 1.$

(Module 20.3, LOS 20.d)

Question #46 of 66

Question ID: 1573177

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) 0.00.



C) +1.00.



Explanation

Adding any stock that is not perfectly correlated with the portfolio (+1) will reduce the risk of the portfolio.

(Module 20.4, LOS 20.f)

Question #47 of 66

Question ID: 1573143

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

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



Explanation

Investors who are less risk averse will have flatter indifference curves, meaning they are willing to take on more risk for a slightly higher return. Investors who are more risk averse require a much higher return to accept more risk, producing steeper indifference curves.

(Module 20.2, LOS 20.c)

Question #48 of 66

Question ID: 1573172

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) 16.3%.
- C) 18.4%.



Explanation

The expected standard deviation of portfolio returns is:

$$[0.40^2 \times 0.15^2 + 0.60^2 \times 0.25^2 + 2(0.40 \times 0.60 \times 0.0158)]^{1/2} = 18.35\%.$$

(Module 20.3, LOS 20.e)

Question #49 of 66

Question ID: 1573145

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

- A) investor's utility curve meets the efficient frontier.



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



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



Explanation

The optimal portfolio for an investor is determined as the point where the investor's highest utility curve is tangent to the efficient frontier.

(Module 20.2, LOS 20.c)

Question #50 of 66

Question ID: 1573184

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.



Explanation

The efficient frontier outlines the set of portfolios that gives investors the highest return for a given level of risk or the lowest risk for a given level of return. Therefore, if a portfolio is not on the efficient frontier, there must be a portfolio that has lower risk for the same return. Equivalently, there must be a portfolio that produces a higher return for the same risk.

(Module 20.4, LOS 20.g)

Question #51 of 66

Question ID: 1573174

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.



Explanation

In portfolio composition questions, return and standard deviation are the key variables. Here you are told that both returns and standard deviations are equal. Thus, you just want to pick the companies with the lowest covariance, because that would mean you picked the ones with the lowest correlation coefficient.

$\sigma_{\text{portfolio}} = [W_1^2 \sigma_1^2 + W_2^2 \sigma_2^2 + 2W_1 W_2 \sigma_1 \sigma_2 r_{1,2}]^{1/2}$ where $\sigma_{\text{Randy}} = \sigma_{\text{Branton}} = \sigma_{\text{XYZ}}$ so you want to pick the lowest covariance which is between Randy and Branton.

(Module 20.4, LOS 20.f)

Question #52 of 66

Question ID: 1573178

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%



Explanation

Because there is a perfectly positive correlation, there is no benefit to diversification. Therefore, the investor should put all his money into Stock A (with the lowest standard deviation) to minimize the risk (standard deviation) of the portfolio.

(Module 20.4, LOS 20.f)

Question #53 of 66

Question ID: 1573152

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.



Explanation

$\text{Cov}_{A,B} = (r_{A,B})(SD_A)(SD_B)$, where r = correlation coefficient and SD_x = standard deviation of stock x

Then, $(r_{A,B}) = \text{Cov}_{A,B} / (SD_A \times SD_B) = 0.007 / (0.400 \times 0.300) = 0.0583$

(Module 20.3, LOS 20.d)

Question #54 of 66

Question ID: 1573197

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 Z.



B) Portfolio Y.



C) Portfolio X.



Explanation

Portfolio X has a lower expected return and a higher standard deviation than Portfolio Y. X must be inefficient.

(Module 20.4, LOS 20.g)

Question #55 of 66

Question ID: 1573141

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.



Explanation

The line that represents possible combinations of a risky asset and the risk-free asset is referred to as a capital allocation line (CAL). The capital market line (CML) represents possible combinations of the market portfolio with the risk-free asset. A characteristic line is the best fitting linear relationship between excess returns on an asset and excess returns on the market and is used to estimate an asset's beta.

(Module 20.2, LOS 20.c)

Question #56 of 66

Question ID: 1573194

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) X.



B) Z.



C) Y.



Explanation

Portfolio Z must be inefficient because its risk is higher than Portfolio Y and its expected return is lower than Portfolio Y.

(Module 20.4, LOS 20.g)

Question #57 of 66

Question ID: 1573136

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
$\text{Cov}_{A,B}$	= 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.



Explanation

The correlation between the two stocks is:

$$\rho_{A,B} = \text{COV}_{A,B} / (\sigma_A \times \sigma_B) = 0.001 / (0.05 \times 0.08) = 0.001 / (0.004) = 0.25$$

Note that the formula uses the standard deviations, not the variances, of the returns on the two securities.

(Module 20.1, LOS 20.a)

Question #58 of 66

Question ID: 1573170

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

- $\sigma_A = 20\%$
- $\sigma_B = 15\%$
- $r_{A,B} = 0.32$
- $W_A = 70\%$
- $W_B = 30\%$

The portfolio's standard deviation is *closest* to:

A) 0.1600.



B) 0.1832.



C) 0.0256.



Explanation

The formula for the standard deviation of a 2-stock portfolio is:

$$\sigma = [W_A^2\sigma_A^2 + W_B^2\sigma_B^2 + 2W_AW_B\sigma_A\sigma_B\rho_{A,B}]^{1/2}$$

$$\sigma = [(0.7^2 \times 0.2^2) + (0.3^2 \times 0.15^2) + (2 \times 0.7 \times 0.3 \times 0.2 \times 0.15 \times 0.32)]^{1/2} = [0.0196 + 0.002025 + 0.004032]^{1/2} = 0.0256570^{1/2} = 0.1602, \text{ or approximately } \mathbf{16.0\%}.$$

(Module 20.3, LOS 20.e)

Question #59 of 66

Question ID: 1573146

The optimal portfolio in the Markowitz framework occurs when an investor achieves the diversified portfolio with the:

- A) highest return.
- B) lowest risk.
- C) highest utility.



Explanation

The optimal portfolio in the Markowitz framework occurs when the investor achieves the diversified portfolio with the highest utility.

(Module 20.2, LOS 20.c)

Question #60 of 66

Question ID: 1573182

Which of the following statements about portfolio theory is *least accurate*?

- Assuming that the correlation coefficient is less than one, the risk of the
- A) 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.
- When the return on an asset added to a portfolio has a correlation coefficient of
- C) 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.



Explanation

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* decrease the overall portfolio standard deviation. Any time the correlation coefficient is less than one, there are benefits from diversification. The other choices are true.

(Module 20.4, LOS 20.f)

Question #61 of 66

Question ID: 1573137

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

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



Explanation

Investors are *risk averse*. Given a choice between assets with equal rates of expected return, the investor will always select the asset with the lowest level of risk. Risk aversion does not imply that an investor will choose the less risky of two assets in all cases, or that an investor is unwilling to accept greater risk to achieve a greater expected return.

(Module 20.2, LOS 20.b)

Question #62 of 66

Question ID: 1573165

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

- A) A and B.
- B) A and C.
- C) C and B.



Explanation

Portfolios A and B have the lowest correlation coefficient and will thus create the lowest-risk portfolio.

The standard deviation of a portfolio = $[W_1^2\sigma_1^2 + W_2^2\sigma_2^2 + 2W_1W_2\sigma_1\sigma_2r_{1,2}]^{1/2}$

The correlation coefficient, $r_{1,2}$, varies from + 1 to - 1. The smaller the correlation coefficient, the smaller $\sigma_{\text{portfolio}}$ can be. If the correlation coefficient were - 1, it would be possible to make $\sigma_{\text{portfolio}}$ go to zero by picking the proper weightings of W_1 and W_2 .

(Module 20.3, LOS 20.e)

Question #63 of 66

Question ID: 1573138

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.



Explanation

Given two investments with the same expected return, a risk averse investor will prefer the investment with less risk. A risk neutral investor will be indifferent between the two investments. A risk seeking investor will prefer the investment with more risk.

(Module 20.2, LOS 20.b)

Question #64 of 66

Question ID: 1573159

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.



Explanation

Negative covariance means rates of return for one security will tend to be above its mean return in periods when the other is below its mean return, and vice versa. Positive covariance means that returns on both securities will tend to be above (or below) their mean returns in the same time periods. For the returns to *always* move in opposite directions, they would have to be perfectly negatively correlated. Negative covariance by itself does not imply anything about the strength of the negative correlation, it must be standardized by dividing by the product of the securities' standard deviations of return.

(Module 20.3, LOS 20.d)

Question #65 of 66

Question ID: 1573153

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.



Explanation

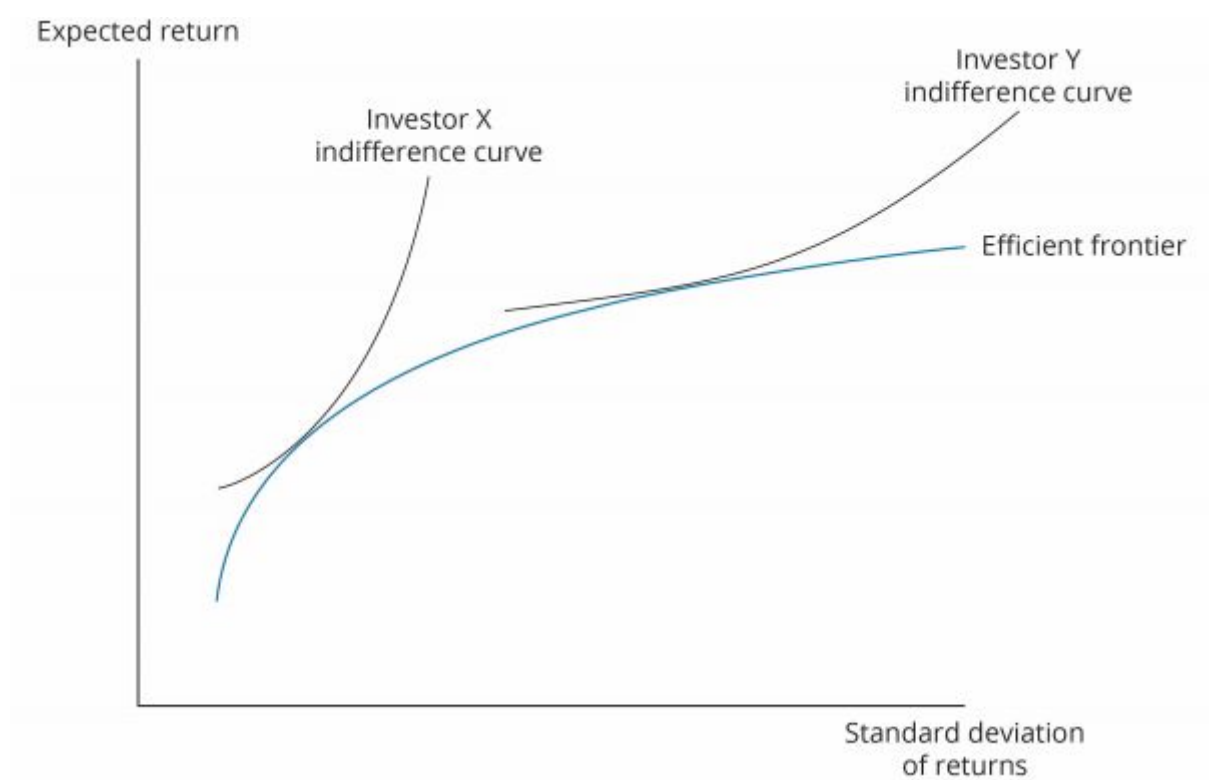
The formula is: (correlation)(standard deviation of A)(standard deviation of B) = (0.20)(0.122)(0.089) = 0.0022.

(Module 20.3, LOS 20.d)

Question #66 of 66

Question ID: 1573144

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) Investor X's expected return is likely to be less than that of Investor Y. ✗
- B) The efficient frontier line represents the portfolios that provide the highest return at each risk level. ✗
- C) Investor X is less risk-averse than Investor Y. ✓

Explanation

Investor X has a steep indifference curve, indicating that he is risk-averse. Flatter indifference curves, such as those for Investor Y, indicate a less risk-averse investor. The other choices are true. A more risk-averse investor will likely obtain lower returns than a less risk-averse investor.

(Module 20.2, LOS 20.c)