

### Question #1 of 92

Question ID: 1459014

A stock that plots below the Security Market Line *most likely*:

- A) is overvalued. 
- B) has a beta less than one. 
- C) is below the efficient frontier. 

#### Explanation

Since the equation of the SML is the capital asset pricing model, you can determine if a stock is over- or underpriced graphically or mathematically. Your answers will always be the same.

*Graphically:* If you plot a stock's expected return on the SML and it falls below the line, it indicates that the stock is currently overpriced, causing its expected return to be too low. If the plot is above the line, it indicates that the stock is underpriced. If the plot falls on the SML, it indicates the stock is properly priced.

*Mathematically:* In the context of the SML, a security is underpriced if the required return is less than the holding period (or expected) return, is overpriced if the required return is greater the holding period (or expected) return, and is correctly priced if the required return equals the holding period (or expected) return.




(Module 63.2, LOS 63.h)

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### Question #2 of 92

Question ID: 1458990

Which of the following is NOT an assumption of capital market theory?

- A) Investors can lend at the risk-free rate, but borrow at a higher rate. 
- B) All assets are infinitely divisible. 
- C) The capital markets are in equilibrium. 

#### Explanation

Capital market theory assumes that investors can borrow or lend at the *risk-free* rate. The other statements are basic assumptions of capital market theory.




(Module 63.2, LOS 63.f)

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### Question #3 of 92

Question ID: 1458944

An equally weighted portfolio of a risky asset and a risk-free asset will exhibit:

- A) half the returns standard deviation of the risky asset. 
- B) less than half the returns standard deviation of the risky asset. 
- C) more than half the returns standard deviation of the risky asset. 

#### Explanation

A risk free asset has a standard deviation of returns equal to zero and a correlation of returns with any risky asset also equal to zero. As a result, the standard deviation of returns of a portfolio of a risky asset and a risk-free asset is equal to the weight of the risky asset multiplied by its standard deviation of returns. For an equally weighted portfolio, the weight of the risky asset is 0.5 and the portfolio standard deviation is  $0.5 \times$  the standard deviation of returns of the risky asset.




(Module 63.1, LOS 63.a)

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### Question #4 of 92

Question ID: 1458974

The market model of the expected return on a risky security is *best* described as a(n):

- A) single-factor model. 
- B) arbitrage-based model. 
- C) two-factor model. 

#### Explanation

The market model is a single-factor model. The single factor is the expected excess return on the market portfolio, or  $[E(R_M) - RFR]$ .


(Module 63.1, LOS 63.d)

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### Question #5 of 92

Question ID: 1459006

The beta of stock D is -0.5. If the expected return of Stock D is 8%, and the risk-free rate of return is 5%, what is the expected return of the market?

- A) +3.5%. 

**B)** -1.0%.



**C)** +3.0%.



### Explanation

$RR_{\text{Stock}} = R_f + (R_{\text{Market}} - R_f) \times \text{Beta}_{\text{Stock}}$ , where  $RR$  = required return,  $R$  = return, and  $R_f$  = risk-free rate

A bit of algebraic manipulation results in:

$$R_{\text{Market}} = [RR_{\text{Stock}} - R_f + (\text{Beta}_{\text{Stock}} \times R_f)] / \text{Beta}_{\text{Stock}} = [8 - 5 + (-0.5 \times 5)] / -0.5 = 0.5 / -0.5 = \mathbf{-1\%}$$

(Module 63.2, LOS 63.g)

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### Question #6 of 92

Question ID: 1459029

A portfolio's excess return per unit of systematic risk is known as its:

**A)** Jensen's alpha.



**B)** Sharpe ratio.



**C)** Treynor measure.



### Explanation

The Treynor measure is excess return relative to beta. The Sharpe ratio measures excess return relative to standard deviation. Jensen's alpha measures a portfolio's excess return relative to return of a portfolio on the SML that has the same beta.

(Module 63.2, LOS 63.i)

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### Question #7 of 92

Question ID: 1458982

An analyst has estimated the following:

- Correlation of Bahr Industries returns with market returns = 0.8
- Variance of the market returns = 0.0441
- Variance of Bahr returns = 0.0225

The beta of Bahr Industries stock is *closest* to:

**A)** 0.77.



B) 0.67.



C) 0.57.



#### Explanation

Covariance of Bahr and the market =  $0.8 \times \sqrt{0.0225} \times \sqrt{0.0441} = 0.0252$

Bahr beta =  $0.0252/0.0441 = 0.57$

(Module 63.1, LOS 63.e)

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### Question #8 of 92

Question ID: 1458959

What is the risk measure associated with the CML?

A) Beta.



B) Market risk.



C) Standard deviation.



#### Explanation

In the context of the CML, the measure of risk (x-axis) is total risk, or standard deviation. Beta (systematic risk) is used to measure risk for the security market line (SML).

(Module 63.1, LOS 63.b)

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### Question #9 of 92

Question ID: 1459019

The stock of Mia Shoes is currently trading at \$15 per share, and the stock of Video Systems is currently trading at \$18 per share. An analyst expects the prices of both stocks to increase by \$2 over the next year and neither company pays dividends. Mia Shoes has a beta of 0.9 and Video Systems has a beta of (-0.3). If the expected market return is 15% and the risk-free rate is 8%, which trading strategy does the CAPM indicate for these two stocks?

Mia Shoes

Video Systems

A) Buy

Buy



B) Buy

Sell



C) Sell

Buy



### Explanation

The required return for Mia Shoes is  $0.08 + 0.9 \times (0.15 - 0.08) = 14.3\%$ . The forecast return is  $\$2/\$15 = 13.3\%$ . The stock is overvalued and the investor should sell it. The required return for Video Systems is  $0.08 - 0.3 \times (0.15 - 0.08) = 5.9\%$ . The forecast return is  $\$2/\$18 = 11.1\%$ . The stock is undervalued and the investor should buy it.

(Module 63.2, LOS 63.h)

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### Question #10 of 92

Question ID: 1462975

An investor's wealth is approximately 50% in bonds and broad-based equities and 50% in shares of a company she founded. Which of the following measures of risk-adjusted returns is *least appropriate* for this investor's portfolio?

A) M-squared.



B) Sharpe ratio.



C) Jensen's alpha.



### Explanation

Jensen's alpha is based on systematic risk and is not appropriate for a portfolio with a 50% concentration in a single entity (i.e., not well diversified). Both the Sharpe ratio and the M-squared measure are based on total portfolio risk and are appropriate for a portfolio that is not well diversified.

(Module 63.2, LOS 63.i)

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### Question #11 of 92

Question ID: 1459026

An analyst determines that three stocks have the following characteristics:

Stock	Beta	Estimated Return
X	1.0	10%
Y	1.6	16%
Z	2.0	16%

If the risk-free rate is 4% and the expected return on the market is 10%, which of the following statements is *most accurate*?

**A)** Stock X is undervalued.



**B)** Stock Y is overvalued.



**C)** Stock Z is properly valued.



#### Explanation

Using the CAPM, the required rate of return for each stock is:

$$E(R_X) = 4\% + 1.0(10\% - 4\%) = 10.0\%.$$

$$10.0\% - 10.0\% = 0.0\%, \text{ properly valued.}$$

$$E(R_Y) = 4\% + 1.6(10\% - 4\%) = 13.6\%.$$

$$16.0\% - 13.6\% = 2.4\% \text{ undervalued.}$$

$$E(R_Z) = 4\% + 2.0(10\% - 4\%) = 16.0\%.$$

$$16.0\% - 16.0\% = 0.0\%, \text{ properly valued.}$$

(Module 63.2, LOS 63.h)

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### Question #12 of 92

Question ID: 1459002

For a security with a beta of 1.10 when the risk-free rate is 5%, and the expected market risk premium is 5%, what is the expected rate of return on the security according to the CAPM?

**A)** 15.5%.



**B)** 10.5%.



**C)** 5.5%.



#### Explanation

The market risk premium is the difference between the market rate of return and the risk-free rate [i.e., the quantity ( $R_M - R_f$ )].

$$k_i = R_f + \beta_i(R_M - R_f)$$

$$k = 5\% + 1.10(5\%) = 10.5\%$$




(Module 63.2, LOS 63.g)

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### Question #13 of 92

Question ID: 1458955

A portfolio to the right of the market portfolio on the capital market line (CML) is created by:

- A) fully diversifying. 
- B) holding both the risk-free asset and the market portfolio. 
- C) holding more than 100% of the risky asset. 

#### Explanation

Portfolios that lie to the right of the market portfolio on the capital market line are created by borrowing funds to own more than 100% of the market portfolio (M).

The statement, "holding both the risk-free asset and the market portfolio" refers to portfolios that lie to the *left* of the market portfolio. Portfolios that lie to the left of point M are created by lending funds (or buying the risk free-asset). These investors own less than 100% of both the market portfolio and more than 100% of the risk-free asset. The portfolio at point  $R_f$  (intersection of the CML and the y-axis) is created by holding 100% of the risk-free asset. The statement, "fully diversifying" is incorrect because the market portfolio is fully diversified.



(Module 63.1, LOS 63.b)


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### Question #14 of 92

Question ID: 1458998

When comparing portfolios that plot on the security market line (SML) to those that plot on the capital market line (CML), a financial analyst would *most accurately* state that portfolios that lie on the SML:

- A) are not necessarily priced at their equilibrium values, while portfolios on the CML are priced at their equilibrium values. 
- B) are not necessarily well diversified, while portfolios on the CML are well diversified. 

- C) have only systematic risk, while portfolios on the CML have both systematic and unsystematic risk. 

### Explanation

Although the risk measure on the capital market line diagram is total risk, all portfolios that lie on the CML are well diversified and have only systematic risk. This is because portfolios on the CML are all constructed from the risk-free asset and the (well-diversified) market portfolio. Any portfolio, including single securities, will plot along the SML in equilibrium. Their unsystematic risk can be significant, but it is not measured on the SML diagram because unsystematic risk is not related to expected return. Both the CML and the SML reflect relations that hold when prices are in equilibrium.




(Module 63.2, LOS 63.f)

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### Question #15 of 92

Question ID: 1458968

Which of the following statements about portfolio management is *most accurate*?

- A) As an investor diversifies away the unsystematic portion of risk, the correlation between his portfolio return and that of the market approaches negative one. 
- B) Combining the capital market line (CML) (risk-free rate and efficient frontier) with an investor's indifference curve map separates out the decision to invest from the decision of what to invest in. 
- C) The security market line (SML) measures systematic and unsystematic risk versus expected return; the CML measures total risk. 

### Explanation

Combining the CML (risk-free rate and efficient frontier) with an investor's indifference curve map separates out the decision to invest from what to invest in and is called the *separation theorem*. The investment selection process is thus simplified from stock picking to efficient portfolio construction through diversification.

The other statements are false. As an investor diversifies away the unsystematic portion of risk, the correlation between his portfolio return and that of the market approaches *positive* one. (Remember that the market portfolio has no unsystematic risk). The SML measures systematic risk, or beta risk.

(Module 63.1, LOS 63.c)

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**Question #16 of 92**

Question ID: 1458963

Which of the following is the risk that disappears in the portfolio construction process?

A) Interest rate risk.



B) Systematic risk.



C) Unsystematic risk.

**Explanation**

Unsystematic risk (diversifiable risk) is the risk that is eliminated when the investor builds a well-diversified portfolio.

(Module 63.1, LOS 63.c)

**Question #17 of 92**

Question ID: 1459024

An analyst estimated the following for three possible investments.

Security	Current Price	Forecast Price in One Year	Annual Dividend	Beta
Alpha Inc.	25.00	31.00	2.00	1.6
Lambda Inc.	10.00	10.80	0	0.5
Omega Inc.	105.00	110.00	1.00	1.2

Given an expected return on the market of 12% and a risk-free rate of 4%, which of the three securities is correctly priced based on the analyst's estimates?

A) Lambda.



B) Omega.



C) Alpha.

**Explanation**

In the context of the SML, a security is underpriced if its required return is less than its estimated holding period return, is overpriced if its required return is greater than its estimated holding period return, and is correctly priced if its required return is equal to its estimated holding period return.

Here, estimated holding period return is calculated as:  $(\text{ending price} - \text{beginning price} + \text{cash flows}) / \text{beginning price}$ . The required return based on the CAPM is:  $\text{risk free rate} + \text{Beta} \times (\text{expected market rate} - \text{risk free rate})$ .

- For Alpha:  $ER = (31 - 25 + 2) / 25 = 32\%$ ,  $RR = 4 + 1.6 \times (12 - 4) = 16.8\%$ . Stock is underpriced.
- For Omega:  $ER = (110 - 105 + 1) / 105 = 5.7\%$ ,  $RR = 4 + 1.2 \times (12 - 4) = 13.6\%$ . Stock is overpriced.
- For Lambda,  $ER = (10.8 - 10) / 10 = 8\%$ ,  $RR = 4 + 0.5 \times (12 - 4) = 8\%$ . Stock is correctly priced.




(Module 63.2, LOS 63.h)

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### Question #18 of 92

Question ID: 1458951

According to capital market theory, which of the following represents the risky portfolio that should be held by all investors who desire to hold risky assets?

- A) Any point on the efficient frontier and to the right of the point of tangency between the CML and the efficient frontier. 
- B) The point of tangency between the capital market line (CML) and the efficient frontier. 
- C) Any point on the efficient frontier and to the left of the point of tangency between the CML and the efficient frontier. 

#### Explanation

Capital market theory suggests that all investors should invest in the same portfolio of risky assets, and this portfolio is located at the point of tangency of the CML and the efficient frontier of risky assets. Any point below the CML is suboptimal, and points above the CML are not feasible.

(Module 63.1, LOS 63.b)

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### Question #19 of 92

Question ID: 1459028

Which of the following measures produces the same portfolio rankings as the Sharpe ratio but is stated in percentage terms?

A) Treynor measure.



B) M-squared.



C) Jensen's alpha.



#### Explanation

M-squared measures the excess return of a leveraged portfolio relative to the market portfolio and produces the same portfolio rankings as Sharpe ratio.

(Module 63.2, LOS 63.i)

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### Question #20 of 92

Question ID: 1459004

What is the required rate of return for a stock with a beta of 1.2, when the risk-free rate is 6% and the market risk premium is 12%?

A) 13.2%.



B) 15.4%.



C) 20.4%.



#### Explanation

$RR_{\text{Stock}} = R_f + (R_{\text{Market}} - R_f) \times \text{Beta}_{\text{Stock}}$ , where  $RR$  = required return,  $R$  = return, and  $R_f$  = risk-free rate.

Here,  $RR_{\text{Stock}} = 6 + (12) \times 1.2 = 6 + 14.4 = 20.4\%$ . We are given the market risk premium  $E(R_{\text{mkt}}) - R_f$ , not the expected return on the market.

(Module 63.2, LOS 63.g)

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### Question #21 of 92

Question ID: 1458958

In the context of the CML, the market portfolio includes:

A) 12-18 stocks needed to provide maximum diversification.



B) all existing risky assets.



C) the risk-free asset.



#### Explanation

The market portfolio has to contain *all the stocks, bonds, and risky assets in existence*. Because this portfolio has all risky assets in it, it represents the ultimate or completely diversified portfolio.

(Module 63.1, LOS 63.b)

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### Question #22 of 92

Question ID: 1458950

Which of the following is the vertical axis *intercept* for the Capital Market Line (CML)?

- A) Expected return on the portfolio.
- B) Expected return on the market.
- C) Risk-free rate.



#### Explanation

The CML originates on the vertical axis from the point of the risk-free rate.

(Module 63.1, LOS 63.b)

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### Question #23 of 92

Question ID: 1459010

Given the following information, what is the required rate of return on Bin Co?

- inflation premium = 3%
- real risk-free rate = 2%
- Bin Co. beta = 1.3
- market risk premium = 4%

- A) 16.7%.
- B) 10.2%.
- C) 7.6%.



#### Explanation

Use the capital asset pricing model (CAPM) to find the required rate of return. The approximate risk-free rate of interest is 5% (2% real risk-free rate + 3% inflation premium).

$$k = 5\% + 1.3(4\%) = 10.2\%.$$

(Module 63.2, LOS 63.g)

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### Question #24 of 92

Question ID: 1459031

Which of the following statements regarding the Sharpe ratio is *most accurate*? The Sharpe ratio measures:

- A) excess return per unit of risk.
- B) peakedness of a return distribution.
- C) total return per unit of risk.



#### Explanation

The Sharpe ratio measures excess return per unit of risk. Remember that the numerator of the Sharpe ratio is (portfolio return – risk free rate), hence the importance of *excess* return. Note that peakedness of a return distribution is measured by *kurtosis*.

(Module 63.2, LOS 63.i)

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### Question #25 of 92

Question ID: 1458976

In the market model, beta measures the sensitivity of an asset's rate of return to the market's:

- A) excess return.
- B) rate of return.
- C) risk-adjusted return.



#### Explanation

The market model is expressed as:  $R_i = \alpha_i + \beta_i R_m + \varepsilon_i$ . In this model, beta ( $\beta_i$ ) measures the sensitivity of the rate of return on an asset ( $R_i$ ) to the market rate of return ( $R_m$ ).

(Module 63.1, LOS 63.d)

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### Question #26 of 92

Question ID: 1458978

Beta is a measure of:

- A) systematic risk.



**B)** company-specific risk.



**C)** total risk.



**Explanation**

Beta is a measure of systematic risk.

(Module 63.1, LOS 63.e)

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**Question #27 of 92**

Question ID: 1458970

Which type of risk is positively related to expected excess returns according to the CAPM?

**A)** Unique.



**B)** Systematic.



**C)** Diversifiable.



**Explanation**

The CAPM concludes that expected returns are a positive (linear) function of systematic risk.

(Module 63.1, LOS 63.c)

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**Question #28 of 92**

Question ID: 1462972

Which of the following statements about the security market line (SML) and capital market line (CML) is *most accurate*?

**A)** The SML uses beta, but the CML uses standard deviation as the risk measure.



**B)** The SML involves the concept of a risk-free asset, but the CML does not.



**C)** Both the SML and CML can be used to explain a stock's expected return.



**Explanation**

The SML and CML both intersect the vertical axis at the risk-free rate. The SML describes the risk/return tradeoff for individual securities or portfolios, whereas the CML describes the risk/return tradeoff of various combinations of the market portfolio and a riskless asset.

(Module 63.2, LOS 63.f)

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### Question #29 of 92

Question ID: 1459011

A stock has a beta of 1.55 and an expected return of 17.3%. If the risk-free rate is 8%, the expected market risk premium is:

A) 12.0%.



B) 14.0%.



C) 6.0%.



#### Explanation

$$17.3 = 8 + 1.55(\text{MRP})$$

$$9.3 = 1.55(\text{MRP})$$

$$\text{MRP} = 9.3 / 1.55 = 6$$

(Module 63.2, LOS 63.g)

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### Question #30 of 92

Question ID: 1458986

The expected rate of return is 1.5 times the 16% expected rate of return from the market. What is the beta if the risk free rate is 8%?

A) 2.



B) 3.



C) 4.



#### Explanation

$$24 = 8 + \beta (16 - 8)$$

$$24 = 8 + 8\beta$$

$$16 = 8\beta$$

$$16 / 8 = \beta$$

$$\beta = 2$$

(Module 63.1, LOS 63.e)

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### Question #31 of 92

Question ID: 1458954

Which of the following is the *most accurate* description of the market portfolio in Capital Market Theory? The market portfolio consists of all:

- A) equity securities in existence.
- B) risky and risk-free assets in existence.
- C) risky assets in existence.



#### Explanation

The market portfolio, in theory, contains all risky assets in existence. It does not contain any risk-free assets.

(Module 63.1, LOS 63.b)

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### Question #32 of 92

Question ID: 1458953

The market portfolio in Capital Market Theory is determined by:

- A) the intersection of the efficient frontier and the investor's highest utility curve.
- B) a line tangent to the efficient frontier, drawn from any point on the expected return axis.
- C) a line tangent to the efficient frontier, drawn from the risk-free rate of return.



#### Explanation

The Capital Market Line is a straight line drawn from the risk-free rate of return (on the Y axis) through the market portfolio. The market portfolio is determined as where that straight line is exactly tangent to the efficient frontier.

(Module 63.1, LOS 63.b)

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### Question #33 of 92

Question ID: 1462973

Which of the following is *least likely* an assumption underlying the capital asset pricing model?

- A) Investors are rational.





**B)** Tax rates are constant over the investment horizon.



**C)** All investors have the same expectations of return and risk for each security.



### Explanation

Both taxes and transactions costs are assumed to be zero in deriving the CAPM.

(Module 63.2, LOS 63.f)

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### Question #34 of 92

Question ID: 1458975

In Fama and French's multifactor model, the expected return on a stock is explained by:

**A)** excess return on the market portfolio, book-to-market ratio, and price momentum.



**B)** firm size, book-to-market ratio, and excess return on the market portfolio.



**C)** firm size, book-to-market ratio, and price momentum.



### Explanation

In the Fama and French model, the three factors that explain individual stock returns are firm size, the firm's book value-to-market value ratio, and the excess return on the market portfolio. The Carhart model added price momentum as a fourth factor.

(Module 63.1, LOS 63.d)

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### Question #35 of 92

Question ID: 1458997

According to the capital asset pricing model (CAPM):

**A)** a stock with high risk, measured as standard deviation of returns, will have high expected returns in equilibrium.



**B)** an investor who is risk averse should hold at least some of the risk-free asset in his portfolio.



**C)** all investors who take on risk will hold the same risky-asset portfolio.



### Explanation

One of the assumptions of the CAPM is that all investors who hold risky assets will hold the same portfolio of risky assets (the market portfolio). Risk aversion means an investor will accept more risk only if compensated with a higher expected return. In capital market theory, all investors exhibit risk aversion, even an investor who is short the risk-free asset. In the CAPM, a stock's risk is measured as its beta, not its standard deviation of returns.

(Module 63.2, LOS 63.f)

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### Question #36 of 92

Question ID: 1459009

Given a beta of 1.25 and a risk-free rate of 6%, what is the expected rate of return assuming a 12% market return?

A) 31%.



B) 10%.



C) 13.5%.



#### Explanation

$$k_i = R_f + \beta_i(R_M - R_f)$$

$$k = 6\% + 1.25(12\% - 6\%)$$

$$= 13.5\%$$

(Module 63.2, LOS 63.g)

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### Question #37 of 92

Question ID: 1459007

What is the expected rate of return on a stock that has a beta of 1.4 if the market risk premium is 9% and the risk-free rate is 4%?

A) 13.0%.



B) 16.6%.



C) 11.0%.



#### Explanation

Using the security market line (SML) equation:

$$4\% + 1.4(9\%) = 16.6\%.$$

(Module 63.2, LOS 63.g)

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**Question #38 of 92**

Question ID: 1458946

A plot of the expected returns and standard deviations of each possible portfolio that combines a risky asset and a risk-free asset will be:

- A)** a straight line.
- B)** convex to the origin.
- C)** a curve that approaches an upper limit.

**Explanation**

The possible portfolios of a risky asset and a risk-free asset have a linear relationship between expected return and standard deviation.

(Module 63.1, LOS 63.a)

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**Question #39 of 92**

Question ID: 1459022

An investor believes Stock M will rise from a current price of \$20 per share to a price of \$26 per share over the next year. The company is not expected to pay a dividend. The following information pertains:

- $R_F = 8\%$
- $ER_M = 16\%$
- Beta = 1.7

Should the investor purchase the stock?

- A)** No, because it is overvalued.
- B)** No, because it is undervalued.
- C)** Yes, because it is undervalued.

**Explanation**

In the context of the SML, a security is underpriced if the required return is less than the holding period (or expected) return, is overpriced if the required return is greater the holding period (or expected) return, and is correctly priced if the required return equals the holding period (or expected) return.

Here, the holding period (or expected) return is calculated as: (ending price – beginning price + any cash flows/dividends) / beginning price. The required return uses the equation of the SML: risk free rate + Beta × (expected market rate – risk free rate).

$ER = (26 - 20) / 20 = 0.30$  or 30%,  $RR = 8 + (16 - 8) \times 1.7 = 21.6\%$ . The stock is underpriced therefore purchase.

(Module 63.2, LOS 63.h)

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### Question #40 of 92

Question ID: 1458987

The slope of the characteristic line is used to estimate:

- A) a risk premium.
- B) risk aversion.
- C) beta.



#### Explanation

Beta for an individual security can be estimated by the slope of its characteristic line, a least-squares regression of the security's excess returns against the market's excess returns.

(Module 63.1, LOS 63.e)

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### Question #41 of 92

Question ID: 1459025

An analyst collected the following data for three possible investments. Alpha Corporation has a beta of 1.6, Omega Company has a beta of 1.2, and Lambda, Inc. has a beta of 0.5.

The expected return on the market is –3% and the risk-free rate is 4%. Assuming that capital markets are in equilibrium, which stock has the highest expected return?

- A) Alpha.
- B) Lambda.
- C) Omega.



### Explanation

An expected decline in the overall market suggests the stock with the lowest beta (Lambda) and, therefore, the least sensitivity to the market should have the highest expected rate of return.

$RR_{\text{Stock}} = R_f + (R_{\text{Market}} - R_f) \times \text{Beta}_{\text{Stock}}$ , where  $RR$  = required return,  $R_f$  = risk-free rate, and  $R_{\text{Market}}$  = market rate of return

Alpha:  $4\% + 1.6(-3\% - 4\%) = -7.2\%$

Omega:  $4\% + 1.2(-3\% - 4\%) = -4.4\%$

Lambda:  $4\% + 0.5(-3\% - 4\%) = +0.5\%$




(Module 63.2, LOS 63.h)

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### Question #42 of 92

Question ID: 1458991

Which of the following is an assumption of capital market theory? All investors:

- A) have multiple-period time horizons. 
- B) see the same risk/return distribution for a given stock. 
- C) select portfolios that lie above the efficient frontier to optimize the risk-return relationship. 

### Explanation

All investors select portfolios that *lie along* the efficient frontier, based on their utility functions. All investors have the same *one-period* time horizon, and have the same risk/return expectations.




(Module 63.2, LOS 63.f)

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### Question #43 of 92

Question ID: 1458969

In equilibrium, investors should only expect to be compensated for bearing systematic risk because:

- A) individual securities in equilibrium only have systematic risk. 
- B) nonsystematic risk can be eliminated by diversification. 
- C) systematic risk is specific to the securities the investor selects. 

### Explanation

In equilibrium, investors should not expect to earn additional return for bearing nonsystematic risk because this risk can be eliminated by diversification. Individual securities have both systematic and nonsystematic risk. Systematic risk is market risk; nonsystematic risk is specific to individual securities.

(Module 63.1, LOS 63.c)

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### Question #44 of 92

Question ID: 1458999

In equilibrium, an inefficient portfolio will plot:

- A) below the CML and below the SML.
- B) on the CML and below the SML.
- C) below the CML and on the SML.



### Explanation

An inefficient portfolio will plot below the CML. In equilibrium, all portfolios will plot on the SML.

(Module 63.2, LOS 63.f)

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### Question #45 of 92

Question ID: 1458996

Portfolios that plot on the security market line in equilibrium:

- A) have only systematic (beta) risk.
- B) must be well diversified.
- C) may be concentrated in only a few stocks.



### Explanation

According to the capital asset pricing model, in equilibrium all securities and portfolios plot on the SML. A security or portfolio is not priced in equilibrium if it plots above the SML (i.e., is undervalued) or below the SML (i.e., is overvalued).




(Module 63.2, LOS 63.f)

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### Question #46 of 92

Question ID: 1458960

Based on Capital Market Theory, an investor should choose the:

- A) market portfolio on the Capital Market Line. 
- B) portfolio that maximizes his utility on the Capital Market Line. 
- C) portfolio with the highest return on the Capital Market Line. 

#### Explanation

Given the Capital Market Line, the investor chooses the portfolio that maximizes his utility. That portfolio may be exactly the market portfolio or it may be some combination of the risk-free asset and the market portfolio.




(Module 63.1, LOS 63.b)

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### Question #47 of 92

Question ID: 1459021

Charlie Smith holds two portfolios, Portfolio X and Portfolio Y. They are both liquid, well-diversified portfolios with approximately equal market values. He expects Portfolio X to return 13% and Portfolio Y to return 14% over the upcoming year. Because of an unexpected need for cash, Smith is forced to sell at least one of the portfolios. He uses the security market line to determine whether his portfolios are undervalued or overvalued. Portfolio X's beta is 0.9 and Portfolio Y's beta is 1.1. The expected return on the market is 12% and the risk-free rate is 5%. Smith should sell:

- A) both portfolios X and Y because they are both overvalued. 
- B) either portfolio X or Y because they are both properly valued. 
- C) portfolio Y only. 

#### Explanation

Portfolio X's required return is  $0.05 + 0.9 \times (0.12 - 0.05) = 11.3\%$ . It is expected to return 13%. The portfolio has an expected excess return of 1.7%

Portfolio Y's required return is  $0.05 + 1.1 \times (0.12 - 0.05) = 12.7\%$ . It is expected to return 14%. The portfolio has an expected excess return of 1.3%.

Since both portfolios are undervalued, the investor should sell the portfolio that offers less excess return. Sell Portfolio Y because its excess return is less than that of Portfolio X.

(Module 63.2, LOS 63.h)

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### Question #48 of 92

Question ID: 1459032

A portfolio of options had a return of 22% with a standard deviation of 20%. If the risk-free rate is 7.5%, what is the Sharpe ratio for the portfolio?

A) 0.147.



B) 0.725.



C) 0.568.



#### Explanation

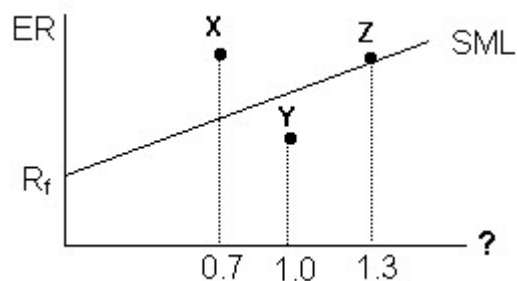
Sharpe ratio =  $(22\% - 7.50\%) / 20\% = 0.725$ .

(Module 63.2, LOS 63.i)

### Question #49 of 92

Question ID: 1459020

Consider the following graph of the Security Market Line (SML). The letters X, Y, and Z represent risky asset portfolios and an analyst's forecast for their returns over the next period. The SML crosses the y-axis at 0.07.



The expected market return is 13.0%.

Using the graph above and the information provided, the analyst *most likely* believes that:

A) Portfolio X's required return is greater than its forecast return.



B) Portfolio Y is undervalued.



C) the expected return for Portfolio Z is 14.8%.



#### Explanation



Portfolio Z has a beta of 1.3 and its required return can be calculated as  $7.0\% + 1.3 \times (13.0\% - 7.0\%) = 14.8\%$ . Because it plots on the SML, its expected (forecast) return and required return are equal.

The SML plots beta (*systematic risk*) versus expected equilibrium (required) return. The analyst believes that Portfolio Y is overvalued – any portfolio located below the SML has a forecast return less than its required return and is overpriced in the market. Since Portfolio X plots above the SML, it is undervalued and the statement should read, "Portfolio X's required return is less than its forecast return."

(Module 63.2, LOS 63.h)

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### Question #50 of 92

Question ID: 1459003

The expected market premium is 8%, with the risk-free rate at 7%. What is the expected rate of return on a stock with a beta of 1.3?

A) 10.4%.



B) 16.3%.



C) 17.4%.



#### Explanation

$RR_{\text{Stock}} = R_f + (R_{\text{Market}} - R_f) \times \text{Beta}_{\text{Stock}}$ , where  $RR$  = required return,  $R$  = return, and  $R_f$  = risk-free rate, and  $(R_{\text{Market}} - R_f)$  = market premium

Here,  $RR_{\text{Stock}} = 7 + (8 \times 1.3) = 7 + 10.4 = \mathbf{17.4\%}$ .

(Module 63.2, LOS 63.g)

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### Question #51 of 92

Question ID: 1462967

All portfolios that lie on the capital market line:

A) contain the same mix of risky assets unless only the risk-free asset is held.



B) have some unsystematic risk unless only the risk-free asset is held.



C) contain at least some positive allocation to the risk-free asset.



#### Explanation

All portfolios on the CML include the same tangency portfolio of risky assets, except the intercept (all invested in risk-free asset). The tangency portfolio contains none of the risk-free asset and "borrowing portfolios" can be constructed with a negative allocation to the risk-free asset. Portfolios on the CML are efficient (well-diversified) and have no unsystematic risk.




(Module 63.1, LOS 63.c)

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## Question #52 of 92

Question ID: 1458980

An analyst has developed the following data for two companies, PNS Manufacturing (PNS) and InCharge Travel (InCharge). PNS has an expected return of 15% and a standard deviation of 18%. InCharge has an expected return of 11% and a standard deviation of 17%. PNS's correlation with the market is 75%, while InCharge's correlation with the market is 85%. If the market standard deviation is 22%, which of the following are the betas for PNS and InCharge?

	<u>Beta of PNS</u>	<u>Beta of</u> <u>InCharge</u>	
<b>A)</b>	0.61	0.66	
<b>B)</b>	0.66	0.61	
<b>C)</b>	0.92	1.10	

### Explanation

$$\text{Beta}_i = (s_i/s_M) \times r_{i, M}$$

$$\text{BetaPNS} = (0.18/0.22) \times 0.75 = 0.6136$$

$$\text{BetaInCharge} = (0.17/0.22) \times 0.85 = 0.6568$$

(Module 63.1, LOS 63.e)

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## Question #53 of 92

Question ID: 1459015

Mason Snow, CFA, is considering two stocks: Bahre (with an expected return of 10% and a beta of 1.4) and Cubb (with an expected return of 15% and a beta of 2.0). Snow uses a risk-free of 7% and estimates that the market risk premium is 4%. Based on capital market theory, Snow should conclude that:

**A)** neither security is underpriced.



**B)** only Bahre is underpriced.



**C)** only Cubb is underpriced.



#### Explanation

In the context of the SML, a security is underpriced if the required return is less than the holding period (or expected) return, is overpriced if the required return is greater the holding period (or expected) return, and is correctly priced if the required return equals the holding period (or expected) return.

Bahre: Expected return = 10% < CAPM Required return  $R = 0.07 + (1.4)(0.11 - 0.07) = 12.6\%$  and is overpriced.

For Cubb: Expected return = 15% = CAPM Required return =  $0.07 + (2.0)(0.11 - 0.07) = 15\%$ .

(Module 63.2, LOS 63.h)

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#### Question #54 of 92

Question ID: 1459023

A stock's abnormal rate of return is defined as the:

**A)** expected risk-adjusted rate of return minus the market rate of return.



**B)** rate of return during abnormal price movements.



**C)** actual rate of return less the expected risk-adjusted rate of return.



#### Explanation

Abnormal return = Actual return – expected risk-adjusted return

(Module 63.2, LOS 63.h)

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#### Question #55 of 92

Question ID: 1459016

Level I CFA candidate Adeline Bass is a member of an investment club. At the next meeting, she is to recommend whether or not the club should purchase the stocks of CS Industries and MG Consolidated. The risk-free rate is at 6% and the expected return on the market is 15%. Prior to the meeting, Bass gathers the following information on the two stocks:

	CS Industries	MG Consolidated
Current Market Value	\$25	\$50
Expected Market Value in One Year	\$30	\$55
Expected Dividend	\$1	\$1
Beta	1.2	0.80

Bass should recommend that the club:

**A)** purchase both stocks.



**B)** purchase CS only.



**C)** purchase MG only.



### Explanation

In the context of the SML, a security is underpriced if the required return is less than the holding period (or expected) return, is overpriced if the required return is greater than the holding period (or expected) return, and is correctly priced if the required return equals the holding period (or expected) return.

Here, the holding period (or expected) return is calculated as:  $(\text{ending price} - \text{beginning price} + \text{any cash flows} / \text{dividends}) / \text{beginning price}$ . The required return uses the equation of the SML:  $\text{risk free rate} + \text{Beta} \times (\text{expected market rate} - \text{risk-free rate})$ .

- For CS Industries:  $ER = (30 - 25 + 1) / 25 = 24\%$ ,  $RR = 6 + 1.2 \times (15 - 6) = 16.8\%$ . Stock is underpriced - purchase.
- For MG Consolidated:  $ER = (55 - 50 + 1) / 50 = 12\%$ ,  $RR = 6 + 0.80 \times (15 - 6) = 13.2\%$ . Stock is overpriced - do not purchase.

(Module 63.2, LOS 63.h)

Over a sample period, an investor gathers the following data about three mutual funds.

Mutual Fund	Portfolio Return	Portfolio Standard Deviation	Portfolio Beta
P	13%	18%	1.2
Q	15%	20%	1.4
R	18%	24%	1.8

The risk-free rate is 5%. Based solely on the Sharpe measure, an investor would prefer:

**A)** Fund Q.



**B)** Fund R.



**C)** Fund P.



#### Explanation

The Sharpe measure for a portfolio is calculated as the (mean portfolio return – mean return on the risk-free asset)/portfolio standard deviation. The Sharpe measures for the three mutual funds are:

$$\text{mutual fund P} = (13 - 5) / 18 = 0.44$$

$$\text{mutual fund Q} = (15 - 5) / 20 = 0.50$$

$$\text{mutual fund R} = (18 - 5) / 24 = 0.54$$

Assuming that investors prefer return and dislike risk, they should prefer portfolios with large Sharpe ratios to those with smaller ratios. Thus, the investor should prefer mutual fund R.

(Module 63.2, LOS 63.i)

#### Question #57 of 92

Question ID: 1459027

The risk-free rate is 5% and the expected market return is 15%. A portfolio manager is estimating a return of 20% on a stock with a beta of 1.5. Based on the SML and the analyst's estimate, this stock is:

**A)** undervalued.



**B)** overvalued.



**C)** properly valued.



#### Explanation

Based on the CAPM, the portfolio should earn:  $E(R) = 0.05 + 1.5(0.15 - 0.05) = 0.20$  or 20%. On a risk-adjusted basis, this portfolio lies on the SML and is, thus, properly valued.

(Module 63.2, LOS 63.h)

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### Question #58 of 92

Question ID: 1458956

Portfolios that represent combinations of the risk-free asset and the market portfolio are plotted on the:

- A) capital asset pricing line.
- B) capital market line.
- C) utility curve.



#### Explanation

The introduction of a risk-free asset changes the Markowitz efficient frontier into a straight line. This straight efficient frontier line is called the capital market line (CML). Investors at point  $R_f$  have 100% of their funds invested in the risk-free asset. Investors at point M have 100% of their funds invested in market portfolio M. Between  $R_f$  and M, investors hold both the risk-free asset and portfolio M. To the right of M, investors hold more than 100% of portfolio M. *All investors have to do to get the risk and return combination that suits them is to simply vary the proportion of their investment in the risky portfolio M and the risk-free asset.*

Utility curves reflect individual preferences.

(Module 63.1, LOS 63.b)

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### Question #59 of 92

Question ID: 1462969

Which of the following terms refer to the same type of risk?

- A) Undiversifiable risk and unsystematic risk.
- B) Total risk and the variance of returns.
- C) Systematic risk and firm-specific risk.



#### Explanation

Variance is a measure of total risk.

(Module 63.1, LOS 63.c)

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### Question #60 of 92

Question ID: 1458967

Which of the following statements about risk is NOT correct?

- A) The market portfolio has only systematic risk.
- B) Total risk = systematic risk - unsystematic risk.
- C) Unsystematic risk is diversifiable risk.



#### Explanation

Total risk = systematic risk + unsystematic risk

(Module 63.1, LOS 63.c)

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### Question #61 of 92

Question ID: 1462970

In extending the 3-factor model of Fama and French, the additional factor suggested by Carhart that is often used is:

- A) price momentum.
- B) market-to-book value.
- C) GDP growth.



#### Explanation

In addition to the three factors of the Fama and French model, market-to-book, firm size, and excess returns on the market, Carhart added a momentum factor based on prior relative price performance.

(Module 63.1, LOS 63.d)

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### Question #62 of 92

Question ID: 1458979

Beta is *least* accurately described as:

- A) a measure of the sensitivity of a security's return to the market return.
- B) a standardized measure of the total risk of a security.
- C) the covariance of a security's returns with the market return, divided by the variance of market returns.



### Explanation

Beta is a standardized measure of the *systematic* risk of a security.  $\beta = \text{Cov}_{r,\text{mkt}} / \sigma_{\text{mkt}}^2$ .  
Beta is multiplied by the market risk premium in the CAPM:  $E(R_i) = \text{RFR} + \beta[E(R_{\text{mkt}}) - \text{RFR}]$ .

(Module 63.1, LOS 63.e)

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### Question #63 of 92

Question ID: 1458983

The expected rate of return is twice the 12% expected rate of return from the market. What is the beta if the risk-free rate is 6%?

A) 2.



B) 3.



C) 4.



### Explanation

$$24 = 6 + \beta (12 - 6)$$

$$18 = 6\beta$$

$$\beta = 3$$

(Module 63.1, LOS 63.e)

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### Question #64 of 92

Question ID: 1459000

Which of the following is an assumption of the Capital Asset Pricing Model (CAPM)?

A) There are no margin transactions or short sales.



B) Investors with shorter time horizons exhibit greater risk aversion.



C) No investor is large enough to influence market prices.



### Explanation

The CAPM assumes all investors are price takers and no single investor can influence prices. The CAPM also assumes markets are free of impediments to trading and that all investors are risk averse and have the same one-period time horizon.

(Module 63.2, LOS 63.f)

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### Question #65 of 92

Question ID: 1459008

If the risk-free rate of return is 3.5%, the expected market return is 9.5%, and the beta of a stock is 1.3, what is the required return on the stock according to the capital asset pricing model?

A) 11.3%.



B) 12.4%.



C) 7.8%.



#### Explanation

The formula for the required return is:  $ER_{\text{stock}} = R_f + (E_{RM} - R_f) \times \text{Beta}_{\text{stock}}$   
or  $0.035 + 1.3 \times (0.095 - 0.035) = 0.113$ , or 11.3%.

(Module 63.2, LOS 63.g)

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### Question #66 of 92

Question ID: 1458981

If the standard deviation of the market's returns is 5.8%, the standard deviation of a stock's returns is 8.2%, and the covariance of the market's returns with the stock's returns is 0.003, what is the beta of the stock?

A) 0.05.



B) 0.89.



C) 1.07.



#### Explanation

The formula for beta is:  $(\text{Cov}_{\text{stock,market}})/(\text{Var}_{\text{market}})$ , or  $(0.003)/(0.058)^2 = 0.89$ .




(Module 63.1, LOS 63.e)

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### Question #67 of 92

Question ID: 1462966

James Franklin, CFA, has high risk tolerance and seeks high returns. Based on capital market theory, Franklin would *most appropriately* hold:

- A) a high-beta portfolio of risky assets financed in part by borrowing at the risk-free rate. 
- B) a high risk biotech stock, as it will have high expected returns in equilibrium. 
- C) the market portfolio as his only risky asset. 

#### Explanation

According to capital market theory, all investors will choose a combination of the market portfolio and borrowing or lending at the risk-free rate; that is, a portfolio on the CML.

(Module 63.1, LOS 63.a)

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#### Question #68 of 92

Question ID: 1458966

Which of the following is *least likely* considered a source of systematic risk for bonds?

- A) Purchasing power risk. 
- B) Default risk. 
- C) Market risk. 

#### Explanation

Default risk is based on company-specific or unsystematic risk.

(Module 63.1, LOS 63.c)

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#### Question #69 of 92

Question ID: 1462971

If a stock's beta is equal to 1.2, its standard deviation of returns is 28%, and the standard deviation of the returns on the market portfolio is 14%, the covariance of the stock's returns with the returns on the market portfolio is *closest* to:

- A) 0.024. 
- B) 0.168. 
- C) 0.600. 

### Explanation

From the fact that  $\beta_i = \text{Cov}_{i,\text{mkt}} / \text{Var}_{\text{mkt}}$ , we have  $\text{Cov}_{i,\text{mkt}} = \beta_i \times \text{var}_{\text{mkt}}$ .

$$\text{Cov}_{i,\text{mkt}} = 1.2 \times 0.14^2 = 0.02352.$$

(Module 63.1, LOS 63.e)

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### Question #70 of 92

Question ID: 1459030

An active manager will *most likely* short a security with an expected Jensen's alpha that is:

A) negative.



B) positive.



C) zero.



### Explanation

A security's expected Jensen's alpha is the difference between an active manager's estimate of a security's expected return and the CAPM expected return. A security that is expected to have a negative alpha will plot below the SML (i.e., the security is overvalued and should be sold or sold short).

(Module 63.2, LOS 63.i)

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### Question #71 of 92

Question ID: 1458992

Which is NOT an assumption of capital market theory?

A) There is no inflation.



B) Investments are not divisible.



C) There are no taxes or transaction costs.



### Explanation

Capital market theory assumes that all investments are infinitely divisible. The other statements are basic assumptions of capital market theory.




(Module 63.2, LOS 63.f)

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### Question #72 of 92

Question ID: 1462974

Which of the following statements about the security market line (SML) is *least accurate*?

- A) Securities plotting above the SML are undervalued. 
- B) The SML measures risk using the standardized covariance of the stock with the market. 
- C) The independent variable in the SML equation is the standard deviation of the market portfolio. 

#### Explanation

The SML uses either the covariance between assets and the market or beta as the measure of risk. Beta is the covariance of a stock with the market divided by the variance of the market. Securities that plot above the SML are undervalued and securities that plot below the SML are overvalued.




(Module 63.2, LOS 63.h)

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### Question #73 of 92

Question ID: 1462968

A portfolio manager is constructing a new equity portfolio consisting of a large number of randomly chosen domestic stocks. As the number of stocks in the portfolio increases, what happens to the expected levels of systematic and unsystematic risk?

- | <u>Systematic risk</u> | <u>Unsystematic risk</u> |   |
|------------------------|--------------------------|---|
| A) Increases           | Remains the same         |  |
| B) Remains the same    | Decreases                |  |
| C) Decreases           | Increases                |  |

#### Explanation

As randomly selected securities are added to a portfolio, the diversifiable (unsystematic) risk decreases, and the expected level of nondiversifiable (systematic) risk remains the same.

(Module 63.1, LOS 63.c)

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### Question #74 of 92

Question ID: 1459005

The beta of Stock A is 1.3. If the expected return of the market is 12%, and the risk-free rate of return is 6%, what is the expected return of Stock A?

A) 14.2%.



B) 13.8%.



C) 15.6%.



#### Explanation

$RR_{\text{Stock}} = R_f + (R_{\text{Market}} - R_f) \times \text{Beta}_{\text{Stock}}$ , where  $RR$  = required return,  $R$  = return, and  $R_f$  = risk-free rate

Here,  $RR_{\text{Stock}} = 6 + (12 - 6) \times 1.3 = 6 + 7.8 = \mathbf{13.8\%}$ .

(Module 63.2, LOS 63.g)

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#### Question #75 of 92

Question ID: 1458964

Which of the following statements about systematic and unsystematic risk is *most accurate*?

A) As an investor increases the number of stocks in a portfolio, the systematic risk will remain constant.



B) The unsystematic risk for a specific firm is similar to the unsystematic risk for other firms.



C) Total risk equals market risk plus firm-specific risk.



#### Explanation

Total risk equals systematic (market) plus unsystematic (firm-specific) risk.

The unsystematic risk for a specific firm is *not* similar to the unsystematic risk for other firms in the same industry. Unsystematic risk is firm-specific or unique risk.

Systematic risk of a portfolio can be changed by adding high-beta or low-beta stocks.

(Module 63.1, LOS 63.c)

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#### Question #76 of 92

Question ID: 1458945

The correlation of returns on the risk-free asset with returns on a portfolio of risky assets is:

A) negative.



B) positive.



C) zero.



#### Explanation

The risk-free asset has zero correlation of returns with any portfolio of risky assets.

(Module 63.1, LOS 63.a)

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#### Question #77 of 92

Question ID: 1458985

The expected rate of return is 2.5 times the 12% expected rate of return from the market.

What is the beta if the risk-free rate is 6%?

A) 4.



B) 5.



C) 3.



#### Explanation

$$30 = 6 + \beta (12 - 6)$$

$$24 = 6\beta$$

$$\beta = 4$$

(Module 63.1, LOS 63.e)

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#### Question #78 of 92

Question ID: 1459013

The following information is available for the stock of Park Street Holdings:

- The price today ( $P_0$ ) equals \$45.00.
- The expected price in one year ( $P_1$ ) is \$55.00.
- The stock's beta is 2.31.
- The firm typically pays no dividend.
- The 3-month Treasury bill is yielding 4.25%.
- The historical average S&P 500 return is 12.5%.

Park Street Holdings stock is:

**A)** undervalued by 1.1%.



**B)** overvalued by 1.1%.



**C)** undervalued by 3.7%.



### Explanation

To determine whether a stock is overvalued or undervalued, we need to compare the expected return (or holding period return) and the required return (from Capital Asset Pricing Model, or CAPM).

*Step 1: Calculate Expected Return (Holding period return):*

The formula for the (one-year) holding period return is:

$$\text{HPR} = (D_1 + S_1 - S_0) / S_0, \text{ where } D = \text{dividend and } S = \text{stock price.}$$

$$\text{Here, HPR} = (0 + 55 - 45) / 45 = 22.2\%$$

*Step 2: Calculate Required Return:*

The formula for the required return is from the CAPM:

$$\text{RR} = R_f + (ER_M - R_f) \times \text{Beta}$$

$$\text{RR} = 4.25\% + (12.5 - 4.25\%) \times 2.31 = 23.3\%.$$

*Step 3: Determine over/under valuation:*

The required return is greater than the expected return, so the security is overvalued.

$$\text{The amount} = 23.3\% - 22.2\% = 1.1\%.$$

(Module 63.2, LOS 63.h)

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## Question #79 of 92

Question ID: 1458949

The *slope* of the capital market line (CML) is a measure of the level of:

**A)** excess return per unit of risk.



**B)** expected return over the level of inflation.



**C)** risk over the level of excess return.



#### Explanation

The slope of the CML indicates the excess return (expected return less the risk-free rate) per unit of risk.

(Module 63.1, LOS 63.b)

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#### Question #80 of 92

Question ID: 1458952

Portfolios on the capital market line:

**A)** each contain different risky assets.



**B)** include some positive allocation to the risk-free asset.



**C)** are perfectly positively correlated with each other.



#### Explanation

The introduction of a risk-free asset changes the Markowitz efficient frontier into a straight line. This straight efficient frontier line is called the capital market line (CML). Since the line is straight, the math implies that the returns on any two portfolios on this line will be perfectly, positively correlated with each other. Note: When  $r_{a,b} = 1$ , then the equation for risk changes to  $s_{\text{port}} = W_A s_A + W_B s_B$ , which is a straight line. The risky assets for each portfolio on the CML are the same, the tangency (or market) portfolio of risky assets. The CML includes lending portfolios with positive allocations to the risk-free asset, the market portfolio with no allocation to the risk-free asset, and borrowing portfolios with negative allocations to the risk-free asset.

(Module 63.1, LOS 63.b)

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#### Question #81 of 92

Question ID: 1458961


Bruce Johansen, CFA, is fully invested in the market portfolio. Johansen desires to increase the expected return from his portfolio. According to capital market theory, Johansen can meet his return objective by:

**A)** borrowing at the risk-free rate to invest in the risky market portfolio.





**B)** owning the risky market portfolio and lending at the risk-free rate. 

**C)** allocating a higher proportion of the portfolio to higher risk assets. 

#### Explanation

Investing on margin in the market portfolio will increase both risk and expected returns. This strategy would be mean-variance efficient. Other strategies such as shifting a portion of total funds to higher risk assets would achieve the higher return goal but would leave the portfolio below the CML and thus would not be an optimal strategy.

(Module 63.1, LOS 63.b)

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#### Question #82 of 92

Question ID: 1458957

For an investor to move further up the Capital Market Line than the market portfolio, the investor must:

**A)** diversify the portfolio even more. 

**B)** borrow and invest in the market portfolio. 

**C)** reduce the portfolio's risk below that of the market. 

#### Explanation

Portfolios that lie to the right of the market portfolio on the capital market line ("up" the capital market line) are created by borrowing funds to own more than 100% of the market portfolio (M).

The statement, "diversify the portfolio even more" is incorrect because the market portfolio is fully diversified.

(Module 63.1, LOS 63.b)

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#### Question #83 of 92

Question ID: 1458973

A model that estimates expected excess return on a security based on the ratio of the firm's book value to its market value is *best* described as a:

**A)** market model. 

**B)** multifactor model. 

**C)** single-factor model. 

#### Explanation

A model that estimates a stock's expected excess return based only on the book-to-market ratio is a single-factor model. The market model is a single-factor model that estimates expected excess return based on a security's sensitivity to the expected excess return of the market portfolio. A multifactor model would estimate expected excess return based on more than one factor.




(Module 63.1, LOS 63.d)

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### Question #84 of 92

Question ID: 1458965

In the context of the capital market line (CML), which of the following statements is CORRECT?

- A) Firm-specific risk can be reduced through diversification. 
- B) Market risk can be reduced through diversification. 
- C) The two classes of risk are market risk and systematic risk. 

#### Explanation

The other statements are false. Market risk *cannot* be reduced through diversification; market risk = systematic risk. The two classes of risk are *unsystematic* risk and systematic risk.




(Module 63.1, LOS 63.c)

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### Question #85 of 92

Question ID: 1459033

A higher Sharpe ratio indicates:

- A) a higher excess return per unit of risk. 
- B) a lower risk per unit of return. 
- C) lower volatility of returns. 

#### Explanation

The Sharpe ratio is excess return (return –  $R_f$ ) per unit of risk (defined as the standard deviation of returns).

(Module 63.2, LOS 63.i)

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**Question #86 of 92**

Question ID: 1459018

An analyst wants to determine whether Dover Holdings is overvalued or undervalued, and by how much (expressed as percentage return). The analyst gathers the following information on the stock:

- Market standard deviation = 0.70
- Covariance of Dover with the market = 0.85
- Dover's current stock price ( $P_0$ ) = \$35.00
- The expected price in one year ( $P_1$ ) is \$39.00
- Expected annual dividend = \$1.50
- 3-month Treasury bill yield = 4.50%.
- Historical average S&P 500 return = 12.0%.

Dover Holdings stock is:

- A)** overvalued by approximately 1.8%.
- B)** undervalued by approximately 2.1%.
- C)** undervalued by approximately 1.8%.



**Explanation**

To determine whether a stock is overvalued or undervalued, we need to compare the expected return (or holding period return) and the required return (from Capital Asset Pricing Model, or CAPM).

*Step 1: Calculate Expected Return (Holding period return)*

The formula for the (one-year) holding period return is:

$$\text{HPR} = (D_1 + S_1 - S_0) / S_0, \text{ where } D = \text{dividend and } S = \text{stock price.}$$

Here,  $\text{HPR} = (1.50 + 39 - 35) / 35 = 15.71\%$

*Step 2: Calculate Required Return*

The formula for the required return is from the CAPM:

$$\text{RR} = R_f + (\text{ER}_M - R_f) \times \text{Beta}$$

Here, we are given the information we need except for Beta. Remember that Beta can be calculated with:  $\text{Beta}_{\text{stock}} = [\text{cov}_{S,M}] / [\sigma^2_M]$ .

Here we are given the numerator and the denominator, so the calculation is:  $0.85 / 0.70^2 = 1.73$ .  $\text{RR} = 4.50\% + (12.0 - 4.50\%) \times 1.73 = 17.48\%$ .

*Step 3: Determine over/under valuation*

The required return is greater than the expected return, so the security is overvalued.

$$\text{The amount} = 17.48\% - 15.71\% = 1.77\%.$$

(Module 63.2, LOS 63.h)

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## Question #87 of 92

Question ID: 1458984

Given the following data, what is the correlation coefficient between the two stocks and the Beta of stock A?

- standard deviation of returns of Stock A is 10.04%
- standard deviation of returns of Stock B is 2.05%
- standard deviation of the market is 3.01%
- covariance between the two stocks is 0.00109
- covariance between the market and stock A is 0.002

	<u>Correlation Coefficient</u>	<u>Beta (stock A)</u>
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<b>A)</b>	0.6556	2.20
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<b>B)</b>	0.5296	2.20
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C) 0.5296

0.06



#### Explanation

correlation coefficient =  $0.00109 / (0.0205)(0.1004) = 0.5296$ .

beta of stock A = covariance between stock and the market / variance of the market

Beta =  $0.002 / 0.0301^2 = 2.2$

(Module 63.1, LOS 63.e)

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#### Question #88 of 92

Question ID: 1458995

One of the assumptions underlying the capital asset pricing model is that:

A) there are no transactions costs or taxes.



B) only whole shares or whole bonds are available.



C) each investor has a unique time horizon.



#### Explanation

The CAPM assumes frictionless markets, i.e., no taxes or transactions costs. Among the other assumptions of the CAPM are that all investors have the same one-period time horizon and that all investments are infinitely divisible.

(Module 63.2, LOS 63.f)

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#### Question #89 of 92

Question ID: 1458994

When the market is in equilibrium, all:

A) assets plot on the CML.



B) assets plot on the SML.



C) investors hold the market portfolio.



#### Explanation

When the market is in equilibrium, expected returns equal required returns. Since this means that all assets are correctly priced, all assets plot on the SML.

By definition, all stocks and portfolios other than the market portfolio fall *below* the CML. (Only the market portfolio is efficient.)

(Module 63.2, LOS 63.f)

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### Question #90 of 92

Question ID: 1459017

Consider a stock selling for \$23 that is expected to increase in price to \$27 by the end of the year and pay a \$0.50 dividend. If the risk-free rate is 4%, the expected return on the market is 8.5%, and the stock's beta is 1.9, what is the current valuation of the stock? The stock:

**A)** is correctly valued.



**B)** is overvalued.



**C)** is undervalued.



#### Explanation

The required return based on systematic risk is computed as:  $ER_{\text{stock}} = R_f + (ER_M - R_f) \times \text{Beta}_{\text{stock}}$ , or  $0.04 + (0.085 - 0.04) \times 1.9 = 0.1255$ , or 12.6%. The expected return is computed as:  $(P_1 - P_0 + D_1) / P_0$ , or  $(\$27 - \$23 + \$0.50) / \$23 = 0.1957$ , or 19.6%. The stock is above the security market line  $ER > RR$ , so it is undervalued.

(Module 63.2, LOS 63.h)

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### Question #91 of 92

Question ID: 1462965

When a risk-free asset is combined with a portfolio of risky assets, which of the following is *least accurate*?

The standard deviation of the return for the newly created portfolio is the

**A)** standard deviation of the returns of the risky asset portfolio multiplied by its portfolio weight.



The expected return for the newly created portfolio is the weighted average of

**B)** the return on the risk-free asset and the expected return on the risky asset portfolio.



- C) The variance of the resulting portfolio is a weighted average of the returns variances of the risk-free asset and of the portfolio of risky assets.



### Explanation

This statement is not correct; the standard deviation of returns for the resulting portfolio is a weighted average of the returns standard deviation of the risk-free asset (zero) and the returns standard deviation of the risky-asset portfolio.

(Module 63.1, LOS 63.a)

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### Question #92 of 92

Question ID: 1458993

Which of the following statements regarding the Capital Asset Pricing Model is *least accurate*?

- A) It is useful for determining an appropriate discount rate.
- B) It is when the security market line (SML) and capital market line (CML) converge.
- C) Its accuracy depends upon the accuracy of the beta estimates.



### Explanation

The CML plots expected return versus standard deviation risk. The SML plots expected return versus beta risk. Therefore, they are lines that are plotted in different two-dimensional spaces and will not converge.

(Module 63.2, LOS 63.f)