

TOPIC: QUANTITATIVE METHODS**THE TOTAL POINT VALUE FOR THIS QUESTION SET IS 12 POINTS**

William Shears, CFA, has been assigned the task of predicting sales for the specialty retail industry. Shears finds that sales have been increasing at a fairly constant rate over time and decides to estimate the linear trend in sales for the industry using quarterly data over the past 15 years, starting with Quarter 1 of 2004 and ending with Quarter 4 of 2018. On January 1, 2019, Shears estimates the following model:

$$\text{sales}_t = b_0 + b_1t + e_t \quad (1)$$

where:

sales = quarterly sales (measured in \$ millions) for the specialty retail industry

b_0 = intercept term

b_1 = slope

t = time variable (quarter number)

e = random error

Exhibit 1 provides the results of the linear trend regression.

Exhibit 1: Linear Trend Regression

	Coefficient	Standard Error
Intercept	10.0	3.50
Trend	16.0	6.55

Shears also estimates an autoregressive model of order one, AR(1), using the changes in quarterly sales data for the industry from the first quarter of 2004 through the fourth quarter of 2018. He obtains the following results for his AR(1) model:

$$\Delta \text{sales}_t = b_0 + b_1 \Delta \text{sales}_{t-1} + e_t$$

Exhibit 2: AR(1) Model for Changes in Industry Sales

	Coefficient	Standard Error
Intercept	20.00	2.15
Lag 1	0.10	0.04

The autocorrelations for the first four lags from Shears's AR(1) model are provided in Exhibit 3:

Exhibit 3: Autocorrelations From the AR(1) Model

Lag	Autocorrelation	p-Value
1	-0.032	0.38
2	-0.200	0.16
3	-0.065	0.23
4	0.470	0.02

Shears also derives a regression using the residuals from the AR(1) model. He regresses the squared residuals (or estimated errors) against the lagged squared residuals. The results of this regression are reported in Exhibit 4.

Quarterly sales for the Specialty Retail Industry during 2018 were:

Exhibit 4: 2018 Quarterly Industry Sales

Quarter	Sales (in millions)
Quarter 1, 2018	900
Quarter 2, 2018	925
Quarter 3, 2018	950
Quarter 4, 2018	1,000

Question #1 of 88

Question ID: 1512437

Shears's supervisor, Sam Kite, expresses concern that equation (1) might be misspecified. Specifically, Kite refers to the finding that "sales have been increasing at a fairly constant rate over time."

Which of the following data transformations should be applied to the dependent variable in equation (1) to best address Kite's concern?

- A) Lagged transformation.
- B) Logarithmic transformation.
- C) First difference transformation.



Explanation

A logarithmic transformation of the dependent variable is the most appropriate transformation to apply when the variable grows at a constant rate over time:

$$\ln(\text{sales}) = b_0 + b_1t + e_t$$

The slope of this equation (b_1) equals the nominal constant rate. (Module 2.1, LOS 2.b)

Question #2 of 88

Question ID: 1507266

Using the results for the linear trend equation in Exhibit 1, the specialty retail industry sales forecast for Quarter 1 of 2019 is *closest* to:

- A) \$26 million.
- B) \$976 million.
- C) \$986 million.

**Explanation**

Quarter 1 of 2019 is the 61st quarter (starting with Quarter 1 of 2004): sales = $10 + 16(61) = \$986$ million. (Module 2.1, LOS 2.b)

Question #3 of 88

Question ID: 1507267

Assuming the AR(1) model in Exhibit 2 is appropriate, Shears should conclude that the Quarter 1, 2019, change in sales is *most likely* to:

- A) fall from Quarter 4, 2018, change in sales.
- B) rise from Quarter 4, 2018, change in sales.
- C) remain unchanged from Quarter 4, 2018, change in sales.

**Explanation**

The mean reverting value equals the intercept divided by 1 minus slope = $20 / (1 - 0.10) = 20 / 0.90 = \22.22 million. The last change was \$50 million as shown in Exhibit 5 (1000 – 950). Therefore, the AR(1) model predicts that the series will fall anytime the current value (the last quarter in 2018) is above the mean reverting value. The change in sales for the last quarter in 2018 was \$50 million, which exceeds the mean reverting value. We could also have computed the forecasted change in sales for Quarter 1, 2019 as $20 + (0.1) \times 50 = 25$ (which is lower than the previous change of 50). (Module 2.2, LOS 2.f)

Question #4 of 88

Question ID: 1507268

Regarding seasonality, given a 5% level of significance, Shears should use Exhibit 3 to conclude he should add the following lag to his autoregressive model:

- A) no lag.
- B) the 3rd lag.
- C) the 4th lag.

**Explanation**

Seasonality refers to repeating patterns each year. Using quarterly data, tests of seasonality focus on the 4th lag (i.e., "same time last year"). The autocorrelation for the 4th lag is statistically significant. This can be observed by comparing the reported p -value (0.02), which is less than the level of significance (0.05). (Module 2.4, LOS 2.l)

TOPIC: ECONOMICS**THE TOTAL POINT VALUE FOR THIS QUESTION SET IS 12 POINTS**

Tristanya is a developed country with three states, West Tristanya (West), Central Tristanya (Central), and East Tristanya (East). Tristanya is a stable democracy with elected representatives, appointed judges, and an elected prime minister. All three states have approximately the same population and geographical area. Tristanya's savings rates are above the global average, and economic development has been mostly financed with domestic savings. The currency in Tristanya is the Tristanya dollar with a symbol of T\$. The financial markets are highly liquid and function efficiently. Tristanya's foreign trade is a significant part of the economy, and because of this, Tristanya has continued to push for lower trade barriers. Similar to other developed nations, population growth rate in Tristanya is low and capital stock is high.

The three states adhere to all federal regulations but differ significantly on some policies that are not covered by federal laws. The states also have their own agencies for regional administration of state-specific regulations. Any jurisdictional issue is resolved in federal courts.

The government of Tristanya is increasing its efforts to boost labor productivity. Some of the proposals under consideration include:

1. Increased education funding for elementary and middle schools.
2. Increased tax credits for private research and development expenditures.
3. Increased depreciation allowances for tax purposes.

Fuel costs have become an issue in Tristanya as demand for gasoline is expected to increase. Mandated fuel additives, specifically corn ethanol, are used to increase supply, and minimum fuel economy standards have been imposed to curtail demand.

East has the highest obesity rates among the three states. To control the state government's health care expenditure, East's government is implementing an additional tax on all sweet snack foods manufactured in the state. The tax is also known as the "sweet tax." Another regulation, the "supersize drinks ban," will prohibit restaurants in East from selling large portion sizes of carbonated beverages.

The most common form of sweetener in Tristanya is corn syrup. The agricultural industry has benefited from excess demand for corn to produce corn syrup and ethanol. Even after implementation of the "sweet tax," the demand for corn is expected to remain high.

West has the highest gasoline usage per capita, and reducing gasoline consumption is a policy goal for that state's government. West also has the most stringent environmental regulations and has recently raised their standards for minimum fuel economy for automobiles.

Juanita Estrada, an analyst, is assigned to assess the impact of all the regulatory changes on economic growth. Estrada lists the following findings from her analysis:

- Finding 1: The snack food industry is in the process of relocating manufacturing of sweet snack foods to West and Central and relocating manufacturing of salty snack foods to East.
- Finding 2: After West raised that state's fuel economy standards, the average miles driven per capita increased.
-

Question #5 of 88

Question ID: 1507275

The government proposal that would *most likely* lead to the highest increase in labor productivity is:

- A) Proposal 1.
- B) Proposal 2.
- C) Proposal 3.



Explanation

In order for developed countries to grow, technological development is critical. Proposal 2 most clearly addresses this need. Proposal 1 would be more effective if the focus was on post-secondary education, as developed nations benefit more from innovation and less from applying technology. Proposal 3 is unlikely to have a major impact on labor productivity, as developed nations have high capital-to-labor ratios, and incentives to further increase capital will have relatively little effect on labor productivity. (Module 6.2, LOS 6.h)

Question #6 of 88

Question ID: 1507276

Which Tristanyan industry is *most likely* to shrink due to the regulatory changes in the East?

- A) Snacks.
- B) Agriculture.
- C) Carbonated beverages.



Explanation

The carbonated beverages industry is likely to be hurt by the elimination of bigger sizes of drinks. The snack industry can avoid the new manufacturing tax in East by moving manufacture of sweet snacks to the other two states. The demand for corn is expected to remain fairly high so the regulatory changes in East are unlikely to have a major impact on the Tristanyan agricultural industry. (Module 7.1, LOS 7.i)

Question #7 of 88

Question ID: 1507277

Based on finding 1, the snack food industry is engaging in regulatory:

- A) capture.
- B) arbitrage.
- C) competition.



Explanation

The snack foods industry, a regulated entity, has found a way to exploit the differences in regulations among the three states and is engaging in regulatory arbitrage. Regulatory competition is a result of actions taken by regulators to attract certain entities. Regulatory capture is the idea that regulatory bodies are influenced or controlled by the regulated industry. (Module 7.1, LOS 7.f)

Question #8 of 88

Question ID: 1507278

The cost associated with finding 2 is:

- A) a component of the regulatory burden.
- B) a component of the implementation cost.
- C) a justification for sunset provisions.



Explanation

The increase in driving miles was not the intended effect of the regulation. Unintended effects are not a component of implementation cost. Regulatory burden refers to the cost of regulation for the entity being regulated. If sunset clause provisions were included in the regulation, West's regulators would be required to revisit the cost-benefit analysis and consider the cost of unintended consequences before renewing the regulation. (Module 7.1, LOS 7.h)

Overview for Questions #9-12 of 88

Question ID: 1508352

TOPIC: ECONOMICS

THE TOTAL POINT VALUE FOR THIS QUESTION SET IS 12 POINTS

Bella Stone, CFA, is analyzing investment opportunities in Astair, an emerging market. She notes that at a recent congressional hearing, Mr. Adel Mahi, the chief economic advisor to the prime minister, stated that Astair's capital accumulation affects the size of the Astair's GDP but not its growth rate.

All commercial and financial market regulations are the domain of federal agencies and government recognized self-regulatory organizations (SROs). In this regard, the federal government tends to set minimum standards and allows each state to create agencies to enforce their regulations.

While discussing international parity conditions with an intern, Stone makes the following statements.

Statement 1:	Absolute purchasing power parity extends the law of one price and states that a basket of goods should have the same price throughout the world. Absolute purchasing power parity is not widely used in practice to forecast exchange rates.
Statement 2:	Although relative purchasing power parity is useful as an input for long-run exchange rate forecasts, it is not useful for predicting short-run currency values.
Statement 3:	For uncovered interest rate parity to hold, the forward rate must be an unbiased predictor of the future spot rate.

Question #9 of 88

Question ID: 1508353

Mahi's statement is consistent with:

- A) classical growth theory. 
- B) endogenous growth theory. 
- C) neoclassical growth theory. 

Explanation

Neoclassical growth theory concludes that capital accumulation affects the level of output but not the long-run growth rate.

(Module 6.3, LOS 6.i)

Question #10 of 88

Question ID: 1508354

The objectives of regulators in financial markets is *least likely* to include:

- A) low inflation. 
- B) prudential supervision. 
- C) promotion of economic growth. 

Explanation

The objectives of regulators in financial markets include prudential supervision, financial stability, market integrity, and economic growth. Low inflation is likely to be an objective of the central bank.

(Module 7.1, LOS 7.b)

Question #11 of 88

Question ID: 1508355

Regarding statements 1 and 2 made by Stone, are both statements correct?

- A) Yes.
- B) No, only Statement 2 is correct.
- C) No, both statements are incorrect.



Explanation

Statement 1: Stone is correct regarding absolute purchasing power parity. It is based on the law of one price, which states that the price of goods (after currency conversion) should not differ internationally. Absolute purchasing power parity is not used to predict exchange rates.

Statement 2: Stone is correct regarding relative purchasing power parity. It does not hold in the short-run and therefore is not useful for predicting short-run currency values. It does tend to hold in the long-run, however, and is therefore useful for long-run exchange rate forecasts.

(Module 5.2, LOS 5.e)

Question #12 of 88

Question ID: 1508356

Stone's statement 3 is *most likely*:

- A) correct.
- B) incorrect as uncovered interest rate parity holds only if real interest rate parity holds.
- C) incorrect as uncovered interest rate parity holds only if covered interest rate parity holds.



Explanation

When the expected future spot rate is equal to the forward rate (and given that covered interest parity always holds—by arbitrage), uncovered interest rate parity should hold as well. The international Fisher relationship links relative purchasing power parity to uncovered interest rate parity. Real interest rate parity links the Fisher effect to the international Fisher relationship.

(Module 5.2, LOS 5.f)

Overview for Questions #13-16 of 88

Question ID: 1512441

TOPIC: FINANCIAL STATEMENT ANALYSIS

THE TOTAL POINT VALUE FOR THIS QUESTION SET IS 12 POINTS

Delicious Candy Company (Delicious) is a leading manufacturer and distributor of quality confectionery products throughout Europe and Mexico. Delicious is a publicly traded firm located in Italy and has been in business over 60 years. Delicious complies with International Financial Reporting Standards (IFRS).

Caleb Scott, an equity analyst with a large pension fund, has been asked to complete a comprehensive analysis of Delicious in order to evaluate the possibility of a future investment.

Scott compiles the selected financial data found in Exhibit 1 and learns that Delicious owns a 30% equity interest in a supplier located in the United States. Delicious uses the equity method to account for its investment in the U.S. associate. The associate prepares its financial statements in accordance with U.S. Generally Accepted Accounting Principles (GAAP).

Exhibit 1: Selected Financial Data—Delicious Candy Company

In millions	2017	2016
Income Statement		
Revenue	€60,229	€55,137
Earnings before interest and tax	7,990	7,077
Earnings before tax	7,570	6,779
Income from associate ^a	354	270
Net income	6,501	5,625
Balance sheet		
Total assets ^b	€56,396	€53,111
Investment in associate	5,504	5,193
Stockholders' equity ^c	30,371	29,595

^a Not included in EBIT or EBT.

^b Total assets were €45,597 at the end of 2015.

^c Stockholders' equity was €27,881 at the end of 2015.

Scott reads the Delicious's revenue recognition footnote found in Exhibit 2.

Exhibit 2: Revenue Recognition Footnote

In millions
Revenue is recognized, net of returns and allowances, when the goods are shipped to customers and collectibility is assured. Several customers remit payment before delivery in order to receive additional discounts. Delicious reports these amounts as unearned revenue until the goods are shipped. Unearned revenue was €9,701 at the end of 2017, €2,514 at the end of 2016, and €2,511 at the end of 2015.

Scott wants to determine whether the cash flow is of high quality.

Scott gathers the information in Exhibit 3 to determine the implied "stand-alone" value of Delicious without regard to the value of its U.S. associate.

Exhibit 3: Selected 2017 Market Capitalization Data

In millions except exchange rates	Delicious	Associate
Market capitalization	€97,525	\$32,330
Current exchange rate (€ per \$)	€0.70	
Average exchange rate (€ per \$)	€0.73	

Delicious financial statements include an investment of €60 million in debt securities, which are reported as fair value through profit or loss securities.

Question #13 of 88

Question ID: 1507290

When applying the financial analysis framework to Delicious, which of the following is the *best* example of an input Scott should use when establishing the purpose and context of the analysis?

- A) The audited financial statements of Delicious prepared in conformance with either U.S. GAAP or IFRS. 
- B) Ratio analysis adjusted for differences between U.S. accounting standards and international accounting standards. 
- C) Review of the pension fund's guidelines related to developing the specific work product. 

Explanation

The institutional guidelines related to developing the specific work product is an input source in the first phase (defining the purpose and context of the analysis). Audited financial statements are an example of an input in the data collection phase. Ratio analysis is an example of the output from the data processing phase. (Module 13.1, LOS 13.a)

Question #14 of 88

Question ID: 1507291

If Delicious reported the investment in debt securities as fair value through OCI securities instead of as fair value through profit or loss securities, the impact on Delicious's financial statement would be:

- A) to decrease total assets. 
- B) to increase total assets. 
- C) no change to total assets. 

Explanation

If Delicious reported the investment in debt securities as fair value through OCI instead of fair value through profit or loss, its total assets would be unchanged, because both methods report the bonds at fair value on the balance sheet. Net income would, however, differ with unrealized gains or loss reported in income statement under fair value through profit or loss classification while being reported in OCI under fair value through OCI classification. (Module 8.1, LOS 8.a)

Question #15 of 88

Question ID: 1512442

Using the data found in Exhibit 1 and Exhibit 2, which of the following *best* describes the impact on Delicious's financial leverage in 2017 as compared to 2016?

- A) Financial leverage increased, but the true nature of the leverage decreased. 
- B) Financial leverage increased, and the true nature of the leverage increased. 
- C) Financial leverage and the true nature of the leverage were unchanged. 

Explanation

Delicious's financial leverage ratio was 1.8 (54,753 average assets / 29,983 average equity) for 2017 and was 1.7 for 2016 (49,354 average assets / 28,738 average equity). Although leverage was higher, the nature of the true leverage was lower. This is because the increasing customer advances (unearned revenue) will not require an outflow of cash in the future and are, thus, less onerous than Delicious's other liabilities.

Average unearned revenue during 2017 = [€9,701 + €2,514] / 2 = 6,107.5

Average unearned revenue during 2016 = [2,514 + 2,511] / 2 = 2512.5

Average assets – average unearned revenue for 2017 = 54,753 – 6,107.5 = 48,645.5

Average assets – average unearned revenue for 2016 = 49,354 – 2,512.5 = 46,841.5

Leverage (2017) = 48,645.50 / 29,983 = 1.62

Leverage (2016) = 46841.5 / 28,738 = 1.63

(Module 13.2, LOS 13.b)

Question #16 of 88

Question ID: 1507293

Using the data found in Exhibit 1 and Exhibit 3, Delicious's implied P/E multiple without regard to its U.S. associate is *closest* to:

- A) 14.0. 
- B) 14.8. 
- C) 15.1. 

Explanation

Delicious's implied value without its U.S. associate is €90,736 [$€97,525 \text{ Delicious market cap} - €6,789 \text{ share of associate's market cap } (\$32,330 \times 30\% \times €0.70 / \$ \text{ current exchange rate})$].

Delicious's net income without associate is €6,147 ($€6,501 \text{ net income} - €354 \text{ pro-rata share of income from associate}$).

Implied P/E = 14.8 ($€90,736 \text{ Delicious implied value without associate} / €6,147 \text{ Delicious net income without associate}$). (Module 13.5, LOS 13.e)

Overview for Questions #17-20 of 88

Question ID: 1508379

TOPIC: EQUITY VALUATION

THE TOTAL POINT VALUE FOR THIS QUESTION SET IS 12 POINTS

Brightscore Investments is a boutique wealth management firm. One of Brightscore's equity analysts, Marie Swift, CFA, recently held a meeting with the senior partners to discuss a relatively new model the firm is implementing to determine the P/E ratios of companies that Brightscore researches.

Swift explains that the model utilizes a cross-sectional regression using the previous year-end data of a group of comparable companies' P/E ratios against their dividend payout ratios (payout ratio), sustainable growth rates (g), and returns on equity (ROE). The resulting regression equation is used to determine a predicted P/E ratio for the subject company using the subject company's most recent year-end data. Swift has developed the following model, which has an R-squared of 81%, for the semiconductor industry (16 companies):

$$\begin{array}{ccccccc} \text{predicted P/E} = & 2.74 + & 8.21(\text{payout ratio}) + & 14.21(g) + & 2.81(\text{ROE}) \\ (\text{STD error}) & (2.11) & (6.52) & (9.24) & (2.10) \end{array}$$

Swift collects data on three companies as shown in Exhibit 1.

Exhibit 1: Selected Financial Information

	A	B	C
EPS	\$2.00	\$4.00	\$3.00
DPS	\$0.50	\$1.60	\$1.50
ROE	20%	15%	13%
Required rate of return	20%	12%	10%

Swift is following Sigma, Inc., a chipmaker for wearable devices. Sigma has invested significantly in R&D since its inception and that expenditure is finally bearing fruit: the company is now profitable. Sigma correctly expenses the R&D expenditure when incurred. Relative to its competitors, Sigma pays a lower share of gross revenue to its

independent contractors. However, Sigma does pay contractors annual bonuses based on their number of years of affiliation with the company.

Swift is also analyzing Safe Bank, a regional bank holding company. Safe Bank is expected to have an earnings growth rate of 3% going forward and its ROE is 12%. Current BVPS is \$50.

Question #17 of 88

Question ID: 1508380

Based on Exhibit 1, which company has the lowest predicted P/E utilizing the model presented by Swift?

A) A.



B) B.



C) C.



Explanation

First calculate the growth rates = ROE × retention rate

$$\text{A: } 0.20 \times 0.75 = 15\%$$

$$\text{B: } 0.15 \times 0.6 = 9\%$$

$$\text{C: } 0.13 \times 0.5 = 6.50\%$$

Based on the model presented, the predicted P/E ratios can be calculated as:

$$\text{A: } 2.74 + 8.21(0.50 / 2.00) + 14.21(0.15) + 2.81(0.20) = 7.49$$

$$\text{B: } 2.74 + 8.21(1.60 / 4.00) + 14.21(0.09) + 2.81(0.15) = 7.72$$

$$\text{C: } 2.74 + 8.21(1.50 / 3.00) + 14.21(0.065) + 2.81(0.13) = 8.13$$

(Module 22.4, LOS 22.e)

Question #18 of 88

Question ID: 1508381

Which relative valuation multiple would Swift *most appropriately* use to value Sigma, Inc.?

A) Price-to-cash-flow ratio.



B) Price-to-book ratio.



C) Price-to-sales ratio.



Explanation

We are told that the firm has significant investment in R&D, suggesting the existence of intangible assets that are not reflected in Sigma's book value; hence, the price-to-book value ratio may be misleading. Sigma's cost structure is different from that of its peers, so use of price-to-sales ratio may not be directly comparable. The price-to-cash-flow ratio is most appropriate here because cash flow is less prone to manipulation and less likely to be distorted by differences in accounting practices.

(Module 22.1, LOS 22.c)

Question #19 of 88

Question ID: 1508382

Which of the following is *least appropriate* regarding the use of standardized unexpected earnings?

- A) A given size forecast error is more meaningful the lower the size of historical forecast errors. 
- B) SUE divides earnings surprise by the standard deviation of earnings. 
- C) The economic rationale for examining earnings surprises is that positive surprises may lead to persistent positive abnormal returns. 

Explanation

SUE divides earnings surprise by the standard deviation of earnings surprise. Other statements are accurate.

(Module 22.4, LOS 22.q)

Question #20 of 88

Question ID: 1508383

Assuming a 9% required rate of return and using the residual income model, the value of Safe Bank's equity is *closest* to:

- A) \$75 per share. 
- B) \$95 per share. 
- C) \$115 per share. 

Explanation

$$V_0 = B_0 + \frac{(\text{ROE} - r) \times B_0}{(r - g)} = \$50 + \frac{(0.12 - 0.09)50}{0.09 - 0.03} = \$75$$

(Module 23.2, LOS 23.d)

Overview for Questions #21-24 of 88

Question ID: 1508369

TOPIC: EQUITY VALUATION

THE TOTAL POINT VALUE FOR THIS QUESTION SET IS 12 POINTS

George Armor, CFA, is a new stock analyst for Pedad Investments. One tool that Pedad uses to compare stock valuations is the dividend discount model (DDM). In particular, the firm evaluates stocks in terms of "justified" multiples of sales and book value. These multiples are based on algebraic manipulation of the DDM. Over time, these multiples seem to provide a good check on the market valuation of a stock relative to the company's fundamentals. Any stock that is currently priced below its value based on a justified multiple of sales or book value is considered attractive for purchase by Pedad portfolio managers. Exhibit 1 contains financial information from the year just ended for three stable companies in the meatpacking industry: Able Corporation, Baker, Inc., and Charles Company, from which Armor will derive his valuation estimates.

Exhibit 1: Selected Financial Information

	Able Corporation	Baker, Inc.	Charles Company
Revenue/share	\$115.00	\$52.80	\$25.75
EPS	\$2.50	\$4.80	\$4.00
DPS	\$1.00	\$1.60	\$2.50
ROE	25%	15%	8%
Book value per share	\$10.00	\$32.00	\$50.00
Stock price per share (current)	\$60.00	\$70.00	\$35.50
Required return	20%	12%	10%

Question #21 of 88

Question ID: 1508370

Based on Exhibit 1, which stock is the *most* undervalued by applying the justified price-to-book value method?

- A) Able Corporation.
- B) Baker, Inc.
- C) Charles Company.



Explanation

The justified price-to-book value (P/B) ratio is calculated as:

$$P/B = (ROE - g) / (r - g)$$

where:

growth rate: $g = ROE \times (1 - \text{payout})$

Able: $g = 0.25 \times (1 - 1.00 / 2.50) = 0.15$

Baker: $g = 0.15 \times (1 - 1.60 / 4.80) = 0.10$

Charles: $g = 0.08 \times (1 - 2.50 / 4.00) = 0.03$

Justified price-to-book value (P/B):

Able: $P/B = (0.25 - 0.15) / (0.20 - 0.15) = 2$, implying price = $2 \times 10 = \$20$

Baker: $P/B = (0.15 - 0.10) / (0.12 - 0.10) = 2.5$, implying price = $2.5 \times 32 = \$80$

Charles: $P/B = (0.08 - 0.03) / (0.10 - 0.03) = 0.71$, implying price = $0.71 \times 50 = \$35.5$

Able sells for \$60, triple its value; Baker sells for \$70, 12% below its value; and Charles sells for \$35.5, right at its value.

(Module 22.4, LOS 22.m)

(Module 22.4, LOS 22.i)

Question #22 of 88

Question ID: 1508371

Based on Exhibit 1, the justified price-to-sales ratio of Baker, Inc., is *closest* to:

A) 1.5.



B) 1.7.



C) 1.9.



Explanation

The justified price-to-sales (P/S) ratio is calculated as:

$$P/S = [\text{profit margin} \times \text{payout ratio} \times (1 + g)] / (r - g)$$

Baker: $P/S = [(4.80 / 52.80) \times (1.60 / 4.80) \times (1 + 0.10)] / (0.12 - 0.10) = 1.67$

(Module 22.4, LOS 22.m)

(Module 22.4, LOS 22.i)

Question #23 of 88

Question ID: 1508372

If valuation is based on the justified price-to-sales ratio, Armor should conclude that Able Corporation is:

- A) overvalued; the stock trades at more than double its value based on a justified price-to-sales ratio. 
- B) overvalued relative to Baker, but undervalued relative to Charles. 
- C) undervalued; the stock trades at less than half its value based on a justified price-to-sales ratio. 

Explanation

Able Corporation should sell for $[(2.50 / 115) \times (1.00 / 2.50) \times (1 + 0.15)] / (0.20 - 0.15) = 0.20 \times \text{sales}$, or \$23/share. The current market price of \$60 is 161% overvalued. Baker trades for \$70 versus a value of $1.67 \times 52.8 = \$88$, a discount of 20%. Charles trades for \$35.50 versus a value of $1.43 \times 25.75 = 37$, a negligible discount of 4%.

(Module 22.4, LOS 22.h)

Question #24 of 88

Question ID: 1508373

Armor has been asked to identify the relative valuation merits of the three stocks. Which of the following statements is correct?

- A) Able Corporation is the best investment because it has the highest ROE. 
- B) Charles Company is the best investment because the stock is priced below book value. 
- C) Able Corporation's earnings should grow the fastest due to its high ROE and retention ratio. 

Explanation

A high ROE does not make a company a good investment, nor does a high book value. However, Able Corporation does have the highest potential growth rate. Because the justified values for Charles Company are near the market price, there does not appear to be any problem with the valuation inputs (e.g., required return). The similarity between the justified P/B value and the market price of Charles indicates that it is fairly priced and not an especially attractive investment.

(Module 22.4, LOS 22.h)

Overview for Questions #25-28 of 88

Question ID: 1508384

TOPIC: FIXED INCOME

THE TOTAL POINT VALUE FOR THIS QUESTION SET IS 12 POINTS

Ande Lindstrom is currently in the final year of his undergraduate degree in finance and is preparing to take the Level I CFA exam in November. To keep on top of the material, Lindstrom runs a website for his peers who are also planning to sit for the CFA exam.

Lindstrom is currently reviewing several submissions from classmates on the subject of fixed-income instruments. These submissions are especially topical because the U.S. central bank raised target rate in the previous month. Lindstrom intends to post the spot rate curve shown in Exhibit 1, which is derived from U.S. Treasuries, along with any articles he agrees with.

Exhibit 1: U.S. Treasuries Spot Curve

Maturity (years)	1	2	3	5	7	10	20	30
Spot Rate (%)	0.25	0.36	0.90	1.49	2.27	2.94	3.52	4.00

Joe Hellens, a fellow Level I candidate, has submitted an article claiming that some banks are still offering forward rates that do not fully account for the new spot curve. As a result, Hellens claims that there are arbitrage opportunities. Upon analyzing a particular bank's offering of a 2-year forward contract on a risk-free, 5-year, zero coupon bond, Hellens states that "the quoted forward price of \$0.8608 per \$1 is higher than it should be under the forward pricing model and, hence, arbitrage profits could be made."

Lindstrom is always wary of posting articles on to the website that could be interpreted as investment advice. Instead, he prefers instructional articles that allow the reader to carry out their own research. In place of Hellens's article on potential arbitrage opportunities (the profits of which he feels would be eliminated by transaction costs), Lindstrom intends to use the comment addressing active bond management shown in Exhibit 2.

Exhibit 2: Active Bond Management

"Active bond managers will seek to outperform the market by anticipating interest rate movements that are not in line with current spot and forward rates. For example, the price of a 1-year forward contract on a 1-year, zero coupon, risk-free bond will remain unchanged if the future 1-year spot rate in one year is equal to the current 2-year spot rate. If it is not, there may be an opportunity for active managers to outperform the market."

Dan Gorman has submitted an article for Lindstrom's review on the topic of the swap curve. Lindstrom is aware of the curve but unsure about how it is used in computing swap spreads and in bond valuation generally. Extracts from Gorman's article are shown in Exhibit 3.

Exhibit 3: Swap Curves and Spreads

"Swap spreads make use of the swap curve. Swap curves are a popular benchmark for the time value of money as they have at least two key advantages over the government yield curve:

Advantage One: Some countries do not have a liquid government bond market for maturities over one year. In those markets, the swap curve is an essential benchmark.

Advantage Two: Retail banks generally have familiarity with the swap market because they hedge assets and liabilities on their balance sheet with swaps. For this reason, the swap rate makes a useful benchmark for the time value of money for them."

Swap curves can also be used to calculate the swap spread, which is an increasingly popular indicator of credit spreads in the markets. The swap spread is defined as:

"The spread paid by the floating-rate payer of an interest rate swap over the rate of the on-the-run government security with the same maturity."

Question #25 of 88

Question ID: 1508385

Hellens's claim regarding the 2-year forward contract on the 5-year, risk-free, zero coupon bond is *most accurately* described as:

- A) incorrect, as the quoted price is roughly in line with the forward pricing model. ✔
- B) incorrect, as the quoted price is much lower than the forward pricing model would suggest. ✘
- C) correct. ✘

Explanation

To obtain $F_{(2,5)}$, first calculate the 2-year discount factor P_2 and the 7-year discount factor P_7 .

$$\begin{aligned} P_2 &= 1 / (1 + 0.0036)^2 = 0.9928 \\ P_7 &= 1 / (1 + 0.0227)^7 = 0.8546 \\ F_{(2,5)} &= 0.8546 / 0.9928 = 0.8608 \end{aligned}$$

Alternatively:

$$\begin{aligned} \text{Using forward price, } f(2,5) &= (1 / 0.8608)^{(1/5)} - 1 = 3.043\% \\ \text{Using spot rates, } [1 + f(2,5)]^5 &= [(1 + S_{(2+5)})^{2+5} / (1 + S_2)^2] = 1.1617 \\ [1 + f(2,5)] &= 1.1617^{(1/5)} = 1.03043 \\ f_{(2,5)} &= 0.03043 = 3.043\% \end{aligned}$$

(Module 25.1, LOS 25.a)

Question #26 of 88

Question ID: 1508386

Lindstrom's comment in Exhibit 2 on active bond management is *most likely*:

- A) correct. ✘
- incorrect, as the forward price will be unchanged if the 1-year spot rate
- B) occurring in one year is equal to the current 1-year forward rate one year from now $[f(1,1)]$. ✔

- C) incorrect, as the forward price will be unchanged if the 1-year spot rate occurring in one year is equal to the current 1-year spot rate.



Explanation

Spot rates should evolve in line with the current forward rates.

(Module 25.1, LOS 25.b)

Question #27 of 88

Question ID: 1508387

Which of the advantages of swap curves listed in Exhibit 3 is accurate?

- A) Advantage one only.
B) Advantage two only.
C) Both advantages one and two are accurate.



Explanation

Retail banks typically have little exposure to swaps and, consequently, they typically use the government yield curve. The swap curve is more commonly used by wholesale banks.

(Module 25.2, LOS 25.d)

Question #28 of 88

Question ID: 1508388

Gorman's definition of the swap spread in Exhibit 3 is *best* described as:

- A) correct.
B) incorrect, as the spread is compared to the corporate bond being valued, not a government security.
C) incorrect, as the spread uses the fixed-rate paid in the swap, not the floating rate.



Explanation

The swap spread is the spread paid by the fixed-rate payer of an interest rate swap over the rate on an on-the-run government security with the same maturity as the swap.

(Module 25.3, LOS 25.e)

Overview for Questions #29-32 of 88

Question ID: 1508402

TOPIC: DERIVATIVES

THE TOTAL POINT VALUE FOR THIS QUESTION SET IS 12 POINTS

Jon Garton, CFA, is an equity analyst covering several industry sectors for a boutique U.S. investment firm. Currently Garton is reviewing a reply that he received from the CFO of TorkSpark, Inc., a manufacturer of automotive parts.

Garton had noticed that the most recent quarterly filing by TorkSpark showed an increase in the volume of derivative transactions that showed gains and losses either in the income statement or in other comprehensive income. This is the third quarter in a row that Garton has observed such an increase, and in a recent analyst call, Garton asked the CFO to give some explanation for such an increase.

Extracts from the CFO's reply are shown in Exhibit 1.

Exhibit 1: TorkSpark CFO Comments

"TorkSpark currently has a \$68 million bond outstanding that is not due to mature until 2028. The coupon payments are fixed at 6.25% and paid quarterly. A decision was taken recently to try to reduce the interest rate risk on the bond.

The board also identified a need to address the financing of TorkSpark Plc., our wholly owned subsidiary in the U.K. In order to raise the 175 million GBP needed to fund an expansion of the operations, the board leveraged its relationship with the Lobman Starn banking group here in the United States.

TorkSpark borrowed 250 million USD and set up a USD-GBP currency swap with a swap dealer based in Europe. Unfortunately, the dealer experienced some issues trying to hedge their position, so TorkSpark agreed to settle the swap at the PV of future payments only 170 days after origination.

Over the past year, TorkSpark has also entered into a receiver swap, and has written call options on the stock of Perimeter, Inc., a Brazilian company listed on the NYSE. Additionally, TorkSpark has a long position in payer swaptions on a five-year interest rate swap.

Garton believes that the expansionary fiscal and monetary policies will soon lead to an increase in interest rates.

Question #29 of 88

Question ID: 1508403

Which of the following positions is *most likely* to achieve the CFO's objective for the \$68 million bond outstanding?

- A) Pay fixed interest rate swap with quarterly settlement.
- B) Pay floating interest rate swap with quarterly settlement.
- C) Long FRA on 90-day MRR.



Explanation

The CFO is looking to reduce the duration of the fixed-rate bond. The risk here is that market interest rates drop below 6.25%, but we're stuck still paying 6.25%. We can reduce this specific risk by effectively changing that fixed payment into a floating payment. A pay floating and receive fixed swap is most likely to achieve this objective.

(Module 30.6, LOS 30.e)

Question #30 of 88

Question ID: 1508404

In order to hedge exposure to the currency swap described by the CFO, the swap dealer would *least appropriately*:

- A) borrow GBP.
- B) borrow USD.
- C) lend USD.



Explanation

TorkSpark has borrowed USD and thus should engage in a USD for GBP swap. At initiation, TorkSpark would exchange USD principal for GBP principal. During the life of the swap, TorkSpark would pay GBP interest and the swap dealer would pay USD interest. To hedge these flows, the dealer could enter into a GBP for USD swap. Alternately, the dealer could lend USD and borrow GBP.

(Module 30.7, LOS 30.f)

Question #31 of 88

Question ID: 1508405

If Garton's expectations about interest rates turn out to be accurate, which of TorkSpark's positions is *most likely* to result in a gain to the firm?

- A) Receiver swap.
- B) Calls on Perimeter, Inc.
- C) Payer swaption.



Explanation

Garton expects interest rates to rise. An increase in rates will lead to a gain for parties entering into a payer swap and payer swaptions because that party pays the (previously lower) fixed rate and receives the (higher) future floating rate. Rho is positive for equity call options; an increase in interest rate leads to a higher value of a call option. Because TorkSpark has written the option, it has a short position in the call, and thus would experience a loss due to an increase in the value of the call option.

(Module 31.7, LOS 31.k)

(Module 30.2, LOS 30.b)

(Module 31.5, LOS 31.b)

(Module 31.6, LOS 31.j)

If Garton wants to hedge the firm's position in TorkSpark stock using put options, the resulting portfolio's gamma would *most likely* be:

- A) negative. 
- B) zero. 
- C) positive. 

Explanation

To dynamically hedge a long stock position, long put options will be used. Long stock has zero gamma while long put has positive gamma. Portfolio gamma therefore would be positive.

(Module 31.7, LOS 31.m)

Overview for Questions #33-36 of 88

TOPIC: ALTERNATIVE INVESTMENTS

THE TOTAL POINT VALUE FOR THIS QUESTION SET IS 12 POINTS

Karen Westin, Kei Shinoya, and Carlos Perez, partners at PacRim Investment Consultants, are advising a client, the West Lundia Government Employees Pension Plan (WLGE), a large public pension fund. In a previous meeting with the pension board of WLGE, the PacRim team made a recommendation to increase the fund's exposure to domestic real estate. Because of the WLGE plan's large size and in-house expertise, the pension fund has the capacity to invest in and manage a wide variety of real estate investments. The currency in West Lundia is the West Lundian Dollar (WL\$).

Because of the favorable real estate conditions, the consensus was to consider equity investments in real estate. Three options under consideration are:

- Option 1: Direct investment, in an existing office building.
- Option 2: Investment in a health care REIT.
- Option 3: Investment in a retail REIT.

Option 1: Direct Investment	
Expected NOI Years 1–7	WL\$ 7.0 MM
Expected NOI Year 8	WL\$ 8.5 MM
Required return on equity investment	10%
NOI growth rate after 8 years	3.25%

Option 2: Health Care REIT

Recent NOI	WL\$ 140.0 MM
Non-cash rents	WL\$ 5.0 MM
Full year adjustment for acquisition	WL\$ 5.0 MM
Other assets	WL\$ 50.0 MM
Total liabilities	WL\$ 300.0 MM
Current market price per share	WL\$ 125.00
Shares outstanding	15 MM
Going-in cap rate	7.00%
NOI growth rate	2.50%

Option 3: Retail REIT

Expected AFFO in Year 7	WL\$ 13.5 MM
Holding period	7 years
Present value of all dividends for 7 years	WL\$ 39.7 MM
Shares outstanding	1.0 MM
Cap rate	7.0%
Growth rate (from Year 8)	2.50%

Additional Information:

1. The office building under consideration has existing tenants with long-term leases that will expire in seven years.
2. The REIT terminal value at the end of seven years is to be based on a price-to-AFFO multiple of 12x.

Question #33 of 88

Question ID: 1508408

The estimated value of the office building (Option 1) using the discounted cash flow approach is *closest* to:

- A) WL\$ 89 million.
- B) WL\$ 93 million.
- C) WL\$ 99 million.



Explanation

There are two components to this valuation. The first component is the cash flows for the first seven years. The second component is the terminal value.

PV of CFs in Years 1–7:

PMT = 7.0; I/Y = 10; N = 7. The PV = WL\$34.08 million.

PV of terminal value:

An appropriate terminal cap rate can be calculated using the following equation:

$$\text{cap rate} = \text{discount rate} - \text{growth rate} = 10\% - 3.25\% = 6.75\%.$$

The terminal value is calculated using the following inputs: WL\$8.5 million divided by the terminal cap rate of 6.75%. The value in Year 7 is WL\$125.93 million, discounting this value to the present:

FV = WL\$125.93 million; N = 7, I/Y = 10 results in a present value of WL\$64.62 million.

$$\text{WL\$34.08} + \text{WL\$64.62} = \text{WL\$98.7 million.}$$

(Module 32.2, LOS 32.i)

Question #34 of 88

Question ID: 1512449

Based on its estimated value using the net asset value approach, the REIT identified in Option 2 is:

- A) fairly priced.
- B) selling at a discount.
- C) selling at a premium.



Explanation

NAVPS based on forecasted NOI:

Option #2 (REIT)	(in WL\$ millions)
Recent NOI	140.0
Subtract: Non-cash rents	– 5.0
Add: Full-year adjustment for acquisition	+ 5.0
Pro forma cash NOI	140.0
Projected NOI @ 2.5% growth	143.5
Estimated value of operating real estate @ cap rate of 7.0%	2050.0
Add: Other assets	+ 50.0
Estimated gross value	2100.0
Subtract: Total liabilities	– 300.0
NAV	1800.0

NAVPS = 1800 / 15 = 120, which is lower than the current market price of WL\$125.00. This REIT is selling at a premium to NAVPS.

(Module 32.3, LOS 32.I)

Question #35 of 88

Question ID: 1512450

The estimated value per share of Option 3, using the discounted cash flow approach, is *closest* to:

- A) WL\$ 125.50.
- B) WL\$ 140.60.
- C) WL\$ 162.00.

**Explanation**

The terminal value estimate is $12.0 \times \text{WL\$}13.5 \text{ MM}$ for end of Year 7 or WL\$162.0 MM. The discount rate is the cap rate of 7.0% plus the growth rate of 2.5%, or 9.5%. Discounting this terminal value to find the present value: $\text{FV} = \text{WL\$}162.0 \text{ MM}$; $I/Y = 9.5$; $N = 7$; $\text{PV} = \text{WL\$}85.83 \text{ MM}$. Add the present value of all dividends of WL\$39.7 MM for a total of WL\$125.53 MM. Divide WL\$125.53 MM by 1 million shares outstanding for a value per share of WL\$125.53.

(Module 32.3, LOS 32.n)

Question #36 of 88

Question ID: 1512451

A REOC would be preferred over Option 2 if:

- A) liquidity of the investment is critical.
- B) the investment must be efficient in terms of corporate taxes.
- C) capital appreciation is more highly valued than current income.

**Explanation**

Investment in both public REOCs and public REITs enjoy high liquidity, as shares of both trade on a stock exchange. Tax advantages favor REITs as REOCs are not tax-advantaged. REOCs are more reliant on capital appreciation due to their ability to reinvest cash flows, while REITs tend to have higher current income (i.e., yield).

(Module 32.3, LOS 32.k)

Overview for Questions #37-40 of 88

Question ID: 1508417

TOPIC: PORTFOLIO MANAGEMENT**THE TOTAL POINT VALUE FOR THIS QUESTION SET IS 12 POINTS**

Sally Sishek, CFA, works as a freelance risk management consultant in the United States. Recently, she was contacted by BlueCanopy Investments (BCI), an asset management firm that recently experienced a significant financial loss after what it described as a "serious failure in multiple risk management processes."

Sishek has had an initial meeting with Jon Bagwell, the chief investment officer of BCI, who is leading the review of risk management following the resignation of BCI's chief

risk officer (CRO) last month.

Bagwell has concerns that the CRO relied too heavily on VaR as a risk measure, rather than also implementing other complimentary controls.

Sishek is reviewing the VaR analysis carried out by the recently departed CRO. Some of the calculations involved are shown in Exhibit 1.

Exhibit 1: VaR Calculations

Portfolio EGF Internal Ref:0300201 5% VaR

Inputs:	Mean annual return	9.4%
	Annual volatility	14.2%

Assumptions:

- 250 trading days per year.
- Risk factors are normally distributed.
- Mean and volatility calculated using historical data over a 3-year lookback period.
- The historical standard deviation has been adjusted upward to reflect the long-term expectations relative to the lookback period.

$$\text{5\% Annual VaR} = [9.4\% - (1.65 \times 14.2\%)] = -14\%$$

Sishek has some concerns about the calculations as well as the firm's use of VaR. Bagwell admits that he has very little idea how the VaR calculations were currently used to manage risk. Sishek suggests that in the short term, the firm should immediately implement at least the following recommendation:

Risk Management Recommendation

Impose a daily 1% VaR limit of (for example) \$2,000,000 on a portfolio.
Monitor the portfolio for any signs of trending and liquidate the portfolio if cumulative monthly losses exceed \$7,500,000.

She also intends to provide a list of typical risk management measures that traditional asset managers employ and agreed to put together a case study on how each of these measures could be implemented. The list she will provide is shown in Exhibit 2.

Exhibit 2: Risk Management Measures

Typical risk measures employed by traditional asset managers include:

1. **Beta sensitivity:** useful for equity only
 2. **Active share:** a measure of similarity to a benchmark
 3. **Surplus-at-risk:** an application of VaR
 4. **Maximum drawdown:** percentage of portfolio redeemed at peak times
-

Bagwell states that he is concerned about risks associated with the ETFs that BCI has been investing in. Sishek makes the following statements about the risks of investing in ETFs:

Statement 1: Some ETF legal structures expose the investors to counterparty risk.

Statement 2: Settlement risk is a key concern for foreign equity ETFs that invest in American depository receipts (ADRs).

Question #37 of 88

Question ID: 1508418

In Exhibit 1, the annual VaR is *most accurately* described as being calculated using:

- A) a historical simulation. 
- B) the parametric method. 
- C) a Monte Carlo simulation. 

Explanation

VaR has been calculated using the parameters (mean and standard deviation) of the portfolio and assuming a distribution for portfolio risk factors. A historical simulation would instead identify actual returns from the portfolio and identify the 5th percentile.

(Module 37.1, LOS 37.b)

Question #38 of 88

Question ID: 1508419

Sishek's short-term risk management recommendation is *best* described as an example of:

- A) risk budgeting. 
- B) a stop loss limit. 
- C) a position limit. 

Explanation

Liquidating a position when losses exceed a certain amount is an example of a stop loss limit.

(Module 37.5, LOS 37.j)

Question #39 of 88

Question ID: 1508420

The description of measures given by Sishek in Exhibit 2 is inaccurate with respect to:

- A) active share because it does not require the use of a benchmark. 
- B) surplus-at-risk because it is not an application of VaR. 
- C) maximum drawdown because it is not a measure of redemptions. 

Explanation

Maximum drawdown is most commonly defined as the worst peak-to-trough decline in a portfolio's returns, or the worst-returning month or quarter for a portfolio. Maximum drawdown is an important risk measure for hedge funds. Redemption risk is a measure for open-end funds of the percentage of a portfolio could be redeemed at peak times.

(Module 37.4, LOS 37.l)

Question #40 of 88

Question ID: 1508421

Which of Sishek's statements about risks of investing in ETF are accurate?

- A) Only statement 1 is correct. 
- B) Only statement 2 is correct. 
- C) Both statements are correct. 

Explanation

Statement 1 is correct. Some ETF legal structures expose investors to counterparty risk: the invested amount could be lost in the event of counterparty failure. Statement 2 is incorrect. Settlement risk is applicable for ETFs that use OTC derivative contracts, however ADRs are exchange-traded.

(Module 35.3, LOS 35.g)

Overview for Questions #41-44 of 88

Question ID: 1508427

TOPIC: ETHICAL AND PROFESSIONAL STANDARDS

THE TOTAL POINT VALUE FOR THIS QUESTION SET IS 12 POINTS

For the past 15 years, Susan Luna, CFA, Kyle Lawson, CFA, and Matt Miller, CFA, have worked together as equity analysts and then equity portfolio managers in the investment management division (BIMCO) of Broadway Life Insurance Company. For the past five years, the three associates have worked together managing the BIMCO Aggressive Growth Fund (BAGF). During their management tenure, the BAGF had excellent performance and was well recognized in the financial press.

Just over one year ago, Broadway Life was acquired by a larger company, Gobble Insurance, and as part of the consolidation process, BIMCO was closed. The closure allowed Luna, Lawson, and Miller to start their own investment management firm, Trio Investment Management LLC (TIM). TIM focuses on the small capitalization growth equities area. This is the same investment focus as the BAGF, but TIM will have

individually managed accounts. Several cases have arisen calling for interpretation as to consistency with CFA Institute Standards of Professional Conduct.

Case 1

TIM markets its investment management services by contracting with small, local bank trust departments. One of the newest bank trust clients for TIM is Shadow Mountain Bank and Trust. Judy Sampson, CFA, the trust officer for Shadow Mountain, has scheduled a meeting with a potential client. When Lawson arrives for the client meeting, he finds that all the TIM marketing material, including biographies of TIM portfolio managers, has been relabeled by Sampson as the Shadow Mountain Wealth Management Team. Sampson has also added the performance of BAGF into the current TIM Equity Composite Index portfolio and relabeled the resultant combined graph, the Shadow Mountain Equity Composite Index. Sampson states that making such changes would probably please clients and improve the chances of acquiring additional trust management accounts for Shadow Mountain and TIM. Lawson goes along and makes the presentation to the potential client using the Shadow Mountain marketing material and the relabeled BAGF/TIM equity performance record.

Case 2

Susan Luna of TIM is meeting with Sol Wurtzel, an institutional salesman for Turn Byer, a large national brokerage firm. Luna complains that TIM's technology costs are too high, especially their outside software services costs. TIM currently subscribes to two investment-related software services. The first software vendor is StockCal Software Services (StockCal), which provides valuation and stock-charting capabilities that TIM uses in its equity research and selection process. The other vendor is Add-Invest Software (Add-Invest), a software program providing account management and performance evaluation reporting, which TIM uses in developing monthly reports for all clients. In response to Luna, Wurtzel suggests that Turn Byer has an excellent soft dollar trading desk and would be willing to offer to cover TIM's StockCal and Add-Invest expenses through soft dollar commissions. Luna then reviews TIM's projected commission dollars for the year and decides there are more than enough soft dollars to pay the StockCal, AGF, and Add-Invest Software bills combined. Luna believes she can be assured of excellent trade execution from Turn Byer and improved profitability for TIM because of the increased use of soft dollars. Luna then directs that the StockCal and Add-Invest software services be paid for with soft dollar or client brokerage dollars.

Case 3

Sol Wurtzel, the equity salesman for Turn Byer, has referred several clients to TIM over the past year. In fact, Wurtzel referrals currently account for almost 20% of the assets managed by TIM. The principals of TIM decide to reward Wurtzel, either by doubling the commissions paid on trades executed through Turn Byer on Wurtzel's referral accounts, or by paying Wurtzel a cash referral fee for each additional TIM account opened by a Wurtzel referral. The principals agree that any cash referral fee would need to be disclosed to clients in advance.

Question #41 of 88

Question ID: 1508428

Did Sampson and/or Lawson violate the CFA Institute Standards of Professional Conduct with respect to presenting the TIM biographies to the client?

- A) Yes, both Sampson and Lawson violated the Standards. 
- B) Yes, Sampson violated the Standards, while Lawson did not. 
- C) Neither Sampson nor Lawson violated the Standards, because such outsourcing is permitted. 

Explanation

Standard I(C). Both Sampson and Lawson have violated Standard I(C) – Professionalism – Misrepresentation. When Sampson prepared biographies with Shadow Mountain Wealth Management Team included in them, she was obviously trying to convey the image that TIM personnel are employees of the bank trust department. This does not portray the correct business relationship between Shadow Mountain and TIM. TIM is an outsourcer to Shadow Mountain and a contract investment management provider, not an employee. Sampson is attempting to create a misleading view of the service level and investment expertise that clients could rightly expect. While Lawson was not a party to preparing such misleading business cards and marketing materials, he participated in the misrepresentation by agreeing to go ahead with the client presentation.

(Module 43.1, LOS 43.a)

Question #42 of 88

Question ID: 1508429

Sampson's use of the relabeled BAGF investment performance record violates CFA Institute Standards:

- A) only if Sampson fails to include written disclosures as to the true source and nature of the performance record. 
- B) only if Sampson does not have written permission from Gobble Insurance to use the performance data. 
- C) the performance record and has written permission from Gobble Insurance to use the performance data. 

Explanation

Standards I(C) and III(D). Including the BAGF performance is a violation of Standard I(C) – Professionalism – Misrepresentation and Standard III(D) – Duties to Clients – Performance Presentation. When Sampson combines the BAGF performance record with the TIM Composite Equity Composite, this gives potential clients a misleading impression of TIM's long-term equity management performance. The use of this performance data might be acceptable if full disclosure were made as to the source and nature of the data.

(Module 43.1, LOS 43.a)

Question #43 of 88

Question ID: 1508430

Did Luna violate the CFA Institute Standards of Professional Conduct by using soft dollar commissions to pay TIM's software subscription costs to StockCal and/or Add-Invest?

- A) Both StockCal and Add-Invest software services may be paid for with soft dollars. 
- B) Neither StockCal nor Add-Invest software may be paid for with soft dollars. 
- C) It is acceptable to use soft dollars to pay for the StockCal software but not the Add-Invest software. 

Explanation

Standard III(A). Luna has violated the CFA Institute Standards of Professional Conduct – Standard III(A) Duties to Clients – Loyalty, Prudence, and Care. Client brokerage is the property or asset of the client and not TIM. Client brokerage should be used only for research products or services that are directly related to the investment decision-making process and not the management costs of the firm. In this case, Luna should disclose to TIM's clients that their brokerage may be used to purchase research. In addition, Luna should seek to ensure that Turn Byer is providing the best execution for TIM's clients. StockCal is clearly providing equity research products/services that aid TIM in the investment decision-making process and not the general operation or management costs of the firm. StockCal may therefore be properly paid for with client brokerage soft dollars, and this is not a violation of the Standards or Code. However, Add-Invest Software provides TIM's clients with portfolio accounting and performance measurement services and is not related to the investment decision-making process. Therefore, Luna is misusing client resources when she uses client brokerage to purchase Add-Invest Software. Add-Invest is clearly a business expense of TIM and should rightly be paid for by the firm and not the clients. The product or service received must provide proper assistance to the investment manager in following through with his investment decision-making responsibilities.

(Module 43.1, LOS 43.a)

Question #44 of 88

Question ID: 1508431

Would either compensation arrangement to reward Wurtzel for client referrals violate the CFA Institute Standards of Professional Conduct?

- A) Both compensation arrangements would be violations, regardless of any disclosures to clients. 
- B) The increased commissions plan would be a violation, while the cash referral fees would not be a violation. 
- C) Both compensation arrangements are allowed, as long as they are fully disclosed, in advance, to all clients and prospective clients. 

Explanation

Standard III(A). The increased commission would be a violation, but the cash referral fee would not. Doubling the commission paid to Wurtzel would be a violation of Standard III(A) Duties to Clients – Loyalty, Prudence, and Care. Client brokerage is strictly an asset of the client and must be used for the benefit of clients in research that will assist the investment manager in the investment decision-making process. Client brokerage cannot be used as a reward for bringing clients to TIM and to do so is a misappropriation of client assets. Cash referral fees are acceptable, so long as the referral arrangement is fully disclosed to the clients in advance of opening their accounts. The case mentions that this disclosure will be made. This disclosure allows the client to evaluate any potential conflict(s) of interest in the referral process.

(Module 43.1, LOS 43.a)

Overview for Questions #45-48 of 88

Question ID: 1512438

TOPIC: QUANTITATIVE METHODS

THE TOTAL POINT VALUE FOR THIS QUESTION SET IS 12 POINTS

Austin Clark, CFA, has been asked to analyze White Goods Corporation, a \$9 billion company that owns a nationwide chain of stores selling appliances and other electronic goods. As part of his analysis of the White Goods Corporation, Clark's supervisor, David Horvath, asks Clark to forecast White Goods's 2019 sales using multiple regression analysis. The following model was developed:

sales	= 20.1	+ 0.001 GDP	+ 1,000.6 TR	+ 0.1 CC	– 3.2 PC	– 40.3 UR
VIF		(5.2)	(3.1)	(5.3)	(1.9)	(4.7)
Number of observations:	76					
Standard error estimate:	15.67					
Unadjusted R ² :	0.96					
Regression sum of squares:	412,522					
Error sum of squares:	17,188					

Independent Variable Descriptions

GDP = gross domestic product

TR = average rate on 5-year U.S. Treasury securities

CC = most recent quarter end consumer confidence index value

PC = previous year's sales of personal computers

UR = most recent quarter end unemployment rate

Variable Estimates for 2019

GDP = 8,000

TR = 0.05

CC = 97

PC = 60,000

UR = 0.055

Dave Carington was recently hired by the same investment firm as a quantitative analyst. During Horvath's meeting with Carington, the two discussed the application of big data and machine learning to investing. Carington makes the following comments:

Comment 1: One has to be careful to avoid overfitting in these models. Overfitting occurs when the noise in the data is perceived as relationships.

Comment 2: To reduce the risk of type II error, choose a model with a high recall.

Question #45 of 88

Question ID: 1507270

Using his multiple linear regression, Clark's sales forecast for 2019 is *closest* to:

A) -\$191,914.



B) \$180,502.



C) \$192,090.



Explanation

2019 sales forecast = $20.1 + 0.001 \times 8,000 + 1,000.6 \times 0.05 + 0.1 \times 97 - 3.2 \times 60,000 - 40.3 \times 0.055 = -\$191,914$ (Module 1.2, LOS 1.f)

Question #46 of 88

Question ID: 1512439

Based on the information provided, which of the following concerns about the model would be *most appropriate*?

A) Low explanatory power.



B) Type II error.



C) Type I error.



Explanation

Unadjusted R^2 is very high at 96% so the model explanatory power is not low. VIFs for variables GDP and CC are greater than 5 indicating that multicollinearity may be a problem. GDP and consumer confidence would also be reasonably expected to be highly correlated (in addition to the correlation to other variables included). Multicollinearity would result in Type II error. Type II errors may also be caused by negative serial correlation, but we don't have any supporting evidence for that. Type I errors can be caused by positive serial correlation as well as with conditional heteroskedasticity. Again, there is no evidence presented for that.

(Module 1.3, LOS 1.h)

(Module 1.3, LOS 1.i)

(Module 1.3, LOS 1.j)

Question #47 of 88

Question ID: 1508351

Regarding Carington's comments:

- A) both comments are accurate.
- B) neither comments are accurate.
- C) only one comment is accurate.



Explanation

Comment 1 is correct. Overfitting means training a model to such a degree that noise or randomness is mistaken for patterns and relationships. Comment 2 is also correct. High precision is important when the cost of a Type I error is large, while high recall is needed when the cost of a Type II error is large.

(Module 4.3, LOS 4.c)(Module 3.1, LOS 3.b)

Question #48 of 88

Question ID: 1507273

What is the F -value that tests the hypothesis that all of the coefficients are equal to zero?

- A) 42.0.
- B) 101.0.
- C) 336.0.



Explanation

The F -value is calculated as (mean regression sum of squares) / (mean squared error) = (412,522 / 5) / (17,188 / 70) = 336. (Module 1.2, LOS 1.e)

Overview for Questions #49-52 of 88

Question ID: 1512440

TOPIC: FINANCIAL STATEMENT ANALYSIS

THE TOTAL POINT VALUE FOR THIS QUESTION SET IS 12 POINTS

Best Tools, Inc., supplies automotive accessories to several major auto manufacturers in North America and Europe. On January 1, 2020, Best purchased a 60% controlling interest in Gremlin Corporation for \$900 million. Best paid for the acquisition with shares of its common stock.

Exhibit 1 contains Best's and Gremlin's preacquisition balance sheet data.

Exhibit 1: Preacquisition Balance Sheet Data

In Millions	Best		Gremlin	
	Book Value	Fair Value	Book Value	Fair Value
Current assets	\$ 9,000	\$ 9,000	\$ 500	\$ 700
Noncurrent assets	\$ 7,500	\$ 7,800	\$ 900	\$ 950
	\$ 16,500		\$ 1,400	
Current liabilities	\$ 3,000	\$ 3,000	\$ 250	\$ 250
Long-term debt	\$ 7,700	\$ 7,500	\$ 400	\$ 300
Stockholders' equity	\$ 5,800		\$ 750	
	\$ 16,500		\$ 1,400	

Exhibit 2 contains selected information from Best's financial statement footnotes.

Exhibit 2: Selected Footnote Information (Amounts in \$ Millions)

At the end of 2020, the carrying value of Best's investment in Gremlin was \$1,425, including goodwill. On that date, the fair value of Gremlin* was \$1,475, and the fair value of Gremlin's identifiable net assets was \$1,350*. The recoverable amount was estimated at \$1,430*.

* for pro rata share

Outside of United States, Best operates in two geographic segments: Europe and Mexico. Selected financial information for each segment is found in Exhibit 3.

Exhibit 3: Selected Financial Information by Segment

<i>in millions</i>	EBIT	Revenue	Total CapEx	Total Assets
Europe	\$7,203	\$50,463	\$4,452	\$36,642
Mexico	\$787	\$9,766	\$8,269	\$14,250

The amount of goodwill Best should report in its consolidated balance sheet immediately after the acquisition of Gremlin is *closest* to:

- A) \$250 million under the partial goodwill method. ✗
- B) \$350 million under the pooling method. ✗
- C) \$400 million under the full goodwill method. ✓

Explanation

<u>Full goodwill method (in millions)</u>		
Fair value of Gremlin	\$1,500	(= 900 purchase price / 60% ownership interest)
Less: Fair value of Gremlin's identifiable net assets	<u>1,100</u>	(= 700CA + 950 NCA - 250 CL - 300LTD)
Goodwill	\$400	
<u>Partial goodwill method (in millions)</u>		
Purchase price	\$900	
Less: Pro rata share of Gremlin's identifiable net assets at FV	<u>660</u>	(= 700 CA + 950 NCA - 250 CL - 300 LTD) × 60%
Goodwill	\$240	

Goodwill is not created under the pooling method.

(Module 8.7, LOS 8.b)

Question #50 of 88

Question ID: 1508359

According to U.S. GAAP, Best's long-term debt-to-equity ratio, calculated immediately after the acquisition, is *closest* to:

- A) 1.07. ✗
- B) 1.10. ✓
- C) 1.12. ✗

Explanation

Best's post-acquisition LTD is \$8,000 million [= 7,700 million BV of Best + 300 million fair value (FV) of Gremlin debt]. Best's post-acquisition equity is equal to \$7,300 million (= 5,800 million Best pre-acquisition equity + 900 million FV of shares used to acquire Gremlin + 600 million noncontrolling interest). Under U.S. GAAP, the noncontrolling interest is based on the full goodwill method (= 1,500 million FV of Gremlin × 40% noncontrolling interest). Thus, the long-term debt-to-equity ratio is 1.10 (= 8,000 million LTD / 7,300 million equity).

(Module 8.7, LOS 8.c)(Module 8.7, LOS 8.b)

Question #51 of 88

Question ID: 1508360

Using only the information contained in Exhibit 2, which of the following statements is *most accurate* regarding Best's consolidated income statement for the year ended 2020?

- A) An impairment loss of \$5 million should be recognized under IFRS. 
- B) An impairment loss of \$275 million should be recognized under U.S. GAAP. 
- C) No impairment loss should be recognized under U.S. GAAP or IFRS. 

Explanation

According to U.S. GAAP, goodwill is not impaired because the \$1,475 million fair value of Gremlin exceeds the \$1,425 million carrying value. Thus, no impairment loss is recognized under GAAP.

Under IFRS, no impairment loss is recognized because the \$1,430 million recoverable amount exceeds the \$1,425 million carrying value.

(Module 8.2, LOS 8.b)

Question #52 of 88

Question ID: 1508361

The data found in Exhibit 3 *most likely* indicates that Best may be over-allocating resources to:

- A) the Europe segment. 
- B) the Mexico segment. 
- C) the Europe segment and the Mexico segment. 

Explanation

As indicated below, the Mexico segment has the lowest EBIT margin, yet it has the highest proportional capital expenditures to proportional assets ratio. Thus, Best may be overallocating resources to the Mexico segment.

Segment Analysis for 2020				
	EBIT Margin	Total CapEx %	Total Assets %	CapEx % / Assets %
Europe	14.3%	35.0%	72.0%	0.5
Mexico	8.1%	65.0%	28.0%	2.3

(Module 13.2, LOS 13.b)

Overview for Questions #53-56 of 88

Question ID: 1512443

THE TOTAL POINT VALUE FOR THIS QUESTION SET IS 12 POINTS.

James Kelley is analyzing X-Sport, Inc., a manufacturer of high-end outdoor sporting equipment. Kelley has been asked by his supervisor, Jessica Malone, to estimate the cost of capital for X-Sport. X-Sport has a \$30 million face value, 5.75% annual-pay, senior unsecured debt with 7 years remaining to maturity. The unrated debt does not

publicly trade, but Kelley estimates that it would be rated A based on X-Sport's metrics. Kelley has collected current information on yields as shown in **Exhibit 1: Current Yield to Maturity by Rating Class and Maturity**.

Exhibit 1: Current Yield to Maturity by Rating Class and Maturity

Maturity					
Rating	3	5	8	10	Average
AAA	5.00%	6.00%	6.50%	7.25%	6.19%
AA	5.50%	6.55%	7.15%	8.00%	6.80%
A	6.00%	7.05%	7.65%	8.50%	7.30%
BBB	6.50%	7.60%	8.25%	9.25%	7.90%
BB	7.00%	8.15%	8.85%	10.00%	8.50%
B	7.50%	8.70%	9.45%	10.75%	9.10%

To estimate X-Sport's cost of equity, Kelley uses the firm's model. **Exhibit 2: Estimated Inputs for Cost of Capital Estimates** shows the estimates of inputs that the model uses.

Exhibit 2: Estimated Inputs for Cost of Capital Estimates

Input	Estimate
Long-term inflation forecast	2.50%
Current level of inflation	4.50%
Forecast div. yield—public companies	1.20%
Real GDP growth rate	3.20%
LT government securities YTM	3.00%
ST government securities YTM	5.00%
Market P/E multiple	Fairly valued
Growth in shares outstanding	0%

Kelley believes that X-Sport's cost of capital should include specific company risk premium (SCRП) and makes the following notes:

1. Qualitative factors affecting SCRП include corporate governance quality, use of leverage to finance assets, and customer and supplier concentration, among others.
2. Firms with most of the assets represented by successful R&D would command a lower SCRП.

While discussing a foreign competitor of X-Sport, Kelley brings up the use of the international capital asset pricing model (ICAPM). While discussing the two factors in the ICAPM, Malone makes the following statements:

- Statement 1: The first factor captures the company's relationship with the local economy relative to the global economy.
- Statement 2: The second factor captures the sensitivity of the company's cash flows to changes in its currency value.
-

Question #53 of 88

Question ID: 1508887

Using the information in Exhibit 1, what is the cost of debt for X-Sport?

- A) 7.45%.
- B) 7.30%.
- C) 7.35%.



Explanation

Because the bond rating is assumed to be A, we interpolate the yield on a 7-year bond using the 5-year and 8-year yields of A rated bonds.

$$\begin{aligned}\text{interpolated yield} &= \text{yield}_5 + [(\text{yield}_8 - \text{yield}_5) / (8 - 5)] \times (7 - 5) \\ &= 7.05\% + [(7.65\% - 7.05\%) / 3] \times 2 \\ &= 7.45\%\end{aligned}$$

(Module 17.1, LOS 17.e)

Question #54 of 88

Question ID: 1512444

Using the information in Exhibit 2 and the Grinold-Kroner model, the estimate of ERP is *closest* to:

- A) 1.90%.
- B) 3.90%.
- C) 5.90%.



Explanation

$$\text{ERP} = [\text{DY} + \Delta P/E + i + G + \Delta S] - r_f = [1.20\% + 0 + 2.50\% + 3.20\% + 0] - 3\% = 3.90\%.$$

(Module 17.2, LOS 17.c)

Question #55 of 88

Question ID: 1508367

Regarding Kelley's statements about specific company risk premium:

- A) only one of the statements is correct.
- B) both statements are correct.



C) both statements are incorrect.



Explanation

Statement 1 is incorrect. Leverage is a quantitative factor and should not be listed in the list of qualitative factors.

Statement 2 is incorrect. Assets represented by successful R&D would be intangible. Firms with mostly liquid, tangible, and fungible assets would command a lower SCRP.

(Module 17.2, LOS 17.e)

Question #56 of 88

Question ID: 1512445

Regarding Malone's statements about ICAPM:

A) only one of the statements is correct.



B) both statements are correct.



C) both statements are incorrect.



Explanation

Both statements are correct. The first factor captures the company's relationship with the local economy relative to the global economy: lower values of β_G indicate lower integration of the company with the global economy. The second factor captures the sensitivity of the company's cash flows to changes in its local currency exchange rate.

(Module 17.2, LOS 17.e)

Overview for Questions #57-60 of 88

Question ID: 1508412

THE TOTAL POINT VALUE FOR THIS QUESTION SET IS 12 POINTS.

Sundakini Mamalakis manages portfolios of several wealthy individual investors. To differentiate herself from other advisors, Mamalakis wants to make available alternative investment portfolio options for some of her clients. Being rather unfamiliar with the asset class, Mamalakis wants to hire an alternative investment specialist. After interviewing several candidates, Mamalakis narrowed down her search to two promising candidates: Adonia Papageorgiou and Adras Nikolaou.

Nikolaou made the following statement about how debt for LBO transactions is raised: "Much of the debt financing for private equity firms comes from the syndicated loan market, but the debt is often repackaged and sold as collateralized loan obligations (CLOs)."

Papageorgiou is bullish on venture capital investment. In her presentation, she illustrated a deal as shown in **Exhibit 1: Venture Capital Investment**.

Exhibit 1: Venture Capital Investment

	Round 1	Round 2
Investment	\$5	\$15
ROI	15	7
Exit value	\$120	\$350

Nikolaou made a presentation about the mechanics of investing in a PE fund where the terms call for a managing partner earning a carried interest with a clawback provision. To illustrate, Nikolaou used an illustration, shown in **Exhibit 2: Vanilla PE Distribution Waterfall**, where the terms call for a zero hurdle rate and two investments that were exited in five years.

Exhibit 2: Vanilla PE Distribution Waterfall

Committed capital	\$300
Carried interest	15%
First investment	\$100
Second investment	\$200
First investment exit proceeds	\$90
Second investment exit proceeds	\$220

Question #57 of 88

Question ID: 1508413

Nikolaou's statement about debt for LBO transactions is *most likely*.

- A) correct.
- B) incorrect about the syndicated loan market.
- C) incorrect about the debt being sold as CLOs.



Explanation

While private equity firms may also issue high-yield bonds, which are repackaged as collateralized debt obligations (CDOs), much of the debt financing for private equity firms comes from the syndicated loan market—which is often repackaged and sold as CLOs.

(Module 33.1, LOS 33.a)

Question #58 of 88

Question ID: 1508414

Which contract term in a private equity LBO transaction is used to prevent unauthorized changes in a business plan?

A) Tag-along, drag-along.



B) Board representation.



C) Required approvals.



Explanation

A required approvals clause ensures that changes of strategic importance (e.g., acquisitions, divestitures, and changes in the business plan) must be approved by the private equity firm. Tag-along, drag-along clauses ensure that anytime an acquirer obtains control of the company, the acquirer must extend the acquisition offer to all shareholders, including the firm's management. A board representation clause ensures that the private equity firm maintains control if the portfolio company experiences a major event such as a takeover, restructuring, initial public offering (IPO), bankruptcy, or liquidation.

(Module 33.1, LOS 33.b)

Question #59 of 88

Question ID: 1508415

Using the information in Exhibit 1, the fractional ownership of first-round investors after the second round is *closest* to:

A) 30%.



B) 63%.



C) 44%.



Explanation

The POST, PRE, and fractional ownership of investors is calculated as follows:

POST= exit value / ROI

PRE = POST – INV

f = INV / POST

	Round 1	Round 2
Investment	\$5	\$15
ROI	15	7
Exit value	\$120	\$350
POST	8	50
PRE	\$3	\$35
f	62.50%	30.00%

The fractional ownership of the first-round investors after the first round is 62.50%, and it gets diluted to $0.625 (1 - 0.3) = 0.4375$, or 43.75%.

(Module 33.1, LOS 33.d)

Question #60 of 88

Question ID: 1508416

Using information in Exhibit 2, under a deal-by-deal method with a claw-back provision and true-up every five years, the cumulative dollar amount the GP receives by the end of the five years is equal to:

A) \$1.5 million.



B) \$2.4 million.



C) \$0.



Explanation

On a cumulative basis, the GP receives $0.15 \times [(90 + 220) - (100 + 200)] = \1.5 million.

(Module 33.2, LOS 33.g)

Overview for Questions #61-64 of 88

Question ID: 1508374

TOPIC: EQUITY VALUATION

THE TOTAL POINT VALUE FOR THIS QUESTION SET IS 12 POINTS

Asante Bizou is an equity analyst for Alpha, Inc., a boutique consulting firm in San Jose, CA. Alpha is providing consulting services to Prizm's board in evaluating the performance of Prizm's management. Bizou reviews Prizm's key financial data for the past three years.

Selected information from Prizm's financial statements is given in Exhibit 1.

Exhibit 1: Selected Prizm Financial Data

	20X4	20X5	20X6
Income Statement	\$m	\$m	\$m
Sales	40.2	42.3	43.9
Cost of goods sold	(11.6)	(12.3)	(12.8)
Gross profit	28.6	30.0	31.1
Administrative expenses	(10.0)	(10.0)	(3.0)
Earnings before interest and tax	18.6	20.0	28.1
Interest	(6.3)	(6.3)	(4.2)
Earnings before tax	12.3	13.7	23.9
Tax	(5.1)	(5.6)	(11.4)
Net income	7.2	8.1	12.5
Dividends	(3.0)	(3.1)	(3.2)
Retained income	4.2	5.0	9.3

Exhibit 1: Selected Prizm Financial Data (continued)

	20X3	20X4	20X5	20X6
Balance Sheet at 31 December	\$m	\$m	\$m	\$m
Working capital	24.0	25.6	27.2	32.4
Fixed assets	<u>76.0</u>	<u>78.6</u>	<u>82.0</u>	<u>78.1</u>
Total assets	<u>100.0</u>	<u>104.2</u>	<u>109.2</u>	<u>110.5</u>
Liabilities	24.0	24.0	24.0	16.0
Common stock	20.0	20.0	20.0	20.0
Additional paid up capital	10.0	10.0	10.0	10.0
Retained income	<u>46.0</u>	<u>50.2</u>	<u>55.2</u>	<u>64.5</u>
	<u>100.0</u>	<u>104.2</u>	<u>109.2</u>	<u>110.5</u>
Market value of equity	167	203	199	145
(31 December)				

Other information:

- Beta of firm = 1.
- Debtholders' required rate of return: 5%.
- Equity holders' required rate of return: 15%.
- After tax WACC: 12.5%.
- Tax rate: 45%.

Notes:

1. Depreciation included in cost of goods sold and administrative expenses is 12m, 10.5m, and 9.6m for 20X6, 20X5, and 20X4, respectively.
2. \$8m of debt was redeemed at the end of 20X6.
3. Other than the debt redeemed in 20X6, Prizm's liabilities consist mostly of long-term debt valued approximately at book value.
4. Replacement value of assets is roughly equal to book value minus 4%.

Question #61 of 88

Question ID: 1508375

Prizm's EVA[®] for 20X6 is *closest* to:

- A)** negative \$1.3 million.
- B)** negative \$1.2 million.
- C)** positive \$1.8 million.

**Explanation**

$$\text{EVA} = \text{NOPAT} - \$\text{WACC}$$

$$\text{NOPAT} = \text{EBIT} \times (1 - t) = 28.1 \times (1 - 0.45) = 15.455$$

$$\$WACC = WACC \times \text{total capital} = 12.5\% \times 109.2 = \$13.65\text{m}$$

For EVA computation, we need beginning 20X6 total capital (i.e., 20X5 ending).

$$\text{EVA} = 15.455 - 13.65 = \$1.805\text{m}$$

(Module 23.1, LOS 23.a)

Question #62 of 88

Question ID: 1508376

Prizm's residual income for 20X6 is *closest* to:

A) -\$0.3 million.



B) \$0.7 million.



C) \$2.5 million.



Explanation

Residual income = accounting profit (after tax and interest) minus a charge for equity capital employed.

Net income for 20X6	12.5
Beg. stockholders' equity	85.2 ¹
(-)Cost of equity @ 15%	(12.78)
(=) Residual income	(0.28)

¹Beginning stockholders' equity = 20X5 ending stockholders' equity = common stock + additional paid-in capital + retained income = 20 + 10 + 55.2 = 85.2.

(Module 23.1, LOS 23.a)

Question #63 of 88

Question ID: 1508377

Prizm's Market Value Added (MVA) as of fiscal year-end 20X6 is *closest* to:

A) \$9.3 million.



B) \$12.5 million.



C) \$50.5 million.



Explanation

$$\begin{aligned} \text{market value added} &= \text{market value of (total) capital} - \text{book value of capital} \\ &= (145 + 16) - (94.5 + 16) \\ &= \$50.5\text{m} \end{aligned}$$

(Module 23.1, LOS 23.a)

Question #64 of 88

Question ID: 1508378

Prizm's free cash flow to equity (FCFE) for 20X6 is *closest* to:

- A) 3 million.
- B) 13 million.
- C) 15 million.

**Explanation**

$$\text{WCInv} = 32.4 - 27.2 = 5.2$$

$$\text{FCInv} = (\text{ending FA} - \text{beginning FA} + \text{depreciation}) = 78.1 - 82.0 + 12 = 8.1$$

$$\text{Net borrowing} = 16 - 24 = -8$$

$$\begin{aligned}\text{FCFE} &= \text{NI} + \text{depreciation} - \text{WCInv} - \text{FCInv} + \text{net borrowing} \\ &= 12.5 + 12 - 5.2 - 8.1 - 8 = 3.2\end{aligned}$$

(Module 21.4, LOS 21.d)

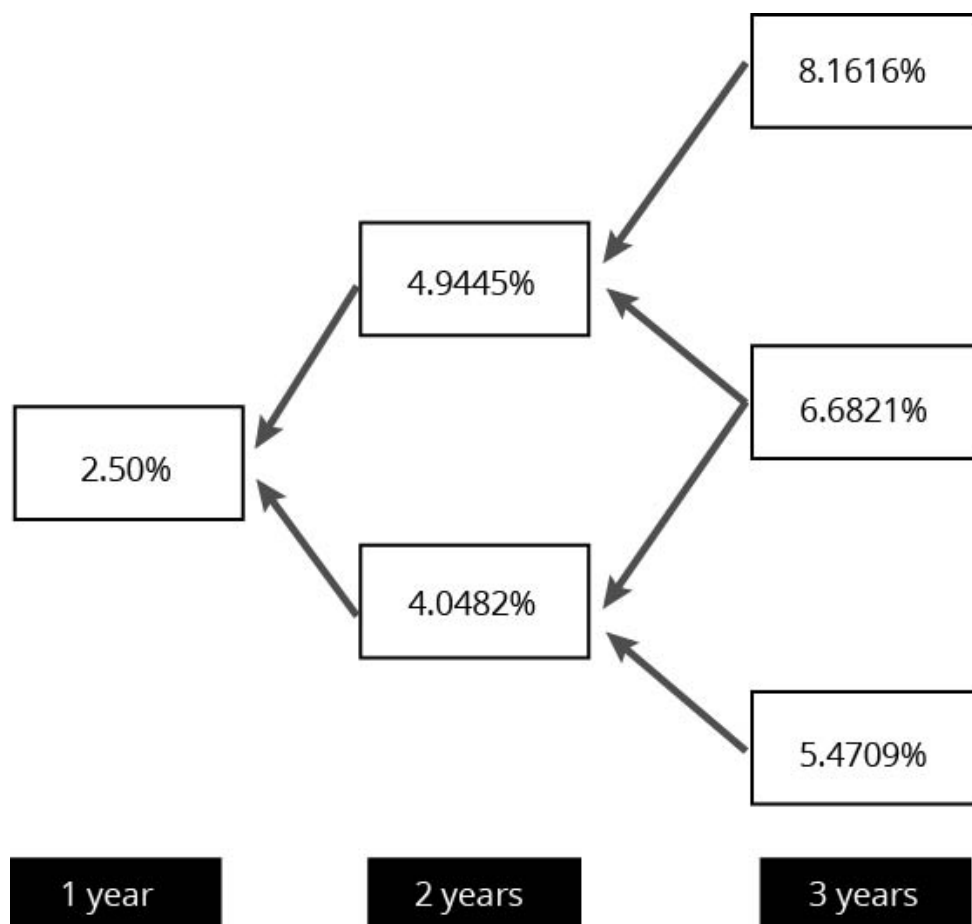
Overview for Questions #65-68 of 88

Question ID: 1508888

TOPIC: FIXED INCOME**THE TOTAL POINT VALUE FOR THIS QUESTION SET IS 12 POINTS**

Juanita Joplin has just begun her summer internship in the bond trading department of Bearclaw Bank NA. Joplin is assigned to Suzanne Thomas who specializes in AA-rated corporate bonds. Thomas explains to Joplin that she relies on binomial interest rate trees to value bonds with embedded options. Thomas provides Joplin with a binomial interest rate tree derived from current swap rates using an interest rate volatility assumption of 10% as shown in Exhibit 1.

Exhibit 1: Binomial Interest Rate Tree ($\sigma = 10\%$, Annual Pay)



Thomas then illustrates valuation of two bonds issued by Dxon Corp. Thomas states that the credit risk of the two bonds is similar to the credit risk premium embedded in the swap rate. Selected data for the two bonds is provided in Exhibit 2.

Exhibit 2: Selected Data on Two Dxon Bonds

Bond	A	B
Coupon	5%, annual pay	5% annual pay
Par Value	\$100	\$100
Type	Option-Free	Extendible*
Maturity	3 years	2 years

*Bond B has an investor option to extend its maturity for an additional year at the same coupon rate.

Thomas states that pathwise valuation can also be used for the bonds instead of the binomial tree approach. She highlights one of the interest rate paths (labeled Path X) as 2.50% in Year 1, 4.9445% in Year 2, and 6.6821% in Year 3.

Joplin feels that the default risk of Dxon Corp. is higher than the default risk of the surveyed banks reflected in the rates used to generate the interest rate tree in Exhibit 1. Accordingly, a spread should be added to the interest rate tree used in Exhibit 1. She learns that such a spread is called the OAS.

During lunch, Joplin sits next to Rex Briar, another intern. Briar notes that Bond B has an OAS of 28 basis points. Another bond, issued by Geneva, Inc., has the same credit

quality and other features as Bond B, except it is option free. The OAS for the Geneva, Inc., bond is 24 basis points.

Question #65 of 88

Question ID: 1508390

Using the information in Exhibit 1 and Exhibit 2, the value of Bond A is *closest* to:

A) \$98.96.



B) \$100.16.

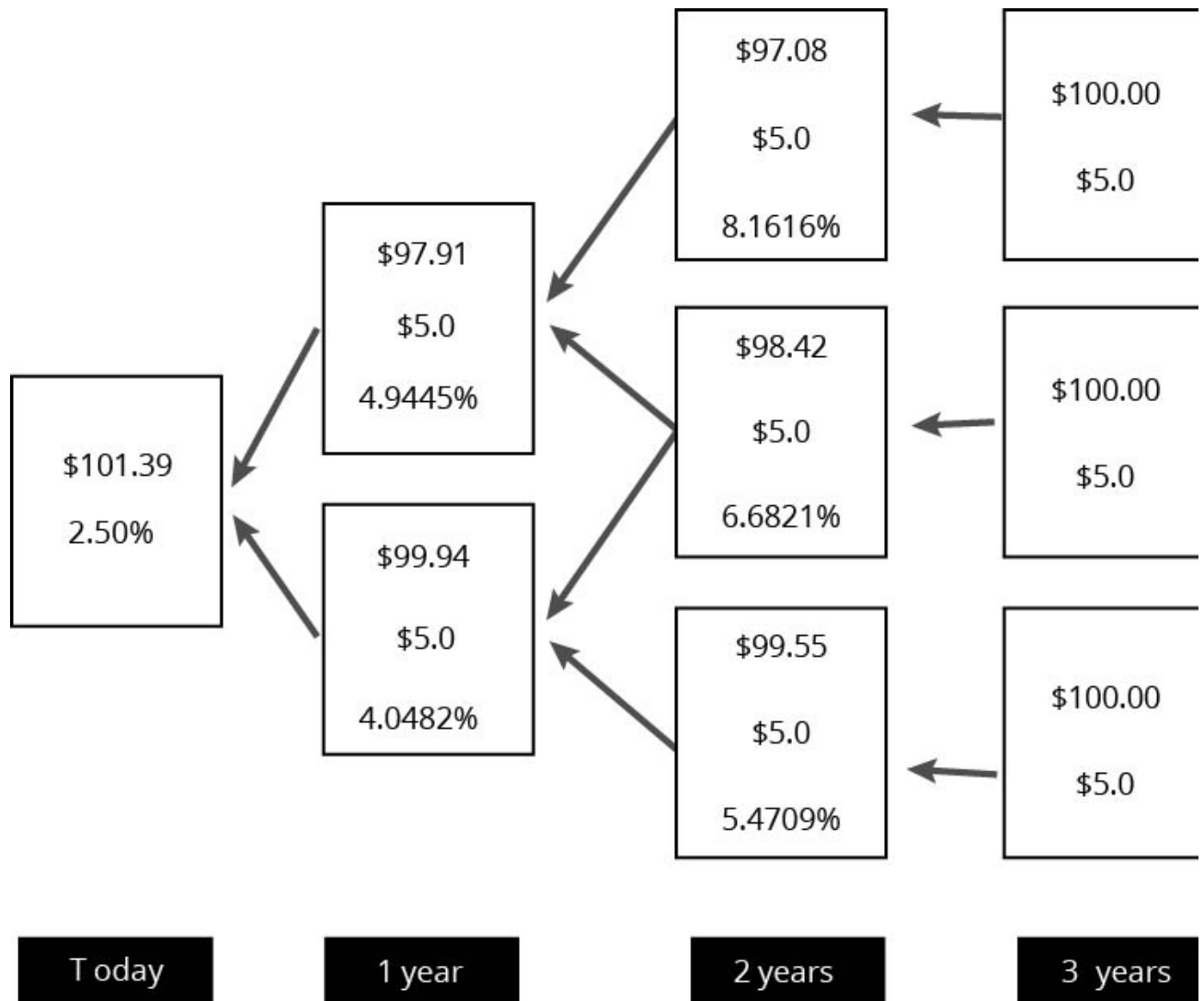


C) \$101.39.



Explanation

The completed binomial tree is as follows:



$$\begin{aligned}
 V_{2,UU} &= \frac{105}{(1.081616)} = \$97.08 \\
 V_{2,UL} &= \frac{105}{(1.066821)} = \$98.42 \\
 V_{2,LL} &= \frac{105}{(1.054709)} = \$99.55 \\
 V_{1,U} &= \left[\frac{[(97.08 + 98.42)/2] + 5}{1.049445} \right] = \$97.91 \\
 V_{1,L} &= \left[\frac{[(98.42 + 99.55)/2] + 5}{1.040482} \right] = \$99.94 \\
 V_0 &= \left[\frac{(97.91 + 99.94)/2 + 5}{1.025} \right] = \$101.39
 \end{aligned}$$

(Module 26.1, LOS 26.e)

Question #66 of 88

Question ID: 1508391

The value of Bond A under Path X is *closest* to:

A) \$98.02.



B) \$99.63.



C) \$101.02.



Explanation

The value of Bond A under interest rate scenario of Path X is determined as:

$$\begin{aligned}\text{Value} &= \frac{5}{(1.025)} + \frac{5}{(1.025)(1.049445)} + \frac{105}{(1.025)(1.049445)(1.066821)} \\ &= \$101.02\end{aligned}$$

(Module 26.2, LOS 26.g)

Question #67 of 88

Question ID: 1508889

Using the information in Exhibit 1 and Exhibit 2, the value of Bond B is *closest* to:

A) \$98.96.



B) \$101.16.

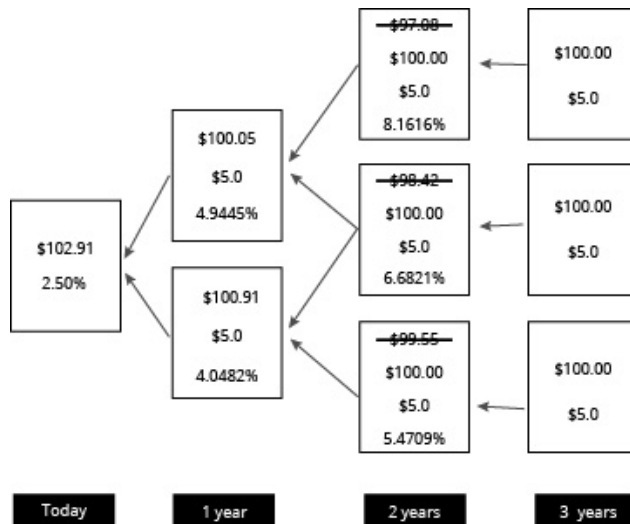


C) \$102.91.



Explanation

An extendible bond is valued identically to a putable bond. Bond B would be identical to a 3-year putable bond where the underlying option is a European put option exercisable in 2 years at par. The completed binomial tree is given below.



$$V_{2,UU} = \frac{105}{(1.081616)} = \$97.08. \text{ Investor will not extend the bond.}$$

$$\text{Value} = \$100$$

$$V_{2,UL} = \frac{105}{(1.066821)} = \$98.42. \text{ Investor will not extend the bond.}$$

$$\text{Value} = \$100$$

$$V_{2,LL} = \frac{105}{(1.054709)} = \$99.55. \text{ Investor will not extend the bond.}$$

$$\text{Value} = \$100$$

$$V_{1,U} = \left[\frac{[(100.00+100.00)/2]+5}{1.049445} \right] = \$100.05$$

$$V_{1,L} = \left[\frac{[(100.00+100.00)/2]+5}{1.040482} \right] = \$100.91$$

$$V_0 = \left[\frac{(100.05+100.91)/2+5}{1.025} \right] = \$102.91$$

(Module 27.2, LOS 27.f)

Question #68 of 88

Question ID: 1508393

Relative to Bond B, the Geneva, Inc., bond is *most likely* to be:

A) underpriced.



B) overpriced.



C) correctly priced.



Explanation

Bond B and Geneva, Inc., bonds are of the same credit quality, but Geneva Inc.'s bond offers a lower OAS and, hence, offers lower compensation for taking the same credit risk. Hence, the Geneva, Inc., bond is overpriced. The difference in option feature is not relevant, as OAS is computed after adjusting for option risk.

(Module 27.4, LOS 27.g)

Overview for Questions #69-72 of 88

Question ID: 1508394

TOPIC: FIXED INCOME

THE TOTAL POINT VALUE FOR THIS QUESTION SET IS 12 POINTS.

Garima Kahn is the head of analytics at Molson Traders. Kahn is onboarding Jason Bates, a new recruit. Kahn provides several research papers and other internal documents for Bates to review.

Bates looks over the section about credit analysis and how OAS is used to value different credit risky bonds. He notes that there is a warning statement that the calculated OAS is sensitive to inputs used in the model, and that care should be taken to use an appropriate level of future interest rate volatility in the model. Bates wants to use a binomial interest rate tree to value bond X. Bond X is a four year bond, extendible by the investor for an additional two years at the same coupon rate.

Bates reads a report prepared by Kahn for the risk management department. Bates underlines the following statement in the report:

The effective duration of a callable bond is greater than the effective duration of a comparable option-free bond. Furthermore, a bond with an embedded at- or near-the-money call option will have a lower one-sided down duration than the one-sided down duration of a comparable option-free bond.

Bates then prepares a summary documenting his understanding of various spread measures as shown in Exhibit 1.

Exhibit 1: Spreads

The swap spread is a useful indicator of credit risk in the markets. It can be used in conjunction with the TED, MRR-OIS, and z-spread to get an in-depth view of the state of the fixed-income markets, as follows:

- Z-spread: Calculated as the constant number of basis points that must be added to the implied spot yield curve to make the discounted cash flows of a bond add up to its market price. For a risky bond, the z-spread is a more accurate measure of compensation for credit and liquidity risk than is the swap spread.
- TED spread: Calculated as the difference between MRR and the yield on a maturity-matched T-bill. TED spread gives better insight into supply and

demand conditions in the market at a given maturity than does the swap spread (which focuses more on the risks in the banking system).

- MRR-OIS spread: Calculated as the difference between MRR and the overnight indexed swap rate. It is considered a good indicator of the risk and liquidity inherent in the money markets.

Bates prepares a partial report about his understanding of bond analytics and submits it to Kahn for feedback. Kahn's feedback is shown in Exhibit 2.

Exhibit 2: Kahn's Feedback

"...I would suggest one area you could look at improving is the portion on term structure theories. Personally, I would remove the theory stating that lenders and borrowers influence the shape of the yield curve, and that the yield of each maturity sector is determined independently.

I suggest instead that you take a look at the following term structure model, which calculates the change in the log of the short term interest rate over small increments of time (dt):

$$d\ln(r_t) = \Theta_t dt + \sigma dz_t$$

Question #69 of 88

Question ID: 1508395

If the volatility estimate used in generating the interest rate tree is less than the true volatility, which of the following would *most accurately* describes the impact on the calculated value of bond X and the estimated OAS of bond X?

<u>Value of Bond X</u>	<u>Estimated OAS of Bond X</u>	
A) Underestimated	Too low	
B) Underestimated	Too high	
C) Overestimated	Too high	

Explanation

Bond X is equivalent to a six-year puttable bond with the put option exercisable in Year 4. If the volatility estimate used to generate the interest rate tree is lower than the actual volatility, the value of the put option and, thus, the value of the puttable bond would be underestimated. A lower volatility estimate would underestimate the OAS computed for the puttable bond. When the assumed level of interest rate volatility is underestimated, the computed value of the bond using backward induction methodology will be too low; therefore, the OAS needed to force the model price to be equal to the market price will be lower as well.

(Module 27.4, LOS 27.g)(Module 27.4, LOS 27.h)

Question #70 of 88

Question ID: 1508396

Kahn's statement to the risk management department is *best* described as:

- A) correct. 
- B) incorrect about effective duration only. 
- C) incorrect about both effective duration and about one-sided duration. 

Explanation

Both callable and puttable bonds have an effective duration that is less-than-or-equal-to the effective duration of an option-free bond. When the underlying call option is deep-out-of-the-money, the effective duration of a callable bond and that of an option-free bond will be the same. As a result, the statement about effective duration is incorrect. Thomas's statement about one-sided down duration is correct: due to the limited upside for a callable bond, the change in price of a callable bond for a decrease in interest rates is less than the change in price for an option-free bond.

(Module 27.5, LOS 27.j)(Module 27.5, LOS 27.i)

Question #71 of 88

Question ID: 1508397

With regard to the summary of spreads in Exhibit 1, Kahn is *least accurate* in her:

- A) definition of the MRR-OIS spread. 
- B) assertion that the z-spread provides a more accurate measure of credit risk than does the swap spread. 
- C) claim that the TED spread gives better insight into supply and demand conditions than does the swap spread. 

Explanation

The swap spread gives more information about supply and demand, whereas the TED spread more accurately reflects the level of risk in the banking system.

(Module 25.4, LOS 25.g)(Module 25.4, LOS 25.f)

Question #72 of 88

Question ID: 1507328

Kahn's feedback in Exhibit 2 is *most likely* to be advocating the exclusion of:

- A) the segmented markets theory in favor of the Kalotay-Williams-Fabozzi (KWF) model. 
- B) the preferred habitat theory in favor of the Vasicek model. 
- C) the segmented markets theory in favor of the Cox-Ingersoll-Ross model. 

Explanation

The Kalotay-Williams-Fabozzi (KWF) model assumes constant drift, no mean reversion, and constant volatility. The KWF differential equation describes the dynamics of the log of the short interest rate. The segmented markets theory and the preferred habitat theory both state that rates are influenced by lenders and borrowers, but it is the segmented markets theory that proposes that the maturity sectors are independent. The "b" term in the Cox-Ingersoll-Ross model is the mean reverting level for the short-term interest rate. (Module 26.3, LOS 26.i)

Overview for Questions #73-76 of 88

Question ID: 1512446

TOPIC: DERIVATIVES

THE TOTAL POINT VALUE FOR THIS QUESTION SET IS 12 POINTS

Michelle Norris, CFA, manages assets for individual investors in the United States as well as in other countries. Norris limits the scope of her practice to equity securities traded on U.S. stock exchanges. Her partner, John Witkowski, handles any requests for international securities. Recently, one of Norris's wealthiest clients suffered a substantial decline in the value of his international portfolio. Worried that his U.S. allocation might suffer the same fate, he has asked Norris to implement a hedge on his portfolio. Norris has agreed to her client's request and is currently in the process of evaluating several futures contracts. Her primary interest is in a futures contract on a broad equity index that will expire 240 days from today. The closing price as of yesterday, January 17, for the equity index was 1,050. The expected dividends from the index yield 2% (continuously compounded annual rate). The continuously compounded risk-free rate is 4%. Norris decides that this equity index futures contract is the appropriate hedge for her client's portfolio and enters into the contract.

Sixty days after entering into the futures contract, the equity index reached a level of 1,015. The futures contract that Norris purchased is now trading on the Chicago Mercantile Exchange for a price of 1,035. Interest rates have not changed. After performing some calculations, Norris calls her client to let him know of an arbitrage opportunity related to his futures position. Over the phone, Norris makes the following comments to her client:

"We have an excellent opportunity to earn a riskless profit by engaging in arbitrage using the equity index, risk-free assets, and futures contracts. My recommended strategy is as follows: We should sell the equity index short, buy the futures contract, and pay any dividends occurring over the life of the contract. By pursuing this strategy, we can generate profits for your portfolio without incurring any risk."

Sixty days ago when the Swiss franc/euro exchange rate was SF1.12 per euro, Witkowski entered into (on behalf of a client) a 1-year, quarterly settlement euro-Swiss franc swap paying €1 million at inception. The fixed-for-fixed swap had the franc fixed rate at 0.96% and the euro fixed rate at 0.78%. Currently, the euro position has a

value of €1.0014 per €1 notional and the exchange rate is SF 1.10 per euro. Exhibit 1 provides information about Swiss interest rates.

Exhibit 1: Swiss Interest Rates

Term	Rate	DF
30	0.50%	0.9996
60	0.54%	0.9991
90	0.48%	0.9988
120	0.65%	0.9978
180	0.77%	0.9962
210	0.67%	0.9961
300	0.82%	0.9932
360	1%	0.9901

Question #73 of 88

Question ID: 1508399

The price of the futures contract on the equity index as of the inception date, January 18, is *closest* to:

- A) 1,064.
- B) 1,071.
- C) 1,078.



Explanation

The futures price can be calculated by growing the spot price at the difference between the continuously compounded risk-free rate and the dividend yield as a continuously compounded rate. The continuously compounded risk-free rate is $\ln(1.040811) = 4\%$, so the futures price for a 240-day future is:

$$FP = S_0 e^{(r-d)t} = 1,050 e^{(0.04-0.02)(240/365)} = 1,064$$

(Module 30.2, LOS 30.a)

Question #74 of 88

Question ID: 1508400

Which of the following *best* describes the movement of the futures price on the 240-day equity index futures contract as the contract moves toward the expiration date?

- A) The futures price will move toward zero as expiration nears.
- B) The futures price will move toward the (at inception) expected spot price as expiration nears.



C) The futures price will move toward the spot price as expiration nears.



Explanation

The futures price for a given contract maturity must converge to the spot price as the contract moves toward expiration. Otherwise, arbitrage opportunities would exist.

(Module 30.2, LOS 30.a)

Question #75 of 88

Question ID: 1512447

Sixty days after the inception of the futures contract on the equity index, Norris has suggested an arbitrage strategy. Regarding the appropriateness of the strategy, the strategy is *best* described as:

A) appropriate since the futures contract is underpriced.



B) inappropriate since the futures contract is overpriced.



C) inappropriate since the futures contract is properly priced in the market.



Explanation

First, calculate the continuously compounded risk-free rate as $\ln(1.040811) = 4\%$ and then calculate the theoretically correct futures price as follows:

$$FP = S_0 e^{(r-d)t} = 1,015 e^{(0.04 - 0.02)(180/365)} = 1,025$$

Then, compare the theoretical price to the observed market price: $1,035 - 1,025 = 10$. The futures contract is overpriced. To take advantage of the arbitrage opportunity, the investor should sell the (overpriced) futures contract and buy the underlying asset (the equity index) using borrowed funds. Norris has suggested the opposite.

(Module 30.2, LOS 30.a)

Question #76 of 88

Question ID: 1507333

Sixty days after inception, the value of the currency swap to Witkowski's client is *closest* to:

A) –€19,633.



B) –€141,584.



C) –€1,021,033.



Explanation

Based on the exchange rate at initiation, the notional principals were €1,000,000 and SF 1,120,000. Sixty days after initiation, the remaining settlement days are 30, 120, 210, and 300 days into the future. The value of the Swiss franc position (per 1 SF notional) is calculated as: $(0.0096 / 4) \times (0.9996 + 0.9978 + 0.9961 + 0.9932) + 1 \times 0.9932 = \text{SF } 1.0028$. For the notional principal of SF 1,120,000, the value is SF 1,123,136. Based on the current exchange rate, this translates into $(1,123,136 / 1.10)$ euros or €1,021,033.

The euro position value is given as €1.0014 per €1 notional. For €1 million notional, this translates into a value of €1,001,400. Because Witkowski's client paid the euro notional at initiation, they will receive the euros and have a value of €1,001,400 – €1,021,033 = –€19,633. (Module 30.7, LOS 30.f)

Overview for Questions #77-80 of 88

Question ID: 1508422

TOPIC: PORTFOLIO MANAGEMENT

THE TOTAL POINT VALUE FOR THIS QUESTION SET IS 12 POINTS.

Tamara Ogle, CFA, and Isaac Segovia, CAIA, are portfolio managers for Lucas Investment Management (Lucas). Ogle and Segovia both manage large institutional investment portfolios and are working together to research portfolio optimization strategies. Ogle mentions the Premier fund. Exhibit 1 shows the Premier fund's exposures and expected return, as well as benchmark specifications.

Exhibit 1: Premier Fund Characteristics

Security (i)	Portfolio Weight (w_{Pi})	Benchmark Weight (w_{Bi})	Return $E(R_i)$
X	35%	40%	11.20%
Y	20%	25%	4.25%
Z	45%	35%	14.00%
Total	100%	100%	

Ogle states that the information ratio for a manager is a good indicator of relative performance. Ogle also makes the following statements:

Statement 1: "Unlike the Sharpe ratio, the information ratio can be affected by the addition of cash or leverage."

Statement 2: "The information ratio of an unconstrained portfolio is unaffected by aggressiveness of the active weights."

Ogle then considers the Dena and Orient funds. Exhibit 2 shows selected data for the two funds.

Exhibit 2: Selected Information for Dena and Orient Funds

Dena	Orient
------	--------

Information coefficient 0.20 0.25

Transfer coefficient 0.99 0.80

Independent bets/year 12 X

Segovia also considers three funds that specialize in market timing. Information about the funds is given in Exhibit 3.

Exhibit 3: Selected Fund Data

	A	B	C
Frequency of bets per year	12	4	2
Number of independent stocks followed	2	3	2
Probability of correct call	0.52	0.58	0.59

Question #77 of 88

Question ID: 1508423

Based on the information in Exhibit 1, the ex-ante active return for the Premier fund is *closest* to:

A) 0.63%.



B) 1.05%.



C) 2.92%.



Explanation

$$E(R_A) = \sum w_{P,j} E(R_{P,j}) - \sum w_{B,j} E(R_{B,j}) = 11.07\% - 10.44\% = 0.63\%$$

(Module 40.1, LOS 40.a)

Question #78 of 88

Question ID: 1508424

Regarding Ogle's Statements 1 and 2:

A) both statements are incorrect.



B) one statement is correct and one is incorrect.



C) both statements are correct.



Explanation

Both statements are correct. Information ratio, unlike the Sharpe ratio, is affected by an allocation to cash or by the use of leverage. For an unconstrained optimization, a change in aggressiveness in active weights changes both the active return and active risk proportionally, leaving the information ratio unchanged.

(Module 40.2, LOS 40.b)

Question #79 of 88

Question ID: 1508425

Assuming that Dena Fund and Orient Fund both have the same information ratio, the value of "X" in Exhibit 2 must be *closest* to:

- A) 10.
- B) 12.
- C) 16.

**Explanation**

$$IR(\text{Dena}) = IR(\text{Orient})$$

$$(0.2) \times (0.99) \times \sqrt{12} = (0.25) \times (0.80) \times \sqrt{X}$$
$$\sqrt{X} = 3.429; X = 11.76$$

(Module 40.3, LOS 40.c)

Question #80 of 88

Question ID: 1508426

Based on the information in Exhibit 3, an investor that wishes to construct a portfolio with an active risk of 4% would *most appropriately* choose to combine the benchmark with:

- A) fund A.
- B) fund B.
- C) fund C.

**Explanation**

$$IC = 2(\% \text{ correct}) - 1$$

$$IC_A = 2(0.52) - 1 = 0.04$$

$$IC_B = 2(0.58) - 1 = 0.16$$

$$IC_C = 2(0.59) - 1 = 0.18$$

$$IR = IC\sqrt{BR}$$

$$IR_A = 0.04\sqrt{12 \times 2} = 0.20$$

$$IR_B = 0.16\sqrt{4 \times 3} = 0.55$$

$$IR_C = 0.18\sqrt{2 \times 2} = 0.36$$

Any investor should always choose the fund with the highest information ratio. The amount of active risk can then be adjusted by changing the allocation of portfolio to the benchmark versus the active fund.

(Module 40.4, LOS 40.e)

(Module 40.3, LOS 40.d)

TOPIC: ETHICAL AND PROFESSIONAL STANDARDS

THE TOTAL POINT VALUE FOR THIS QUESTION SET IS 12 POINTS

Chester Brothers, LLC, is an investment management firm with \$200 million in assets under management. Chester's equity style is described to clients as a large-cap core strategy. One year ago, Chester instituted a new compensation plan for its equity portfolio managers. Under this new plan, each portfolio manager receives an annual bonus based upon that manager's quarterly performance relative to the S&P 500 Index. For each quarter of out-performance, the manager receives a bonus in the amount of 20% of his regular annual compensation. Chester has not disclosed this new plan to clients. Portfolio managers at Chester are not bound by non-compete agreements.

James Rogers, CFA, and Karen Pierce, CFA, are both portfolio managers affected by the new policy. Rogers out-performed the S&P 500 Index in each of the last three quarters, largely because he began investing his clients' funds in small-cap securities. Chester has recently been citing Rogers's performance in local media advertising, including claims that "Chester's star manager, James Rogers, has outperformed the S&P 500 Index in each of the last three quarters." The print advertising associated with the media campaign includes a photograph of Rogers, identifying him as James Rogers, CFA. Below his name is a quote apparently attributable to Rogers saying "as a CFA charterholder, I am committed to the highest ethical standards."

A few weeks after the advertising campaign began, Rogers was approached by the Grumpp Foundation, a local charitable endowment with \$3 billion in assets, about serving on its investment advisory committee. The committee meets weekly to review the portfolio and make adjustments as needed. The Grumpp trustees were impressed by the favorable mention of Rogers in the marketing campaign. In making their offer, they even suggested that Rogers could mention his position on the advisory committee in future Chester marketing material. Rogers has not informed Chester about the Grumpp offer, but he has not yet accepted the position.

Pierce has not fared as well as Rogers. She also shifted into smaller-cap securities, but due to two extremely poor performing large-cap stocks, her performance lagged the S&P 500 Index for the first three quarters. After an angry confrontation with her supervisor, Pierce resigned. Pierce soon accepted a position at a competing firm, Cheeri Group.

Cheeri has posted Pierce's investment performance for the past five years on its website, excluding the three most recent quarters. The footnotes to the performance information include the following two statements:

Statement 1: Includes large capitalization portfolios only.

Statement 2: Results reflect manager's performance at previous employer.

Question #81 of 88

Question ID: 1508438

Chester's new compensation plan for awarding bonuses to individual portfolio managers is consistent with CFA Institute Standards:

- A) and does not require disclosure. 
- B) only if fully disclosed to clients. 
- C) but any bonuses awarded under the plan must be fully disclosed to clients. 

Explanation

Standard VI(A). The compensation plan is acceptable under Standard VI(A) Conflicts of Interest – Disclosure of Conflicts, but Chester must disclose the plan to clients. The firm's equity strategy is described as "large cap core." The S&P 500 Index is an appropriate benchmark for such a strategy, but the incentive for portfolio managers is to invest outside the index in order to achieve excess returns. Managers may be motivated to invest in securities that would not be consistent with client objectives or risk profiles.

(Module 43.1, LOS 43.a)

Question #82 of 88

Question ID: 1508439

Assuming Rogers would like to accept the offer to serve on the Grumpp investment advisory committee, Rogers's obligations under the CFA Institute Standards require that he:

- A) refuse to serve on the Grumpp committee. 
- B) accept the Grumpp committee position only after disclosing the offer to his supervisor. 
- C) accept the Grumpp committee position and disclose his acceptance as soon as possible to his supervisor. 

Explanation

Standard VI(A). Rogers must discuss the offer with supervisory personnel at Chester before accepting the offer. His employer then has the opportunity to evaluate the effect of the offer on Rogers's ability to continue to perform his duties for Chester. The foundation is very large, and the position appears likely to consume much of Rogers's time and effort. If compensation is involved, Rogers would have to decline the offer unless Chester consented to the arrangement.

(Module 43.1, LOS 43.a)

Question #83 of 88

Question ID: 1508440

Chester's advertising campaign includes claims about Rogers's investment performance, as well as Rogers's use and reference to the CFA charter. Is Chester's advertising campaign consistent with the CFA Institute Standards?

- Chester's performance claims are inconsistent with CFA Institute Standards, but
- A) his use and reference to the CFA designation is appropriate. 
 - B) Both the performance claim and the reference to the CFA charter are violations. 
 - C) Neither the performance claims nor the use and reference to the CFA designation are violations. 

Explanation

Standard III(D). Chester has violated Standard III(D) Duties to Clients – Performance Presentation. The claim in itself is acceptable. Rogers's superior performance has lasted only a short time, and the advertising does not suggest otherwise. However, the superior performance has been achieved by investing in small cap securities, which is inconsistent with the stated style of Chester's equity management. Unless Chester discloses this change in style, the performance claims do not accurately reflect the firm's performance. Chester has not violated the Standards regarding use of and reference to the CFA designation. Rogers's use of the CFA designation is acceptable, and the quote stating that a CFA charterholder is committed to high ethical standards is acceptable as well.

(Module 43.1, LOS 43.a)

Question #84 of 88

Question ID: 1508441

Cheeri's presentation of Pierce's investment performance is inconsistent with CFA Institute Standards because:

- A) the results were not calculated under GIPS. 
- B) performance from a previous employer should not be included. 
- C) the results misrepresent Pierce's large cap performance. 

Explanation

Standard III (D). The problem is that Pierce's performance over the past three quarters arose from large cap securities, not small cap securities. Excluding these results misrepresents her ability as a large cap manager. The Standards do not require compliance with GIPS, nor do they require that previous employer results be excluded. Stating results of a specific style, such as large cap, is acceptable if it is accurate.

(Module 43.1, LOS 43.a)

Overview for Questions #85-88 of 88

Question ID: 1508432

TOPIC: ETHICAL AND PROFESSIONAL STANDARDS

THE TOTAL POINT VALUE FOR THIS QUESTION SET IS 12 POINTS

Darren Patel, CFA, has worked at Analytica Partners, LLC, for the past six years as a portfolio manager and has built up a book of several large clients. Patel notes that his clients have become increasingly aware of the directed client brokerage (soft dollar commissions) issue. At a recent meeting with one of his large pension clients, Service

Workers Union Local No. 1418, the subject of directed commissions came up. Upon learning of the commission dollars available to their account, the Union trustees directed Patel to use their client brokerage of approximately \$25,000 to donate to a think tank called the Hoover Study Center of Unions at Samford University. The Service Workers trustees believe the Hoover study will increase the public awareness of the benefits unions offer to their members and increase union membership. Patel concurs with the trustees' goal of increasing union enrollment, and follows the client's instructions: he makes the \$25,000 contribution to the Hoover Study Center.

Another client, Rosa Lutz, has asked Patel to credit the soft dollar client brokerage proceeds from her personal retirement accounts to Roswell Academy to update their computer lab. Patel agrees that a new computer lab for Roswell Academy is greatly needed, and he allocates \$10,000 of Lutz's commission dollars to Roswell Academy.

Jessica Burns, CFA, one of Patel's colleague at Analytica, recently quit. When she left, Burns took a copy of a computer model with the permission of the co-worker who developed the model, as well as the most recent list of her buy recommendations, which was created from the output of the computer model. Burns soon accepts a position at a competing firm, Babylon Group. On her first day at Babylon, she contacts each of her five largest former clients, informing them of her new employment and asking that they consider moving their accounts from Analytica to Babylon. During telephone conversations and emails with her former clients, Burns mentions that Analytica has a new compensation program that created incentives for managers to shift into mid-cap securities.

Question #85 of 88

Question ID: 1508433

Is the use of client brokerage to make the \$25,000 contribution to the Hoover Study Center of Unions a violation of the CFA Institute Standards of Professional Conduct?

- A) Yes, because Patel must ensure that client brokerage fees are directed to the benefit of the client. 
- B) Yes, because client brokerage must only be used to pay for goods and services directly related to the investment decision-making process. 
- C) No, because the client brokerage has been spent at the specific direction of the client. 

Explanation

In making a \$25,000 contribution to the Hoover Study Center of Unions, Patel has violated Standard III(A) Duties to Clients – Loyalty, Prudence, and Care, which states that Members and Candidates must act for the benefit of their clients and place their clients' interest before their employers' or their own interest. In relationships with clients, Members and Candidates must determine applicable fiduciary duties and must comply with such duties to the persons and interests to whom it is owed. The contribution to the Hoover Study Center of Unions, authorized by the trustees of the union, brings into question whether the union is acting for the benefit of the client. Despite providing guidance and governance for the union, trustees are not the client of the union fund; rather, the members of the union and their beneficiaries are the clients of the fund. By making a \$25,000 contribution from the client brokerage, Patel and the trustees have used funds that rightly belong to the members of the union, and they have done so without direct compensation to the union members. Patel should not have authorized the pension account to make the contribution, and in doing so he has violated his duty to guard the assets of his clients as a fiduciary. Client brokerage is the property of the client, and not of the trustee or fiduciary representing the client.

(Module 43.4, LOS 43.a)

Question #86 of 88

Question ID: 1508434

Is the use of client brokerage to make the \$10,000 contribution to the Roswell Academy a violation of the CFA Institute Standards of Professional Conduct?

- A) Yes, because client brokerage must only be used to pay for goods and services directly related to the investment decision-making process. 
- B) Yes, because client brokerage of tax-deferred accounts cannot be used to make charitable contributions. 
- C) No, because the client brokerage has been spent at the specific direction of the client. 

Explanation

In this case, Lutz is the client and, therefore, the direct owner of the client brokerage. If Lutz's desire is to give the soft dollar client brokerage asset to the Roswell Academy, she is free to do so because it is her asset; she is sole owner of her own retirement account. Patel, by following the wishes of the client, is complying with his duty of loyalty. Thus, there is no violation of Standard III(A) Duties to Clients – Loyalty, Prudence, and Care, in the case of the \$10,000 contribution to Roswell Academy.

(Module 43.4, LOS 43.a)

Question #87 of 88

Question ID: 1508435

By taking the computer model when leaving her position at Analytica, Burns has *most likely* violated CFA Institute Standards:

- A) because she should have obtained the permission from her colleague in writing. 
- B) by placing the interests of her current employer above the interests of her former employer. 

C) unless she obtained permission from Analytica.



Explanation

Burns should not have taken any employer records, and the computer model was Analytica's property, regardless of her co-worker's role in developing the model. Burns has violated Standard IV(A) Duties to Employers – Loyalty by taking the model without Analytica's consent.

(Module 43.7, LOS 43.a)

Question #88 of 88

Question ID: 1508436

Burns's behavior upon assuming her new position at Babylon can *best* be described as violating CFA Institute Standards because she:

A) encouraged her former clients to leave Analytica.



B) should not have contacted her former clients.



C) disclosed her former employer's new compensation program.



Explanation

Burns took no client records with her from Analytica. (It is reasonable to assume that she is using publicly available information to contact her former clients.) So long as Burns did not have a non-compete agreement, the standards do not preclude her from contacting former clients or encouraging them to move their accounts. The violation in this case was disclosing the new compensation plan: this plan should be disclosed to Analytica's clients by Analytica. Burns does not have whistleblower status in this case because she stands to receive a personal gain by bringing her former clients to Babylon. By disclosing the plan, Burns has violated Standard IV(A) Duties to Employers – Loyalty by attempting to injure her former employer. Note that the compensation plan is not illegal; it is only a policy that should be disclosed. (Had there been an illegal activity, Burns might have had justification as a whistleblower.)

(Module 43.7, LOS 43.a)
