

2018 Level III Mock Exam AM

The morning session of the 2018 Level III Chartered Financial Analyst® Mock Examination has 60 questions. To best simulate the exam day experience, candidates are advised to allocate an average of 18 minutes per item set (vignette and 6 multiple choice questions) for a total of 180 minutes (3 hours) for this session of the exam.

Questions	Topic	Minutes
1–6	Ethical and Professional Standards	18
7–12	Behavioral Finance	18
13–18	Institutional Investors	18
19–24	Fixed Income	18
25–30	Equity	18
31–36	Derivatives	18
37–42	Risk Management	18
43–48	Asset Allocation	18
49–54	Trading, Monitoring, and Rebalancing	18
55–60	Performance Evaluation	18
Total:		180

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2018 LEVEL III MOCK EXAM AM

Vision 2020 Capital Partners Case Scenario

Vision 2020 Capital Partners (V2020) has operated for the last 10 years originating and brokering corporate finance deals through private placements in emerging and frontier markets. Because of slow economic growth globally, investment banking deals have declined, and V2020 has struggled to generate enough fees to sustain its business. The board of directors of V2020, composed of corporate finance experts, has identified opportunities to generate a new revenue stream.

One such opportunity is the creation of a division to manage an Emerging and Frontier Market Balanced Fund (the Fund). The board has had several inquiries from clients asking for such a product. The board believes the Fund is an ideal business line to meet client demand and create monthly asset management fees. The board thinks the Fund should also be required to act as a buyer of last resort for all its corporate finance clients' private placements. The board believes this arrangement would act as a major incentive for private businesses to use their corporate finance services, thereby increasing revenues from their primary business activity.

Because none of the V2020 board members or senior managers are experienced in asset management, the board hires Lauren Akinyi, CFA, an independent consultant who works with various clients in the asset management industry. She is asked to undertake a study on an appropriate structure for the Fund to meet both corporate finance and fund client needs. She is also asked to help V2020 set up policies and procedures for the new fund to make certain all capital market regulations have been followed.

The board informs Akinyi that the policies and procedures should also ensure compliance with the CFA Institute Asset Manager Code of Professional Conduct (Asset Manager Code).

Subsequently, in a report to the board, Akinyi makes the following recommendations concerning compliance with the Asset Manager Code:

Recommendation 1: V2020 should abide by the following principles of conduct:

- Principle 1 Proceed with skill, competence, and diligence;
- Principle 2 Act with independence and objectivity; and
- Principle 3 Provide client performance within three days after month-end.

Recommendation 2: To take advantage of their vast business experience, the board of directors should implement new policies. Specifically, the board should


- Policy 1 take an active daily role in managing the Fund's assets,
- Policy 2 designate an existing employee as a compliance officer, and
- Policy 3 disclose any conflicts of interest arising from their business interests.

Recommendation 3: To avoid any conflicts of interest between the investment banking business and the new fund management business, a separate wholly owned subsidiary should be created to undertake the fund management business. The Fund would then provide a 100% guarantee to buy the private placements of the corporate finance clients without having to disclose to all clients the relationship between the two entities.

Recommendation 4: To ensure timely and efficient trades in each of the markets in which the Fund invests, only one stockbroker in each market should be used. The board should also consider buying an equity stake in each of the appointed brokers as an added profit opportunity.

After the Fund completes its first year of operations, V2020 receives a letter from its regulator. The notification imposes heavy fines for poor disclosures to its fund clients and mandates the replacement of the senior fund manager as a condition for the renewal of V2020's asset management license. The board challenges the ruling in court, stating that the Fund made the necessary full disclosures. After six months, not wanting to incur further expensive legal fees or waste more precious time, the board, without admitting or denying fault, settles out of court, paying a smaller fine. Subsequently, the senior fund manager is terminated but receives a multimillion-dollar bonus upon leaving. After the replacement of the senior fund manager, the license is renewed for a further year. The regulatory body, however, gives a warning that if the Fund has any future violations, their license will be permanently revoked. Subsequently, the Fund discloses to its clients that the regulator has renewed its license for one year after the termination of the senior fund manager, a condition of the renewal. They also disclose the out-of-court settlement and the fine paid.

- 1 Given the board's intended purpose for starting the Fund, which of the following principles of conduct under the Asset Manager Code of Professional Conduct is *least likely* violated?
- A Act in a professional and ethical manner at all times.
 - B Act for the benefit of clients.
 - C Uphold the rules governing capital markets.




C is correct. The board gave instructions to Akinyi to ensure compliance with capital markets regulations, thus upholding one of the general principles of conduct of the Asset Manager Code. But the desire for the Fund to act as a buyer of last resort violates the principle of acting for the benefit of clients (i.e., placing their interests before the firm's and their own). By putting the firm's interests in front of their clients, the board is not acting in a professional and ethical manner. Although the Fund may benefit corporate finance clients and meet the demand of some clients for a fund, not all Fund clients' interests may be protected by the Fund being the buyer of last resort (i.e., guaranteeing to buy 100% of the corporate finance clients' private placements if placement to other potential investors does not succeed). These placements may not meet the Fund's objectives and risk profile, thus not protecting the interests of the Fund's clients.

A is incorrect because by not acting for the benefit of all clients, the Board is unprofessional and unethical, violating one of the principles of the Code.

B is incorrect because one of the principles is to act for the benefit of clients, placing client interests before their own. This is not likely because the Fund's clients' interests are not necessarily being protected with the underwriting of all corporate finance deals.

Asset Manager Code of Professional Conduct
LOS b
General Principles of Conduct: 1, 2, and 6

- 2 Which of the principles in Akinyi's Recommendation 1 is *least likely* sufficient to meet the principles of the Asset Manager Code of Professional Conduct?
- A Principle 1
 - B Principle 2
 - C Principle 3



C is correct. Although it is true that managers are recommended to provide performance data on a timely basis, they also have the responsibility to present performance information that is fair, accurate, relevant, and complete. Given this requirement, it may not always be possible to provide this information to clients within three days, particularly in complicated scenarios.

A is incorrect because one of the principles of the Asset Managers Code is for managers to act with skill, competence, and diligence.


B is incorrect because one of the principles of the Asset Managers Code is for managers to act with independence and objectivity.

Asset Manager Code of Professional Conduct

LOS c

Appendix, Recommendations and Guidance, Section 6; Section E: Performance and Valuation

- 3 Which of Akinyi's policies in Recommendation 2 would *least likely* comply with the Asset Manager Code of Professional Conduct and its general principles if implemented?
- A Policy 1
 - B Policy 2
 - C Policy 3



A is correct. The board of directors have corporate finance experience and business experience but not asset management experience. Consequently, they may not act with skill or competence, as required by the fourth principle of the General Principles of Conduct. Therefore, they should hire professional asset managers to manage the Fund.

B is incorrect because by appointing an existing employee to act as a Compliance Officer the Fund would be in Compliance with the Asset Manager Code assuming that the employee is competent, knowledgeable, and credible and is empowered to carry out their duties.


C is incorrect because the Directors should disclose any conflicts of interest arising from their business associations outside of V2020, namely their positions as trustees for small pensions funds.

Asset Manager Code of Professional Conduct

LOS b, c

General Principles of Conduct; Section F: Disclosures

- 4 Which of the following would be *most* effective to prevent any violation of the Asset Manager Code of Professional Conduct as reflected in Akinyi's Recommendation 3?
- A V2020 discloses to all clients the relationship between V2020 and the Fund.
 - B The Fund only retains a minority shareholding in V2020.
 - C The Fund does not participate in any of V2020's private placements.



A is correct. The Fund would comply with the Asset Manager Code if it made full disclosure to all of its clients regarding the relationship between the Fund and V2020's activities (the investment banking/corporate finance activities). Both parties should disclose any common ownership, even minority positions. If some of the private placements met the investment objectives of the Fund, it would harm the Fund's clients if the Fund was not able to invest in those private placements because of the potential conflict of interests.

B is incorrect because owning a minority stake would still result in a conflict of interest and thus would require full disclosure.

C is incorrect because Fund clients should have the benefit of the full universe of available investments where appropriate even if the assets are originating from the Investment Banking arm. However, the fact that V2020 represents the corporate finance clients should be disclosed.


Asset Manager Code of Professional Conduct

LOS d

Section A: Loyalty to Clients; Section F: Disclosures

- 5 If Recommendation 4 was implemented, which aspect of the Asset Manager Code of Professional Conduct would *most likely* be violated?

- A Priority of transactions
- B Fair dealing
- C Best execution



C is correct. The Asset Manager Code calls for the manager to maximize client portfolio value by seeking best execution for all client transactions. If trades only go through one stockbroker, best execution cannot be ensured. In addition, any equity ownership in these brokers should be disclosed because this arrangement has the potential for conflicts of interest.

A is incorrect because the use of one broker does not involve the aspect of priority of transactions.

B is incorrect because the use of one broker does not involve the aspect of fair dealing.


Asset Manager Code of Professional Conduct

LOS c

Section C: Trading

- 6 Does the Fund's disclosure to its clients regarding the renewal of the license *most likely* comply with the Asset Manager Code of Professional Conduct?

- A No.
- B Yes, the disclosure included the out-of-court settlement and payment of fine.
- C Yes, the disclosure included the termination of the fund manager.



A is correct. The Asset Manager Code calls for complete disclosures regarding significant changes in personnel and any regulatory or disciplinary action taken against the Fund. Although the board disclosed the conditional license renewal and the removal of the

Fund manager, they did not disclose the serious condition that any further violation would result in the Fund being closed. Clients should be told about the regulator's warning so they can make an informed decision regarding whether to continue their investment in the Fund. Disclosure is not required for the payment of bonuses or termination packages to employees.

B is incorrect because the Fund should also include the fact that any subsequent violation will lead to the closure of the Fund.

C is incorrect because the Fund need not disclose the termination payment or bonus to the Senior Fund Manager.

Asset Manager Code of Professional Conduct
LOS c
Section F: Disclosures

Arzac Wealth Management Services Case Scenario

Victoria Arzac recently formed Arzac Wealth Management Services, catering to high-net-worth individuals. Arzac is working with a marketing consultant to determine how she should market her firm's services. She describes her ideal clients as people who readily acknowledge their limitations regarding investments, will easily follow her advice, tend to be cautious about their investment portfolios, and are mainly concerned about conserving their capital.

In preparing for her first meeting with David Pak, a potential new client, Arzac develops a "Know Your Client" process, including the design of several tools she can use to get to know her client's investment objectives and risk profile. One of these tools is a risk tolerance questionnaire. Arzac's questionnaire contains inquiries relating to mean-variance optimization and the maximum loss the client would be willing to tolerate each year. She includes a few other questions about the client's confidence in his own abilities as an investor.

Arzac holds a meeting with David Pak, her first potential client. Arzac asks Pak to describe how he has constructed his investment portfolio over time. He informs Arzac that 12 years ago his employer offered him company shares at a discount, but share prices declined because the company wasn't performing as well as expected. He decided he would rather construct his investment portfolio by investing in three mutual funds he had analyzed, two of which were balanced funds and the third a global equity fund. Pak allocated one-third of his available funds to each of the mutual funds. Pak then describes how over the last five years, he has reviewed his portfolio each year, leading to a higher allocation in global securities over time on the understanding they would help reduce overall risk.


One day after the Brexit referendum, Arzac met with Pak for the annual review of his portfolio and an assessment of his earlier decision to continually add global securities to his portfolio. In the meeting, Pak tells Arzac he and his friends discussed the possible impact of Brexit on their portfolios if the UK decided to leave the EU. His friends subsequently got out of the market prior to the referendum. Pak, however, decided to stay in the market. The referendum results caused a sharp drop in security prices worldwide, causing Pak's portfolio value to decline by 20%. He now wants to sell the biggest losers so he can realign his portfolio because he thinks the market will continue to decline given the current momentum. Pak adds, "I should have known the Brexit referendum would go the way it did."

As Arzac continues to grow the firm, she starts building a research department so the firm is less reliant on third-party research. Arzac interviews Christine Torok, who has more than 20 years of experience as an equity analyst following the banking

industry. Torok considers herself to be one of the most sought after analysts in the market, ranking in the top five analysts in the industry year after year. Her earnings forecasts have tended to be within 1% of actual results. She attributes the accuracy to her firm's highly complex forecast models, including sensitivity analysis and the confirmation of similar information sourced from multiple databases. She is regularly asked to speak at investment conferences and on TV to make comments on financial securities.

As part of the investment management process, Arzac requires her analysts to present their investment recommendations to a newly formed investment committee. The committee, made up of five highly experienced investment professionals with extensive personal investment portfolios, meets weekly. The committee members have diverse backgrounds and contrasting personal investment styles. The committee chair insists that no opinions should be expressed until such time as the analysts presenting have made their investment case and given their investment recommendations. The chair also mandates that all presentations be made available to the committee well in advance of each meeting. At the most recent investment committee meeting, one of Arzac's analysts, despite lacking confidence in his analysis, recommends a company he knows is held in the personal portfolios of the chair and other senior members of the committee.

- 7 Given Arzac's description of her ideal clients, her clients could *most likely* be described as which type of investor personality?
- A Celebrity
 - B Individualist
 - C Guardian




C is correct. Arzac's ideal clients would most likely be classified as the Guardian investor personality type using the BB&K classifications. Guardians are cautious and concerned about the future, particularly as they approach retirement. They are concerned about protecting their assets and may seek advice from those they perceive as being more knowledgeable than themselves.

B is incorrect because Individualists are independent and confident investors who like to make their own decisions. They are unlikely to easily take advice without doing their own analysis.

A is incorrect because celebrities hold opinions about some things but may be willing to take advice about investing. They only recognize their investment limitations to a certain extent.

Behavioral Finance and Investment Processes
LOS a
Section 2.1.2

- 8 The "Know Your Client" tools Arzac develops for new clients will *most likely* cause an unfavorable investor–adviser relationship for which investor type?
- A Active Growth
 - B Active aggressive
 - C Passive moderate



B is correct. Because risk analysis is a cognitive process, the risk tolerance questionnaire may fail investors with an emotional bias—those who are likely to view risk as an emotional process rather than a cognitive process. Risk tolerance questionnaires will likely work better for investors with a cognitive bias because they are likely to think about risk more logically. Therefore, Arzac's questionnaire will likely fail Active Aggressive investor types because of their primary emotional bias. Consequently, the relationship between the investor and the adviser may not be favorable.

A is incorrect because an Active Growth investor type has a primary cognitive bias. Investors with a cognitive bias look at risk as a cognitive process, not an emotional process.


C is incorrect because a Passive Moderate investor type has a primary cognitive bias. Investors with a cognitive bias look at risk as a cognitive process, not an emotional process.

Behavioral Finance and Investment Processes

LOS a

Sections 2.1.3, 3.5

- 9 Which behavioral factor *most likely* impacted Pak's decisions on how to construct his investment portfolio over time?
- A Naive diversification
 - B Home bias
 - C Familiar investing



A is correct. Pak constructed his initial investment portfolio through the equal distribution of mutual funds, reflecting simple heuristics or a framing bias. This is an example of a naive diversification strategy (i.e., dividing assets equally among available funds irrespective of the underlying composition of the funds). The equal distribution may also reflect a fear of regret: Pak doesn't understand which fund will outperform, so he decides to invest in all three equally.

B is incorrect because Pak has been increasing his exposure to global securities over time, as he wants to reduce risk by increasing his diversification by investing outside his home market. He does not have a home bias.


C is incorrect because Pak did not purchase an investment on the basis of familiarity but declined to purchase his employer's stock because he felt the company was not performing to expectations.

Behavioral Finance and Investment Processes

LOS d

Sections 4.2, 4.3, and 4.5

- 10 Pak's conversation with Arzac in the annual review meeting after the Brexit referendum *most likely* reflects which type of bias?
- A Herding
 - B Hindsight
 - C Loss aversion



B is correct. In expressing the opinion that he should have known the Brexit referendum outcome in advance, Pak is exhibiting hindsight bias or regret. Humans have a tendency to see past events as having been predictable, and the resulting regret can be acute when the event results in a highly volatile market.


A is incorrect because Pak did not follow his friends when they exited the market prior to the Brexit referendum.

C is incorrect because Pak is selling his biggest losers so does not exhibit signs of loss aversion.

Behavioral Finance and Investment Processes
LOS g
Section 7

- 11 Given Torok's analysis of the banking industry, she *least likely* exhibited which of the following behavioral biases?

- A Self-attribution
- B Overconfidence
- C Illusion of control



A is correct. Self-attribution bias is a bias in which people take personal credit for successes and attribute failures to external factors outside the individual's control. There is no evidence she takes personal credit for her success. Torok actually credits the firm's financial models for the accuracy of the forecasts.


B is incorrect because Torok is likely overconfident given that she considers herself to be one of the top five analysts in the market and being asked to speak at banking conferences and on TV. She also sources additional information similar in nature, so it is unlikely to increase the accuracy of her forecast but instead reinforces her confidence in that forecast.

C is incorrect because Torok may have been subject to the illusion of control due to using highly complex forecast models. Excess of information cannot eliminate the risk in a model or the modeling process.

Behavioral Finance and Investment Processes
LOS e
Section 5.1

- 12 What is the *most likely* criticism of Arzac's investment committee? The committee:

- A chair may dictate decisions.
- B is unlikely to reach group consensus.
- C exhibits social proof bias.



C is correct. The analyst who presents at the committee appears to be influenced by the status and prior comments made by the members of the investment committee. He may have wrongly favored the judgment or endorsement of committee members, which is an example of social proof bias.

A is incorrect. Given that the committee chair insists each analyst presents and gives their opinions before committee members indicate he will unlikely dictate the investment decisions.

B is incorrect because the chair requires all presentations to be made available to the committee well in advance of any meeting. Allowing the committee members to form opinions independently prior to the meeting will likely give rise to active discussions with varying viewpoints. Having members of an investment committee with diverse backgrounds and different investment styles can be viewed favorably in that it can help prevent groupthink. It does not necessarily indicate they will not be able to reach a consensus.

Behavioral Finance and Investment Processes
LOS f
Section 6

Edward Chen Case Scenario

Philanthropy Source Asset Management (PSA) is a US-based investment consultant for non-profit organizations, including foundations and endowments. In addition to advising on investment policy and asset allocation, PSA offers asset management services for smaller foundations and endowments. Edward Chen, CFA, a senior client adviser with PSA, is preparing for meetings with individuals representing two new US-based clients, the Magyar Foundation (MF) and the Cheyenne Endowment (CYE). Both institutions have hired PSA as their new adviser after experiencing sub-par investment returns over the past three years.

MF provides grants to local charitable organizations to support their operating and capital improvement needs. MF seeks to maintain its grant spending at no more than 5% of the 12-month average asset value, the minimum level required to maintain its US tax-exempt status, because it anticipates no further additions or contributions to its available funds. MF has recently added two independent trustees to its decision-making board: Richard Larson, who has been a director at three area banks, and Christine Kuzmych, an experienced life insurance industry investment professional. Chen meets with them to discuss potential concerns with MF's investment policy.

Larson tells Chen: "I would like MF's investment policy to reflect my belief that MF should have a more substantial community impact. This change could be accomplished by funding large capital improvement projects for two local charities over the next five years. The timing of the charities' cash requirements is expected to be quite irregular, so we may need to reduce portfolio risk. In my professional experience, there are similarities between a bank's management of its liabilities and a foundation's management of its spending requirements. We should consider adopting an asset/liability management model similar to that used by banks. Both foundation and bank portfolios have intermediate-term time horizons. However, foundations have lower liquidity requirements than banks, and because of the need to provide stable funding for required charitable grants, foundations have lower risk tolerances."

Kuzmych believes comparing needs of an insurance company and MF might be helpful in preparing MF's investment policy statement. She comments: "MF's grants are similar to a property and casualty insurance company's liabilities in that outlays are relatively certain in value but uncertain in timing. In addition, MF's liquidity requirements are similar to those of a property and casualty insurer. These insurers keep an asset valuation reserve to deal with their liquidity requirements. However, in contrast to a property and casualty insurance company, MF can avoid income and capital gains tax considerations."

Kuzmych continues, “Mr. Larson and I serve on the board of directors for CYE. CYE funds 75% of Cheyenne College’s annual administrative budget and actively solicits donations through annual fundraisers. Donations, equal to approximately 3% of the portfolio’s current value, offset potential shortfalls between average returns and the spending rate. In preparation for our discussion regarding a new investment policy statement for CYE, I have examined MF’s investment policy. After noting similarities and differences between CYE’s and MF’s portfolios, I have reached the following conclusions:

- Conclusion I: The spending policies of both portfolios must balance the needs of current and future beneficiaries.
- Conclusion II: The magnitude of importance that CYE’s portfolio distributions have in Cheyenne College’s administrative budget reduces CYE’s risk tolerance.
- Conclusion III: The portfolios of MF and CYE each have long time horizons.”


Larson adds: “Ms. Kuzmych and I have limited experience with alternative investment funds, but it appears to us that they function as another type of institutional investor. Would you please explain how their investment policies compare with those of foundations and endowments?”

Chen informs Larson and Kuzmych: “PSA’s client portfolios use our proprietary alternative investment mutual funds, such as the Alpha Commodity Pool Mutual Fund and the Omega Market Neutral Mutual Fund. Alpha and Omega can be thought of as investment intermediaries. All institutional investors are generally either financial or investment intermediaries and exhibit some of the following characteristics:

- Characteristic I: They have well defined purposes besides investing.
- Characteristic II: The amounts of money invested are usually larger relative to private investors.
- Characteristic III: Investment objectives and constraints cannot be expected to generally apply to all members of a given group.

13 MF is *most likely* a(n):

- A operating foundation.
- B community foundation.
- C independent foundation.



C is correct. MF is an independent foundation. An independent (or private) foundation is a grant-making organization established to aid social, educational, charitable, or religious activities. The decision-making authority lies with the donor, members of the donor’s family, or independent trustees. At least 5% of the 12-month average asset value constitutes an annual spending requirement. Independent foundations generally do not engage in fundraising campaigns and may not receive any new contributions from the donor nor receive any public support.

A is incorrect. An operating foundation uses its resources to conduct research or provide a direct service (e.g., operate a museum). Its decision-making authority is an independent board of directors. It must use at least 85% of interest and dividend income for active conduct of the institution’s own programs.

B is incorrect. A community foundation is a publicly supported organization that makes grants for social, educational, charitable, or religious purposes and is a type of public charity. Its decision-making authority is a board of directors, and there is no spending requirement.

Managing Institutional Investor Portfolios
LOS h
Section 3.1

- 14 When suggesting that MF adopt an asset/liability management model, Larson is *most likely* accurate about:
- A liquidity requirements.
 - B risk tolerance.
 - C time horizon.

A is correct. Foundations have lower liquidity requirements than banks because they mostly consist of anticipated grant needs. Foundations also have higher return objectives and tolerance for risk than banks, as well as much longer time horizons.

B is incorrect. Foundations have higher return objectives and tolerance for risk than banks. Foundations do have lower liquidity requirements than banks because they mostly consist of anticipated grant needs.

C is incorrect. Foundations have higher return objectives and tolerance for risk than banks. Foundations do have lower liquidity requirements than banks because they mostly consist of anticipated grant needs.

Managing Institutional Investor Portfolios
LOS i
Sections 3.1 and 5.1.3

- 15 In comparing MF's investment policy with a property and casualty insurance company's investment policy, Kuzmych is *most likely* correct about:
- A the timing of outlays.
 - B liquidity requirements.
 - C tax considerations.

C is correct. As a US-based private foundation, MF is essentially considered a tax-exempt investor. This status differs from a property and casualty insurance company, which is subject to income, capital gains, and other types of taxes.


A is incorrect. The foundation, with its long time horizon, low liquidity needs, and sufficient assets presently has an above average risk tolerance.

B is incorrect. The foundation liquidity needs are predictable with grant spending fixed at 5% (plus expenses), and there are no additional liquidity concerns. Given the uncertainty of cash flow from casualty insurance operations, liquidity is a paramount consideration for non-life companies because it provides portfolio flexibility under changing tax, underwriting, and interest rate conditions.

Managing Institutional Investor Portfolios
LOS j
Sections 3.1.5 and 4.1.5

16 Regarding the comparison of the CYE and MF portfolios, which of Kuzmych's conclusions is *most likely*?:

- A** Conclusion II
- B** Conclusion III
- C** Conclusion I



B is correct. The only correct conclusion is that both the foundation and endowment portfolios have long time horizons. The foundation has no obligation to balance the needs of current and future beneficiaries. CYE has a high tolerance for risk with its long time horizon and ability to replenish itself through donations.


A is incorrect. The only correct conclusion is that both the foundation and endowment portfolios have long time horizons. The foundation has no obligation to balance the needs of current and future beneficiaries. CYE has a high tolerance for risk with its long time horizon and ability to replenish itself through donations.

C is incorrect. The only correct conclusion is that both the foundation and endowment portfolios have long time horizons. The foundation has no obligation to balance the needs of current and future beneficiaries. CYE has a high tolerance for risk with its long time horizon and ability to replenish itself through donations.

Managing Institutional Investor Portfolios
LOS i
Sections 3.1 and 3.2

17 Alpha and Omega are *least likely* consistent with which of the institutional investor characteristics described by Chen?

- A** Characteristic II
- B** Characteristic III
- C** Characteristic I



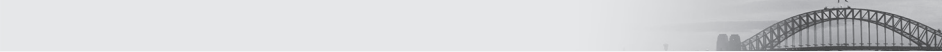
C is correct. Mutual funds have no other corporate purpose besides investing. Mutual funds (investment companies) and hedge funds are investment intermediaries, whereas foundations, endowments, insurance companies, and banks are financial intermediaries. Compared with individual investors, they all usually have larger amounts of money to invest.

A is incorrect. Although investment companies, such as mutual funds, generally all have large amounts of money to invest, they have no other corporate purpose besides investing.

B is incorrect. It is correct that one cannot generally characterize the investment objectives and constraints of a given type of investment intermediary with the expectation that it will apply to all members of the group. Mutual funds, for example, cover the range of equity and fixed-income investment styles; one cannot characterize the return requirement and risk tolerance of “a mutual fund.”

Managing Institutional Investor Portfolios
LOS I
Sections 1 and 5.2

- 18** When comparing investment objectives and constraints, Alpha and Omega *most likely* have similar:
- A** return objectives.
 - B** legal and regulatory constraints.
 - C** risk tolerances.



B is correct. Both Alpha and Omega are mutual funds, a type of investment company. They would share similar legal and regulatory constraints, such as a need to describe their objectives, constraints, and costs in legally prescribed formats (e.g., a prospectus). However, they would have different risk and return objectives that would match different needs in investor portfolios.

A is incorrect. Both Alpha and Omega are mutual funds, a type of investment company. They would share similar legal and regulatory constraints, such as a need to describe their objectives, constraints, and costs in legally prescribed formats (e.g., a prospectus). However, each would have its own risk tolerance and return objectives because they draw on funds from investors who are attracted to them for specific portfolio purposes.

C is incorrect. Both Alpha and Omega are mutual funds, a type of investment company. They would share similar legal and regulatory constraints, such as a need to describe their objectives, constraints, and costs in legally prescribed formats (e.g., a prospectus). However, each would have its own risk tolerance and return objectives because they draw on funds from investors who are attracted to them for specific portfolio purposes.

Managing Institutional Investor Portfolios
LOS n
Section 5.2

Danny Moynahan Case Scenario

Danny Moynahan, CFA, is a fixed-income portfolio manager at Reagan Investment Advisory (Reagan). His wife, Abigail Boyle, is a professor at a local university not far from their home. She is currently teaching an investments class. Over dinner one evening, she asks her husband if he will come and talk to her class about managing fixed-income portfolios. She believes it will be a useful experience for her students to hear from someone working in the investment industry. He agrees, and they plan for him to make his presentation the following week.

The next day at his office, with permission from his superior, Tom Gayle, Moynahan works on his presentation to the class. He plans to put together six pages for his discussion. He reviews the presentation materials he previously used at a conference to see if any of it would be useful. He decides page 1 should discuss the benefits of including fixed-income securities in a portfolio and highlights the following three points:

Point A: Adding fixed-income securities to a portfolio is an effective way of obtaining the benefits of diversification, especially because fixed-income correlations with other asset classes are low.

Point B: The regular nature of fixed-income cash flows enables investors to fund future obligations, unless there is a credit event.

Point C: Fixed-income securities can always provide a hedge for inflation, which results in superior risk-adjusted real portfolio returns.

On page 2, Moynahan decides to outline the three total return approaches he utilizes to manage Reagan's fixed-income portfolios. He puts together the following exhibit:

Exhibit 1 Features of Total Return Portfolios

	Benchmark	Portfolio 1	Portfolio 2	Portfolio 3
Quality:				
AAA/AA/A (% of portfolio)	76.0	74.9	75.8	76.3
BBB/BB (% of portfolio)	24.0	25.1	24.2	23.7
Average	AA–	AA–	AA–	AA
Key Rate Duration:				
1–5 years	2.5	2.4	2.4	2.5
5–10 years	1.8	1.9	1.9	1.8
10–15 years	1.5	1.4	1.5	1.5
Credit Spread Duration	1.45	1.55	1.43	1.50
Turnover (%)		8%	5%	6%
Country Exposure				
Developed Markets	90.0	86.4	91.2	87.0
Emerging Markets	10.0	14.0	9.8	13.0
Securities Lending	N/A	Not Allowed	Allowed	Not Allowed

Moynahan titles page 3, "Liquidity in the Fixed-Income Market." He wants to ensure that the class appreciates the differences in liquidity between fixed-income and equity securities. He stresses that liquidity across fixed-income securities varies greatly and that compared to equities, fixed-income markets are generally less liquid. Also, liquidity influences fixed-income pricing, but illiquidity enhances the portfolio's yield to maturity. Lastly, dealers will narrow bid–ask spreads on thinly traded securities as a consequence of their illiquidity.

Tom Gayle, Moynahan's superior, stops by Moynahan's office. Moynahan shares his presentation with Gayle, who suggests that page 4 include a discussion about expected returns. They decide to outline an example of a recent bond trade where they bought a \$100 par value bond at a premium. Moynahan presents a decomposition of the bond's expected returns detailing various components and focuses on roll down

return. He adds the following footnote: “The roll down return demonstrates how the price of a bond typically moves closer to par regardless of yield curve changes over the strategy horizon.”

Moynahan and Gayle continue their discussion about the presentation and debate several potential subjects to include on page 5. Gayle suggests assessing the use of leverage in the portfolios. They decide to present a scenario where the portfolio is fully invested, but given their outlook for a decline in interest rates, they want to increase the portfolio’s investment exposure. The portfolio and the benchmark both currently have the same duration.

On page 6, the final page of his presentation, Moynahan plans to discuss the tax implications of fixed-income investing. He wants the class to understand that the management of taxable portfolios is more complicated than that of tax-exempt portfolios. He outlines the following key considerations for managing taxable fixed-income portfolios:

- A Minimize interest income relative to capital gains.
 - B Minimize capital gains relative to capital losses.
 - C Forego attractive trading opportunity because of tax implications.
- 19 Which of the points outlined on page 1 of Moynahan’s presentation is *least likely* correct?
- A Point B
 - B Point C
 - C Point A

B is correct. Point C of Moynahan’s presentation is incorrect. Some fixed-income securities, such as inflation-linked bonds, provide a hedge for inflation that results in superior risk-adjusted real portfolio returns. However, not all fixed-income securities act as a hedge against inflation.

A is incorrect because the statement regarding fixed-income cash flows is accurate.

C is incorrect because the statement regarding diversification benefits of fixed-income securities is accurate.

Introduction to Fixed-Income Portfolio Management
LOS a
Section 2

- 20 How should Moynahan *most likely* label the management approaches for each of the portfolios described in Exhibit 1 on page 2 of his presentation?
- A Portfolio 1 = Active Management, Portfolio 2 = Pure Indexing, Portfolio 3 = Enhanced Indexing
 - B Portfolio 1 = Enhanced Indexing, Portfolio 2 = Pure Indexing, Portfolio 3 = Active Management
 - C Portfolio 1 = Active Management, Portfolio 2 = Enhanced Indexing, Portfolio 3 = Pure Indexing

A is correct. Moynahan should label the portfolios on page 2 as follows: Portfolio 1 = Active Management, which allows for larger risk factor mismatch to the benchmark. Portfolio 2 = Pure Indexing, which involves attempting to replicate a bond index as closely as possible. Portfolio 3 = Enhanced Indexing, which is closely linked to the benchmark but attempts to generate a modest amount of outperformance versus the benchmark.

	Portfolio 1	Portfolio 2	Portfolio 3
Quality	Enhanced Indexing or Active Management	Pure Indexing	Enhanced Indexing or Active Management
Duration	Active Management	Pure Indexing or Enhanced Indexing	Enhanced Indexing or Active Management
Credit Spread	Active Management	Pure Indexing	Enhanced Indexing
Turnover	Active Management	Pure Indexing	Enhanced Indexing
Country Exposure	Active Management	Pure Indexing	Enhanced Indexing
Securities Lending	No Impact	No Impact	No Impact
Determination	Active Management	Pure Indexing	Enhanced Indexing

B is incorrect because the ordering of portfolios given is incorrect. The correct ordering is: Portfolio 1 = Active Management, Portfolio 2 = Pure Indexing, Portfolio 3 = Enhanced Indexing.

C is incorrect because the ordering of portfolios given is incorrect. The correct ordering is: Portfolio 1 = Active Management, Portfolio 2 = Pure Indexing, Portfolio 3 = Enhanced Indexing.

Introduction to Fixed-Income Portfolio Management
LOS b
Section 3

21 Are Moynahan's comments regarding fixed-income liquidity *most likely* correct?

- A Yes.
- B No, with respect to fixed-income pricing and yield to maturity.
- C No, with respect to the bid–ask spread.

C is correct. Moynahan's comment on the bid–ask spread of thinly traded securities is incorrect. Dealers widen bid–ask spreads for thinly traded securities to reflect their illiquidity.


A is incorrect because Moynahan's comment regarding fixed-income trading and narrowly traded securities is incorrect.

B is incorrect because the comment regarding fixed-income pricing and yield to maturity is correct.

Introduction to Fixed-Income Portfolio Management
LOS c
Section 4

22 Is the footnote Moynahan includes on page 4 *most likely* correct?

- A Yes.
- B No, with respect to bond prices.
- C No, with respect to roll down return.



C is correct. The footnote Moynahan includes on page 4 is incorrect with respect to roll down return. The roll down return is equal to the bond's percentage price change assuming an unchanged yield curve over the strategy horizon. The roll down return results from the bond "rolling down" the yield curve as the time to maturity decreases. As time passes, a bond's price typically moves closer to par.


A is incorrect. Moynahan's footnote regarding the yield curve is not accurate.

B is incorrect. Moynahan's footnote with respect to bond prices is accurate.

Introduction to Fixed-Income Portfolio Management
LOS d
Section 5

23 What trades can Moynahan *most likely* make to accomplish the objective outlined on page 5 of his presentation?

- A Enter into a fixed-rate payer swap contract
- B Buy long bond futures contracts
- C Sell an overnight repurchase agreement



B is correct. To accomplish Moynahan's objective of increasing the investment exposure of a fully invested portfolio, he would buy long bond futures. Futures contracts embed significant leverage because they permit the counterparties to gain exposure to a large quantity of the underlying asset without having to actually transact in the asset.

A is incorrect because entering into a fixed-rate payer swap contract would not increase the portfolio's investment exposure.

C is incorrect because selling an overnight repurchase agreement would not increase the portfolio's investment exposure.

Introduction to Fixed-Income Portfolio Management
LOS e
Section 6

24 Which of the considerations outlined by Moynahan on page 6 of the presentation is *least likely* correct?

- A Consideration A

- B Consideration B
- C Consideration C

B is correct. When managing taxable fixed-income portfolios, Moynahan should not minimize capital gains relative to capital losses because capital losses are generally only used to offset capital gains.

A is incorrect. When managing taxable fixed-income portfolios, Moynahan would want to minimize interest income relative to capital gains because capital gains are typically taxed at a lower effective tax rate.

C is incorrect. When managing taxable fixed-income portfolios, Moynahan may want to dismiss attractive relative value trades due to tax implications.

Introduction to Fixed-Income Portfolio Management
LOS f
Section 7

Gregory Dodson Case Scenario

Gregory Dodson, CFA, is an investment consultant who advises individual and institutional clients on their equity portfolios. During a typical work week, he is called upon to evaluate a variety of situations and provide expert advice. This week, he is meeting with three clients.

Dodson's first client meeting is with the Magnolia Foundation, a small not-for-profit organization. Magnolia currently uses three long-only portfolio managers for its equity investments. Details of those investments, including expected performance relative to Magnolia's equity benchmark, the S&P 500 Index, are shown in Exhibit 1.

Exhibit 1 Magnolia Foundation Equity Portfolio Managers

	Investment Size (\$ millions)	Expected Alpha	Expected Tracking Error
Manager A	140	0%	0%
Manager B	40	1.50%	2.50%
Manager C	20	2.00%	4.00%

Magnolia's goal for its total equity investment is expected alpha greater than 0.40% and expected tracking error less than 1.00%.

Dodson's second client meeting is with Sarah Tan, a wealthy individual who is actively involved in managing her investments. Tan wants to add a \$100 million allocation to US mid-cap stocks, represented by the US S&P 400 Midcap Index, to her long-term asset allocation. No investment has been made to meet this new allocation.

Tan has not found any manager capable of generating positive alpha in US mid-cap stocks. She has, however, identified a long-only portfolio manager of Canadian equities whom she believes will produce positive alpha. This manager uses the S&P/TSX (Toronto Stock Exchange) Index as a benchmark. Tan wants to create a portable alpha strategy that will earn the alpha of the Canadian equity portfolio and meet the new benchmark allocation to US mid-cap stocks. She asks Dodson for advice to establish this strategy. Tan provides some information about the security selection

methods used by the Canadian equity portfolio manager. The Canadian manager uses a proprietary discounted cash flow model to analyze all stocks in the S&P/TSX Index and purchases those with market prices that are the most below the intrinsic value estimated by his model, regardless of their price-to-earnings ratios (P/Es).

Dodson's third client meeting is with the chief investment officer (CIO) of Susquehanna Industries' pension fund. The fund needs to establish a \$50 million portfolio that replicates the Russell 2000 Index, an index of small-cap US equities. The CIO's goal is to minimize trading costs. He asks Dodson to suggest an investment approach that will meet this goal. The CIO also outlines his portfolio managers' sell discipline with respect to the pension fund's actively managed value and growth equity portfolios. Currently, the managers monitor the P/E of each stock held. A value stock is sold when its P/E rises to its 10-year historical average. A growth stock is sold when its P/E falls to its 10-year historical average.

- 25 The Magnolia Foundation's approach to portfolio construction is *best* described as:
- A a core–satellite structure.
 - B using a completeness fund.
 - C a portable alpha strategy.

A is correct. A large portion of the portfolio is invested with a manager that is expected to match the portfolio's benchmark (zero alpha, zero tracking error), forming the core of the portfolio.

B is incorrect because it is a method for matching a portfolio to its benchmark.

C is incorrect because it is a method for earning pure alpha in one asset class and adding it to a passive (beta) investment in another asset class.

Equity Portfolio Management
LOS r
Section 7.1

- 26 Do the Magnolia Foundation's current equity investments *most likely* meet its total equity investment return and risk goals?
- A No, the expected tracking error is too high.
 - B Yes.
 - C No, the expected alpha is too low.

B is correct. The expected alpha of the portfolio is

$$\left(\frac{\$140}{\$200} \times 0\%\right) + \left(\frac{\$40}{\$200} \times 1.5\%\right) + \left(\frac{\$20}{\$200} \times 2.0\%\right) = 0.50\%$$

which is greater than 0.40%.

The portfolio's expected tracking error is

$$\left[\left(\frac{\$140}{\$200} \times 0\%\right)^2 + \left(\frac{\$40}{\$200} \times 2.5\%\right)^2 + \left(\frac{\$20}{\$200} \times 4.0\%\right)^2\right]^{1/2} = 0.64\%$$

which is less than 1.00%.

A is incorrect because the tracking error is lower than the maximum.

C is incorrect because the alpha is higher than the minimum.

Equity Portfolio Management
LOS q
Section 7

- 27 Which of the following combinations of futures positions would *most likely* be included in Dodson's advice to Tan regarding her intended portable alpha strategy?
- A Long position in S&P/TSX futures and short position in S&P 400 futures
 - B Long position in S&P/TSX futures and long position in S&P 400 futures
 - C Short position in S&P/TSX futures and long position in S&P 400 futures

C is correct. The portfolio needs to shed exposure to the return of the S&P/TSX and gain exposure to the return of the S&P 400.

A is incorrect because the portfolio needs to gain exposure to the return of the S&P 400 Index, not shed it.

B is incorrect because the portfolio needs to shed exposure to the return of the S&P/TSX Index, not gain it.

Equity Portfolio Management
LOS t
Section 7.3

- 28 The style of the Canadian equities portfolio manager is *most likely*:
- A value.
 - B market oriented.
 - C growth.

B is correct. The portfolio manager is willing to buy both value and growth stocks (regardless of P/E). He focuses solely on whether the stock is trading below its intrinsic value. This approach is also known as a blend or core style with reference to equity investing, which is an intermediate grouping for investment disciplines that cannot be clearly categorized as value or growth.

A is incorrect because the portfolio manager's stock selection method does not favor low P/E stocks.

C is incorrect because the portfolio manager's stock selection method does not favor high P/E stocks.

Equity Portfolio Management
LOS i
Section 5.1

- 29 Given the manager's goal, what approach should Dodson *most likely* recommend for the \$50 million portfolio of the Susquehanna Industries' pension fund?
- A Stratified sampling

- B** Optimization
- C** Full replication

A is correct. The portfolio contains small-cap stocks, which indicates an approach other than full replication, and the desire to minimize transaction costs indicates stratified sampling rather than optimization.

B is incorrect because optimization typically requires rebalancing (leading to transactions costs) even when the index's constituents don't change.

C is incorrect because the portfolio size is moderate.

Equity Portfolio Management
LOS f
Section 4.2

- 30** The Susquehanna Industries' pension fund value and growth portfolio managers follow a sell discipline that is *best* described as:
- A** substitution strategy.
 - B** deteriorating fundamentals.
 - C** rule driven.

C is correct. Valuation-level sell disciplines are rule driven.

A is incorrect because a substitution strategy exists when an investor is always looking for new securities to buy and will replace an existing security with the new opportunity, assuming it is an improvement after taxes and transactions costs are considered.

B is incorrect because a deteriorating fundamentals sell discipline requires a manager to continually examine the business prospects of the portfolio's holdings, reducing or eliminating positions for which fundamentals are deteriorating.

Equity Portfolio Management
LOS o
Section 5.4

Amy Allison Case Scenario

Amy Allison is a fund manager at Downing Securities. The third quarter ends today, and she is preparing for her quarterly review with her five largest US-based clients. To complete her analysis, she has obtained the market data in Exhibit 1.

Exhibit 1 Market Data as of 30 September

Level of NASDAQ 100 Index	1223.14
Level of S&P 500 Index	984.03
Level of S&P/Barra Growth Index	496.24
Level of S&P/Barra Value Index	484.28
Price of December S&P 500 Index futures contract	\$245,750

Exhibit 1 (Continued)

Price of December S&P/Barra Growth futures contract	\$117,475
Price of December S&P/Barra Value futures contract	\$120,875
Beta of S&P/Barra Growth futures contract	1.15
Beta of S&P/Barra Value futures contract	1.03
Price of December U.S. Treasury-bond futures contract	\$106,906
Implied modified duration of U.S. Treasury-bond futures contract	6.87
Macaulay duration of U.S. Treasury-bond futures contract	7.05

Allison's assistant has prepared the following summaries of each client's current situation, including any recent inquiries or requests from the client.

- Client A has a \$20 million technology equity portfolio. At the beginning of the last quarter, Allison forecasted a weak equity market and recommended adjusting the risk of the portfolio by lowering the portfolio's beta from 1.20 to 1.05. To lower the beta, **Allison sold 25 December NASDAQ 100 futures contracts at \$124,450**. During the quarter, the market decreased by 3.5 percent, the value of the equity portfolio decreased by 5.1 percent, and the NASDAQ futures contract price fell from \$124,450 to \$119,347. Client A has questioned the effectiveness of the futures transaction used to adjust the portfolio beta.
- Client B's portfolio holds \$40 million of US large-cap value stocks with a portfolio beta of 1.06. This client wants to shift \$22 million from value to growth stocks with a target beta of 1.21. Allison will implement this shift using S&P/Barra Growth and S&P/Barra Value futures contracts.
- Client C anticipates receiving \$75 million in December. This client is optimistic about the near-term performance of the equity and debt markets and does not want to wait until the money is received to invest it. The client wants Allison to establish a position that allocates 60% of the money to a well-diversified equity portfolio with a target beta of 1.00 and 40% of the money to a long-term debt portfolio with a target modified duration of 5.75. Allison plans to use the December US Treasury-bond futures to establish the debt position.
- Client D's \$100 million portfolio contains \$60 million in US large-cap stocks, \$20 million in US Treasury bills, and \$20 million in US Treasury bonds. The client wants to create a synthetic cash position because he believes that in three months, the level of the S&P 500 Index will be 925.00 and Treasury bond yields will have declined.
- Client E's \$60 million portfolio contains \$40 million in large-cap growth stocks and \$20 million in US Treasury bonds. The beta of the stock portfolio is 1.25, and the duration of the bond portfolio is 5.0. The client believes that

macroeconomic conditions over the next three months are such that the level of the S&P/Barra Growth Index will be 400.00 and the price of the US Treasury bond futures contract will be \$110,400.

- Client F has \$10 million in cash and is optimistic about the near-term performance of US large-cap stocks and US Treasury bonds. The client anticipates positive performance for approximately three months. Client F asks Allison to implement a strategy that will create profit from this view if it proves to be correct.
- 31 With respect to Client A, Allison's *most* appropriate conclusion is the futures transaction used to adjust the beta of the portfolio was:
- A effective.
 - B ineffective because the effective beta on the portfolio was 1.64.
 - C ineffective because the effective beta on the portfolio was 1.27.

C is correct. The effective beta is the (hedged) return on the portfolio divided by the return on the market. The return on the market is -3.5%. The return on the portfolio is -5.1% plus the return on the futures position. The return on the (short) futures position relative to the unhedged portfolio is $-25 \times (119,347 - 124,450)/20,000,000 = +0.0064$. Effective beta = $(-0.051 + 0.0064)/-0.035 = 1.27$.

A is incorrect because the target beta of the hedged portfolio was 1.05.

B is incorrect because the effective beta was 1.27. This answer was incorrectly calculated by treating the futures position as long instead of short.

Risk Management Applications of Forward and Futures Strategies
LOS a
Section 3.2

- 32 When implementing the shift from value to growth stocks for Client B, the number of S&P/Barra Value future contracts Allison shorts will be *closest* to:
- A 187.
 - B 182.
 - C 177.

A is correct. To convert \$22 million of the value-stock portfolio to cash (beta = 0) will require:

$$\begin{aligned}
 N_{Vf} &= \left(\frac{\beta_T - \beta_S}{\beta_f} \right) \left(\frac{S}{f} \right) \\
 &= \frac{(0 - 1.06)}{1.03} \times \frac{22,000,000}{120,875} \\
 &= -187.3 \text{ futures}
 \end{aligned}$$

B is incorrect because the value of the stock position is simply divided by the futures price: $22,000,000/120,875 = 182$.

C is incorrect because it reverses the position of the target beta and the future's beta in the calculation.

Risk Management Applications of Forward and Futures Strategies
LOS e
Section 4.2

- 33** The number of December US Treasury bond futures contracts Allison will buy for Client C is *closest* to:
- A** 335.
 - B** 235.
 - C** 229.

B is correct. The number of bond futures contracts required is:

$$\begin{aligned}
 N_{bf} &= \left(\frac{\text{MDUR}_T - \text{MDUR}_B}{\text{MDUR}_f} \right) \frac{B}{f_b} \\
 &= \frac{(5.75 - 0)}{6.87} \times \frac{30,000,000}{106,906} \\
 &= 234.9
 \end{aligned}$$

A is incorrect because it reverses the position of the target duration and the future's modified duration in the calculation.

C is incorrect because it substitutes Macaulay duration for modified duration.

Risk Management Applications of Forward and Futures Strategies
LOS e
Section 4.2

- 34** With respect to Client D's market view, Allison will *most likely*:
- A** sell S&P 500 Index Futures
 - B** sell US Treasury bond futures
 - C** buy S&P 500 Index Futures and buy US Treasury bond futures

A is correct. Selling the S&P 500 Index futures will be a profitable trade should the index decline to 925, and it effectively converts a long stock position into cash.

B is incorrect. Buying, not selling, the US Treasury bond futures will be a profitable trade should treasury yields decline.

C is incorrect. Selling, not buying, the S&P 500 index future is the appropriate equity index transaction given client D's market view. Buying US Treasury bond futures will be a profitable trade should treasury yields decline.

Risk Management Applications of Forward and Futures Strategies
LOS c
Section 3.4

- 35 For Client E to shift, for three months, the portfolio allocation to 50% large cap growth stocks and 50% US Treasury, and presuming no other changes in the characteristics of the portfolio, Allison will *most likely*:
- A sell 92 stock index contracts and buy 136 Treasury future bond contracts.
 - B sell 370 stock index contracts and buy 68 Treasury future bond contracts.
 - C sell 92 stock index contracts and buy 68 Treasury future bond contracts.

C is correct. Shifting the asset allocation from 66.66% stock/33.33% bonds to 50% stock/50% bonds requires that Allison sell stock index futures and buy bond index futures for a notional amount of \$10,000,000.

$$\begin{aligned}
 -N_{vf} &= \left(\frac{\beta_T - \beta_S}{\beta_f} \right) \left(\frac{S}{f} \right) \\
 &= \frac{(0.00 - 1.25)}{1.15} \times \frac{10,000,000}{117,475} \\
 &= -92.5 \text{ stock futures}
 \end{aligned}$$

That is, sell 92.5 or 92 futures contracts.

$$\begin{aligned}
 N_{bf} &= \left(\frac{\text{MDUR}_T - \text{MDUR}_B}{\text{MDUR}_f} \right) \frac{B}{f_b} \\
 &= \frac{(5.0 - 0.0)}{6.87} \times \frac{\$10,000,000}{\$106,906} \\
 &= 68.08 \text{ bond futures}
 \end{aligned}$$

That is, buy 68.08 or 68 bond futures.

A is incorrect. It incorrectly calculated the bond futures based on \$20,000,000 amount


$$[(5.0 - 0.0)/6.87] \times (\$20,000,000/\$106,906) = 136 \text{ bond futures (+ futures means to buy)}$$

B is incorrect. It incorrectly calculated the stock futures based on \$40,000,000 amount

$$[(0.00 - 1.25)/1.15] \times (40,000,000/117,475) = -370 \text{ stock futures (- futures means to sell)}$$

Risk Management Applications of Forward and Futures Strategies
LOS d
Section 4.1

- 36 To implement Client F's request, Allison's *most* appropriate course of action is to:
- A buy stocks in the S&P 500 Index and sell US Treasury bond futures contracts.
 - B buy US Treasury bond futures contracts and buy S&P 500 Index futures contracts.
 - C sell US Treasury bond futures contracts and buy S&P 500 Index futures contracts.



B is correct. Buying US Treasury bond futures and S&P 500 Index futures creates synthetic bond position and synthetic stock index fund positions, respectively. Client F is long \$10 million in cash, which can be used to fund the purchases.

A is incorrect. Selling US Treasury bond futures is inconsistent with a favorable outlook for US Treasury bonds.

C is incorrect. The correct action is to buy both S&P 500 and bond futures.

Risk Management Applications of Forward and Futures Strategies

LOS b

Section 3.3

Apollo Bank Case Scenario

Apollo Bank and Mercury Bank are commercial banking institutions that are considering a merger. The head of Apollo's risk committee, Alan Armstrong, is meeting with Mercury's CEO, Neil Shephard, to discuss risk management practices for their respective firms and for the prospective merged firm.

Shephard shares Mercury's risk management philosophy:

"We think risk management is an ongoing process. We follow a conservative management style, and in all of our businesses, our risk policy is to adjust risk levels so that risk exposures remain within certain ranges. Our risk governance entails a firmwide enterprise risk management approach in which risk factors are considered both in isolation and in relation to each other."

Shephard continues with a discussion of the portfolio's sources of risk:

"For example, our investment portfolio includes publicly traded large-cap and small-cap domestic stocks and global bonds. Our bonds are denominated in various currencies and have both fixed and floating rates. We use over-the-counter derivatives to hedge risks related to interest rates, foreign currency, adverse security price movements, and payment default."

Shephard asks Armstrong to describe how Apollo manages credit exposure related to its over-the-counter derivatives activity. Armstrong makes the following comments:

- Comment 1 Cross-default provisions are negotiated into all agreements to reduce credit risk.
- Comment 2 Market value updates received from counterparties are used to measure credit risk.
- Comment 3 Swap, option, and forward payments are netted. Each of these derivatives has bilateral credit risk.

Shephard turns his attention to the loan portfolio. He asks Armstrong, "To which industries does Apollo have substantial loan exposure?" Armstrong indicates that Apollo has three industry-specific lending units and shows him the data contained in Exhibit 1.

Exhibit 1 Selected Information for Apollo's Loan Portfolio

	Energy	Technology	Media and Entertainment
Loan balance (millions)	5,000	6,666	4,000
Value at risk (VaR) (millions)	300	200	100
Time period	10 days	5 days	1 day
Probability	5.00%	1.00%	3.00%

Analytical method assumptions

- (1) There are 250 trading days per year.
- (2) There is Statistical independence between days.
- (3) Expected return is 0% and is normally distributed.

Armstrong then states:

“At Apollo, because there are limits to VaR, we use an additional risk measure that is an extension of VaR. This supplemental metric provides a measure of our expected loss in excess of VaR.”

Armstrong concludes the discussion by commenting:

“Ultimately, our success as a merged company will depend, in part, on measuring the total amount of risk we are taking. Within our risk management framework, we can use scenario analysis to estimate total losses under normal market conditions and then stress our models to estimate total losses under extreme market conditions.”

- 37 Is Mercury's risk management philosophy *likely* consistent with the practical application of the process of risk management?
- A No, because of Mercury's risk policy.
 - B Yes.
 - C No, because of Mercury's risk governance.


B is correct. Risk management involves adjusting levels of risk to appropriate levels, not necessarily eliminating risk altogether. Risk governance entails a firmwide approach in which risk factors are considered both in isolation and in relation to each other.

A is incorrect because risk management policy entails adjusting risk levels to appropriate levels

C is incorrect because risk management governance entails considering risk factors both in isolation and in relation to each other.

Risk Management
LOS a, b
Sections 2, 3

- 38 Mercury's investment portfolio *most likely* has the greatest net exposure to which source of risk?
- A Credit risk
 - B Market risk
 - C Liquidity risk




C is correct. Mercury's holdings of small-cap stocks suggest that liquidity risk may be an issue. Liquidity risk reflects an inability to sell (or purchase) a security without a significant price concession because of the market's inability to accommodate a desired trading size. Liquidity risk is among the more complex measures of risk management. Credit risk (payment default) and market risk (interest rate, foreign exchange, adverse price movement) are hedged by Mercury.

A is incorrect because Mercury hedges its market risk (price, interest rate, foreign exchange) by using over-the-counter derivatives.

B is incorrect because Mercury hedges its credit risk by using over-the-counter derivatives.

Risk Management
LOS d
Section 4

- 39 Which of Armstrong's comments regarding Apollo's credit management for its over-the-counter derivatives activity is *least likely* correct?
- A Comment 3
 - B Comment 1
 - C Comment 2



A is correct. Swaps and forwards have bilateral credit risk, but options have unilateral credit risk. The owner of the option does not have any obligation to the counterparty once it pays the upfront option premium.

C is incorrect because market value updates are used to measure credit risk.

B is incorrect because cross default provisions reduce credit risk.

Risk Management
LOS i
Section 5.6.4

- 40 Based on the information in Exhibit 1 and assuming Mercury uses the analytical method for calculating VaR, which of Mercury's industry-specific lending units *most likely* has the lowest annual VaR?
- A Technology
 - B Media and entertainment
 - C Energy

A is correct. Given the assumptions in Exhibit 1 of an expected return of zero, independent daily returns, and a 250-day year, annualized VaR = n -day VaR $\times \sqrt{250/n}$

For energy, annualized VaR = $300 \times \sqrt{250/10} = 1,500.00$.

For technology, annualized VaR = $200 \times \sqrt{250/5} = 1,414.21$.

For media and entertainment, annualized VaR = $100 \times \sqrt{250/1} = 1,581.14$.

Therefore, technology has the lowest annualized VaR.

B is incorrect because media and entertainment's annualized VAR is larger than technology's.

C is incorrect because energy's annualized VAR is larger than technology's.

Risk Management
LOS e, f
Sections 5.2, 5.2.1, 5.2.2

41 Which extension of VaR is *most likely* used by Apollo?

- A Cash flow at risk
- B Incremental value at risk
- C Tail value at risk

C is correct. Apollo would most likely use tail value at risk because it represents an improvement to VaR. Tail value at risk is defined as VaR plus the expected loss in excess of VaR whenever such a loss occurs (i.e., excess loss).

A is incorrect because cash flow at risk is a measure within value at risk

B is incorrect because incremental value at risk is a measure within value at risk.

Risk Management
LOS g
Section 5.4

42 Are Armstrong's concluding comments about measuring total risk *most likely* correct?

- A Yes.
- B No, because he is incorrect about stressing models.
- C No, because he is incorrect about scenario analysis.

C is correct. Both scenario analysis and stress models are used to test for losses under extreme market conditions; therefore, Armstrong is incorrect about the use of scenario analysis for normal market conditions.

A is incorrect because VaR, not scenario analysis, is used to test for losses under normal market conditions.

B is incorrect because stressing models are used to test for losses under extreme market conditions.

Risk Management
LOS h
Section 5.5

Windsong Wealth Management Case Scenario

Eunice Fox is head of Strategic Asset Allocation at Windsong Wealth Management, Inc. (WWM). WWM's clients include pension funds, foundations, sovereign funds, high-net-worth individuals, and family trusts. Fox is in the process of hiring an asset allocation analyst and has just completed interviewing two candidates, Ambrose Kelly and Catherine Trainor, for the position. The interviews were directed around the case study of Jane Lennon, a fictitious client, described in Exhibit 1. Fox reviews her interview notes.

Exhibit 1 Case Study of Jane Lennon

Name	Jane Lennon
Occupation and Family Structure	<ul style="list-style-type: none"> ■ She is the morning news anchor for a national broadcasting company, where she has worked for the past 20 years. ■ She is 56 years of age, divorced, and the sole supporter of her two children, Everett, aged 18, and Marshall, aged 14. ■ Marshall suffers from severe medical and developmental issues.
Current and Expected Future Employment Income	<ul style="list-style-type: none"> ■ She currently earns \$1 million per year as a broadcaster. ■ She plans on retiring in four years. With typical raises in her industry, she estimates that the present value of her pre-retirement income is \$4.5 million.
Financial Assets and Liabilities	<ul style="list-style-type: none"> ■ She has an investment portfolio worth \$8 million, which consists of 30% equities and the remainder in fixed-income securities. She also owns \$1 million in shares of the broadcasting company she works for, but she is restricted from selling them for two more years. ■ Her primary residence carries no mortgage and was recently valued at \$2 million. She also owns a vacation property worth \$3 million, with an outstanding mortgage of \$1 million. ■ Her defined-contribution pension plan has vested and is valued at \$2.5 million.
Aspirational Goals and Extended Liabilities	<ul style="list-style-type: none"> ■ Everett is just beginning university and plans to pursue a medical degree. Lennon plans on paying for his entire education and living expenses as well as providing some assistance in funding his future practice. She believes that these goals will be covered with \$1.5 million in present value terms. ■ She has begun the process of setting up a special needs trust to provide lifetime benefits for Marshall that will not interfere with the government benefits that he is eligible to receive. It will be funded with \$2 million within the year. ■ She recently received an honorary doctorate from her alma mater and has started the process of endowing a chair in its communications department. She anticipates that the funding will be made available to the university in two years; it has a present value of \$1.75 million. ■ The present value of future consumption is estimated to be \$9 million.
Risk Tolerance	<ul style="list-style-type: none"> ■ In the past, she has had a tendency to sell winning investments to avoid the risk of giving back gains. She also has had a tendency to retain losing investments even when there is little chance of them recovering in value.

Fox told the candidates to assume that Lennon would use sub-portfolios to achieve her aspirational goals and asked them to identify which of the sub-portfolios is in the best position to tolerate the greatest risk exposure.

In reviewing Lennon's risk tolerance, Fox pointed out that Lennon's prior investment experience clearly indicates some behavioral biases that would influence her reaction to any asset allocation proposals.

Fox reminded the candidates that in addition to high-net-worth individuals, the firm's client base also includes various institutional investors. The candidates made the following statements:

Trainor: A goals-based approach to asset allocation is appropriate for individual investors, but institutions need to focus either on the asset or liability side of the balance sheet, depending on the nature of their business.

Kelly: A typical objective of some institutions is to maximize their Sharpe ratio for an acceptable level of volatility, and they rely on the law of large numbers to assist them in modeling their liabilities. Other institutions behave much like individuals by segmenting general account assets into sub-portfolios associated with specific lines of business with their individual return objectives.

Fox mentioned to the candidates that when dealing with strategic asset allocation, investors often had difficulty understanding the relevant characteristics of asset classes. They responded:

Kelly: I like to stress to clients that asset classes should have high within-group correlations but low correlations with other classes. In addition, because investors need to rebalance to a strategic asset allocation, asset classes need to have both sufficient liquidity and low transaction costs.

Trainor: It is important that asset classes should be diversifying. I always look for low pairwise correlations with other asset classes.

Other general comments were noted about asset classes, but Fox could not recall their sources:

- Emerging market equities should not be considered a separate asset class from global equities.
- Asset classes differ from strategies in offering a non-skill-based ex ante expected return premium.
- Asset classes should be defined in such a way that there is no overlap in sources of risk.

43 Based on the information in Exhibit 1, Lennon's economic net worth (in \$ millions) is *closest* to:

- A** 4.75.
- B** 5.75.
- C** 1.25.

B is correct. The economic net worth is the difference between the total assets and the total liabilities ($21.00 - 15.25 = 5.75$), as calculated in the following economic balance sheet.

Economic Balance Sheet of Jane Lennon (in \$ millions)

Assets		Liabilities and Net Worth	
<i>Financial Assets</i>		<i>Financial Liabilities</i>	
Investment portfolio	8.00	Mortgage: vacation property	1.00
Restricted shares	1.00		
Real estate: residence	2.00	<i>Extended Liabilities</i>	
Real estate: vacation property	3.00	Everett's education	1.50
Defined contribution pension plan	2.50	Trust for Marshall	2.00
		University endowment	1.75
		PV of future consumption	9.00
<i>Extended Assets</i>		Total Liabilities	15.25
Human capital	4.50	Net Worth	
		Economic net worth	5.75
Total Assets	21.00	Total Liabilities and Net Worth	21.00

A is incorrect. It ignores the restricted shares but keeps everything else: $(21 - 1) - 15.25 = 4.75$

C is incorrect. It ignores earnings until retirement (human capital): $(21 - 4.5) - 15.25 = 1.25$

Introduction to Asset Allocation
LOS b
Sections 4, 6.3

44 Which of the sub-portfolios dedicated to Lennon's aspirational goals is in the *best* position to tolerate the greatest risk exposure? The one dedicated to:

- A Everett's education
- B Marshall's trust
- C University endowment

A is correct. Both of the funds planned for the trust and university endowment represent an imminent need (immediate for the trust and within two years for the endowment). The funding needed for education, however, extends over the longest time horizon, possibly as long as 8 to 10 years. Thus, its sub-portfolio would be in the best position to take on the greatest risk.

B is incorrect. Although the special needs trust for Marshall will provide benefits for his entire life, and therefore has a long-time horizon, from Lennon's perspective it requires immediate funding and should be very liquid and bear little risk.

C is incorrect. Funding of the university endowment involves a short-term time horizon (within two years) so it should bear little risk.

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LOS h
Section 6.3

- 45 The behavioral bias that Lennon's past investment experience illustrates is *best* described as:
- A self-control bias.
 - B mental accounting bias.
 - C loss-aversion bias.

C is correct. The behavioral bias illustrated in Lennon's past investment experience was loss-aversion bias: Losses are perceived as more painful than the satisfaction of equivalent gains, and assets that have incurred losses but have little chance of recovery are retained because the pain of recognizing the loss is too great. Given the risk of having to give back gains already realized, winning investments are often sold early, resulting in self-imposed limited upside potential.

A is incorrect. Self-control bias is a bias in which people fail to act in pursuit of their long-term, overarching goals because of lack of discipline. Lennon does not appear to exhibit this bias because she has taken steps to deal with her specific goals, including saving for her own future and that of her children.

B is incorrect. The mental accounting bias involves setting up separate accounts or buckets for wealth, each with its own risk tolerance and expected return depending on the purpose the investor associates with it. Although one of Fox's comments refers to taking higher risk to achieve one of the goals, this is not being referred to in Exhibit 1, which deals with retaining losers and selling winners.

Asset Allocation with Real-World Constraints
LOS e
Section 6.1
The Behavioral Biases of Individuals
LOS c
Section 4.1

- 46 The *most* appropriate statement in regards to approaches to asset allocation by institutions is made by:
- A Kelly, regarding their goals-based allocations.
 - B Trainor.
 - C Kelly, regarding the Sharpe ratio and modeling of liabilities.

A is correct. Kelly's second comment regarding institutions' goals-based allocations is correct. Some institutions (e.g., insurance companies) segment their general account assets into sub-portfolios associated with specific lines of business or blocks of liabilities, with each sub-portfolio having its own return objective.

B is incorrect. Trainor is incorrect. Some institutions may focus on asset-only allocations, but another approach that can be used is liability-relative, which focuses on the assets in relation to the liabilities.

C is incorrect. Kelly's first comment about the Sharpe ratio and the law of large numbers is incorrect. Institutions that maximize their Sharpe ratio for an acceptable level of volatility would be following an asset-only asset allocation approach, and, as such, they would not be concerned with modeling their liabilities.

Introduction to Asset Allocation
LOS c
Section 5

47 In the candidates' responses to Fox regarding the relevant characteristics of asset classes, the statement that is *least* accurate is:

- A Kelly's regarding correlations.
- B Trainor's.
- C Kelly's regarding rebalancing.

B is correct. Although Trainor is correct that asset classes should be diversifying, low pairwise correlations with other asset classes is not sufficient. An asset class may be highly correlated with some linear combination of the other asset classes even when pairwise correlations are not high. Both of Kelly's comments are correct: Asset classes should have high within-group correlations but low correlations with other classes. If liquidity and transaction costs are unfavorable for an investment of a size meaningful for an investor, an asset class may not be a suitable investment for that investor.

A is incorrect. Kelly's first comment is correct about both the within-group and between class correlations.

C is incorrect. Kelly's second comment is correct. The criteria that he is referring to is that asset classes should have the capacity to absorb a meaningful proportion of an investor's portfolio. He is correct in saying that if liquidity and transaction costs are unfavorable for an investment of a size meaningful for an investor, an asset class may not be a suitable investment for the investor.

Introduction to Asset Allocation
LOS f
Section 5.3

48 In the general comments about asset classes that Fox noted, the *most* accurate comment is the one regarding:

- A the overlap of sources of risk.
- B emerging markets.
- C the return premiums from asset classes.

C is correct. Asset classes should have a return premium based on an underlying market risk factor (e.g., beta) and not any underlying skill of the investor. Strategies, on the other hand, involve combinations of asset classes with the objective of earning a return based on investment skill.

A is incorrect. There will be overlap of sources of risk when asset classes are defined, e.g., US and non-US equities, or even US small and large cap equities will have some risks in common, but there should be as few common risk factors as possible, and they should have only modest correlations.

B is incorrect. Emerging markets equities should be considered a distinct asset class as they differ from other equities in terms of diversification potential, informational efficiency, corporate governance, taxation, and currency convertibility.

Introduction to Asset Allocation
LOS f
Section 5.3

Charles Truck Case Scenario

Asset manager Charles Truck has long-standing clients Sam and Winona Harding. Truck is preparing for their upcoming annual client review. Prior to that meeting, he is meeting with the Hardings' daughter Heidi. Heidi has recently graduated from college and started a new, lucrative career. In addition, Heidi has followed her parents' recommendation and sought out Truck's assistance because a \$1 million inheritance from her grandmother has just passed to her.

Truck constructs an investment policy statement (IPS) for Heidi, which he will review with her at the upcoming meeting. He plans for the portfolio to incur significant initial trading to bring it in line with a more appropriate mix. He notes that her investments are held in a taxable account. In a previous conversation, Heidi stated a preference for a buy-and-hold strategy because she "does not like risky strategies." He makes notes to review with her why a rebalancing strategy may be more consistent with her conservative risk profile, but he decides to recommend a strategy of rebalancing only so far as the portfolio's allowed range.

Truck next pulls together information about the Hardings' circumstances and their portfolio, shown in Exhibit 1.

Exhibit 1 Selected Investment Policy Statement Information on Sam and Winona Harding

Principals	Current Age	Expected Retirement	Life Expectancy	
Sam Harding	50	55	85	
Winona Harding	50	55	85	
Dependent(s)	Relationship	Current Age	Comments	
Heidi Harding	Daughter	22	Heidi is no longer considered a dependent.	
Portfolio Details		Historical Risk/Return Rankings	Portfolio Value (millions)	
			End of Last Year	End of Current Year
Domestic stocks	Higher	40% ± 2%	\$2.0	\$1.5
International stocks	Highest	20% ± 2%	\$1.0	\$0.7
Fixed income	Lower	30% ± 5%	\$1.5	\$1.6
Cash reserves	Lowest	10% ± 2%	\$0.5	\$0.2

Exhibit 1 (Continued)**Current Portfolio Rebalancing Strategy**

Percentage-of-portfolio rebalancing back to the strategic asset allocation with weekly monitoring

Truck carefully reviews equity market conditions, market return expectations, and current holdings in order to consider the implications for both Heidi's and her parents' portfolios. He notes that equity market volatility, both domestic and international, has been lower recently than historical levels. On the basis of recent research, Truck expects this trending low-volatility environment to persist and anticipates strong positive equity performance for the next few years.

Truck will recommend moving the Hardings' international equity holdings to a more cost-effective passive fund. This move can be done without a tax consequence because the bulk of their assets are held in a tax-deferred retirement account. Although the new fund has a similar risk level and country exposure to the old, it offers significantly lower trading costs, especially for holding periods of greater than 90 trading days. Truck makes a note to discuss the option of converting their portfolio to a semiannual rebalancing strategy.

The Hardings have recently paid off their home mortgage in preparation for their early retirement in five years, which reduced their cash reserves by \$300,000. As a result of Heidi's inheritance, however, Truck notes that the Hardings may see less of a need to keep cash on hand to meet unexpected, short-term needs that their daughter might experience while becoming established in her new career. Truck notes that he should plan to discuss the return target in the Hardings' IPS during their annual review.

Truck also reviews the Hardings' strategic asset allocation and the corridors that he uses when rebalancing to their target mix. He lists a number of market and portfolio characteristics that could weigh for and against a recommendation to widen this rebalancing corridor. Truck also considers that the Hardings may have a lower risk tolerance in the future because of a decline in portfolio value caused both by their reduced cash reserves and by losses elsewhere in their portfolio, and he makes a note to discuss this issue in the annual review as well.

49 Which of the following items have characteristics that are *most* in line with Heidi's preferred investment strategy?

- A** The client's unwillingness to accept risk
- B** Rebalancing to the portfolio's allowed range
- C** Truck's market expectations

C is correct. Truck anticipates strongly positive equity performance for the next few years. Perold-Sharpe analysis clearly illustrates that a buy-and-hold strategy can be expected to outperform a rebalancing discipline in an upward trending market.

A is incorrect. Heidi's dislike of risky strategies is not a valid reason for preferring a buy-and-hold approach. A buy-and-hold strategy is inconsistent with a conservative risk profile, as the implication of using this strategy is that the investor's risk tolerance is positively related to wealth and stock market returns. Hence, the risk of the portfolio would increase as the portfolio value grew.

B is incorrect. Heidi's preferred strategy is buy-and-hold, which does not involve rebalancing. In contrast, it is Truck's recommendation to rebalance only so far as the portfolio's allowed range.

Monitoring and Rebalancing
LOS h
Section 3.3

- 50 Truck's suggestion for a different portfolio rebalancing strategy for Heidi than for her parents is *most likely* based on differences in:
- A tax consequences.
 - B wealth levels.
 - C risk preferences.

A is correct. Heidi's investments are held in a taxable account, and tax costs are one of the costs that arise when rebalancing to a strategic asset allocation. Truck recommends rebalancing only to the allowed range for Heidi rather than fully back to target weights as he does for the elder Hardings. Rebalancing to the allowed range typically results in lower after-tax rebalancing costs than rebalancing to target weights.

B is incorrect. The benefits of different rebalancing disciplines do not vary for different wealth levels. Although wealth levels play a role in determining optimal corridors for rebalancing, the benefits of one over the other are unrelated to the level of client wealth.

C is incorrect. Rebalancing to target would align Heidi's portfolio more closely to her strategic asset allocation. If we assume that an investor's strategic asset allocation is optimal, then any divergence in the investor's portfolio from this strategic asset allocation is undesired. Rebalancing to the allowed range is less consistent with her desire to avoid risk than would be a strategy of rebalancing fully to the strategic asset allocation.

Monitoring and Rebalancing
LOS g
Section 3.2

- 51 As a result of the recommendation for the Hardings' international equity holdings, Truck's motivation for a revised rebalancing strategy is *most likely* based on changes in:
- A risk tolerance.
 - B market volatility.
 - C transaction costs.

C is correct. Rebalancing trades can occur on any calendar date for percentage-of-portfolio rebalancing, in contrast to calendar rebalancing. To take advantage of the low transaction costs for longer holding periods in the new international equity fund, semiannual rebalancing may be beneficial.

A is incorrect. Risk tolerance plays a role in setting tolerance bands but has no clear impact on the choice of calendar rebalancing over percentage-of-portfolio rebalancing.

B is incorrect. Market volatility plays a role in setting tolerance bands but has no clear impact on the choice of calendar rebalancing over percentage-of-portfolio rebalancing.

Monitoring and Rebalancing
LOS e
Section 3.2

- 52 The *most* appropriate reason in favor of amending the Hardings' IPS to allow for a higher return objective is their reduced:
- A time horizon.
 - B portfolio value.
 - C liquidity requirements.

C is correct. Because of Heidi's inheritance, the Hardings no longer have to keep as much cash on hand to meet any needs that might arise in establishing her career. Cash is the asset class offering the lowest risk and return (Exhibit 1), which is offset by the benefits of high liquidity. With the need for higher liquidity removed, the IPS can target a higher return that is consistent with reduced cash reserves in the strategic asset allocation.

A is incorrect. The total length of the Hardings' time horizon has changed very little since their last annual review and hence will have minimal effect. In addition, reducing investment risk is generally advisable as an individual moves through the life cycle and his time horizon shortens. The Hardings' time horizon as they approach retirement is most consistent with a reduction in risk and return objectives, all else being equal.

B is incorrect. Utility theory suggests that increases in wealth allow investors to increase their level of risk tolerance, accepting more systematic risk with its attendant expected reward. The Hardings' loss of wealth is not consistent with higher allocations toward high-risk/high-return assets.

Monitoring and Rebalancing
LOS c
Section 2.1

- 53 The expected benefits of immediately rebalancing the Hardings' portfolio are *best* described as being related to the fact that the portfolio currently:
- A is at risk of not meeting their return objectives.
 - B has a low tracking error compared with the strategic asset allocation.
 - C may have a higher volatility than optimal.

A is correct. If we assume that an investor's strategic asset allocation is optimal, then any divergence in the investor's portfolio from this strategic asset allocation is undesirable and represents an expected utility loss to the investor. The Hardings' domestic and international stock holdings are below their strategic asset allocation targets, both in value and on a percentage-of-portfolio basis (Exhibit 1). This decline represents an inadequate allocation toward assets with a higher risk premium and would increase the Hardings' risk of not achieving their return objectives if rebalancing does not occur.


End of Current Year Selected Data	Historical Risk/Return Rankings	Strategic Asset Allocation	Dollar Allocation	Percentage Allocation
Domestic stocks	Higher	40% \pm 2%	\$1.5 million	37.5%
International stocks	Highest	20% \pm 2%	\$0.7 million	17.5%
Fixed income	Lower	30% \pm 5%	\$1.6 million	40%
Cash reserves	Lowest	10% \pm 2%	\$0.2 million	5%

B is incorrect. The fact that the risk profile overall is lower than optimal illustrates that the portfolio has high tracking error versus the strategic allocation. If instead the portfolio were to have a low tracking error, then that would reduce the expected benefit of rebalancing.

C is incorrect. The portfolio has lower expected volatility than the strategic asset allocation due to the lower stock allocation. Since the strategic asset allocation is intended to represent the optimal risk target, then the current mix may have a lower volatility than optimal.

Monitoring and Rebalancing
LOS d
Section 3.1

- 54 Which of the following characteristics is Truck *most likely* to weigh in favor of widening the Hardings' rebalancing corridor?
- A The Hardings' ability to tolerate risk
 - B Costs associated with rebalancing
 - C The expected volatility environment



C is correct. A lower volatility should lead to a wider corridor, all else being equal. When the asset class volatility is lower than the historical average, this segment of the portfolio can drift farther from the optimal mix with less of an impact on overall risk at the portfolio level.

Equity market volatility that has been lower recently than historical levels—and Truck's research supports the idea that it will persist—argues in favor of wider corridors if his expectations are realized. In contrast, the Hardings' decrease in wealth may lead to a decreased risk tolerance, which would suggest a narrower optimal corridor. Similarly, the lower costs associated with their new international stock fund are consistent with a narrower corridor because rebalancing costs are reduced.

A is incorrect. The Hardings' decrease in wealth may lead to a decreased risk tolerance, which would suggest a narrower optimal corridor.

B is incorrect. The lower costs associated with their new international stock fund are consistent with a narrower corridor, as rebalancing costs are reduced.

Monitoring and Rebalancing
LOS f
Section 3.2.2

Carol Lancaster Case Scenario

Carol Lancaster of Trident Funds is discussing the fund's portfolio performance evaluation with a new employee, Mary Clark. Clark asks Lancaster why the firm prefers using a time-weighted rate of return (TWR) instead of a money-weighted rate of return (MWR). Lancaster informs Clark that MWR always has an upward bias relative to TWR whenever the fund receives large contributions during a particular period. Consequently, TWR is the preferred metric.

Clark also asks Lancaster about the strict appraisal criteria used to evaluate the different managers employed by the fund. Lancaster states:

"The fund takes a very strict approach to identifying poor managers and firing them. They understand that this approach increases the chance of firing good managers, a Type II error. But they are willing to do this in order to avoid retaining poor managers, a Type I error. But I would prefer if the fund would relax the appraisal criteria."

Lancaster then introduces Clark to a typical micro attribution model used by the fund to evaluate a manager's ability using the information in Exhibit 1.

Exhibit 1 Micro Attribution Model Data

Economic Sector	Portfolio Weight (%)	Sector Benchmark Weight (%)	Portfolio Return (%)	Sector Benchmark Return (%)
Sector 1	15	10	1.16	0.82
Sector 2	25	25	1.69	2.31
Sector 3	40	30	-0.62	-0.38
Sector 4	14	15	4.98	2.95
Sector 5	5	20	3.10	0.69
Cash	1	0	0.45	—
Buy/hold return			1.21	1.13
Trading/other costs			-0.04	0.00
Total return			1.17	1.13

The value-added return produced by the manager is segmented into a pure sector allocation return, a within-sector allocation return, and an allocation/selection interaction return. Lancaster states that each portion of the value-added return is examined, but particular emphasis is placed on the within-sector allocation return because it strictly measures the manager's ability to select securities.

55 Lancaster's statement about the MWR is *most likely*:

- A** incorrect, because the MWR is equivalent to the TWR.
- B** incorrect, because the MWR can have downward and upward bias relative to the TWR.
- C** correct.

B is correct. Lancaster's statement is incorrect because the MWR can have upward (downward) bias relative to the TWR when large contributions are made just prior to a period of strong (weak) performance.

A is incorrect because there can be upward or downward bias.

C is incorrect because there can be upward or downward bias.

Evaluating Portfolio Performance

LOS c

Section 4.5

56 If the fund adopted Lancaster's preferred appraisal criteria, the *most likely* impact would be an increase in:

A Type II error only.

B both types of errors.

C Type I error only.

C is correct. If the fund relaxes the appraisal criteria, they are more likely to make a Type I error, retaining a poor manager.

A is incorrect because Type II errors would decrease.

B is incorrect because Type II errors would decrease.

Evaluating Portfolio Performance

LOS t

Section 8.3

57 The pure sector allocation return for Sector 1 is *closest* to:

A -0.02%.

B 0.02%.

C -0.05%.

A is correct.

$$\begin{aligned} \text{Pure sector allocation return} &= (\text{Portfolio weight} - \text{Benchmark weight}) \\ &\quad \times (\text{Benchmark return} - \text{Benchmark total return}) \\ &= (15\% - 10\%) \times (0.82\% - 1.13\%) = -0.02\% \end{aligned}$$

B is incorrect because it deducts the portfolio weight from the benchmark weight instead of the other way around: $0.02\% = (10\% - 15\%) \times (0.82\% - 1.13\%)$.

C is incorrect because it fails to deduct the benchmark weight: $-0.05\% = 15\% \times (0.82\% - 1.13\%)$.

Evaluating Portfolio Performance

LOS I

Section 6.6

58 The within-sector allocation return for Sector 3 is *closest* to:

- A -0.07%.
- B -0.10%.
- C -0.02%.

A is correct.

$$\begin{aligned}\text{Within-sector allocation return} &= \text{Benchmark weight} \times (\text{Portfolio return} \\ &\quad - \text{Benchmark return}) \\ &= 30\% \times [-0.62\% - (-0.38\%)] = -0.07\%\end{aligned}$$

B is incorrect because it uses the portfolio weight not the benchmark weight: $-0.10\% = 40\% \times [-0.62\% - (-0.38\%)]$.

C is incorrect because it uses the difference in the weights: $-0.02\% = (40\% - 30\%) \times [-0.62\% - (-0.38\%)]$.

Evaluating Portfolio Performance
LOS I
Section 6.6

59 The allocation/selection interaction return for Sector 5 is *closest* to:

- A 0.48%.
- B -0.30%.
- C -0.36%.

C is correct.

$$\begin{aligned}\text{The allocation/selection interaction return} &= (\text{Portfolio weight} - \\ &\quad \text{Benchmark weight}) \\ &\quad \times (\text{Portfolio return} - \\ &\quad \text{Benchmark return}) \\ &= (5\% - 20\%) \times (3.10\% - 0.69\%) \\ &= -0.36\%\end{aligned}$$

A is incorrect because it uses the benchmark total return: $0.48\% = 20\% \times (3.10\% - 0.69\%)$.

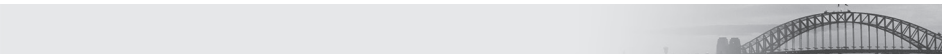
B is incorrect because it is the benchmark total return: $-0.30\% = (5\% - 20\%) \times (3.10\% - 1.13\%)$.

Evaluating Portfolio Performance
LOS I
Section 6.6

60 Lancaster's statement about the within-sector allocation return is *most likely*:

- A incorrect, because the manager's portfolio weighting and security selection within the sector are both considered.

- B** incorrect, because only the manager's portfolio weighting of securities within the sector is considered.
- C** correct.



C is correct. The within-sector allocation return only considers the manager's security selection within a sector.

A is incorrect because portfolio weighting is not considered in the within-sector allocation return.

B is incorrect because portfolio weighting is not considered in the within-sector allocation return.

Evaluating Portfolio Performance
LOS I
Section 6.6