
Part B

END-OF-CHAPTER

SOLUTIONS

***Fundamentals of Investments*, 6th edition**
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Chapter 1
A Brief History of Risk and Return

Concept Questions

1. For both risk and return, increasing order is *b*, *c*, *a*, *d*. On average, the higher the risk of an investment, the higher is its expected return.

2. Since the price didn't change, the capital gains yield was zero. If the total return was four percent, then the dividend yield must be four percent.

3. It is impossible to lose more than –100 percent of your investment. Therefore, return distributions are cut off on the lower tail at –100 percent; if returns were truly normally distributed, you could lose much more.

4. To calculate an arithmetic return, you simply sum the returns and divide by the number of returns. As such, arithmetic returns do not account for the effects of compounding. Geometric returns do account for the effects of compounding. As an investor, the more important return of an asset is the geometric return.

5. Blume's formula uses the arithmetic and geometric returns along with the number of observations to approximate a holding period return. When predicting a holding period return, the arithmetic return will tend to be too high and the geometric return will tend to be too low. Blume's formula adjusts these returns for different holding period expected returns.

6. T-bill rates were highest in the early eighties since inflation at the time was relatively high. As we discuss in our chapter on interest rates, rates on T-bills will almost always be slightly higher than the rate of inflation.

7. Risk premiums are about the same whether or not we account for inflation. The reason is that risk premiums are the difference between two returns, so inflation essentially nets out.

8. Returns, risk premiums, and volatility would all be lower than we estimated because aftertax returns are smaller than pretax returns.

9. We have seen that T-bills barely kept up with inflation before taxes. After taxes, investors in T-bills actually lost ground (assuming anything other than a very low tax rate). Thus, an all T-bill strategy will probably lose money in real dollars for a taxable investor.

10. It is important not to lose sight of the fact that the results we have discussed cover over 80 years, well beyond the investing lifetime for most of us. There have been extended periods during which small stocks have done terribly. Thus, one reason most investors will choose not to pursue a 100 percent stock (particularly small-cap stocks) strategy is that many investors have relatively short horizons, and high volatility investments may be very inappropriate in such cases. There are other reasons, but we will defer discussion of these to later chapters.

Solutions to Questions and Problems

NOTE: All end of chapter problems were solved using a spreadsheet. Many problems require multiple steps. Due to space and readability constraints, when these intermediate steps are included in this solutions manual, rounding may appear to have occurred. However, the final answer for each problem is found without rounding during any step in the problem.

Core Questions

1. Total dollar return = 100($41 – 37 + 0.28) = $428.00
Whether you choose to sell the stock or not does not affect the gain or loss for the year, your stock is worth what it would bring if you sold it. Whether you choose to do so or not is irrelevant (ignoring commissions and taxes).

2. Capital gains yield = ($41 – 37)/$37 = 10.81%
Dividend yield = $0.28/$37 = 0.76%
Total rate of return = 10.81% + 0.76% = 11.57%

3. Dollar return = 750($32 – 37 + 0.28) = –$3,540
Capital gains yield = ($32 – 37)/$37 = –13.51%
Dividend yield = $0.28/$37 = 0.76%
Total rate of return = –13.51% + 0.76% = –12.76%

4. *a.* average return = 5.9%, average risk premium = 2.1%
b. average return = 3.8%, average risk premium = 0%
c. average return = 11.7%, average risk premium = 7.9%
d. average return = 17.7%, average risk premium = 13.9%

5. Cherry average return = (17% + 11% – 2% + 3% + 14%) / 5 = 8.60%
Straw average return = (16% + 18% – 6% + 1% + 22%) / 5 = 10.20%

6. Cherry: $R_A = 8.60\%$
Var = $1/4[(.17 – .086)^2 + (.11 – .086)^2 + (–.02 – .086)^2 + (.03 – .086)^2 + (.14 – .086)^2] = 0.00623$
Standard deviation = $(0.00623)^{1/2} = 0.0789$ or 7.89%

Straw: $R_B = 10.20\%$
Var = $1/4[(.16 – .102)^2 + (.18 – .102)^2 + (–.06 – .102)^2 + (.01 – .102)^2 + (.22 – .102)^2] = 0.01452$
Standard deviation = $(0.01452)^{1/2} = 0.1205$ or 12.05%

7. The capital gains yield is ($49 – 56)/$56 = –.1250 or –12.5% (notice the negative sign). With a dividend yield of 1.3 percent, the total return is –11.20%.

8. Geometric return = $[(1 + .17)(1 + .11)(1 - .02)(1 + .03)(1 + .14)]^{(1/5)} – 1 = .0837$ or 8.37%

9. Arithmetic return = (.21 + .12 + .07 –.13 – .04 + .26) / 6 = .0817 or 8.17%
Geometric return = $[(1 + .21)(1 + .12)(1 + .07)(1 – .13)(1 – .04)(1 + .26)]^{(1/6)} – 1 = .0730$ or 7.30%

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Intermediate Questions

10. That's plus or minus one standard deviation, so about two-thirds of the time, or two years out of three. In one year out of three, you will be outside this range, implying that you will be below it one year out of six and above it one year out of six.

11. You lose money if you have a negative return. With an 8 percent expected return and a 4 percent standard deviation, a zero return is two standard deviations below the average. The odds of being outside (above or below) two standard deviations are 5 percent; the odds of being below are half that, or 2.5 percent. (It's actually 2.28 percent.) You should expect to lose money only 2.5 years out of every 100. It's a pretty safe investment.

12. The average return is 5.9 percent, with a standard deviation of 11.9 percent, so Prob(Return < –6.0 or Return > 17.8) ≈ 1/3, but we are only interested in one tail; Prob(Return < –6.0) ≈ 1/6, which is half of 1/3 .
95%: $5.9 \pm 2\sigma = 5.9 \pm 2(11.9) = -17.9\%$ to 29.7%
99%: $5.9 \pm 3\sigma = 5.9 \pm 3(11.9) = -29.8\%$ to 41.6%

13. Expected return = 17.7% ; σ = 37.1%. Doubling your money is a 100% return, so if the return distribution is normal, $Z = (100 - 17.7)/37.1 = 2.22$ standard deviations; this is in-between two and three standard deviations, so the probability is small, somewhere between .5% and 2.5% (why?). Referring to the nearest *Z* table, the actual probability is = 1.327%, or about once every 100 years. Tripling your money would be $Z = (200 - 17.4)/ 37.1 = 4.92$ standard deviations; this corresponds to a probability of (much) less than 0.5%, or once every 200 years. (The actual answer is less than once every 1 million years, so don't hold your breath.)

14.

Year	Common stocks	T-bill return	Risk premium
1973	–14.69%	7.29%	–21.98%
1974	–26.47%	7.99%	–34.46%
1975	37.23%	5.87%	31.36%
1796	23.93%	5.07%	18.86%
1977	–7.16%	5.45%	–12.61%
sum	12.84%	31.67%	–18.83%

a. Annual risk premium = Common stock return – T-bill return (see table above).
b. Average returns: Common stocks = 12.84 / 5 = 2.57% ; T-bills = 31.67 / 5 = 6.33%;
Risk premium = –18.83 / 5 = –3.77%
c. Common stocks: $\text{Var} = 1/4[(-.1469 - .0257)^2 + (-.2647 - .0257)^2 + (.3723 - .0257)^2 + (.2393 - .0257)^2 + (-.0716 - .0257)^2] = 0.072337$
Standard deviation = $(0.072337)^{1/2} = 0.2690 = 26.90\%$
T-bills: $\text{Var} = 1/4[(.0729 - .0633)^2 + (.0799 - .0633)^2 + (.0587 - .0633)^2 + (.0507 - .0633)^2 + (.0545 - .0633)^2] = 0.0001565$
Standard deviation = $(0.000156)^{1/2} = 0.0125 = 1.25\%$
Risk premium: $\text{Var} = 1/4[(-.2198 - (-.0377))^2 + (-.3446 - (-.0377))^2 + (.3136 - (-.0377))^2 + (.1886 - (-.0377))^2 + (-.1261 - (-.0377))^2] = 0.077446$
Standard deviation = $(0.077446)^{1/2} = 0.2783 = 27.83\%$

d. Before the fact, the risk premium will be positive; investors demand compensation over and above the risk-free return to invest their money in the risky asset. After the fact, the observed risk premium can be negative if the asset's nominal return is unexpectedly low, the risk-free return is unexpectedly high, or any combination of these two events.

15. ($231,000 / $1,000)$^{1/46}$ – 1 = .1256 or 12.56%

16. 5 year estimate = [(5 – 1)/(40 – 1)] × 9.46% + [(40 – 5)/(40 – 1)] × 11.40% = 11.20%
10 year estimate = [(10 – 1)/(40 – 1)] × 9.46% + [(40 – 10)/(40 – 1)] × 11.40% = 10.95%
20 year estimate = [(20 – 1)/(40 – 1)] × 9.46% + [(40 – 20)/(40 – 1)] × 11.40% = 10.45%

17. Small company stocks = ($12,971.38 / $1)$^{1/84}$ – 1 = .1193 or 11.93%
Large company stocks = ($2,382.68 / $1)$^{1/84}$ – 1 = .0970or 9.70%
Long-term government bonds = ($75.33 / $1)$^{1/84}$ – 1 = .0528 or 5.28%
Treasury bills = ($22.33 $1)$^{1/84}$ – 1 = .0377 or 3.77%
Inflation = ($12.06 / $1)$^{1/84}$ – 1 = .0301 or 3.01%

18. R_A = (–0.12 + 0.15 + 0.11 + 0.19 - 0.02)/5 = .0620 or 6.20%
R_G = [(1 – .12)(1 + .15)(1 + .11)(1 + .19)(1 - .02)]$^{1/5}$ – 1 = .0555 or 5.55%

19. R_1 = ($25.61 – 23.25 + 0.15) / $23.25 = 10.80%
R_2 = ($26.72 – 25.61 + 0.18) / $25.61 = 5.04%
R_3 = ($25.18 – 26.72 + 0.20) / $26.72 = –5.01%
R_4 = ($27.12 – 25.18 + 0.24) / $25.18 = 8.66%
R_5 = ($30.43 – 27.12 + 0.28) / $27.12 = 13.24%
R_A = (0.1080 + .0504 – .0501 + 0.0866 + 0.1324)/5 = .0654 or 6.54%
R_G = [(1 + .1080)(1 + .0504)(1 – .0501)(1 + .0866)(1 + .1324)]$^{1/5}$ – 1 = .0634 or 6.34%

20. Stock A: R_A = (0.08 + 0.08 + 0.08 + 0.08 + 0.08)/5 = .0800 or 8.00%
Var = 1/4[(.08 – .08)^2 + (.08 – .08)^2 + (.08 – .08)^2 + (.08 – .08)^2 + (.08 – .08)^2] = 0.000000
Standard deviation = (0.000)$^{1/2}$ = 0.000 or 0.00%
R_G = [(1 + .08)(1 + .08)(1 + .08)(1 +.08)(1 + .08)]$^{1/5}$ – 1 = .0800 or 8.00%

Stock B: R_A = (0.03 + 0.13 + 0.07 + 0.05 + 0.12)/5 = .0800 or 8.00%
Var = 1/4[(.03 – .08)^2 + (.13 – .08)^2 + (.07 – .08)^2 + (.05 – .08)^2 + (.12 – .08)^2] = 0.001900
Standard deviation = (0.001900)$^{1/2}$ = 0.0436 or 4.36%
R_G = [(1 + .03)(1 + .13)(1 + .07)(1 + .05)(1 + .12)]$^{1/5}$ – 1 = .0793 or 7.93%

Stock C: R_A = (–0.24 + 0.37 + 0.14 + 0.09 + 0.04)/5 = .0800 or 8.00%
Var = 1/4[(–.24 – .08)^2 + (.37 – .08)^2 + (.14 – .08)^2 + (.09 – .08)^2 + (.04 – .08)^2] = 0.047950
Standard deviation = (0.047950)$^{1/2}$ = 0.2190 or 21.90%
R_G = [(1 – .24)(1 + .37)(1 + .14)(1 + .09)(1 + .04)]$^{1/5}$ – 1 = .0612 or 6.12%

The larger the standard deviation, the greater will be the difference between the arithmetic return and geometric return. In fact, for lognormally distributed returns, another formula to find the geometric return is arithmetic return – ½ variance. Therefore, for Stock C, we get .0800 – ½(.047950) = .0560. The difference in this case is because the return sample is not a true lognormal distribution.

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Spreadsheet Problems

	A	B	C	D	E	F	G	H
1			**Chapter 1**					
2			Question 21					
3								
4			*Input area:*					
5								
6								
7				Year	Return	Year	Return	
8				1980	32.50%	1985	31.73%	
9				1981	-4.92%	1986	18.67%	
10				1982	21.55%	1987	5.25%	
11				1983	22.56%	1988	16.61%	
12				1984	6.27%	1989	31.69%	
13								
14								
15								
16			Average return	18.19%	=AVERAGE(D8:D12,F8:F12)			
17								
18			Variance	0.01608	=VAR(D8:D12,F8:F12)			
19								
20			Standard Deviation	12.68%	=STDEV(D8:D12,F8:F12)			
21								
22								

	A	B	C	D	E	F	G	H
1			**Chapter 1**					
2			Question 22					
3								
4			*Input area:*					
5								
6								
7			Time	Deposit	Return			
8			0	$ 1,000				
9			1	$ 1,000	12%			
10			2	$ 1,000	5%			
11			3	$ 1,000	8%			
12			4	$ 1,000	-7%			
13			5		-14%			
14								
15								
16			Arithmetic Average	0.80%	=AVERAGE(E9:E13)			
17								
18			Geometric Average	0.31%	=((1+E9)*(1+E10)*(1+E11)*(1+E12)*(1+E13))^(1/5)-1			
19								
20			Ending Portfolio Value					
21			Year 1	$ 1,120.00	=D8*(1+E9)			
22			Year 2	$ 2,226.00	=(D21+D9)*(1+E10)			
23			Year 3	$ 3,484.08	=(D22+D10)*(1+E11)			
24			Year 4	$ 4,170.19	=(D23+D11)*(1+E12)			
25			Year 5	$ 4,446.37	=(D24+D12)*(1+E13)			
26								
27			Dollar Weighted Average					
28			CF0	$ (1,000)	=-D8			
29			CF1	$ (1,000)	=-D9			
30			CF2	$ (1,000)	=-D10			
31			CF3	$ (1,000)	=-D11			
32			CF4	$ (1,000)	=-D12			
33			CF5	$ 4,446.37	=D25			
34			IRR	-3.89%	=IRR(D28:D33)			
35								
36			Because the investor deposited more money (i.e., had the most invested) prior/during					
37			the worst return years, the dollar weighted return is lower.					

CFA Exam Review by Schweser

1. a

   Geometric average return = $[(0.9)(1.25)(0.95)(1.30)(1.05)]^{1/5}-1 = 7.85\%$

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2. b

	Scenario 2	Scenario 3
CF_0	-100	-100
CF_1	0	0
CF_2	-20	+10
CF_3	0	0
CF_4	0	0
CF_5	171.82	132.92
IRR	7.96%	7.78%

Scenario 2 Ending MV

End of Year 2 = 100(0.9)(1.25) + 20 = 132.5

End of Year 5 = 132.5(0.95)(1.30)(1.05) = 171.8194

Scenario 3 Ending MV

End of Year 2 = 100(0.9)(1.25) - 10 = 102.5

End of Year 5 = 102.5(0.95)(1.30)(1.05) = 132.9169

3. c

Annualized return = $(1.0163)^{12} - 1 = 21.412\%$

4. b

Geometric returns provide the best estimate of a portfolio manager's return because it neutralizes the impact of the client's cash flow decisions. For the clients themselves, the dollar weighted return would be appropriate.

Chapter 2
The Investment Process

Concept Questions

1. Purchasing on margin means borrowing some of the money used to buy securities. You do it because you desire a larger position than you can afford to pay for, recognizing that using margin is a form of financial leverage. As such, your gains and losses will be magnified. Of course, you hope you only experience the gains.

2. Shorting a security means borrowing it and selling it, with the understanding that at some future date you will buy the security and return it, thereby "covering" the short. You do it because you believe the security's value will decline, so you hope to sell high now, then buy low later.

3. Margin requirements amount to security deposits. They exist to protect your broker against losses.

4. Asset allocation means choosing among broad categories such as stocks and bonds. Security selection means picking individual assets within a particular category, such as shares of stock in particular companies.

5. Tactical asset allocation is making small, short-term adjustments to your longer-term strategic allocation. The idea is to overweight sectors with the greatest potential for gains. Since you are effectively trying to determine which sectors will perform the best, tactical asset allocation can be considered a form of market timing.

6. A broker simply conducts trades on your behalf, and in return he receives a commission. An advisor is typically a fee-based relationship, where you pay an annual percentage of assets, which covers the cost of all advice and trades. With an advisory relationship, the interests of the advisor and investor may be better aligned, as the incentive to "churn" is eliminated.

7. Probably none. The advice you receive is unconditionally *not* guaranteed. If the recommendation was grossly unsuitable or improper, then arbitration is probably your only possible means of recovery. Of course, you can close your account, or at least what's left of it.

8. If you buy (go long) 500 shares at $18, you have a total of $9,000 invested. This is the most you can lose because the worst that could happen is that the company could go bankrupt, leaving you with worthless shares. There is no limit to what you can make because there is no maximum value for your shares – they can increase in value without limit.

9. If the asset is illiquid, it may be difficult to quickly sell it during market declines, or to purchase it during market rallies. Hence, special care should always be given to investment positions in illiquid assets, especially in times of market turmoil

10. Traditional IRAs are tax-deferred, with withdrawals being taxed. Contributions to Roth IRAs are taxed up-front, but all deposits grow tax free. Thus, an investor who is currently in a low tax bracket (such as a college student) may prefer a Roth as the benefit of the tax-free growth outweighs the tax benefit of the traditional tax-deferred IRA.

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Solutions to Questions and Problems

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Core questions

1. Maximum investment = $31,000 / .60 = $51,667
Number of shares = $51,667 / $17 per share = 3,039.22 (or 3,039) shares

2. Margin loan = ($35 × 750) – $14,000 = $12,250
Margin requirement = $14,000 / ($35 × 750) = 0.5333 or 53.33%

3. Terminal price = $42
Without margin = ($42 – 35) / $35 = 20%
With margin = {($42 × 750) – ($35 × 750) } / $14,000 = 37.50%

Terminal price = $34
Without margin = ($34 – 35) / $35 = –2.86%
With margin = {($34 × 750) – ($35 × 750)} / $14,000 = –5.36%

4. Initial deposit = 0.30 × ($35 × 750) = $7,875

Terminal price = $42
Without margin = ($42 – 35) / $35 = 20%
With margin = {($42 × 750) – ($35 × 750)} / $7,875 = 66.67%

Terminal price = $34
Without margin = ($34 – 35) / $35 = –2.86%
With margin = {($34 × 750) – ($35 × 750)} / $7,875 = –9.52%

A lower initial margin requirement will make the returns more volatile. In other words, a stock price increase will increase the return, and a stock price decrease will cause a greater loss.

5. Maximum purchase = $22,000 / .55 = $40,000

6. Amount borrowed = (400 × $55) - (400 × $55)(.60) = $8,800
Margin call price = ($8,800/400) / (1-.3) = $31.43

7. Amount borrowed = (1,200 × $34)(1 – .55) = $18,360
Margin call price = ($18,360/1,200) / (1-.35) = $23.54
Stock price decline = ($23.54 - $34) / $34 = –30.77%

8. Proceeds from short sale = 900 × $17 = $15,300
Initial deposit = $15,300 (.60) = $9,180
Account value = $15,300 + $9,180 = $24,480
Margin call price = $24,480 / [900 + (.30 × 900)] = $20.92

9. Proceeds from short sale = 1,000($36) = $36,000
Initial deposit = $36,000(.55) = $19,800
Account value = $36,000 + 19,800 = $55,800
Margin call price = $55,800 / [1,000 + (.35 × 1,000)] = $41.33
Account equity = $55,800 – (1,000 × $41.33) = $14,470

10. Pretax return = ($97 – 81 + 1.80) / $81 = 21.98%
Aftertax capital gains = ($97 – 81)(1 – .30) = $11.20
Aftertax dividend = $1.80(1 – .15) = $1.53
Aftertax return = ($11.20 + 1.53) / $81 = 15.72%

Intermediate questions

11.

Assets		Liabilities and account equity	
3039 shares	$51,663.00	Margin loan	$20,665.20
		Account equity	30,997.80
Total	$51,663.00	Total	$51,663.00

Stock price = $24

Assets		Liabilities and account equity	
3039 shares	$72,936.00	Margin loan	$20,665.20
		Account equity	52,270.80
Total	$72,936.00	Total	$72,936

Margin = $52,270.80/$72,936 = 71.67%

Stock price = $14

Assets		Liabilities and account equity	
3039 shares	$42,546.00	Margin loan	$20,665.20
		Account equity	21,880.80
Total	$42,546.00	Total	$42,546.00

Margin = $21,880.80/$42,546 = 51.43%

12. 600 shares × $46 per share = $27,600
Initial margin = $11,000/$27,600 = 39.86%

Assets		Liabilities and account equity	
600 shares	$27,600	Margin loan	$16,600
		Account equity	11,000
Total	$27,600	Total	$27,600

13. Total purchase = 500 shares × $48 = $24,000
Margin loan = $24,000 – 8,000 = $16,000
Margin call price = $16,000 / [500 – (.30 × 500)] = $45.71

To meet a margin call, you can deposit additional cash into your trading account, liquidate shares until your margin requirement is met, or deposit additional marketable securities against your account as collateral.

14. Interest on loan = $16,000(1.065) – 16,000 = $1,040

a. Proceeds from sale = 500($56) = $28,000
Dollar return = $28,000 – 8,000 – 16,000 – 1,040 = $2,960
Rate of return = $2,960/ $8,000 = 37.00%
Without margin, rate of return = ($56 – 48)/$48 = 16.67%

b. Proceeds from sale = 500($48) = $24,000
Dollar return = $24,000 – 8,000 – 16,000 – 1,040 = –$1,040
Rate of return = –$1,040 / $8,000 = –13.00%
Without margin, rate of return = $0%

c. Proceeds from sale = 500($32) = $16,000
Dollar return = $16,000 – 8,000 – 16,000 – 1,040 = –$9,040
Rate of return = –$9,040 / $8,000 = –113.00%
Without margin, rate of return = ($32 – 48) / $48 = –33.33%

15. Initial equity = (1,000 × $51)(.40) = $20,400
Amount borrowed = (1,000 × $51)(1 – .40) = $30,600
Interest = $30,600 × .0870 = $2,662
Proceeds from sale = 1,000 × $57 = $57,000
Dollar return = $57,000 – 20,400 – 30,600 – 2,662 = $3,338
Rate of return = $3,338 / $20,400 = 16.36%

16. Total purchase = 800 × $34 = $27,200
Loan = $27,200 – 15,000 = $12,200
Interest = $12,200 × .07 = $854
Proceeds from sale = 800 × $48 = $38,400
Dividends = 800 × $.64 = $512
Dollar return = $38,400 + 512 – 15,000 – 12,200 – 854= $10,858
Return = $10,858 / $15,000 = 72.39%

17. $50,000 × $(1.084)^{6/12}$ – 50,000 = $2,057.66

18. $39,000 × $(1.058)^{2/12}$ – 39,000 = $368.20

19. $(1 + .06)^{12/7} – 1 = 10.50\%$

20. $(1 + .06)^{12/5} – 1 = 15.01\%$
All else the same, the shorter the holding period, the larger the EAR.

21. Holding period return = ($61 – 57 + .60) / $57 = 8.07%
EAR = $(1 + .0807)^{12/5} – 1 = 20.47\%$

22. Initial purchase = 600 × $46 = $27,600
Amount borrowed = $27,600 – 11,000 = $16,600
Interest on loan = $16,600(1 + .0725)$^{1/2}$ – 16,600 = $591.22
Dividends received = 600($.25) = $150.00
Proceeds from stock sale = 600($53) = $31,800
Dollar return = $31,800 + 150 – 11,000 – 16,600 – 591.22 = $3,758.78
Rate of return = $3,758.78 / $11,000 = 34.17% per six months
Effective annual return = (1 + .3417)$^{12/6}$ – 1 = 80.02%

23. Proceeds from sale = 800 × $47 = $37.600
Initial margin = $37,600 × 1.00 = $37,600

Assets		Liabilities and account equity	
Proceeds from sale	$37,600	Short position	$37,600
Initial margin deposit	37,600	Account equity	37,600
Total	$75,200	Total	$75,200

24. Proceeds from sale = 800 × $47 = $37.600
Initial margin = $37,600 × .75 = $28,200

Assets		Liabilities and account equity	
Proceeds from sale	$37,600	Short position	$37,600
Initial margin deposit	28,200	Account equity	28,200
Total	$65,800	Total	$65,800

25. Proceeds from short sale = 750($96) = $72,000
Initial margin deposit = $72,000(.60) = $43,200
Total assets = Total liabilities and equity = $72,000 + 43,200 = $115,200
Cost of covering short = 750($86.50) = $64,875
Account equity = $115,200 – 64,875 = $50,325
Cost of covering dividends = 750($0.75) = $563
Dollar profit = $50,325 – 43,200 – 563 = $6,563
Rate of return = $6,563 / $43,200 = 15.19%

26. Proceeds from sale = 600 × $72 = $43,200
Initial margin = $43,200 × .50 = $21,600

Initial Balance Sheet

Assets		Liabilities and account equity	
Proceeds from sale	$ 43,200	Short position	$ 43,200
Initial margin deposit	21,600	Account equity	21,600
Total	$ 64,800	Total	$ 64,800

Stock price = $63

Assets		Liabilities and account equity	
Proceeds from sale	$ 43,200	Short position	$ 37,800
Initial margin deposit	21,600	Account equity	27,000
Total	$ 64,800	Total	$ 64,800

Margin = $27,000 / $37,800 = 71.43%
Five-month return = ($27,000 – 21,600) / $21,600 = 25%
Effective annual return = $(1 + .25)^{12/5} – 1 = 70.84\%$

Stock price = $77

Assets		Liabilities and account equity	
Proceeds from sale	$ 43,200	Short position	$ 46,200
Initial margin deposit	21,600	Account equity	18,600
Total	$ 64,800	Total	$ 64,800

Margin = $18,600 / $46,200 = 40.26%
Five-month return = ($18,600 – 21,600) / $21,600 = –13.89%
Effective annual return = $(1 – .1389)^{12/5} – 1 = –30.15\%$

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5. a
The Analee's pre-tax return objective is computed as follows:

Living expenses	$75,000
Travel expenses	15,000
College fund	20,000
Total	$110,000

Portfolio Value = $3,000,000

Income objective = $110,000 / 3,000,000 =	3.67%
Plus inflation	3.00%
Gross Return Objective	6.67%

6. a

Their risk tolerance is average. Their liquidity needs are high due to their living expenses, yet their portfolio is large enough. Since they are in their retirement years, they will be living off their portfolio and not adding to it other than the growth in the portfolio to stay even with inflation.

7. a

   Although Barbara's willingness to assume risk may be high (above average) given her past entrepreneurial pursuits and the Analee's time horizon is quite long, her ability to assume risk is average given her current income needs.

8. a

   The most appropriate portfolio is A, as it provides a good balance in terms of return objectives, risk tolerance, and constraints. The portfolio provides an adequate return (8.8%) versus their requirement (6.8%), and it provides sufficient income while minimizing the impact of inflation.

   Portfolio B is inappropriate because it concentrates a higher proportion of assets into VC and REITs, which are lower liquidity and higher volatility assets. Portfolio C is inappropriate because it does not meet the return objective.