Fundamentals of Investments 6th Edition Jordan Solutions Manual

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Part B

END-OF-CHAPTER

SOLUTIONS

Fundamentals of Investments, 6th edition Jordan, Miller, Dolvin

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) = \$428.00Whether 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) = -\$3,540Capital 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%

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

- 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) \approx 1/3, but we are only interested in one tail; Prob(Return < -6.0) \approx 1/6, which is half of 1/3. 95%: 5.9 ± 2 σ = 5.9 ± 2(11.9) = -17.9% to 29.7% 99%: 5.9 ± 3 σ = 5.9 ± 3(11.9) = -29.8% to 41.6%
- **13.** Expected return = 17.7%; $\sigma = 37.1\%$. 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	<u>T-bill return</u>	<u>Risk premium</u>
	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	<u> </u>	<u>5.45%</u>	-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: 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: 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: 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.** $(\$231,000 / \$1,000)^{1/46} 1 = .1256 \text{ or } 12.56\%$
- **16.** 5 year estimate = $[(5-1)/(40-1)] \times 9.46\% + [(40-5)/(40-1)] \times 11.40\% = 11.20\%$ 10 year estimate = $[(10-1)/(40-1)] \times 9.46\% + [(40-10)/(40-1)] \times 11.40\% = 10.95\%$ 20 year estimate = $[(20-1)/(40-1)] \times 9.46\% + [(40-20)/(40-1)] \times 11.40\% = 10.45\%$
- **17.** Small company stocks = $(\$12,971.38 / \$1)^{1/84} 1 = .1193$ or 11.93% Large company stocks = $(\$2,382.68 / \$1)^{1/84} - 1 = .0970$ or 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.** $R_A = (-0.12 + 0.15 + 0.11 + 0.19 0.02)/5 = .0620 \text{ or } 6.20\%$ $R_G = [(1 - .12)(1 + .15)(1 + .11)(1 + .19)(1 - .02)]^{1/5} - 1 = .0555 \text{ or } 5.55\%$
- $\begin{array}{ll} \textbf{19.} & R_1 = (\$25.61 23.25 + 0.15) \ / \ \$23.25 = 10.80\% \\ & R_2 = (\$26.72 25.61 + 0.18) \ / \ \$25.61 = 5.04\% \\ & R_3 = (\$25.18 26.72 + 0.20) \ / \ \$26.72 = -5.01\% \\ & R_4 = (\$27.12 25.18 + 0.24) \ / \ \$25.18 = 8.66\% \\ & R_5 = (\$30.43 27.12 + 0.28) \ / \ \$27.12 = 13.24\% \\ & R_A = (0.1080 + .0504 .0501 + 0.0866 + 0.1324) \ / \ 5 = .0654 \ \text{or} \ 6.54\% \\ & R_G = [(1 + .1080)(1 + .0504)(1 .0501)(1 + .0866)(1 + .1324)]^{1/5} 1 = .0634 \ \text{or} \ 6.34\% \\ \end{array}$
- **20.** Stock A: $R_A = (0.08 + 0.08 + 0.08 + 0.08 + 0.08)/5 = .0800 \text{ or } 8.00\%$ $Var = 1/4[(.08 - .08)^2 + (.08 - .08)^2 + (.08 - .08)^2 + (.08 - .08)^2 + (.08 - .08)^2] = 0.000000$ Standard deviation = $(0.000)^{1/2} = 0.000 \text{ or } 0.00\%$ $R_G = [(1 + .08)(1 + .08)(1 + .08)(1 + .08)]^{1/5} - 1 = .0800 \text{ or } 8.00\%$

 $\begin{array}{l} \mbox{Stock B: } R_A = (0.03 + 0.13 + 0.07 + 0.05 + 0.12)/5 = .0800 \mbox{ or } 8.00\% \\ \mbox{Var} = 1/4[(.03 - .08)^2 + (.13 - .08)^2 + (.07 - .08)^2 + (.05 - .08)^2 + (.12 - .08)^2] = 0.001900 \\ \mbox{Standard deviation} = (0.001900)^{1/2} = 0.0436 \mbox{ or } 4.36\% \\ \mbox{R}_G = [(1 + .03)(1 + .13)(1 + .07)(1 + .05)(1 + .12)]^{1/5} - 1 = .0793 \mbox{ or } 7.93\% \end{array}$

 $\begin{array}{l} \mbox{Stock C: } R_A = (-0.24 + 0.37 + 0.14 + 0.09 + 0.04)/5 = .0800 \mbox{ or } 8.00\% \\ \mbox{Var} = 1/4[(-.24 - .08)^2 + (.37 - .08)^2 + (.14 - .08)^2 + (.09 - .08)^2 + (.04 - .08)^2] = 0.047950 \\ \mbox{Standard deviation} = (0.047950)^{1/2} = 0.2190 \mbox{ or } 21.90\% \\ \mbox{R}_G = [(1 - .24)(1 + .37)(1 + .14)(1 + .09)(1 + .04)]^{1/5} - 1 = .0612 \mbox{ or } 6.12\% \\ \end{array}$

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 $-\frac{1}{2}$ variance. Therefore, for Stock C, we get $.0800 - \frac{1}{2}(.047950) = .0560$. The difference in this case is because the return sample is not a true lognormal distribution.

B-6 SOLUTIONS

Spreadsheet Problems

	A	В	С	D	E	F	G	Н
1			Chapter 1					
2			Question 21					
3								
4			Input area:					
5								
6								
7			<u>Year</u>	<u>Return</u>	<u>Year</u>	<u>Return</u>		
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:D	012,F8:F12)		
17			-					
18			Variance	0.01608	=VAR(D8:D12,F8	3:F12)		
19								
20			Standard Deviation	12.68%	=STDEV(D8:D1)	2,F8:F12)		
21						. ,		
22								

A	BC	D	E	F	G	Н
1	Chapter 1					
2	Question 22					
3						
4	Input area:					
5						
6						
7	Time	<u>Deposit</u>	<u>Return</u>			
8	0	\$ 1,000				
9	1	\$ 1,000	12%			
10	2	\$ 1,000	5%			
11	3	\$ 1,000	8%			
12	4	\$ 1,000	-1%			
13	C		-14%			
14						
15	Arithmotic Avora	0.90%		=13)		
10	Anninenc Avera			_13)		
18	Geometric Avera	de 0.31%]=((1+E9)*(1+E10)*(1+E11)*(1+E12)*(1+E13))^(1/5	1	
10	Ocometrie / Werta]-((1.23) (1.210	(1) (1) (1) (1) (1) (1) (1)	,- ,	
20	Ending Portfolio	Value				
21	Year 1	\$ 1.120.00	=D8*(1+E9)			
22	Year 2	\$ 2,226.00	=(D21+D9)*(1+E	10)		
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 inve	stor deposited more mo	oney (i.e., had the n	nost invested) prior/during		
37	the worst return ye	ears, the dollar weighted	d return is lower.			

CFA Exam Review by Schweser

1. a

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

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.

B-10 SOLUTIONS

Solutions to Questions and Problems

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Core questions

- 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 = $(\$35 \times 750) \$14,000 = \$12,250$ Margin requirement = $\$14,000 / (\$35 \times 750) = 0.5333$ or 53.33%
- 3. Terminal price = 42Without margin = (42 - 35) / 35 = 20%With margin = $\{(42 \times 750) - (35 \times 750) \} / 14,000 = 37.50\%$

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

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

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

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

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 = $(400 \times \$55) (400 \times \$55)(.60) = \$8,800$ 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) = \$11.20Aftertax dividend = \$1.80(1 - .15) = \$1.53Aftertax return = (\$11.20 + 1.53) / \$81 = 15.72%

Intermediate questions

11.	Assets		Liabilities a	nd account equity
	3039 shares	\$51,663.00	Margin loan	\$20,665.20
			Account equity	30,997.80
	Total	\$51,663.00	Total	<u>\$51,663.00</u>

Stock price = \$24

Assets		Liabilities a	nd account equity
3039 shares	\$72,936.00	Margin loan	\$20,665.20
		Account equity	52,270.80
Total	<u>\$72,936.00</u>	Total	<u>\$72,936</u>

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

Stock price = \$14

Assets		Liabilities a	nd account equity
3039 shares	\$42,546.00	Margin loan	\$20,665.20
		Account equity	21,880.80
Total	<u>\$42,546.00</u>	Total	<u>\$42,546.00</u>

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 a	and account equity
600 shares	\$27,600	Margin loan	\$16,600
		Account equity	11,000
Total	\$27,600	Total	<u>\$27,600</u>

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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 = $(1,000 \times \$51)(.40) = \$20,400$ Amount borrowed = $(1,000 \times \$51)(1 - .40) = \$30,600$ Interest = $\$30,600 \times .0870 = \$2,662$ Proceeds from sale = $1,000 \times \$57 = \$57,000$ Dollar return = \$57,000 - 20,400 - 30,600 - 2,662 = \$3,338Rate of return = \$3,338 / \$20,400 = 16.36%
- 16. Total purchase = $800 \times $34 = $27,200$ Loan = \$27,200 - 15,000 = \$12,200Interest = $$12,200 \times .07 = 854 Proceeds from sale = $800 \times $48 = $38,400$ Dividends = $800 \times $.64 = 512 Dollar return = \$38,400 + 512 - 15,000 - 12,200 - 854 = \$10,858Return = \$10,858 / \$15,000 = 72.39%
- **17.** $$50,000 \times (1.084)^{6/12} 50,000 = $2,057.66$
- **18.** $$39,000 \times (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 = $600 \times \$46 = \$27,600$ Amount borrowed = \$27,600 - 11,000 = \$16,600Interest on loan = $\$16,600(1 + .0725)^{1/2} - 16,600 = \591.22 Dividends received = 600(\$25) = \$150.00Proceeds from stock sale = 600(\$53) = \$31,800Dollar return = \$31,800 + 150 - 11,000 - 16,600 - 591.22 = \$3,758.78Rate 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 \times $47 = 37.600 Initial margin = $$37,600 \times 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	<u>\$75,200</u>	Total	<u>\$75,200</u>	

24. Proceeds from sale = $800 \times $47 = 37.600 Initial margin = $$37,600 \times .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	<u>\$65,800</u>	Total	<u>\$65,800</u>	

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

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

Initial Balance Sheet					
Assets		Liabilities and acco	Liabilities and account equity		
Proceeds from sale	\$ 43,200	Short position	\$ 43,200		
Initial margin deposit	21,600	Account equity	21,600		
Total	<u>\$ 64,800</u>	Total	<u>\$ 64,800</u>		
Stock price = \$63					
Assets		Liabilities and acco	unt equity		
Proceeds from sale	\$ 43,200	Short position	\$ 37,800		
Initial margin deposit	21,600	Account equity	27,000		
Total	<u>\$ 64,800</u>	Total	<u>\$ 64,800</u>		
Margin = \$27,000 / \$37,3 Five-month return = (\$27 Effective annual return =	800 = 71.43% 7,000 - 21,600) $4(1 + .25)^{12/5} - 1$	/ \$21,600 = 25% = 70.84%			
Stock price $=$ \$77					

Assets		Liabilities and acco	unt equity
Proceeds from sale	\$ 43,200	Short position	\$ 46,200
Initial margin deposit	21,600	Account equity	18,600
Total	<u>\$ 64,800</u>	Total	<u>\$ 64,800</u>

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 Travel expenses College fund Total	\$75,000 15,000 <u>20,000</u> \$110,000	
Portfolio Value = \$3,000,000 Income objective = \$110,000 / 3,000,000 = Plus inflation Gross Return Objective		3.67% <u>3.00%</u> 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.

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