Case 7

The Cantrell Case

AN INVESTMENT PLANNING MINI-CASE

Gabriel and Sarah Cantrell, both age 26, were married four years ago. They have one daughter, Joyce, who is now age 3. They also have a new son, Lee, who is age 1. They live at 1315 Devonshire Drive in Anytown, Anystate, 78901.

Gabe works for TG Ag Services as a sales representative. He has been working since he turned age 16, and has spent the last five years with TG Ag Services. Gabe earns $45,000 per year.

Sarah started working when she was 15 years old. Four years ago she took a clerk position at Dave's Discount Store in downtown Anytown. She makes $27,500 per year.

Use the following information to conduct a review of the Cantrells' financial situation.

Global Assumptions (Valid unless otherwise Specified in Certain Instances)

- Inflation: 3.5%
- Anystate has no state-imposed income tax.
- All income and expense figures are given in today's dollars.
- Planned retirement age: 67 for both
- Federal marginal tax bracket: 15%
- State marginal tax bracket: No state income tax
- All nominal rates of return are pretax returns.

Income Issues

Currently Gabe earns $45,000 per year, and Sarah earns $27,500. Both Gabe and Sarah assume that their salaries will increase at the rate of inflation. They make approximately $60 (all of which is reinvested) in interest annually. They have no other sources of income.

Expense Summary

Before meeting with you, they summarized their expenses. These are shown in Table VI.8. Their assets and liabilities are summarized in Tables VI.9 and VI.10, respectively.

Table VI.8 The Cantrells' Dedicated and Discretionary Expenses

Expenses	Amount	Frequency
Health care expenses (Gabe)*	$300.00	Monthly
Health care expenses (Sarah)*	$50.00	Monthly
401(k) contribution (Gabe)*	$1,800.00	Annually
401(k) contribution (Sarah)*	$1,375.00	Annually
SS/Medicare (FICA) withholdings	$5,225.00	Annually
Federal tax withholdings	$4,500.00	Annually
Mortgage payments	$714.25	Monthly
Credit card payments	$20.00	Monthly
Auto insurance	$800.00	Semiannually
Homeowner's insurance	$600.00	Annually
Subscriptions	$480.00	Annually
Telephone expense	$1,800.00	Annually
Home Internet	$90.00	Monthly
Hobbies (Sarah)	$1,450.00	Annually
Recreation/entertainment	$200.00	Monthly
Groceries	$400.00	Monthly
Food away from home	$3,000.00	Annually
Real estate taxes	$1,482.00	Annually
Private mortgage insurance	$50.00	Monthly
Household maintenance	$750.00	Annually
Utilities	$3,300.00	Annually
Clothing	$2,200.00	Annually
Laundry services	$300.00	Annually
Personal care	$50.00	Monthly
Furnishing	$750.00	Annually
Child care***	$600.00	Monthly
Eye glasses	$300.00	Annually
Medical deductibles	$50.00	Monthly
Unreimbursed medical expenses	$100.00	Annually
Gasoline	$1,100.00	Annually
Car registrations	$575.00	Annually
Personal property tax	$450.00	Annually
Safe deposit box fee	$1.00	Monthly
Accounting fees	$150.00	Annually
Charitable contributions	$100.00	Monthly
Vacations	$2,800.00	Annually
Gifts to family members	$1,000.00	Annually

*Pretax § 125 plan expenses

**Pretax expenses

***The child care provider is licensed in Anystate.

Note: Last year the Cantrells paid $711 in Anystate sales taxes.

Asset Summary

Table VI.10 A Summary of the Cantrells' Assets

Asset	Amount	Ownership
Financial Assets		
Checking account	$350.00	Joint
Savings account	$500.00	Joint
EE savings bonds	$1,000.00	Joint
Retirement 401(k) Assets		
Large-cap funds	$5,000.00	Gabe
Mid-cap funds	$2,500.00	Gabe
Small-cap funds	$2,500.00	Gabe
Government bond funds	$1,000.00	Sarah
Mid-cap funds	$2,500.00	Sarah
Small-cap funds	$1,000.00	Sarah
Other Assets		
Primary residence	$124,000.00	Joint
Buick Regal	$12,000.00	Joint
GMC pickup	$9,800.00	Joint
Collectibles	$1,200.00	Joint
Golf clubs and equipment	$3,800.00	Joint
16-foot sailboat w/2-HP motor	$9,600.00	Joint
Furniture	$13,000.00	Joint
Other assets	$4,700.00	Joint

Liability Summary

Table VI.11 A Summary of the Cantrells' Liabilities

Liability	Amount	Ownership
Visa credit card*	$2,400.00	Joint
MasterCard**	$500.00	Joint
Mortgage	Unknown	Joint

*17.95% APR
** 14.25% APR

Gabe and Sarah purchased a new home in town exactly two years ago today. The original mortgage was in the amount of $116,000 for 30 years at a 6.25% rate. They have made precisely 24 payments on the mortgage.

Life Insurance and Planning Issues

Gabe and Sarah would like you to analyze their life insurance situation using the following assumptions and facts:

- Upon the first death, household expenses will decrease to $55,000 per year.
- Final expenses are expected to be $9,500 each.
- Estate administration costs are anticipated to be $3,500 each.
- All outstanding liabilities will be paid at the first death.
- They would like to prefund $10,000 in child care expenses at the death of the first spouse.
- They would like to prefund college costs in the event of a spouse's death. They plan to invest any insurance proceeds for this goal in a tax-advantaged educational savings plan.
- They can earn 7% before taxes on any life insurance proceeds both pre- and postretirement.
- They anticipate that their marginal federal tax rate will increase to 25% in retirement.
- They would like to replace $58,000 in retirement income for the surviving spouse.
- They are willing to use all of their retirement savings to offset life insurance needs.
- In the event of either spouse's death, the other spouse plans to stop working at age 60 and begin taking early retirement survivor benefits (if available).
- For conservative planning purposes, the Cantrells do not plan to use interest and/or dividends as an income source when determining insurance needs.
- Gabe's employer provides a term policy for two times his salary at no cost, which continues during periods of disability but terminates at retirement. Sarah is the beneficiary of the life insurance policy.
- Sarah's employer also provides two times her salary in term coverage at no cost, which continues during periods of disability but terminates at retirement. Gabe is the beneficiary of the life insurance policy.
- The surviving spouse's income is not expected to change after the death of the first spouse.

See Table VI.12 for information on the Cantrells' Social Security and life insurance.

Table VI.12 Social Security Survivor Benefit Information

Beneficiary	Amount (Monthly)*
Sarah and children (until last child turns age 18)	$2,582.50
Gabe and children (until last child turns age 18)	$1,843.10
Sarah (ages 60–67)	$1,048.00
Gabe (ages 60-67)	$1,118.00
Sarah (at age 67)	$1,466.00
Gabe (at age 67)	$1,563.00

* Income test limits could apply. See www.ssa.gov for more information.

Additional Insurance Information and Planning Issues

Both TG Ag Services and Dave's Discount Store are large employers in the area; each employs more than 20 people at any given time. The Cantrells do not currently have disability or long-term care insurance policies. Both are healthy, with both sets of parents still alive and well. Their home is currently covered by an HO-3 policy with an inflation rider and a $1,000 deductible. Both automobiles are insured with split-limit coverage of $25/$50/$10 and a $500 deductible.

Retirement Information and Planning Issues

The following information should be used when evaluating the Cantrells' current retirement planning situation:

- They anticipate being in the 25% federal marginal tax bracket after retirement.
- They are comfortable assuming that working with you, their financial planner, they can generate a 10.00% rate of return before retirement.
- When retired, they would prefer to maintain a conservative growth asset allocation that will generate an 8.25% rate of return.
- If retired today, they would like to replace 80% of their combined income.
- At retirement Gabe will be eligible to receive $1,563.00 in monthly Social Security benefits.
- At retirement Sarah will be eligible to receive $1,096.00 in monthly Social Security benefits.
- They are comfortable assuming a life expectancy of 100 years.
- Gabe currently contributes 4% of his salary to his company's 401(k) plan; his employer matches 50% on the first 6% contributed; his plan has a maximum deferral limit of 12% of salary.

- Sarah currently contributes 5% of her salary to her company's 401(k) plan; her employer matches 50% on the first 5% contributed, up to the maximum annual limit.

- Inflation before and after retirement is assumed to be 3.50%.

- Contributions to their 401(k) plans will increase by 3% even though their salaries are expected to increase by the rate of inflation.

Estate Information and Planning Issues

Both Gabe and Sarah have professionally prepared wills; Gabe's will leaves all of his assets to Sarah, and Sarah's will leaves all of her assets to Gabe. Their wills name their attorney as the estate executor, and in the event of a simultaneous death it is assumed that Gabe will predecease Sarah. Other estate planning facts include:

- Funeral and burial expenses will be $7,500 each.

- Estate and legal costs will be $2,000 each.

- Executor fees will be approximately 2% of the gross estate *before* the marital transfer.

- The net growth rate of the survivor's estate is estimated to be 4% annually.

- Both wills name Sarah's sister Lindsey as the guardian of their children.

- All individually owned assets that pass via property law or contract (e.g., IRAs, qualified plans, bank accounts, life insurance) name the surviving spouse as the primary beneficiary; no contingent beneficiaries have been named.

- No other estate planning documents are known to exist.

Table VI.13 provides a summary of the current yield and rate information applicable to this case.

Table VI.13 Yield and Rate Information for Use in the Cantrell Analysis

Investment Class	Yield
Checking account	0.00%
Savings account	3.00%
Taxable money market fund	3.50%
EE and I bonds	3.50%
Loan Rates	
30-year mortgage*	6.50%
15-year mortgage*	6.00%
Home equity line of credit*	7.25%
Home equity loan*	7.35%
5-year auto loan	7.90%
Personal loan	8.50%

*APR includes closing costs over life of loan.

Goals and Objectives

The Cantrells' primary objective at this point is to fully fund four years of college for their two children. They have already been in contact with the universities that they hope their children will attend. Gabe and Sarah learned that the annual cost of college (including tuition, room, and board) in today's dollars is $18,000 at each school. College costs are estimated to increase by about 6% annually.

They would like to have the total amount needed to pay for a child's college costs available on the first day of college. Given their moderate level of risk tolerance, they are comfortable planning for these expenses using a 7% rate of return. They would also like to use a tax-advantaged investment to save for college.

Their second goal is to retire at age 67, using the assumptions already listed.

In preparation for a meeting with the Cantrells, you have been given a monitored list of mutual funds used by your firm. Your firm's investment committee will allow you to use any of the funds listed below when developing investment recommendations for the Cantrells (see Table 1VI.14).

Table VI.14 Mutual Funds Approved for Cantrell Recommendations

Market Indexes

		RoR*	SD	Corr (r) with Index	Yield
T-bills		4.00%	2.00%	1.00	4.00%
Equity market		12.00%	17.00%	1.00	2.00%
Bond market		8.00%	9.00%	1.00	4.70%

Approved Mutual Funds

Fund	Stated Equity Fund Objective	RoR*	SD	Corr (r) with Stock Market	Yield
Super Big Fund	Large-cap fund	13.00%	18.00%	0.95	2.00%
Maxi Fund	Large-cap fund	12.20%	17.40%	0.92	2.00%
Multivariate Fund	Mid-cap fund	14.00%	18.30%	0.90	1.00%
Germain Fund	Mid-cap fund	13.30%	16.90%	0.89	1.25%
Efficacy Fund	Small-cap fund	11.00%	19.00%	0.85	0.25%
Software Fund	Small-cap fund	12.00%	21.00%	0.70	0.00%
Clinical Fund	International fund	10.00%	13.00%	0.68	2.00%
Image Fund	International fund	9.80%	11.00%	0.63	1.00%
Measures Fund	Precious metals fund	6.00%	13.00%	0.40	0.50%
Thumb Fund	Real estate fund	11.00%	11.00%	0.99	4.00%
Factors Fund	Real estate fund	9.90%	12.00%	0.89	5.30%
Column Averages		**11.11%**	**15.51%**	**0.80**	**1.75%**

Fund	Stated Bond Fund Objective	RoR*	SD	Corr (r) with Bond Market	Yield
Alumni Fund	Gov't bond fund	7.80%	8.00%	0.95	4.50%
Bush Fund	Gov't bond fund	8.20%	8.50%	0.90	5.00%
National Fund	Corporate bond fund	8.40%	9.00%	0.98	5.10%
CDR Fund	Corporate bond fund	7.56%	9.20%	0.85	5.40%
Fast Fund	High-yield bond fund	9.90%	13.00%	0.75	7.00%
Mobile Fund	High-yield bond fund	10.30%	12.80%	0.60	8.20%
Column Averages		**8.69%**	**10.08%**	**0.84**	**5.87%**

*Rates of return include yields.

Use the information provided in the case narrative to answer the questions that follow.

Case Questions

1. How much total § 79 income (rounded) for the year must the Cantrells report for tax purposes?

   a. $0

   b. $6

   c. $29

   d. $32

   e. $35

2. Which of the following is true?

   a. Interest earned by the Cantrells adds to their level of discretionary cash flow.

   b. § 79 income earned by the Cantrells adds to their level of discretionary cash flow.

   c. Contributions to Gabe's 401(k) plan reduce discretionary cash flow.

   d. All of the above are true.

   e. A and b only are true.

3. The Cantrells are eligible for which of the following tax credits?

   I. income tax credit.

   II. Child and dependent care tax credit.

   III. Earned Child tax credit.

   IV. Low-income housing tax credit.

   a. I and II only

   b. II and III only

   c. III and IV only

   d. II, III, and IV only

4. The Cantrells' current net worth situation can best be described as

   a. A positive $78,356

   b. A negative $2,900

   c. A positive $116,094

d. A negative $113,194

e. A positive $194,950

5. When completing their tax return, the Cantrells should

a. file married filing separately.

b. claim a deduction from AGI for retirement plan contributions.

c. use the sales tax deduction when calculating the amount they can claim for itemized deductions.

d. claim Anystate income taxes as a tax credit.

6. Which of the following strategies can the Cantrells use to improve their discretionary cash flow situation?

I. Refinance their first mortgage using a 15-year loan.

II. Pay off some or all credit card debt with financial assets.

III. Reduce the amount being withheld for federal taxes.

IV. Increase the amount of reinvested interest earned on investments.

a. I and III only

b. II and III only

c. II and IV only

d. II, III, and IV only

7. The Cantrells' current level of discretionary cash flow is enough to

a. fund this year's savings need for one child's college education.

b. fund both children's savings need for college education this year.

c. pay off credit card debts within one year.

d. fund both a and c.

8. Which of the following statements is true?

a. The Cantrells need to save an additional $3,700 per year to meet their retirement goal.

b. The Cantrells will fall short of their retirement goal by more than $1.5 million using their current retirement planning strategy.

c. The Cantrells must reduce their life expectancy in retirement to retire at age 67.

d. Both a and c.

e. None of the above.

9. Which of the following is true regarding the Cantrells' estate situation?

    I. The value of Gabe's group life insurance policy will be excluded from his gross estate.

    II. The full value of jointly held liabilities can be deducted as an expense from the gross estate at the passing of the first spouse.

    III. If Gabe and Sarah establish § 529 plans for their children by contributing $5,000, the assets held in the accounts will be excluded from Gabe and Sarah's gross estate.

    IV. The Cantrells should begin a gifting strategy to reduce their taxable estate.

a. I only

b. III only

c. I and II only

d. II and III only

e. I, III, and IV only

10. All of the following are examples of tax-advantaged education savings alternatives appropriate for use by the Cantrells except:

a. A § 529 plan.

b. A Coverdell savings plan.

c. EE savings bonds.

d. An immediate annuity.

11. Sarah's grandmother has decided to gift Gabe and Sarah $150,000. Which of the following strategies can the Cantrells fund with this gift?

    I. Fully prefund their children's college education costs.

    II. Earmark the gift as a source of emergency funds.

    III. Use the gift to fully offset Gabe's need for additional life insurance.

a. I only

b. III only

c. I and II only

d. II and III only

12. Rank the following funds in terms of their total portfolio risk (volatility), highest to lowest:

    I. Maxi Fund

    II. Software Fund

    III. Image Fund

    IV. Clinical Fund

    a. I, II, IV, and III

    b. I, II, III, and IV

    c. II, I, IV, and III

    d. II, I, III, and IV

13. Which fund's expected rate of return, as measured by CAPM, is the lowest?

    a. Super Big Fund

    b. Efficacy Fund

    c. Image Fund

    d. Measures Fund

14. Rank the following funds based on the Sharpe ratio (highest to lowest):

    I. Thumb Fund

    II. Germain Fund

    III. Multivariate Fund

    IV. Super Big Fund

    a. I, II, IV, and III

    b. I, II, III, and IV

    c. II, I, IV, and III

    d. II, I, III, and IV

15. Rank the following funds based on the Treynor index (highest to lowest):

    I. Clinical Fund

    II. Image Fund

    III. Measures Fund

    IV. Thumb Fund

    a. I, II, IV, and III

    b. I, II, III, and IV

    c. II, I, IV, and III

    d. II, I, III, and IV

16. Rank the following funds based on the Sharpe ratio (highest to lowest):

    I. Germain Fund

    II. Image Fund

    III. Multivariate Fund

    IV. Thumb Fund

    a. I, II, IV, and III

    b. I, II, III, and IV

    c. II, I, IV, and III

    d. IV, I, III, and II

17. Rank the following funds based on the Treynor index (highest to lowest):

    I. Germain Fund

    II. Image Fund

    III. Multivariate Fund

    IV. Thumb Fund

    a. I, II, IV, and III

    b. I, II, III, and IV

    c. II, IV, I, and III

    d. IV, I, III, and II

18. Which of the following funds has the highest alpha?

    a. Super Big Fund

    b. Thumb Fund

    c. Germain Fund

    d. Factors Fund

19. Assume that the correlation and standard deviation data for the bond funds are linked to the bond market index. Which bond fund has the highest alpha?

    a. Mobile Fund

    b. Fast Fund

    c. National Fund

    d. CDR Fund

20. Which of the following statements is correct?

    I. High-yield bond funds are affected by both interest rate changes and changes in the economic performance of the company issuing the bonds.

    II. Risk-adjusted performance can best be measured by beta.

    III. An investor who wanted to rank a list of diversified mutual funds could feel comfortable using the Treynor index.

    IV. If an investor wanted to rank a list of sector funds, the Treynor index would be more appropriate than the Sharpe ratio.

    a. II only

    b. I and IV only

    c. I and III only

    d. II and IV only