TEST BANK AND SOLUTIONS

1-1: Accounting and Control

The controller of a small private college is complaining about the amount of work she is required to do at the beginning of each month. The president of the university requires the controller to submit a monthly report by the fifth day of the following month. The monthly report contains pages of financial data from operations. The controller was heard saying, "Why does the president need all this information? He probably doesn't read half of the report. He's an old English professor and probably doesn't know the difference between a cost and a revenue."

Required:

a. What is the probable role of the monthly report?

b. What is the controller's responsibility with respect to a president who doesn't know much accounting?

2-1: Fixed, Variable, and Average Costs

Midstate University is trying to decide whether to allow 100 more students into the university. Tuition is $5000 per year. The controller has determined the following schedule of costs to educate students:

Number of Students	Total Costs
4000	$30,000,000
4100	30,300,000
4200	30,600,000
4300	30,900,000

The current enrollment is 4200 students. The president of the university has calculated the cost per student in the following manner: $30,600,000/4200 students = $7286 per student. The president was wondering why the university should accept more students if the tuition is only $5000.

Required:

a. What is wrong with the president's calculation?

b. What are the fixed and variable costs of operating the university?

2-2: The Elements of Cost Volume Profit

The M Company's variable costs are 75% of the sales price per unit and their fixed costs are $240,000. If the company earned $60,000 in selling 150,000 units, what was the sales price per unit?

2-3: Opportunity Costs

The First Church has been asked to operate a homeless shelter in part of the church. To operate a homeless shelter the church would have to hire a full time employee for $1,200/month to manage the shelter. In addition, the church would have to purchase $400 of supplies/month for the people using the shelter. The space that would be used by the shelter is rented for wedding parties. The church averages about 5 wedding parties a month that pay rent of $200 per party. Utilities are normally $1,000 per month. With the homeless shelter, the utilities will increase to $1,300 per month.

What is the opportunity cost to the church of operating a homeless shelter in the church?

2-4: Fixed and Variable Costs

The university athletic department has been asked to host a professional basketball game at the campus sports center. The athletic director must estimate the opportunity cost of holding the event at the sports center. The only other event scheduled for the sports center that evening is a fencing match that would not have generated any additional costs or revenues. The fencing match can be held at the local high school, but the rental cost of the high school gym would be $200. The athletic director estimates that the professional basketball game will require 20 hours of labor to prepare the building. Clean-up depends on the number of spectators. The athletic director estimates the time of clean-up to be equal to 2 minutes per spectator. The labor would be hired especially for the basketball game and would cost $8 per hour. Utilities will be $500 greater if the basketball game is held at the sports center. All other costs would be covered by the professional basketball team.

Required:

a. What is the variable cost of having one more spectator?

b. What is the opportunity cost of allowing the professional basketball team to use the sports center if 10,000 spectators are expected?

c. What is the opportunity cost of allowing the professional basketball team to use the sports center if 12,000 spectators are expected?

2-5: Opportunity Cost of Attracting Industry

The Itagi Computer Company From Japan is looking to build a factory for making DVD burners in the United States. The company is concerned about the safety and well-being of its employees and wants to locate in a community with good schools. The company also wants the factory to be profitable and is looking for subsidies from potential communities. Encouraging new business to create jobs for citizens is important for communities, especially communities with high unemployment.

Wellville has not been very well since the shoe factory left town. The city officials have been working on a deal with Itagi to get the company to locate in Wellville. Itagi officials have identified a 20 acre undeveloped site. The city has tentatively agreed to buy the site for $50,000 for Itagi and not require any payment of property taxes on the factory by Itagi for the first five years of operation. The property tax deal will save Itagi $3,000,000 in taxes over the five years. This deal was leaked to the local newspaper. The headlines the next day were: "Wellville Gives Away $3,000,000+ to Japanese Company".

Required:

a. Do the headlines accurately describe the deal with Itagi?

b. What are the relevant costs and benefits to the citizens of Wellville of making this deal?

2-6: Cost, Volume, Profit Analysis

With the possibility of the US Congress relaxing restrictions on cutting old growth, a local lumber company is considering an expansion of its facilities. The company believes it can sell lumber for $0.18/board foot. A board foot is a measure of lumber. The tax rate for the company is 30 percent. The company has the following two opportunities:

- Build Factory A with annual fixed costs of $20 million and variable costs of $0.10/board foot. This factory has an annual capacity of 500 million board feet.

- Build Factory B with annual fixed costs of $10 million and variable costs of $0.12/board foot. This factory has an annual capacity of 300 million board feet.

Required:

a. What is the break-even point in board feet for Factory A?

b. If the company wants to generate an after tax profit of $2 million with Factory B, how many board feet would the company have to process and sell?

c. If demand for lumber is uncertain, which factory is riskier?

d. At what level of board feet would the after-tax profit of the two factories be the same?

2-7: Cost, Volume, Profit Analysis

Leslie Mittelberg is considering the wholesaling of a leather handbag from Kenya. She must travel to Kenya to check on quality and transportation. The trip will cost $3000. The cost of the handbag is $10 and shipping to the United States can occur through the postal system for $2 per handbag or through a freight company which will ship a container that can hold up to a 1000 handbags at a cost of $1000. The freight company will charge $1000 even if less than 1000 handbags are shipped. Leslie will try to sell the handbags to retailers for $20. Assume there are no other costs and benefits.

Required:

a. What is the break-even point if shipping is through the postal system?

b. How many units must be sold if Leslie uses the freight company and she wants to have a profit of $1000?

c. At what output level would the two shipping methods yield the same profit?

d. Suppose a large discount store asks to buy an additional 1000 handbags beyond normal sales. Which shipping method should be used and what is the minimum sales price Leslie should consider in selling those 1000 handbags?

2-8: Multiple Product Cost Volume Profit

A company sells three products as shown below:

	Product X	Product Y	Product Z	Total
Units	60,000	140,000	50,000	250,000
Sales	$90,000	$150,000	$60,000	$300,000
Variable Costs	$63,000	$93,000	$19,000	$175,000
Contribution Margin				$125,000
Fixed Costs				$100,000

Required:

a. How many units of each product need to be sold to breakeven?

b. How many units must of each product must be sold if the company wants to have a profit of $50,000?

2-9: **Make Buy**

A company has needs 10,000 units of a component used in producing one of its products. The latest internal accounting reports show that the per unit manufacturing cost to be $150.00. The manufacturing cost per component broken down into type of costs is as follows: Variable manufacturing costs = $110.00 and fixed manufacturing overhead = $40. The company recently received an offer from another manufacturer to produce the component for $144.00. If they buy the component on the outside 40% of the fixed overhead can be avoided.

Required:

a. If the company decides to have the component made by the outside supplier at $144.00, what is the impact on income?

b. What price would make the company indifferent between making the component internally and having the outside supplier make it?

2-10: Cost, Volume, Profit Analysis

Kalifo Company manufactures a line of electric garden tools that are sold in general hardware stores. The company's controller, Sylvia Harlow, has just received the sales forecast for the coming year for Kalifo's three products: weeders, hedge clippers, and leaf blowers. Kalifo has experienced considerable variations in sales volumes and variable costs over the past two years, and Harlow believes the forecast should be carefully evaluated from a cost-volume-profit viewpoint. The preliminary budget information for 1996 is presented below.

	Weeders	Hedge Clippers	Leaf Blowers
Unit sales	50,000	50,000	100,000
Unit selling price	$28.00	$36.00	$48.00
Variable manufacturing cost per unit	13.00	12.00	25.00
Variable selling cost per unit	5.00	4.00	6.00

For 1996, Kalifo's fixed factory overhead is budgeted at $2 million, and the company's fixed selling and administrative expenses are forecast to be $600,000. Kalifo has a tax rate of 40 percent.

Required:

a. Determine Kalifo Co.'s budgeted net income for 1996.

b. Assuming that the sales mix remains as budgeted, determine how many units of each product Kalifo must sell in order to break even in 1996.

c. Determine the total dollar sales Kalifo must sell in 1996 in order to earn an after-tax net income of $450,000.

d. After preparing the original estimates, Kalifo determines that its variable manufacturing cost of leaf blowers will increase 20 percent and the variable selling cost of hedge clippers can be expected to increase $1 per unit. However, Kalifo has decided not to change the selling price of either product. In addition, Kalifo learns that its leaf blower is perceived as the best value on the market, and it can expect to sell three times as many leaf blowers as any other product. Under these circumstances, determine how many units of each product Kalifo will have to sell to break even in 1996.

e. Explain the limitations of cost-volume-profit analysis that Sylvia Harlow should consider when evaluating Kalifo's 1996 budget.

Source: CMA adapted.

2-11: Breakeven and Cost-Volume-Profit with Taxes

DisKing Company is a retailer for video disks. The projected after-tax net income for the current year is $120,000 based on a sales volume of 200,000 video disks. DisKing has been selling the disks at $16 each. The variable costs consist of the $10 unit purchase price of the disks and a handling cost of $2 per disk. DisKing's annual fixed costs are $600,000 and DisKing is subject to a 40 percent income tax rate.

Management is planning for the coming year, when it expects that the unit purchase price of the video disks will increase 30 percent.

Required:

a. Calculate DisKing Company's break-even point for the current year in number of video disks.

b. Calculate the increased after-tax income for the current year from an increase of 10 percent in projected unit sales volume.

c. If the unit selling price remains at $16, calculate the volume of sales in dollars that DisKing Company must achieve in the coming year to maintain the same after-tax net income as projected for the current year.

Source: CMA adapted

2-12: Cost-volume-profit of a Make/buy Decision

Elly Industries is a multiproduct company that currently manufactures 30,000 units of Part MR24 each month for use in production. The facilities now being used to produce Part MR24 have affixed monthly cost of $150,000 and a capacity to produce 84,000 units per month. If Elly were to buy Part MR24 from an outside supplier, the facilities would be idle, but its fixed costs would continue at 40 percent of its present amount. The variable production costs of Part MR24 are $11 per unit.

Required:

a. If Elly Industries continues to use 30,000 units of Part MR24 each month, it would realize a net benefit by purchasing Part MR24 from an outside supplier only if the supplier's unit price is less than how much?

b. If Elly Industries can obtain Part MR24 from an outside supplier at a unit purchase price of $12.875, what is the monthly usage at which it will be indifferent between purchasing and making Part MR24?

Source: CMA adapted

2-13: Opportunity Cost of Purchase Discounts and Lost Sales

Winter Company is a medium-size manufacturer of hard drives that are sold to computer manufacturers. At the beginning of 2012 Winter began shipping a much-improved hard drive, Model W899. The W899 was an immediate success and accounted for $5 million in revenues for Winter in 2012.

While the W899 was in the development stage, Winter planned to price it at $130. In preliminary discussions with customers about the W899 design, no resistance was detected to suggestions that the price might be $130. The $130 price was considerably higher than the estimated variable cost of $70 per unit to produce the W899, and it would provide Winter with ample profits.

Shortly before setting the price of the W899, Winter discovered that a competitor was reading a product very similar to the W899 and was no more than 60 days behind Winter's own schedule. No information could be obtained on the competitor's planned price, although it had a reputation for aggressive pricing. Worried about the competitor, and unsure of the market size, Winter lowered the price of the W899 to $100. It maintained the price although, to Winter's surprise, the competitor announced a price of $130 for its product.

After reviewing the 2012 sales of the W899, Winter's management concluded that unit sales would have been the same if the product had been marketed at the original price of $130 each. Management has predicted that 2013 sales of the W899 would be either 85,000 units at $100 each or 60,000 units at $130 each. Winter has decided to raise the price of the disk drive to $130 effective immediately.

Having supported the higher price from the beginning, Sharon Daley, Winter's marketing director, believes that the opportunity cost of selling the W899 for $100 during 2012 should be reflected in the company's internal records and reports. In support of her recommendation, Daley explained that the company has booked these types of costs on other occasions when purchase discounts not taken for early payment have been recorded.

Required:

a. Define *opportunity cost* and explain why opportunity costs are not usually recorded.

b. What is the 2012 opportunity cost?

c. Explain the impact of Winter Company's selection of the $130 selling price for the W899 on 2013 operating income. Support your answer with appropriate calculations.

Source: CMA adapted

2-14: Make/Buy and the Opportunity Cost of Freed Capacity

Leland Manufacturing uses 10 units of part KJ37 each month in the production of radar equipment. The cost to manufacture one unit of KJ37 is presented in the accompanying table.

Direct materials	$ 1,000
Materials handling (20% of direct material cost)	200
Direct labor	8,000
Manufacturing overhead	12,000
Total manufacturing cost	$21,200

Materials handling represents the direct variable costs of the receiving department and is applied to direct materials and purchased components on the basis of their cost. This is a separate charge in addition to manufacturing overhead. Leland's annual manufacturing overhead budget is one-third variable and two-third fixed. Scott Supply, one of Leland's reliable vendors, has offered to supply part KJ37 at a unit price of $15,000. The fixed cost of producing KJ37 is the cost of a special piece of testing equipment that ensures the quality of each part manufactured. This testing equipment is under a long-term, noncancelable lease. If Leland were to purchase part KJ37, materials handling costs would not be incurred.

Required:

a. If Leland purchases the KJ37 units from Scott, the capacity Leland was using to manufacture these parts would be idle. Should Leland purchase the parts from Scott? Make explicit any key assumptions.

b. Assume Leland Manufacturing is able to rent all idle capacity for $25,000 per month. Should Leland purchase from Scott Supply? Make explicit any key assumptions.

c. Assume that Leland Manufacturing does not wish to commit to a rental agreement but could use idle capacity to manufacture another product that would contribute $52,000 per month. Should Leland manufacture KJ37? Make explicit any key assumptions.

Source: CMA adapted

3-1: Annuity

Suppose the opportunity cost of capital is 10 percent and you have just won a $1 million lottery that entitles you to $100,000 at the end of each of the next ten years.

Required:

a. What is the minimum lump sum cash payment you would be willing to take now in lieu of the ten-year annuity?

b. What is the minimum lump sum you would be willing to accept at the end of the ten years in lieu of the annuity?

c. Suppose three years have passed and you have just received the third payment and you have seven left when the lottery promoters approach you with an offer to "settle-up for cash." What is the minimum you would accept (the end of year three)?

d. How would your answer to part (a) change if the first payment came immediately (at t = 0) and the remaining payments were at the beginning instead of at the end of each year?

3-2: Identifying the Opportunity Cost of Capital

Don Phelps recently started a dry cleaning business. He would like to expand the business and have a coin-operated laundry also. The expansion of the building and the washing and drying machines will cost $100,000. The bank will lend the business $100,000 at 12 percent interest rate. Don could get a 10 percent interest rate loan if he uses his personal house as collateral. The lower interest rate reflects the increased security of the loan to the bank, because the bank could take Don's home if he doesn't pay back the loan. Don currently can put money in the bank and receive 6 percent interest.

Required:

Provide arguments for using 12 percent, 10 percent, and 6 percent as the opportunity cost of capital for evaluating the investment.

3-3: Financing Charges and Net Present Value

The president of the company is not convinced that the interest expense should be excluded from the calculation of the net present value. He points out that, "Interest is a cash flow. You are supposed to discount cash flows. We borrowed money to completely finance this project. Why not discount interest expenditures?" The president is so convinced that he asks you, the controller, to calculate the net present value including the interest expense.

How can you adjust the net present value analysis to compensate for the inclusion of the interest expense?

3-4: Asset Replacement

The Baltic Company is considering the purchase of a new machine tool to replace an obsolete one. The machine being used for the operation has a tax book value of $80,000, with an annual depreciation expense of $8,000. It has a salvage value (resale value) of $40,000, is in good working order, and will last, physically, for at least 10 more years. The proposed machine will perform the operation so much more efficiently that Baltic engineers estimate that labor, material, and other direct costs of the operation will be reduced $60,000 a year if it is installed.

The proposed machine costs $240,000 delivered and installed, and its economic life is estimated at 10 years, with zero salvage value. The company expects to earn 14 percent on its investment after taxes (14 percent is the firm's cost of capital). The tax rate is 40 percent, and the firm uses straight-line depreciation. Any gain or loss on the machine is subject to tax at 40 percent.

Should Baltic buy the new machine?

4-1: Choosing Performance Measures

Jen and Barry opened an ice cream shop in Eugene. It was a big success, so they decide to open a ice cream shops in many cities including Portland. They hire Dante to manage the shop in Portland. Jen and Barry are considering two different sets of performance measures for Dante. The first set would grade Dante based on the cleanliness of the restaurant and customer service. The second set would use accounting numbers including the profit of the shop in Portland.

What are the advantages and disadvantages of each set of performance measures?

4-2: Linking Decision Rights and Knowledge

Professional football teams have both a coach and a general manager. The general manager is usually responsible for the general operations of the organization and maintains the decision rights for selecting personnel on the football team. The coach is responsible for the training of the football team and making decisions on game day. Many coaches have been unhappy with their relationship with the general manager and feel they should have more decision rights in choosing the players on the team. Some of the top coaches are now insisting on also being general managers.

What are the advantages and disadvantages of separating the duties of the coach and general manager with respect to selecting members of the football team?

4-3: Monitoring Computer Use

Samson Company is an engineering firm. Many of the employees are engineers who are working individually on different projects. Most of the design work takes place on computers. The computers are connected by a network and employees can also "surf" the internet through their desk top computers.

The president is concerned about productivity among his engineers. He has acquired software that allows him to monitor each engineer's computer work. At anytime during the day, the president can observe on her screen exactly what the different engineers are working on. The engineers are quite unhappy with this monitoring process. They feel it is unethical for the president to be able to access what they are working on without their knowledge.

Describe the pros and cons of monitoring through observing the computer work of the engineers.

4-4: Choosing Performance Measures

The president of the Canby Insurance Company has just read an article on the balanced scorecard. A company has a balanced scorecard when there is a set of performance measures that reflect the diverse interests and goals of all the stakeholders (shareholders, customers, employees, and society) of the organization. Presently, Canby Insurance Company has only one performance measure for the top executives: profit. The board of directors claims that profit as the sole performance measure is sufficient. If customers are satisfied and employees are productive, then the company will be profitable. Any other performance measure will detract from the basic goal of making a profit.

Required: