Accounting Vocabulary

accumulated depreciation, p. 264
avoidable costs, p. 257
book value, p. 264
common costs, p. 257
depreciation, p. 263
differential cost, p. 248
differential revenue, p. 248
incremental analysis, p. 248
incremental benefits, p. 248
incremental costs, p. 248
inventory turnover, p. 261
joint costs, p. 262
joint products, p. 262
limiting factor, p. 260
net book value, p. 264
opportunity cost, p. 249
outlay cost, p. 249
outsourcing, p. 251
scarce resource, p. 260
separable costs, p. 262
split-off point, p. 262
sunk cost, p. 264
unavoidable costs, p. 257

Fundamental Assignment Material

6-A1 Make or Buy

Sunshine State Fruit Company sells premium-quality oranges and other citrus fruits by mail order. Protecting the fruit during shipping is important so the company has designed and produces shipping boxes. The annual cost to make 80,000 boxes is

Materials	$120,000
Labor	20,000
Indirect manufacturing costs	
Variable	16,000
Fixed	60,000
Total	$216,000

Therefore, the cost per box averages $2.70.

Suppose Weyerhaeuser submits a bid to supply Sunshine State with boxes for $2.10 per box. Sunshine State must give Weyerhaeuser the box design specifications, and the boxes will be made according to those specs.

1. How much, if any, would Sunshine State save by buying the boxes from Weyerhaeuser?
2. What subjective factors should affect Sunshine State's decision whether to make or buy the boxes?
3. Suppose all the fixed costs represent depreciation on equipment that was purchased for $600,000 and is just about at the end of its 10-year life. New replacement equipment will cost $800,000 and is also expected to last 10 years. In this case, how much, if any, would Sunshine State save by buying the boxes from Weyerhaeuser?

6-A2 Choice of Products

The Ibunez Tool Company has two products: a plain circular saw and a professional circular saw. The plain saw sells for $70 and has a variable cost of $50. The professional saw sells for $100 and has a variable cost of $70.

1. Compute contribution margins and contribution-margin ratios for plain and professional saws.
2. The demand is for more units than the company can produce. There are only 20,000 machine hours of manufacturing capacity available. Two plain saws can be produced in the same average time (1 hour) needed to produce one professional saw. Compute the total contribution margin for 20,000 hours for plain saws only and for professional saws only. Which product is the best use of machine hours?
3. Use two or three sentences to state the major lesson of this problem.

6-A3 Joint Products: Sell or Process Further

The Mussina Chemical Company produced three joint products at a joint cost of $117,000. These products were processed further and sold as follows.

Chemical Product	Sales	Additional Processing Costs
A	$230,000	$190,000
B	330,000	300,000
C	175,000	100,000

The company has had an opportunity to sell at split off directly to other processors. If that alternative had been selected, sales would have been A, $54,000; B, $32,000; and C, $54,000.

The company expects to operate at the same level of production and sales in the forthcoming year. Consider all the available information, and assume that all costs incurred after split off are variable.

1. Could the company increase operating income by altering its processing decisions? If so, what would be the expected overall operating income?
2. Which products should be processed further and which should be sold at split off?

6-A4 Role of Old Equipment Replacement

On January 2, 2007, the S. H. Park Company installed a brand-new $87,000 special molding machine for producing a new product. The product and the machine have an expected life of 3 years. The machine's expected disposal value at the end of 3 years is zero.

On January 3, 2007, Kimiyo Lee, a star salesperson for a machine tool manufacturer, tells Mr. Park, "I wish I had known earlier of your purchase plans. I can supply you with a technically superior machine for $99,000. The machine you just purchased can be sold for $16,000. I guarantee that our machine will save $40,000 per year in cash operating costs, although it too will have no disposal value at the end of 3 years."

Park examines some technical data. Although he has confidence in Lee's claims, Park contends, "I'm locked in now. My alternatives are clear: (a) Disposal will result in a loss, (b) keeping and using the 'old' equipment avoids such a loss. I have brains enough to avoid a loss when my other alternative is recognizing a loss. We've got to use that equipment until we get our money out of it."

The annual operating costs of the old machine are expected to be $60,000, exclusive of depreciation. Sales, all in cash, will be $910,000 per year. Other annual cash expenses will be $810,000 regardless of this decision. Assume that the equipment in question is the company's only fixed asset.

Ignore income taxes and the time value of money.

1. Prepare statements of cash receipts and disbursements as they would appear in each of the next 3 years under both alternatives. What is the total cumulative increase or decrease in cash for the 3 years?
2. Prepare income statements as they would appear in each of the next 3 years under both alternatives. Assume straight-line depreciation. What is the cumulative increase or decrease in net income for the 3 years?
3. Assume that the cost of the "old" equipment was $1 million rather than $87,000. Would the net difference computed in numbers 1 and 2 change? Explain.
4. As Kimiyo Lee, reply to Mr. Park's contentions.
5. What are the irrelevant items in each of your presentations for numbers 1 and 2? Why are they irrelevant?

6-B1 Make or Buy

Suppose a BMW executive in Germany is trying to decide whether the company should continue to manufacture an engine component or purchase it from Frankfurt Corporation for €50 each. Demand for the coming year is expected to be the same as for the current year, 200,000 units. Data for the current year follow:

Direct material	€ 5,000,000
Direct labor	1,900,000
Factory overhead, variable	1,100,000
Factory overhead, fixed	2,500,000
Total costs	€10,500,000

If BMW makes the components, the unit costs of direct material will increase 10%.

If BMW buys the components, 30% of the fixed costs will be avoided. The other 70% will continue regardless of whether the components are manufactured or purchased. Assume that variable overhead varies with output volume.

1. Prepare a schedule that compares the make-or-buy alternatives. Show totals and amounts per unit. Compute the numerical difference between making and buying. Assume that the capacity now used to make the components will become idle if the components are purchased.
2. Assume also that the BMW capacity in question can be rented to a local electronics firm for €1,250,000 for the coming year. Prepare a schedule that compares the net relevant costs of the

three alternatives: make, buy and leave capacity idle, buy and rent. Which is the most favorable alternative? By how much in total?

6-B2 Unit Costs and Capacity

Fargo Manufacturing Company produces two industrial solvents for which the following data have been tabulated. Fixed manufacturing cost is applied to products at a rate of $1.00 per machine hour.

Per Unit	XY-7	BD-4
Selling price	$6.00	$4.00
Variable manufacturing costs	3.00	1.50
Fixed manufacturing cost	.80	.25
Variable selling cost	2.00	2.00

The sales manager has had a $160,000 increase in her budget allotment for advertising and wants to apply the money on the most profitable product. The solvents are not substitutes for one another in the eyes of the company's customers.

1. How many machine hours does it take to produce one XY-7? To produce one BD-4? (*Hint:* Focus on applied fixed manufacturing cost.)
2. Suppose Fargo has only 100,000 machine hours that can be made available to produce XY-7 and BD-4. If the potential increase in sales units for either product resulting from advertising is far in excess of these production capabilities, which product should be produced and advertised, and what is the estimated increase in contribution margin earned?

6-B3 Dropping a Product Line

Hambley's Toy Store is on Regent Street in London. It has a magic department near the main door. Suppose that management is considering dropping the magic department, which has consistently shown an operating loss. The predicted income statements, in thousands of pounds (£), follow (for ease of analysis, only three product lines are shown):

	Total	General Merchandise	Electronic Products	Magic Department
Sales	£6,000	£5,000	£400	£ 600
Variable expenses	4,090	3,500	200	390
Contribution margin	£1,910 (32%)	£1,500 (30%)	£200 (50%)	£ 210 (35%)
Fixed expenses (compensation, depreciation, property taxes, insurance, etc.)	1,110	750	50	310
Operating income (loss)	£ 800	£ 750	£150	£(100)

The £310,000 of magic department fixed expenses include the compensation of employees of £100,000. These employees will be released if the magic department is abandoned. All of the magic department's equipment is fully depreciated, so none of the £310,000 pertains to such items. Furthermore, disposal values of equipment will be exactly offset by the costs of removal and remodeling.

If the magic department is dropped, the manager will use the vacated space for either more general merchandise or more electronic products. The expansion of general merchandise would not entail hiring any additional salaried help, but more electronic products would require an additional person at an annual cost of £25,000. The manager thinks that sales of general merchandise would increase by £300,000; electronic products, by £200,000. The manager's modest predictions are partially based on the fact that she thinks the magic department has helped lure customers to the store and, thus, improved overall sales. If the magic department is closed, that lure would be gone.

Should the magic department be closed? Explain, showing computations.