Chapter 04
Fundamentals of Cost Analysis for Decision Making

90. Carson Corporation produces and sells three products. The three products, Alpha, Beta, and Gamma, are sold in a local market and in a regional market. At the end of the first quarter of the current year, the following income statement (in thousands of dollars) has been prepared:

	Total	Local	Regional
Sales revenue	$5,200	$4,000	$1,200
Cost of goods sold	4,040	3,100	940
Gross margin	1,160	900	260
Marketing costs	420	240	180
Administrative costs	208	160	48
Operating profits	$532	$500	$ 32

Management has expressed special concern with the regional market because of the extremely poor return on sales. This market was entered a year ago because of excess capacity. It was originally believed that the return on sales would improve with time, but after a year, no noticeable improvement can be seen from the results as reported in the above quarterly statement. In attempting to decide whether to eliminate the regional market, the following information has been gathered:

Products	Alpha	Beta	Gamma
Sales revenue	$2,000	$1,600	$1,600
Variable manufacturing cost % of sales	60%	70%	60%
Variable marketing cost	3%	2%	2%

Product Sales by Markets	Local	Regional
Alpha	$1,600	$400
Beta	1,200	400
Gamma	1,200	400

All administrative costs and fixed manufacturing costs are common to the three products and the two markets and are fixed for the period. Remaining marketing costs are fixed for the period and separable by market. All fixed costs have been arbitrarily allocated to markets.

Required:

(a) Assuming there are no alternative uses for the Carson Corporation's present capacity, would you recommend dropping the regional market? Why or why not?

(b) Prepare the quarterly income statement showing contribution margins by products. Do not allocate fixed costs to products.

(c) It is believed that a new product can be ready for sale next year if the Carson Corporation decides to go ahead with continued research. The new product can be produced by simply converting equipment presently used in producing product Gamma. This conversion will increase fixed costs by $40,000 per quarter. What must be the minimum contribution margin per quarter for the new product to make the changeover financially feasible?

91. Hi-Speed Electronics manufactures low-cost, consumer-grade computers. It sells these computers to various electronics retailers to market under store brand names. It manufactures two computers, the Lightning 2.0 and the Lightning 2.4, which differ in terms of speed, memory, and hard drive capacity. The following information is available:

	Lightning 2.0	Lightning 2.4
Direct materials	$ 90	$ 110
Direct labor	60	90
Variable overhead	30	30
Fixed overhead	180	240
Total cost per unit	$360	$470
Selling price	600	780
Units produced and sold	6,000	3,000

The average wage rate is $30 per hour. The plant has a capacity of 32,000 direct labor-hours.

Required:

1. A nationwide discount chain has approached Hi-Speed with an offer to buy 2,000 Lightning 2.0 computers and 2,000 Lightning 2.4 computers if the price is lowered to $350 and $450, respectively, per unit.

a. If Hi-Speed accepts the offer, how many direct labor-hours will be required to produce the additional computers?

b. How much will the profit increase (or decrease) if Hi-Speed accepts this proposal? All other prices will remain the same.

Suppose that the customer has offered instead to buy *up to* 3,000 each of the two models at $350 and $450, respectively.

c. How many of each product should be manufactured and sold? Assume current demand will not be affected by the special order. Also assume that the company cannot increase its production capacity to meet the extra demand.

d. How much will the profits change if this order is accepted instead?

92. The operations of BSC Corporation are divided into the Kaplan Division and the Norton Division. Projections for the next year are as follows:

	Kaplan Division	Norton Division	Total
Sales	$1,200,000	$600,000	$1,800,000
Variable costs	480,000	360,000	840,000
Contribution margin	$720,000	$240,000	$960,000
Direct fixed costs	160,000	90,000	250,000
Segment margin	$ 560,000	$ 150,000	$710,000
Allocated common costs	360,000	180,000	540,000
Operating income (loss)	$ 200,000	$(30,000)	$ 170,000

a. Operating income for BSC Corporation as a whole if the Norton Division were dropped would be
b. If the Norton Division were dropped, Kaplan Division's sales would increase by 45%. If this happened, the operating income for BSC Corporation as a whole would be

105. Bruce Industries manufactures 200,000 components per year. The manufacturing cost of the components was determined as follows:

Direct materials	$200,000
Direct labor	320,000
Variable manufacturing overhead	120,000
Fixed manufacturing overhead	160,000

An outside supplier has offered to sell the component for $3.40. If Bruce purchases the component from the outside supplier, the manufacturing facilities would be unused and could be rented out for $20,000.
a. If Bruce purchases the component from the supplier instead of manufacturing it, the effect on income would be
b. What is the maximum price Bruce would be willing to pay the outside supplier?

95. Buffalo Industries produces two products. Information about the products is as follows:

	Product Q	Product R
Units produced and sold	8,000	20,000
Selling price per unit	$16	$14
Variable costs per unit	10	9

The company's fixed costs totaled $140,000, of which $30,000 can be directly traced to Product Q and $90,000 can be directly traced to Product R. The effect on the firm's profits if Product R is dropped would be:

99. The Wood Company manufactures two products: A and B. The costs and revenues are as follows:

	Product A	Product B
Sales price	$300	$175
Variable cost per unit	160	85

Total demand for Product A is 7,000 units and for Product B is 5,000 units. Machine time is a scarce resource. During the year, 48,000 machine hours are available. Product A requires 6 machine hours per unit, while Product B requires 2.5 machine hours per unit.
a. How many units of Products A and B should Wood produce?
b. What will be the maximum possible contribution margin?