



Questions for CMA Part 2 Section C: Decision Analysis
(Các câu hỏi cho CMA Phần 2 Phần C: Phân tích Quyết định)

I. Trắc nghiệm

1. Garner Products is considering a new accounts payable and cash disbursement process which is projected to add 3 days to the disbursement schedule without having significant negative effects on supplier relations. Daily cash outflows average \$1,500,000. Garner is in a short-term borrowing position for 8 months of the year and in an investment position for 4 months. On an annual basis, bank lending rates are expected to average 7% and marketable securities yields are expected to average 4%. What is the maximum annual expense that Garner could incur for this new process to be break even?

- a. \$90,000.
- b. \$180,000.
- c. \$270,000.
- d. \$315,000.

2. Bolger and Co. manufactures large gaskets for the turbine industry. Bolger's per unit sales price and variable costs for the current year are as follows.

Sales price per unit	\$300
Variable costs per unit	210

Bolger's total fixed costs aggregate \$360,000. As Bolger's labor agreement is expiring at the end of the year, management is concerned about the effect a new agreement will have on its unit breakeven point. The controller performed a sensitivity analysis to ascertain the estimated effect of a \$10 per unit direct labor increase and a \$10,000 reduction in fixed costs. Based on these data, it was determined that the breakeven point would

- a. decrease by 1,000 units.
 - b. decrease by 125 units.
 - c. increase by 375 units.
 - d. increase by 500 units.
3. Phillips & Company produces educational software. Its unit cost structure, based upon an anticipated production volume of 150,000 units, is as follows.

Sales price	\$160
Variable costs	60
Fixed costs	55

The marketing department has estimated sales for the coming year at 175,000 units, which is within the relevant range of Phillip's cost structure. Phillip's break-even



volume (in units) and anticipated operating income for the coming year would amount to

- a. 82,500 units and \$7,875,000 of operating income.
- b. 82,500 units and \$9,250,000 of operating income.
- c. 96,250 units and \$3,543,750 of operating income.
- d. 96,250 units and \$7,875,000 of operating income.

4. All of the following are assumptions of cost-volume-profit analysis **except**

- a. total fixed costs do not change with a change in volume.
- b. revenues change proportionately with volume.
- c. variable costs per unit change proportionately with volume.
- d. sales mix for multi-product situations do not vary with volume changes.

5. Ace Manufacturing plans to produce two products, Product C and Product F, during the next year, with the following characteristics.

	<u>Product C</u>	<u>Product F</u>
Selling price per unit	\$10	\$15
Variable cost per unit	\$ 8	\$10
Expected sales (units)	20,000	5,000

Total projected fixed costs for the company are \$30,000. Assume that the product mix would be the same at the breakeven point as at the expected level of sales of both products. What is the projected number of units (rounded) of Product C to be sold at the breakeven point?

- a. 2,308 units.
- b. 9,231 units.
- c. 11,538 units.
- d. 15,000 units.

6. Starlight Theater stages a number of summer musicals at its theater in northern Ohio. Preliminary planning has just begun for the upcoming season, and Starlight has developed the following estimated data.

<u>Production Performances</u>	<u>Number of</u>	<u>Average</u>	<u>Ticket</u>	<u>Variable</u>	<u>Fixed</u>
		<u>Attendance per</u>	<u>Price</u>	<u>Costs</u> ¹	<u>Costs</u> ²
Mr. Wonderful	12	3,500	\$18	\$3	\$165,000
That's Life20	3,000	15	1	249,000	



All That Jazz	12	4,000	20	0	316,000
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¹ Represent payments to production companies and are based on tickets sold.

² Costs directly associated with the entire run of each production for costumes, sets, and artist fees.

Starlight will also incur \$565,000 of common fixed operating charges (administrative overhead, facility costs, and advertising) for the entire season, and is subject to a 30% income tax rate. These common charges are allocated based on total attendance for each production.

If Starlight's schedule of musicals is held, as planned, how many patrons would have to attend for Starlight to break even during the summer season?

- a. 77,918.
- b. 79,302.
- c. 79,938.
- d. 81,344.

7. Carson Inc. manufactures only one product and is preparing its budget for next year based on the following information.

Selling price per unit	\$ 100
Variable costs per unit	75
Fixed costs	250,000
Effective tax rate	35%

If Carson wants to achieve a net income of \$1.3 million next year, its sales must be

- a. 62,000 units.
- b. 70,200 units.
- c. 80,000 units.
- d. 90,000 units.

8. MetalCraft produces three inexpensive socket wrench sets that are popular with do-it-yourselfers. Budgeted information for the upcoming year is as follows.

<u>Model</u>	<u>Selling Price</u>	<u>Variable Cost</u>	<u>Estimated Sales Volume</u>
No. 109	\$10.00	\$ 5.50	30,000 sets
No. 145	15.00	8.00	75,000 sets
No. 153	20.00	14.00	45,000 sets

Total fixed costs for the socket wrench product line is \$961,000. If the company's



actual experience remains consistent with the estimated sales volume percentage distribution, and the firm desires to generate total operating income of \$161,200, how many Model No. 153 socket sets will MetalCraft have to sell?

- a. 26,000.
- b. 54,300.
- c. 155,000.
- d. 181,000.

9. Robin Company wants to earn a 6% return on sales after taxes. The company's effective income tax rate is 40%, and its contribution margin is 30%. If Robin has fixed costs of \$240,000, the amount of sales required to earn the desired return is

- a. \$375,000.
- b. \$400,000.
- c. \$1,000,000.
- d. \$1,200,000.

10. Bargain Press is considering publishing a new textbook. The publisher has developed the following cost data related to a production run of 6,000, the minimum possible production run. Bargain Press will sell the textbook for \$45 per copy.

	<u>Estimated cost</u>
Development (reviews, class testing, editing)	\$35,000
Set-up costs	18,500
Depreciation on equipment	9,320
General and administrative	7,500
Miscellaneous fixed costs	4,400
Printing and binding (variable cost)	30,000
Sales staff commissions (variable cost)	5,400
Bookstore commissions (variable cost)	67,500
Author's royalties (variable cost)	<u>27,000</u>
Total costs at production of 6,000 copies	<u>\$204,620</u>

How many textbooks must Bargain Press sell in order to generate operating earnings of 20% on sales? (Round your answer up to the nearest whole textbook.)

- a. 2,076 copies.
- b. 5,207 copies.
- c. 5,412 copies.
- d. 6,199 copies.



11. Zipper Company invested \$300,000 in a new machine to produce cones for the textile industry. Zipper's variable costs are 30% of the selling price, and its fixed costs are \$600,000. Zipper has an effective income tax rate of 40%. The amount of sales required to earn an 8% after-tax return on its investment would be
- a. \$891,429.
 - b. \$914,286.
 - c. \$2,080,000.
 - d. \$2,133,333.

12. Breakeven quantity is defined as the volume of output at which revenues are equal to
- a. marginal costs.
 - b. total costs.
 - c. variable costs.
 - d. fixed costs.

13. Eagle Brand Inc. produces two products. Data regarding these products are presented below.

	<u>Product X</u>	<u>Product Y</u>
Selling price per unit	\$100	\$130
Variable costs per unit	\$80	\$100
Raw materials used per unit	4 lbs.	10 lbs.

Eagle Brand has 1,000 lbs. of raw materials which can be used to produce Products X and Y.

Which one of the alternatives below should Eagle Brand accept in order to maximize contribution margin?

- a. 100 units of product Y.
 - b. 250 units of product X.
 - c. 200 units of product X and 20 units of product Y.
 - d. 200 units of product X and 50 units of product Y.
14. A detergent company sells large containers of industrial cleaner at a selling price of \$12 per container. Each container of cleaner requires \$4.50 of direct materials, \$2.50 direct labor, and \$1.00 of variable overhead. The company has total fixed costs of \$2,000,000 and an income tax rate of 40%. Management has set a goal to achieve a targeted after-tax net income of \$2,400,000. What amount of dollar sales must the company achieve in order to meet its goal?
- a. \$14,400,000.



- b. \$18,000,000.
 - c. \$22,000,000.
 - d. \$24,000,000.
15. Projected sales for a tent manufacturer are \$510,000. Each tent sells for \$850 and requires \$350 of variable costs to produce. The tent manufacturer's total fixed costs are \$145,000. The tent manufacturer's margin of safety is
- a. 310 units.
 - b. 710 units.
 - c. 730 units.
 - d. 1,310 units.
16. For the year just ended, Silverstone Company's sales revenue was \$450,000. Silverstone's fixed costs were \$120,000 and its variable costs amounted to \$270,000. For the current year sales are forecasted at \$500,000. If the fixed costs do not change, Silverstone's profits this year will be
- a. \$60,000.
 - b. \$80,000.
 - c. \$110,000.
 - d. \$200,000.
17. Breeze Company has a contribution margin of \$4,000 and fixed costs of \$1,000. If the total contribution margin increases by \$1,000, operating profit would
- a. decrease by \$1,000.
 - b. increase by more than \$1,000.
 - c. increase by \$1,000.
 - d. remain unchanged.
18. Wilkinson Company sells its single product for \$30 per unit. The contribution margin ratio is 45% and Wilkinson has fixed costs of \$10,000 per month. If 3,000 units are sold in the current month, Wilkinson's income would be
- a. \$30,500.
 - b. \$49,500.
 - c. \$40,500.
 - d. \$90,000.



19. Cervine Corporation makes motors for various products. Operating data and unit cost information for its products are presented below.

	<u>Product A</u>	<u>Product B</u>
Annual unit capacity	10,000	20,000
Annual unit demand	<u>10,000</u>	<u>20,000</u>
Selling price	\$100	\$80
Variable manufacturing cost	53	45
Fixed manufacturing cost	10	10
Variable selling & administrative	10	11
Fixed selling & administrative	5	4
Fixed other administrative	<u>2</u>	<u>-</u>
Unit operating profit	<u>\$ 20</u>	<u>\$10</u>
Machine hours per unit	2.0	1.5

Cervine has 40,000 productive machine hours available. What is the maximum total contribution margin that Cervine can generate in the coming year?

- a. \$665,000.
 - b. \$689,992.
 - c. \$850,000.
 - d. \$980,000.
20. Specialty Cakes Inc. produces two types of cakes, a 2 lbs. round cake and a 3 lbs. heart-shaped cake. Total fixed costs for the firm are \$94,000. Variable costs and sales data for the two types of cakes are presented below.

	<u>2 lbs. Round Cake</u>	<u>3 lbs. Heart-shape Cake</u>
Selling price per unit	\$12	\$20
Variable cost per unit	\$8	\$15
Current sales (units)	10,000	15,000

If the product sales mix were to change to three heart-shaped cakes for each round cake, the breakeven volume for each of these products would be

- a. 8,174 round cakes, 12,261 heart-shaped cakes.
- b. 12,261 round cakes, 8,174 heart-shaped cakes.
- c. 4,947 round cakes, 14,842 heart-shaped cakes.
- d. 15,326 round cakes, 8,109 heart-shaped cakes.



21. Lazar Industries produces two products, Crates and Boxes. Per unit selling prices, costs, and resource utilization for these products are as follows.

	<u>Crates</u>	<u>Boxes</u>
Selling price	<u>\$20</u>	<u>\$30</u>
Direct material costs	\$ 5	\$ 5
Direct labor costs	8	10
Variable overhead costs	3	5
Variable selling costs	1	2
Machine hours per unit	2	4

Production of Crates and Boxes involves joint processes and use of the same facilities. The total fixed factory overhead cost is \$2,000,000 and total fixed selling and administrative costs are \$840,000. Production and sales are scheduled for 500,000 units of Crates and 700,000 units of Boxes. Lazar maintains no direct materials, work-in-process, or finished goods inventory.

Lazar can reduce direct material costs for Crates by 50% per unit, with no change in direct labor costs. However, it would increase machine-hour production time by 1-1/2 hours per unit. For Crates, variable overhead costs are allocated based on machine hours. What would be the effect on the total contribution margin if this change was implemented?

- a. \$125,000 increase.
 - b. \$250,000 decrease.
 - c. \$300,000 increase.
 - d. \$1,250,000 increase.
22. Ticker Company sells two products. Product A provides a contribution margin of \$3 per unit, and Product B provides a contribution margin of \$4 per unit. If Ticker's sales mix shifts toward Product A, which one of the following statements is **correct**?
- a. The total number of units necessary to break even will decrease.
 - b. The overall contribution margin ratio will increase.
 - c. Operating income will decrease if the total number of units sold remains constant.
 - d. The contribution margin ratios for Products A and B will change.
23. Lazar Industries produces two products, Crates and Trunks. Per unit selling prices, costs, and resource utilization for these products are as follows.

<u>Crates</u>	<u>Trunks</u>
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Selling price	<u>\$20</u>	<u>\$30</u>
Direct material costs	\$ 5	\$ 5
Direct labor costs	8	10
Variable overhead costs	3	5
Variable selling costs	1	2
Machine hours per unit	2	4

Production of Crates and Trunks involves joint processes and use of the same facilities. The total fixed factory overhead cost is \$2,000,000 and total fixed selling and administrative costs are \$840,000. Production and sales are scheduled for 500,000 Crates and 700,000 Trunks. Lazar has a normal capacity to produce a total of 2,000,000 units in any combination of Crates and Trunks, and maintains no direct materials, work-in-process, or finished goods inventory.

Due to plant renovations Lazar Industries will be limited to 1,000,000 machine hours. What is the maximum amount of contribution margin Lazar can generate during the renovation period?

- a. \$1,500,000.
- b. \$2,000,000.
- c. \$3,000,000.
- d. \$7,000,000.

24. A company sells two products with the following results for the year just ended.

	<u>Product 1</u>	<u>Product 2</u>
Sales	\$12,000,000	\$3,000,000
Variable costs	4,800,000	1,500,000
Fixed costs	5,400,000	400,000

Assuming the product mix and the sales mix remain the same, the company's breakeven point in sales dollars is

- a. \$9,800,000.
- b. \$10,000,000.
- c. \$12,100,000.
- d. \$13,810,000.

25. Sunk costs are not relevant in the decision-making process because they are

- a. fixed costs.



- b. historical costs.
 - c. indirect costs.
 - d. period costs.
26. A company plans to add a new product that would affect its indirect labor costs in two ways. First, the production manager from an existing product would serve as manager of the new product. Her current assistant manager would be promoted and assume her previous position. Second, the existing maintenance staff would provide facility and machine maintenance that would require 30 hours of labor each month, but no increase in their total weekly hours worked. The company's production managers earn \$60,000 annually, assistant production managers are paid \$50,000 each year, and maintenance employees earn \$20 per hour. No additional hiring is planned. The annual relevant indirect labor costs for adding the new product would total
- a. \$67,200.
 - b. \$60,600.
 - c. \$10,000.
 - d. \$7,200.
27. Johnson waits two hours in line to buy a ticket to an NCAA Final Four Tournament. The opportunity cost of buying the \$200 ticket is
- a. Johnson's best alternative use of the \$200.
 - b. Johnson's best alternative use of the two hours it took to wait in line.
 - c. the value of the \$200 to the ticket agent.
 - d. Johnson's best alternative use of both the \$200 and the two hours spent in line.
28. In a management decision process, the cost measurement of the benefits sacrificed due to selecting an alternative use of resources is **most** often referred to as a(n)
- a. relevant cost.
 - b. sunk cost.
 - c. opportunity cost.
 - d. differential cost.
29. In order to avoid pitfalls in relevant-cost analysis, management should focus on
- a. variable cost items that differ for each alternative.
 - b. long-run fixed costs of each alternative.
 - c. anticipated fixed costs and variable costs of all alternatives.
 - d. anticipated revenues and costs that differ for each alternative.



30. In a joint manufacturing process, joint costs incurred prior to a decision as to whether to process the products after the split-off point should be viewed as
- sunk costs.
 - relevant costs.
 - standard costs.
 - differential costs.
31. Jack Blaze wants to rent store space in a new shopping mall for the three-month holiday shopping season. Blaze believes he has a new product available which has the potential for good sales. The product can be obtained on consignment at the cost of \$20 per unit and he expects to sell the item for \$100 per unit. Due to other business ventures, Blaze's risk tolerance is low. He recognizes that, as the product is entirely new, there is an element of risk. The mall management has offered Blaze three rental options: (1) a fixed fee of \$8,000 per month, (2) a fixed fee of \$3,990 per month plus 10% of Blaze's revenue, or (3) 30% of Blaze's revenues. Which one of the following actions would you recommend to Jack Blaze?
- Choose the first option no matter what Blaze expects the revenues to be.
 - Choose the second option no matter what Blaze expects the revenues to be.
 - Choose the second option only if Blaze expects revenues to exceed \$5,700.
 - Choose the third option no matter what Blaze expects the revenues to be.
32. Profits that are lost by moving an input from one use to another are referred to as
- out-of-pocket costs.
 - cannibalization charges.
 - replacement costs.
 - opportunity costs.
33. Refrigerator Company manufactures ice-makers for installation in refrigerators. The costs per unit, for 20,000 units of ice-makers, are as follows.

Direct materials	\$ 7
Direct labor	12
Variable overhead	5
Fixed overhead	<u>10</u>
Total costs	<u>\$34</u>



Cool Compartments Inc. has offered to sell 20,000 ice-makers to Refrigerator Company for \$28 per unit. If Refrigerator accepts Cool Compartments' offer the plant would be idled and fixed overhead amounting to \$6 per unit could be eliminated. The total relevant costs associated with the manufacture of ice-makers amount to

- a. \$480,000.
- b. \$560,000.
- c. \$600,000.
- d. \$680,000.

34. Edwards Products has just developed a new product with a manufacturing cost of \$30. The Marketing Director has identified three marketing approaches for this new product.

Approach X Set a selling price of \$36 and have the firm's sales staff sell the product at a 10% commission with no advertising program. Estimated annual sales would be 10,000 units.

Approach Y Set a selling price of \$38, have the firm's sales staff sell the product at a 10% commission, and back them up with a \$30,000 advertising program. Estimated annual sales would be 12,000 units.

Approach Z Rely on wholesalers to handle the product. Edwards would sell the new product to the wholesalers at \$32 per unit and incur no selling expenses. Estimated annual sales would be 14,000 units.

Rank the three alternatives in order of net profit, from highest net profit to lowest.

- a. X, Y, Z.
- b. Y, Z, X.
- c. Z, X, Y.
- d. Z, Y, X.

35. Auburn Products Inc. has compiled the following daily cost information for its manufacturing operation.

<u>Output (units)</u>	<u>Fixed Cost</u>	<u>Variable Cost</u>
0	\$2,000	\$ 0
1	2,000	200
2	2,000	380
3	2,000	550



4	2,000	700
5	2,000	860
6	2,000	1,040
7	2,000	1,250
8	2,000	1,500

Auburn's average total cost at an output level of 3 units is

- a. \$667.
- b. \$850.
- c. \$1,217.
- d. \$2,550.

36. Daily costs for Kelso Manufacturing include \$1,000 of fixed costs and total variable costs are shown below.

Unit Output	10	11	12	13	14	15
Cost	\$125	\$250	\$400	\$525	\$700	\$825

The average total cost at an output level of 11 units is

- a. \$113.64.
- b. \$125.00.
- c. \$215.91.
- d. \$250.00.

37. Harper Products' cost information for the normal range of output in a month is shown below.

<u>Output in units</u>	<u>Total Cost</u>
20,000	\$3,000,000
22,500	3,325,000
25,000	3,650,000

What is Harper's short-run marginal cost?

- a. \$26.
- b. \$130.
- c. \$146.
- d. \$150.

38. Auburn Products Inc. has compiled the following daily cost information for its manufacturing



operation.

<u>Output (units)</u>	<u>Fixed Cost</u>	<u>Variable Cost</u>
0	\$2,000	\$ 0
1	2,000	200
2	2,000	380
3	2,000	550
4	2,000	700
5	2,000	860
6	2,000	1,040
7	2,000	1,250
8	2,000	1,500

Auburn's marginal cost for the 7th unit is

- a. \$179.
- b. \$210.
- c. \$286.
- d. \$464.

39. Daily costs for Kelso Manufacturing include \$1,250 in fixed costs and total variable costs are shown below.

Unit Output	10	11	12	13	14	15
Cost	\$150	\$300	\$480	\$620	\$750	\$900

The marginal cost of the 12th unit is

- a. \$180.00.
 - b. \$140.00.
 - c. \$104.16.
 - d. \$40.00.
40. The total cost of producing 100 units of a good is \$800. If a firm's average variable cost is \$5 per unit, then the firm's
- a. average fixed cost is \$3.
 - b. total variable cost is \$300.
 - c. marginal cost is \$3.
 - d. marginal cost is \$8.



41. Daily sales and cost data for Crawford Industries are shown below.

Sales		Total
<u>Units</u>	<u>\$</u>	<u>Costs</u>
20	\$2,000	\$1,200
21	2,090	1,250
22	2,170	1,290
23	2,240	1,330
24	2,300	1,380
25	2,350	1,440

The marginal cost of the 23rd unit is

- a. \$30.00.
 - b. \$40.00.
 - c. \$50.00.
 - d. \$57.83.
42. Parker Manufacturing is analyzing the market potential for its specialty turbines. Parker developed its pricing and cost structures for their specialty turbines over various relevant ranges. The pricing and cost data for each relevant range are presented below.

Units produced and sold	<u>1 - 5</u>	<u>6 - 10</u>	<u>11 - 15</u>	<u>16 - 20</u>
Total fixed costs	\$200,000	\$400,000	\$600,000	\$800,000
Unit variable cost	50,000	50,000	45,000	45,000
Unit selling price	100,000	100,000	100,000	100,000

Which one of the following production/sales levels would produce the highest operating income for Parker?

- a. 8 units.
 - b. 10 units.
 - c. 14 units.
 - d. 17 units.
43. A fuel company can sell 8 units of product at a selling price of \$450. However, at a selling price of \$445 the company can sell 9 units. What is the marginal revenue that is derived from selling the 9th unit?
- a. (\$5).
 - b. \$405.
 - c. \$445.
 - d. \$4,005.



44. A company's budget indicated the following cost per unit for the company's most popular product.

Variable manufacturing costs	\$64
Fixed manufacturing overhead	45
Sales commissions	3
Fixed selling and administrative costs	32

Although this product normally sells for \$160 per unit, the company received a special order from a new customer. If the company has idle capacity, its income would increase by accepting the order if the selling price per unit for the order was greater than

- a. \$64.
 - b. \$67.
 - c. \$109.
 - d. \$144.
45. A company manufactures a product that has the following unit price and costs.

Selling price	\$300
Costs	
Direct materials	\$40
Direct labor	30
Variable manufacturing overhead	24
Fixed manufacturing overhead	60
Variable selling	6
Fixed selling and administrative	<u>20</u>
Total costs	(180)
Operating margin	<u>\$120</u>

The company received a special order for 1,000 units of the product. The company currently has excess capacity but has an alternative use for this capacity that will result in a contribution margin of \$20,000. What is the minimum price that the company should charge for this special order?

- a. \$120, because it covers the costs of manufacturing the product and allows the company to break even.
- b. \$140, because operating margin will increase by \$20,000.
- c. \$180, because it covers the costs of manufacturing the product and allows the company to break even.
- d. \$200, because operating margin will increase by \$20,000.



46. Johnson Company manufactures a variety of shoes, and has received a special one-time-only order directly from a wholesaler. Johnson has sufficient idle capacity to accept the special order to manufacture 15,000 pairs of sneakers at a price of \$7.50 per pair. Johnson's normal selling price is \$11.50 per pair of sneakers. Variable manufacturing costs are \$5.00 per pair and fixed manufacturing costs are \$3.00 a pair. Johnson's variable selling expense for its normal line of sneakers is \$1.00 per pair. What would the effect on Johnson's operating income be if the company accepted the special order?
- a. Decrease by \$60,000.
 - b. Increase by \$22,500.
 - c. Increase by \$37,500.
 - d. Increase by \$52,500.
47. The Robo Division, a decentralized division of GMT Industries, has been approached to submit a bid for a potential project for the RSP Company. Robo Division has been informed by RSP that they will not consider bids over \$8,000,000. Robo Division purchases its materials from the Cross Division of GMT Industries. There would be no additional fixed costs for either the Robo or Cross Divisions. Information regarding this project is as follows.

	<u>Cross Division</u>	<u>Robo Division</u>
Variable Costs	\$1,500,000	\$4,800,000
Transfer Price	3,700,000	-

If Robo Division submits a bid for \$8,000,000, the amount of contribution margin recognized by the Robo Division and GMT Industries, respectively, is

- a. \$(500,000) and \$(2,000,000).
 - b. \$3,200,000 and \$(500,000).
 - c. \$(500,000) and \$1,700,000.
 - d. \$3,200,000 and \$1,700,000.
48. Basic Computer Company (BCC) sells its micro-computers using bid pricing. It develops bids on a full cost basis. Full cost includes estimated material, labor, variable overheads, fixed manufacturing overheads, and reasonable incremental computer assembly administrative costs, plus a 10% return on full cost. BCC believes bids in excess of \$925 per computer are not likely to be considered.
- BCC's current cost structure, based on its normal production levels, is \$500 for materials per computer and \$20 per labor hour. Assembly and testing of each computer requires 12 labor hours. BCC's variable manufacturing overhead is \$2 per labor hour, fixed manufacturing overhead is \$3 per labor hour, and incremental administrative costs are \$8 per computer assembled.



The company has received a request from the School Board for 500 computers. BCC's management expects heavy competition in bidding for this job. As this is a very large order for BCC, and could lead to other educational institution orders, management is extremely interested in submitting a bid which would win the job, but at a price high enough so that current net income will not be unfavorably impacted. Management believes this order can be absorbed within its current manufacturing facility. Which one of the following bid prices should be recommended to BCC's management?

- a. \$764.00.
- b. \$772.00.
- c. \$849.20.
- d. \$888.80.

49. The loss of a key customer has temporarily caused Bedford Machining to have some excess manufacturing capacity. Bedford is considering the acceptance of a special order, one that involves Bedford's most popular product. Consider the following types of costs.

- I. Variable costs of the product
- II. Fixed costs of the product
- III. Direct fixed costs associated with the order
- IV. Opportunity cost of the temporarily idle capacity

Which one of the following combinations of cost types should be considered in the special order acceptance decision?

- a. I and II.
- b. I and IV.
- c. II and III.
- d. I, III, and IV.

50. Raymund Inc. currently sells its only product to Mall-Stores. Raymund has received a one-time- only order for 2,000 units from another buyer. Sale of the special order items will not require any additional selling effort. Raymund has a manufacturing capacity to produce 7,000 units. Raymund has an effective income tax rate of 40%. Raymund's Income Statement, before consideration of the one-time-only order, is as follows.

Sales (5,000 units at \$20 per unit)		\$100,000
Variable manufacturing costs	\$50,000	
Variable selling costs	<u>15,000</u>	<u>65,000</u>
Contribution margin		35,000



Fixed manufacturing costs	16,000	
Fixed selling costs	<u>4,000</u>	<u>20,000</u>
Operating income		15,000
Income taxes		<u>6,000</u>
Net income		<u>\$ 9,000</u>

In negotiating a price for the special order, Raymund should set the minimum per unit selling price at

- a. \$10.
- b. \$13.
- c. \$17.
- d. \$18.

51. Two months ago, Hickory Corporation purchased 4,500 pounds of Kaylene at a cost of \$15,300. The market for this product has become very strong, with the price jumping to \$4.05 per pound. Because of the demand, Hickory can buy or sell Kaylene at this price. Hickory recently received a special order inquiry that would require the use of 4,200 pounds of Kaylene. In deciding whether to accept the order, management must evaluate a number of decision factors. Without regard to income taxes, which one of the following combination of factors correctly depicts relevant and irrelevant decision factors, respectively?

<u>Relevant Decision Factor</u>	<u>Irrelevant Decision Factor</u>
a. Remaining 300 pounds of Kaylene	Market price of \$4.05 per lb.
b. Market price of \$4.05 per lb.	Purchase price of \$3.40 per lb.
c. Purchase price of \$3.40 per lb.	Market price of \$4.05 per lb.
d. 4,500 pounds of Kaylene	Remaining 300 pounds of Kaylene.

52. Gardener Company currently is using its full capacity of 25,000 machine hours to manufacture product XR-2000. LJB Corporation placed an order with Gardener for the manufacture of 1,000 units of KT-6500. LJB would normally manufacture this component. However, due to a fire at its plant, LJB needs to purchase these units to continue manufacturing other products. This is a one- time special order. The following reflects unit cost data, and selling prices.

	<u>KT-6500</u>	<u>XR-2000</u>
Material	\$27	\$24
Direct labor	12	10
Variable overhead	6	5
Fixed overhead	48	40
Variable selling & administrative	5	4



Fixed selling & administrative	12	10
Normal selling price	\$125	\$105
Machine hours required	3	4

What is the minimum unit price that Gardener should charge LJB to manufacture 1,000 units of KT- 6500?

- a. \$93.00.
- b. \$96.50.
- c. \$110.00.
- d. \$125.00

53. Green Corporation builds custom-designed machinery. A review of selected data and the company's pricing policies revealed the following.

- A 10% commission is paid on all sales orders.
- Variable and fixed factory overheads total 40% and 20%, respectively, of direct labor.
- Corporate administrative costs amount to 10% of direct labor.
- When bidding on jobs, Green adds a 25% markup to the total of all factory and administrative costs to cover income taxes and produce a profit.
- The firm's income tax rate is 40%.

The company expects to operate at a maximum of 80% of practical capacity.

Green recently received an invitation to bid on the manufacture of some custom machinery for Kennendale, Inc. For this project, Green's production accountants estimate the material and labor costs will be \$66,000 and \$120,000, respectively. Accordingly, Green submitted a bid to Kennendale in the amount of \$375,000. Feeling Green's bid was too high, Kennendale countered with a price of \$280,000. Which one of the following options should be recommended to Green's management?

- a. Accept the counteroffer because the order will increase operating income.
- b. Accept the counteroffer even though the order will decrease operating income.
- c. Reject the counteroffer even though the order will increase operating income.
- d. Reject the counteroffer because the order will decrease operating income.

54. Synergy Inc. produces a component that is popular in many refrigeration systems. Data on three of the five different models of this component are as follows.



	Model		
	A	B	C
Volume needed (units)	<u>5,000</u>	<u>6,000</u>	<u>3,000</u>
Manufacturing costs			
Variable direct costs	\$10	\$24	\$20
Variable overhead	5	10	15
Fixed overhead	<u>11</u>	<u>20</u>	<u>17</u>
Total manufacturing costs	<u>\$26</u>	<u>\$54</u>	<u>\$52</u>
Cost if purchased	<u>\$21</u>	<u>\$42</u>	<u>\$39</u>

Synergy applies variable overhead on the basis of machine hours at the rate of \$2.50 per hour. Models A and B are manufactured in the Freezer Department, which has a capacity of 28,000 machine processing hours. Which one of the following options should be recommended to Synergy's management?

- a. Purchase all three products in the quantities required.
- b. Manufacture all three products in the quantities required.
- c. The Freezer Department's manufacturing plan should include 5,000 units of Model A and 4,500 units of Model B.
- d. The Freezer Department's manufacturing plan should include 2,000 units of Model A and 6,000 units of Model B.

55. Refrigerator Company manufactures ice-makers for installation in refrigerators. The costs per unit, for 20,000 units of ice-makers, are as follows.

Direct materials	\$ 7
Direct labor	12
Variable overhead	5
Fixed overhead	<u>10</u>
Total costs	<u>\$34</u>

Cool Compartments Inc. has offered to sell 20,000 ice-makers to Refrigerator Company for \$28 per unit. If Refrigerator accepts Cool Compartments' offer, the facilities used to manufacture ice-makers could be used to produce water filtration units. Revenues from the sale of water filtration units are estimated at \$80,000, with variable costs amounting to 60% of sales. In addition, \$6 per unit of the fixed overhead associated with the manufacture of ice-makers could be eliminated.

For Refrigerator Company to determine the **most** appropriate action to take in this situation, the total relevant costs of make vs. buy, respectively, are

- a. \$600,000 vs. \$560,000.
- b. \$648,000 vs. \$528,000.



- c. \$600,000 vs. \$528,000.
- d. \$680,000 vs. \$440,000.

56. Sunshine Corporation is considering the purchase of a new machine for \$800,000. The machine is capable of producing 1.6 million units of product over its useful life. The manufacturer's engineering specifications state that the machine-related cost of producing each unit of product should be \$.50. Sunshine's total anticipated demand over the asset's useful life is 1.2 million units. The average cost of materials and labor for each unit is \$.40. In considering whether to buy the new machine, would you recommend that Sunshine use the manufacturer's engineering specification of machine-related unit production cost?

- a. No, the machine-related cost of producing each unit is \$2.00.
- b. No, the machine-related cost of producing each unit is \$.67.
- c. No, the machine-related cost of producing each unit is \$.90.
- d. Yes, the machine-related cost of producing each unit is \$.50.

57. Aril Industries is a multiproduct company that currently manufactures 30,000 units of Part 730 each month for use in production. The facilities now being used to produce Part 730 have fixed monthly overhead costs of \$150,000, and a theoretical capacity to produce 60,000 units per month. If Aril were to buy Part 730 from an outside supplier, the facilities would be idle and 40% of fixed costs would continue to be incurred. There are no alternative uses for the facilities. The variable production costs of Part 730 are \$11 per unit. Fixed overhead is allocated based on planned production levels.

If Aril Industries continues to use 30,000 units of Part 730 each month, it would realize a net benefit by purchasing Part 730 from an outside supplier only if the supplier's unit price is less than

- a. \$12.00.
- b. \$12.50.
- c. \$13.00.
- d. \$14.00.

58. Verla Industries is trying to decide which one of the following two options to pursue. Either option will take effect on January 1st of the next year.

Option One - Acquire a New Finishing Machine.

The cost of the machine is \$1,000,000 and will have a useful life of five years. Net pre-tax cash flows arising from savings in labor costs will amount to \$100,000 per year for five years.

Depreciation expense will be calculated using the straight-line method for both financial and tax reporting purposes. As an incentive to purchase, Verla will receive a trade-in allowance of \$50,000 on their current fully depreciated finishing machine.



Option Two - Outsource the Finishing Work.

Verla can outsource the work to LM Inc. at a cost of \$200,000 per year for five years. If they outsource, Verla will scrap their current fully depreciated finishing machine.

Verla's effective income tax rate is 40%. The weighted-average cost of capital is 10%. When comparing the two options, the \$50,000 trade-in allowance would be considered

- a. irrelevant because it does not affect taxes.
- b. relevant because it is a decrease in cash outflow.
- c. irrelevant because it does not affect cash.
- d. relevant because it is an increase in cash outflows.

59. A company currently manufactures subcomponent XT9, a part in the company's main product ZL10. Management has found an outside supplier that could sell the company 100,000 XT9 subcomponents next year for \$45 each. The company's production of XT9 costs per unit are shown below.

Direct materials	\$17.00
Direct labor	16.00
Variable manufacturing overhead	4.50
Fixed manufacturing overhead	<u>6.00</u>
Total cost per unit	<u>\$43.50</u>

If the subcomponent is purchased from the outside supplier, all variable production costs would be eliminated and 70% of the fixed production costs would be eliminated. Management has found that the space used for the XT9 subcomponent could be used to produce a new product that would generate \$300,000 in net operating income each year. If the company purchases XT9 from the outside supplier, operating income would decrease by

- a. \$30,000.
 - b. \$270,000.
 - c. \$330,000.
 - d. \$630,000.
60. A manufacturing company is considering a new product for the coming year, which requires the production of an electric motor. The company can purchase the motor from a reliable vendor for \$21 per unit, or manufacture it internally. The company has excess capacity to manufacture the 30,000 motors needed in the coming year except for manufacturing space



and special machinery. The machinery can be leased for \$45,000 annually. The company has finished goods warehouse space that it currently leases for \$39,000, which can be converted and used to manufacture the motors. To replace the finished goods warehouse, additional off-site space can be leased at an annual cost of \$54,000. The estimated unit costs for manufacturing the motors internally, exclusive of the leasing costs itemized above, are shown below.

Direct material	\$ 8.00
Direct labor	4.00
Variable manufacturing overhead	3.00
Allocated fixed manufacturing overhead	5.00

Should the company make or buy the electric motors, and why?

- a. Buy, because purchasing from the outside vendor would save \$69,000.
- b. Make, because manufacturing the motors internally would save \$96,000.
- c. Buy, because purchasing from the outside vendor would save \$54,000.
- d. Make, because manufacturing the motors internally would save \$81,000.

61. A company currently has a four-stage manufacturing process in the following order: Processing, Smoothing, Shaping, and Painting. There is a market for the output of each stage. A newly-appointed management accountant has been examining the company's operations, and has prepared the following information below.

<u>Manufacturing Stage</u>	<u>Total Selling Price of Output</u>	<u>Incremental Variable Cost Per Stage</u>
Processing	\$10	\$8
Smoothing	12	1
Shaping	18	5
Painting	20	3

Given the above information, selling the output after which one of the following stages will yield the **greatest** contribution margin?

- a. Processing.
- b. Smoothing.
- c. Shaping.
- d. Painting.

62. A circuit board company conducts a joint manufacturing process to produce 10,000 units of Board A and 10,000 units of Board B. The total joint variable manufacturing cost to produce these two products is \$2,000,000. The company can sell all 10,000 units of Board B at the split-off point for



\$300 per unit, or process Board B further and sell all 10,000 units at \$375 per unit. The total additional cost to process Board B further would be \$500,000, and all additional costs would be variable. If the company decides to process Board B further, what effect would the decision have on operating income?

- a. \$750,000 decrease in operating income.
- b. \$250,000 increase in operating income.
- c. \$2,250,000 increase in operating income.
- d. \$3,250,000 increase in operating income.

63. Jones Enterprises manufactures 3 products, A, B, and C. During the month of May Jones' production, costs, and sales data were as follows.

	<u>Products</u>			<u>Totals</u>
	<u>A</u>	<u>B</u>	<u>C</u>	
Units of production	<u>30,000</u>	<u>20,000</u>	<u>70,000</u>	<u>120,000</u>
Joint production costs to split-off point				\$480,000
Further processing costs	\$ -	\$60,000	\$140,000	
Unit sales price				
At split-off	3.75	5.50	10.25	
After further processing	-	8.00	12.50	

Based on the above information, which one of the following alternatives should be recommended to Jones' management?

- a. Sell both Product B and Product C at the split-off point.
 - b. Process Product B further but sell Product C at the split-off point.
 - c. Process Product C further but sell Product B at the split-off point.
 - d. Process both Products B and C further.
64. Oakes Inc. manufactured 40,000 gallons of Mononate and 60,000 gallons of Beracyl in a joint production process, incurring \$250,000 of joint costs. Oakes allocates joint costs based on the physical volume of each product produced. Mononate and Beracyl can each be sold at the split-off point in a semifinished state or, alternatively, processed further. Additional data about the two products are as follows.

	<u>Mononate</u>	<u>Beracyl</u>
Sales price per gallon at split-off	\$7	\$15
Sales price per gallon if processed further	\$10	\$18
Variable production costs if processed further	\$125,000	\$115,000

An assistant in the company's cost accounting department was overheard saying "... that when



both

joint and separable costs are considered, the firm has no business processing either product beyond the split-off point. The extra revenue is simply not worth the effort.” Which of the following strategies should be recommended for Oakes?

- | <u>Mononate</u> | <u>Beracyl</u> |
|----------------------|--------------------|
| a. Sell at split-off | Sell at split-off. |
| b. Sell at split-off | Process further. |
| c. Process further | Sell at split-off. |
| d. Process further | Process further. |

65. Current business segment operations for Whitman, a mass retailer, are presented below.

	<u>Merchandise</u>	<u>Automotive</u>	<u>Restaurant</u>	<u>Total</u>
Sales	\$500,000	\$400,000	\$100,000	\$1,000,000
Variable costs	300,000	200,000	70,000	570,000
Fixed costs	<u>100,000</u>	<u>100,000</u>	<u>50,000</u>	<u>250,000</u>
Operating income (loss)	<u>\$100,000</u>	<u>\$100,000</u>	<u>\$(20,000)</u>	<u>\$ 180,000</u>

Management is contemplating the discontinuance of the Restaurant segment since “it is losing money.” If this segment is discontinued, \$30,000 of its fixed costs will be eliminated. In addition, Merchandise and Automotive sales will decrease 5% from their current levels. What will Whitman’s total contribution margin be if the Restaurant segment is discontinued?

- a. \$160,000.
b. \$220,000.
c. \$367,650.
d. \$380,000.
66. A company manufactures three products, T1, T2 and T3. Their financial information is shown below.

	<u>T1</u>	<u>T2</u>	<u>T3</u>
Sales	\$60,000	\$90,000	\$24,000
Variable costs	<u>36,000</u>	<u>48,000</u>	<u>15,000</u>
Contribution margin	24,000	42,000	9,000
Fixed costs:			
Avoidable	9,000	18,000	6,000
Unavoidable	<u>6,000</u>	<u>9,000</u>	<u>5,400</u>
Operating income	<u>\$9,000</u>	<u>\$15,000</u>	<u>(\$2,400)</u>

Management is concerned about the financial performance of T3. If the company drops the T3 product line, the operating income will



- a. increase by \$2,400.
- b. decrease by \$3,000.
- c. increase by \$3,000.
- d. decrease by \$9,000.

67. A company sells two products that are manufactured in the same production department on two different machines. The contribution margin per unit of the two products is \$120 and \$80, respectively. When deciding if the second product should be discontinued, which one of the following pieces of information is needed to make the correct decision?

- a. Alternative use of the second product's space.
- b. Commissions paid on the second product's sales.
- c. Depreciation expense of the second product's machinery.
- d. Production department manager's salary.

68. A company has the following financial information for its divisions.

	<u>Alcohol</u>	<u>Soft Drink</u>	<u>Juice</u>	<u>Total</u>
Sales	\$700,000	\$430,000	\$270,000	\$1,400,000
Variable costs	280,000	150,000	170,000	600,000
Fixed costs	<u>300,000</u>	<u>100,000</u>	<u>120,000</u>	<u>520,000</u>
Operating income (loss)	<u>\$120,000</u>	<u>\$180,000</u>	<u>\$ (20,000)</u>	<u>\$ 280,000</u>

Which one of the following options reflects the current contribution margin ratio for each of the company's business segments?

- | | <u>Alcohol</u> | <u>Soft Drink</u> | <u>Juice</u> |
|----|----------------|-------------------|--------------|
| a. | 60% | 65% | 37%. |
| b. | 60% | 35% | 63%. |
| c. | 40% | 65% | 37%. |
| d. | 40% | 35% | 63%. |

69. Capital Company has decided to discontinue a product produced on a machine purchased four years ago at a cost of \$70,000. The machine has a current book value of \$30,000. Due to technologically improved machinery now available in the marketplace the existing machine has no current salvage value. The company is reviewing the various aspects involved in the production of a new product. The engineering staff advised that the existing machine can be used to produce the new product.
Other costs involved in the production of the new product will be materials of \$20,000 and labor priced at \$5,000.

Ignoring income taxes, the costs relevant to the decision to produce or not to produce



the new product would be

- a. \$25,000.
- b. \$30,000.
- c. \$55,000.
- d. \$95,000.

70. Reynolds Inc. manufactures several different products, including a premium lawn fertilizer and weed killer that is popular in hot, dry climates. Reynolds is currently operating at less than full capacity because of market saturation for lawn fertilizer. Sales and cost data for a 40-pound bag of Reynolds lawn fertilizer is as follows.

Selling price		\$18.50
Production cost		
Materials and labor	\$12.25	
Variable overhead	3.75	
Allocated fixed overhead	<u>4.00</u>	<u>20.00</u>
Income (loss) per bag		<u><u>\$(1.50)</u></u>

On the basis of this information, which one of the following alternatives should be recommended to Reynolds management?

- a. Select a different cost driver to allocate its overhead.
- b. Drop this product from its product line.
- c. Continue to produce and market this product.
- d. Increase output and spread fixed overhead over a larger volume base.



71. Following are the operating results of the two segments of Parklin Corporation.

	<u>Segment A</u>	<u>Segment B</u>	<u>Total</u>
Sales	\$10,000	\$15,000	\$25,000
Variable costs of goods sold	4,000	8,500	12,500
Fixed costs of goods sold	<u>1,500</u>	<u>2,500</u>	<u>4,000</u>
Gross margin	4,500	4,000	8,500
Variable selling and administrative	2,000	3,000	5,000
Fixed selling and administrative	<u>1,500</u>	<u>1,500</u>	<u>3,000</u>
Operating income (loss)	<u>\$ 1,000</u>	<u>\$ (500)</u>	<u>\$ 500</u>

Variable costs of goods sold are directly related to the operating segments. Fixed costs of goods sold are allocated to each segment based on the number of employees. Fixed selling and administrative expenses are allocated equally. If Segment B is eliminated, \$1,500 of fixed costs of goods sold would be eliminated. Assuming Segment B is closed, the effect on operating income would be

- a. an increase of \$500.
- b. an increase of \$2,000.
- c. a decrease of \$2,000.
- d. a decrease of \$2,500.

72. Grapevine Corporation produces two joint products, JP-1 and JP-2, and a single by-product, BP-1, in Department 2 of its manufacturing plant. JP-1 is subsequently transferred to Department 3 where it is refined into a more expensive, higher-priced product, JP-1R, and a by-product known as BP-2.

Recently, Santa Fe Company introduced a product that would compete directly with JP-1R and, as a result, Grapevine must reevaluate its decision to process JP-1 further. The market for JP-1 will not be affected by Santa Fe's product, and Grapevine plans to continue production of JP-1, even if further processing is terminated. Should this latter action be necessary, Department 3 will be dismantled.

Which of the following items should Grapevine consider in its decision to continue or terminate Department 3 operations?

- 1. The selling price per pound of JP-1.
- 2. The total hourly direct labor cost in Department 3.
- 3. Unit marketing and packaging costs for BP-2.
- 4. Supervisory salaries of Department 3 personnel who will be transferred elsewhere in the plant, if processing is terminated.
- 5. Department 2 joint cost allocated to JP-1 and transferred to Department 3.
- 6. The cost of existing JP-1R inventory.



- a. 2, 3, 4.
- b. 1, 2, 3.
- c. 2, 3, 5, 6.
- d. 1, 2, 3, 4, 5.

73. The Doll House, a very profitable company, plans to introduce a new type of doll to its product line. The sales price and costs for the new dolls are as follows.

Selling price per doll	\$100
Variable cost per doll	\$60
Incremental annual fixed costs	\$456,000
Income tax rate	30%

If 10,000 new dolls are produced and sold, the effect on Doll House's profit (loss) would be

- a. \$(176,000).
 - b. \$(56,000).
 - c. \$(39,200).
 - d. \$280,000.
74. The Furniture Company currently has three divisions: Maple, Oak, and Cherry. The oak furniture line does not seem to be doing well and the president of the company is considering dropping this line. If it is dropped, the revenues associated with the Oak Division will be lost and the related variable costs saved. Also, 50% of the fixed costs allocated to the oak furniture line would be eliminated. The income statements, by divisions, are as follows.

	<u>Maple</u>	<u>Oak</u>	<u>Cherry</u>
Sales	\$55,000	\$85,000	\$100,000
Variable Costs	<u>40,000</u>	<u>72,000</u>	<u>82,000</u>
Contribution Margin	15,000	13,000	18,000
Fixed costs	<u>10,000</u>	<u>14,000</u>	<u>10,200</u>
Operating profit (loss)	<u>\$ 5,000</u>	<u>\$(1,000)</u>	<u>\$ 7,800</u>

Which one of the following options should be recommended to the president of the company?

- a. Continue operating the Oak Division as discontinuance would result in a total operating loss of \$1,200.
- b. Continue operating the Oak Division as discontinuance would result in a \$6,000 decline in operating profits.
- c. Discontinue the Oak Division which would result in a \$1,000 increase in operating profits.



d. Discontinue the Oak Division which would result in a \$7,000 increase in operating profits.

75. Milton Manufacturing occasionally has capacity problems in its metal shaping division, where the chief cost driver is machine hours. In evaluating the attractiveness of its individual products for decision-making purposes, which measurement tool should the firm select?

If machine hours do not
constrain the number
of units to be produced

If machine hours
constrain the number
of units to be produced

- | | |
|----------------------------|---------------------------------------|
| a. Contribution margin | Contribution margin per machine hour. |
| b. Gross profit | Contribution margin. |
| c. Contribution margin | Contribution margin ratio. |
| d. Contribution margin per | Contribution margin. machine hour |

76. Elgers Company produces valves for the plumbing industry. Elgers' per unit sales price and variable costs are as follows.

Sales		
price	\$12	Variable costs 8

Elgers' practical plant capacity is 40,000 units. Elgers' total fixed costs aggregate \$48,000 and it has a 40% effective tax rate. The maximum net profit that Elger can earn is

- a. \$48,000.
- b. \$67,200.
- c. \$96,000.
- d. \$112,000.

77. Dayton Corporation manufactures pipe elbows for the plumbing industry. Dayton's per unit sales price and variable costs are as follows.

Sales		
price	\$10	Variable costs 7

Dayton's practical plant capacity is 35,000 units. Dayton's total fixed costs amount to \$42,000, and the company has a 50% effective tax rate. If Dayton produced and sold 30,000 units, net income would be

- a. \$24,000.
- b. \$45,000.



- c. \$48,000.
- d. \$90,000.

78. Raymund Inc., a bearings manufacturer, has the capacity to produce 7,000 bearings per month. The company is planning to replace a portion of its labor-intensive production process with a highly automated process, which would increase Raymund's fixed manufacturing costs by \$30,000 per month and reduce its variable costs by \$5 per unit.

Raymund's Income Statement for an average month is as follows.

Sales (5,000 units at \$20 per unit)		\$100,000
Variable manufacturing costs	\$50,000	
Variable selling costs	<u>15,000</u>	<u>65,000</u>
Contribution margin		35,000
Fixed manufacturing costs	16,000	
Fixed selling costs	<u>4,000</u>	<u>20,000</u>
Operating income		<u>\$ 15,000</u>

If Raymund installs the automated process, the company's monthly operating income would be

- a. \$5,000.
 - b. \$10,000.
 - c. \$30,000.
 - d. \$40,000.
79. Phillips and Company produces educational software. Its current unit cost, based upon an anticipated volume of 150,000 units, is as follows.

Selling price	\$150
Variable costs	60
Contribution margin	90
Fixed costs	60
Operating income	30

Sales for the coming year are estimated at 175,000 units, which is within the relevant range of Phillip's cost structure. Cost management initiatives are expected to yield a 20% reduction in variable costs and a reduction of \$750,000 in fixed costs. Phillip's cost structure for the coming year will include a

- a. per unit contribution margin of \$72 and fixed costs of \$55.
- b. total contribution margin of \$15,300,000 and fixed costs of \$8,250,000.
- c. variable cost ratio of 32% and operating income of \$9,600,000.



d. contribution margin ratio of 68% and operating income of \$7,050,000.

80. Cervine Corporation makes two types of motors for use in various products. Operating data and unit cost information for its products are presented below.

	<u>Product A</u>	<u>Product B</u>
Annual unit capacity	10,000	20,000
Annual unit demand	<u>10,000</u>	<u>20,000</u>
Selling price	\$100	\$80
Variable manufacturing cost	53	45
Fixed manufacturing cost	10	10
Variable selling & administrative	10	11
Fixed selling & administrative	5	4
Fixed other administrative	<u>2</u>	<u>0</u>
Unit operating profit	<u>\$ 20</u>	<u>\$10</u>
Machine hours per unit	2.0	1.5

Cervine has 40,000 productive machine hours available. The relevant contribution margins, per machine hour for each product, to be utilized in making a decision on product priorities for the coming year, are

	<u>Product A</u>	<u>Product B</u>
a. \$17.00		\$14.00.
b. \$18.50		\$16.00.
c. \$20.00		\$10.00.
d. \$37.00		\$24.00.

81. Lark Industries accepted a contract to provide 30,000 units of Product A and 20,000 units of Product B. Lark's staff developed the following information with regard to meeting this contract.

	<u>Product A</u>	<u>Product B</u>	<u>Total</u>
Selling Price	\$75	\$125	
Variable costs	\$30	\$48	
Fixed overhead			\$1,600,000
Machine hours required	3	5	
Machine hours available			160,000
Cost if outsourced	\$45	\$60	



Lark's operations manager has identified the following alternatives. Which alternative should be recommended to Lark's management?

- a. Make 30,000 units of Product A, utilize the remaining capacity to make Product B, and outsource the remainder.
- b. Make 25,000 units of Product A, utilize the remaining capacity to make Product B, and outsource the remainder.
- c. Make 20,000 units of Product A, utilize the remaining capacity to make Product B, and outsource the remainder.
- d. Rent additional capacity of 30,000 machine hours which will increase fixed costs by \$150,000.

82. Which one of the following would cause the demand curve for bagels to shift to the left?

- a. A decrease in the cost of muffins.
- b. An increase in the population.
- c. A decrease in the price of bagels.
- d. An increase in the supply of bagels.

83. Which one of the following would cause the demand curve for prepared meals sold in supermarkets to shift to the right?

- a. An increase in the price of prepared meals.
- b. An increase in consumer income.
- c. A decrease in the price of restaurant meals.
- d. An increase in the supply of prepared meals.

84. If the demand for a product is elastic, a price increase will result in

- a. no change in total revenue.
- b. an increase in total revenue.
- c. a decrease in total revenue.
- d. an indeterminate change in revenue.

85. The advantages of incorporating full product costs in pricing decisions include all the following **except**

- a. ease in identifying unit fixed costs with individual products.
- b. full product cost recovery.
- c. the promotion of price stability.



d. a pricing formula that meets the cost-benefit test; i.e., simplicity.

86. An economist determined the following market data for a commodity.

<u>Price</u>	<u>Quantity Supplied</u>	<u>Quantity Demanded</u>
\$25	250	750
50	500	500
75	750	250
100	1,000	0

Based on this information, which one of the following statements is correct?

- a. In the short-term, there would be excess supply at a price of \$40.
- b. In the long-run, if producers' costs per unit decline, then a reasonable market clearing price could be \$65.
- c. In the short-term, there would be excess demand at a price of \$70.
- d. In the long-run, if producers' costs per unit increase, then a reasonable market clearing price could be \$70.

87. If a product's price elasticity of demand is greater than one, then a 1% price increase will cause the quantity demanded to

- a. increase by more than 1%.
- b. increase by less than 1%.
- c. decrease by less than 1%.
- d. decrease by more than 1%.

88. If the demand for a good is elastic, then a(n)

- a. decrease in price will increase total revenue.
- b. increase in price will increase total revenue.
- c. decrease in price will decrease total revenue.
- d. increase in price will have no effect on total revenue.

89. Leader Industries is planning to introduce a new product, DMA. It is expected that 10,000 units of DMA will be sold. The full product cost per unit is \$300. Invested capital for this product amounts to \$20 million. Leader's target rate of return on investment is 20%. The markup percentage for this product, based on operating income as a percentage of full product cost, will be



- a. 42.9%.
- b. 57.1%.
- c. 133.3%.
- d. 233.7%.

90. Which one of the following situations **best** lends itself to a cost-based pricing approach?
- a. A paper manufacturer negotiating the price for supplying copy paper to a new mass merchandiser of office products.
 - b. An industrial equipment fabricator negotiating pricing for one of its standard models with a major steel manufacturer.
 - c. A computer component manufacturer debating pricing terms with a customer in a new channel of distribution.
 - d. A computer component manufacturer debating pricing with a new customer for a made to order, state of the art application.
91. Companies that manufacture made-to-order industrial equipment typically use which one of the following?
- a. Cost-based pricing.
 - b. Market-based pricing.
 - c. Material-based pricing.
 - d. Price discrimination.
92. Which one of the following is **not** a characteristic of market-based costing?
- a. It has a customer-driven external focus.
 - b. It is used by companies facing stiff competition.
 - c. It is used by companies facing minimal competition.
 - d. It starts with a target selling price and target profit.
93. Almelo Manpower Inc. provides contracted bookkeeping services. Almelo has annual fixed costs of \$100,000 and variable costs of \$6 per hour. This year the company budgeted 50,000 hours of bookkeeping services. Almelo prices its services at full cost and uses a cost-plus pricing approach.
The company developed a billing price of \$9 per hour. The company's mark-up level would be
- a. 12.5%.
 - b. 33.3%.
 - c. 50.0%.
 - d. 66.6%.



94. Which one of the following pricing methods focuses on setting the price based on recouping the manufacturing cost of the product and achieving a desired profit?

- a. Market-based pricing.
- b. Cost-based pricing.
- c. Target pricing.
- d. Life-cycle based pricing.

95. The management of a company is attempting to reduce the cost for Product X by analyzing the trade-offs between different types of product features and total product cost. What type of cost reduction strategy is the company using?

- a. Total quality management.
- b. Activity-based costing.
- c. Kaizen.
- d. Value engineering.

96. Fennel Products is using cost-based pricing to determine the selling price for its new product based on the following information.

Annual volume	25,000 units
Fixed costs	\$700,000 per year
Variable costs	\$200 per unit
Total assets	\$4,000,000 Effective tax rate40%

The target price that Fennell needs to set for the new product to achieve a 15% after-tax return on investment (ROI) would be

- a. \$228.
- b. \$238.
- c. \$258.
- d. \$268.

97. All of the following statements about product life-cycle pricing are correct **except** that price

- a. is set to cover costs incurred from the time when the product is manufactured.
- b. may be set low to penetrate the market when the product is first introduced.
- c. is maintained by introducing new features to differentiate the product in the later stages.
- d. may be set high to skim the market when the product is first introduced.



98. Product X was launched ten years ago as an innovative product. The initial price was relatively high, which yielded a high profit margin. The market for Product X is now becoming very competitive, and demand for the product is slowing. What pricing strategy should the company follow for Product X based on the current market conditions?
- Because of the increased competition, Product X's price should be decreased.
 - Pricing for Product X should be at its highest level to recoup its innovation R&D.
 - The company should sell Product X below cost so that it can force competitors out of the market.
 - Prices should be held steady with only inflation adjustments.
99. A monopoly will maximize profits if it produces an output where marginal cost is
- less than marginal revenue.
 - greater than marginal revenue.
 - equal to marginal revenue.
 - equal to price.

II. Tự luận

1. Microeconomic theory suggests that the quantity demanded for any good is a function of relative prices, consumer real income, and consumer tastes. If tastes are held constant, then changes in the other two independent variables will induce a change in the dependent variable, i.e., the quantity demanded for a particular good. The concept that measures the responsiveness of quantity demanded to changes in the independent variable is called elasticity.

Questions

- Define the concept of price elasticity.
 - Explain the significance of the price elasticity concept for a firm's management.
2. The City of Blakston owns and operates a community swimming pool. The pool is open each year for 90 days during the summer months of June, July, and August. A daily admission is charged to patrons of the pool. By law, 10% of all recreational and sporting fees must be remitted to a state tourism promotion fund. The City Manager has set a goal that pool admission revenue, after subtracting the state fee and variable costs, must be sufficient to cover the fixed costs. Variable costs are assumed to be 15% of gross revenue. Fixed costs for the three-month period total \$33,000. The following budget for the pool has been prepared for the current year.



TACA Training & Coaching Accounting

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Địa chỉ: Tầng 2 tòa A Chelsea Residences 48 Trần Kim
Xuyến, Cầu giấy, Hà Nội

Adult admissions: 30 per day x 90 days x \$5.00	\$13,500
Student admissions: 120 per day x 90 days x \$2.50	<u>27,000</u>
Total revenue	40,500
State tourism fee	<u>4,050</u>
Net revenue	36,450
Variable costs	6,075
Fixed costs	<u>33,000</u>
Expected deficit	\$ (2,625)

The City Manager is trying to determine what admission mix is necessary to break even and what actions could be taken to eliminate the expected deficit.

Questions

- Given the anticipated mix of adult and student admissions, how many total admissions must the pool have in order to break even for the season?
- Regardless of the admissions mix, what is the highest number of admissions that would be necessary to break even for the season?
- Regardless of the admissions mix, what is the lowest number of admissions that would be necessary to break even for the season?



Answer for Section C: Decision Analysis
(Câu trả lời cho Phần C: Phân tích quyết định)

I. Trắc nghiệm

1. Correct answer c. Garner could incur up to \$270,000 of expense and still break even due to savings of \$270,000 as shown below.

$$\begin{aligned}\text{Interest expense avoided} &= (3 \times \$1,500,000) \times [(.07 \div 12) \times 8] \\ &= \$4,500,000 \times .046666 \\ &= \$210,000 \\ \text{Additional income earned} &= (3 \times \$1,500,000) \times [(.04 \div 12) \times 4] \\ &= \$4,500,000 \times .013333 \\ &= \$60,000 \\ \text{Total savings} &= \$210,000 + \$60,000 \\ &= \underline{\underline{\$270,000}}\end{aligned}$$

2. Correct answer c. Bolger's breakeven point would increase by 375 units as shown below.

$$\begin{aligned}\text{Current breakeven point:} & (\$300 - \$210)X &= \$360,000 \\ & \$90 X &= \$360,000 \\ & X &= 4,000 \text{ units} \\ \text{Future breakeven point:} & (\$300 - \$220)X &= \$350,000 \\ & \$80X &= \$350,000 \\ & X &= 4,375 \text{ units} \\ \text{Difference} & 4,375 - 4,000 &= \underline{\underline{375 \text{ units}}}\end{aligned}$$

3. Correct answer b. Phillips breakeven volume is 82,500 units, and the company's anticipated operating income is \$9,250,000 as calculated below.

$$\begin{aligned}\text{Breakeven point:} & (\$160 - \$60) X &= (\$55 \times 150,000) \\ & \$100X &= \$8,250,000 \\ & X &= \underline{\underline{82,500 \text{ units}}} \\ \text{Operating income} &= [(\$160 - \$60) \times 175,000] - \$8,250,000 \\ &= \underline{\underline{\$9,250,000}}\end{aligned}$$

4. Correct answer c. Cost-volume-profit analysis assumes that variable costs do not change with a change in volume; therefore, option C is the correct response. All other assumptions presented are correct.
5. Correct answer b. At the breakeven point, Ace would sell 9,231 units of Product C based on a sales mix of 80% Product C.



$$\begin{aligned}\text{Breakeven point: } 80\% \text{ C contribution} + 20\% \text{ F contribution} &= \text{Fixed costs} \\ [(.8 \times \$2) + (.2 \times \$5)] \times A &= \$30,000 \\ \$2.60A &= \$30,000 \quad A = 11,538.46\end{aligned}$$

$$\text{Product C breakeven point: } 11,538.46 \times 80\% = \underline{9,231 \text{ units}}$$

6. Correct answer c.

$$\begin{array}{rcl} 12 \times 3,500 & = & 42,000 \quad .28 \\ 20 \times 3,000 & = & 60,000 \quad .40 \\ 12 \times 4,000 & = & \underline{48,000} \quad .32 \\ & & 150,000 \end{array}$$

$$\begin{aligned} .28 \times (18-3) &= 4.2 \\ .40 \times (15-1) &= 5.6 \\ .32 \times (20-0) &= \underline{6.4} \\ & 16.2 \text{ weighted CM} \end{aligned}$$

$$\text{Fixed: } 165,000 + 249,000 + 316,000 + 565,000 = 1,295,000 / 16.2 = 79,938$$

7. Correct answer d. In order to achieve a net income of \$1.3 million, Carson will need to sell 90,000 units as shown below.

$$\begin{array}{rcl} \$100x - \$75x - \$250,000 & = & \$1,300,000 \div (1 - .35) \\ \$25x - \$250,000 & = & \$2,000,000 \\ \$25x & = & \$2,250,000 \\ x & = & \underline{90,000 \text{ units}} \end{array}$$

8. Correct answer b. Metal Craft would need to sell 54,300 Model No. 153 socket sets in order to generate \$161,200 in operating income based on the following calculation.

Sales mix: Model 109: 20%; Model 145: 50%; Model 153: 30%

$$\text{Breakeven: } (.2 \times \$10 - \$5.50)A + (.5 \times \$15 - \$8)A + (.3 \times \$20 - \$14)A = \$161,200$$

$$$.90A + \$3.50A + \$1.80A = \$1,122,200$$

$$\$6.20A = \$1,122,200$$

$$A = 181,000 \text{ sets}$$

$$\text{Model 153 breakeven: } 181,000 \text{ sets} \times 30\% = \underline{54,300 \text{ sets}}$$

9. Correct answer d. Robin Company's required sales would be \$1,200,000 as shown below.

$$\begin{aligned} (1 - \text{tax rate}) \times (\text{Contribution} - \text{Fixed costs}) &= \text{Return on sales} \\ (1 - .4) \times (.30A - \$240,000) &= .06A \\ .12A &= \$144,000 \\ A &= \underline{\$1,200,000} \end{aligned}$$



10. Correct answer b.

$$\text{Fixed costs} = 35,000 + 18,500 + 9,320 + 7,500 + 4,400 = 74,720$$

$$\text{Variable costs} = 30,000 + 5,400 + 67,500 + 27,000 = \$129,900$$

$$\text{Variable cost per copy} = \$129,900 / 6,000 = \$ 21.65$$

$$\text{Contribution margin} = 45 - 21.65 = 23.35$$

$$23.35X - 74,720 = .2 \times 45X$$

$$23.35X = 9X + 74,720$$

$$14.35X = 74,720$$

$$X = 5,207 \text{ copies}$$

11. Correct answer b. To earn an 8% after-tax return on the \$300,000 investment, Zipper Company would require sales totaling \$914,286 as shown below.

$$\begin{array}{rcl} \text{Contribution} - \text{Fixed costs} & = & 8\% \text{ of investment} \div (1 - \text{tax rate}) \\ .7A - \$600,000 & = & (.08 \times \$300,000) \div (1 - .4) \\ .7A - \$600,000 & = & \$24,000 \div .6 \\ .7A & = & \$600,000 + \$40,000 \\ A & = & \underline{\underline{\$914,286}} \end{array}$$

12. Correct answer b. Breakeven quantity can be defined as the point where operating income is equal to zero. Therefore, revenue must equal total costs.
13. Correct answer b. To maximize contribution, Eagle Brand should produce 250 units of Product X at \$20 contribution per unit for a total of \$5,000. Option D provides a higher contribution but Eagle does not have enough raw material to produce all these units.
14. Correct answer b.
b. Volume to reach targeted net income =
[fixed costs + (target after tax income / (1 – tax rate))] / unit
contribution margin unit contribution margin = price – variable
costs
Volume to reach targeted net income =
[\$2,000,000 + (\$2,400,000 / (1 – 0.40))] / (\$12 - \$4.50 - \$2.50 - \$1.00) = 1,500,000 containers
1,500,000 containers * \$12 per container = \$18,000,000 of dollar sales to reach targeted net
income
15. Correct answer a.
Breakeven unit sales = fixed costs / (selling price – variable costs)
Margin of safety = projected unit sales – breakeven unit sales
\$145,000 / (\$850 - \$350) = 290 breakeven unit sales
\$510,000 / \$850 = 600 projected unit sales 600 - 290 = 310



16. Correct answer b. Silverstone's profits this will be \$80,000 as shown below.

$$\begin{aligned}\text{Contribution margin} &= 1 - (\$270,000 \div \$450,000) \\ &= 40\% \\ \text{Profit} &= (.4 \times \$500,000) - \$120,000 \\ &= \underline{\$80,000}\end{aligned}$$

17. Correct answer c. Breeze's operating profit would increase by \$1,000. Operating profit equals contribution minus fixed costs. If contribution increases while fixed costs remain the same, operating profit will increase by the same amount.

18. Correct answer a. Wilkinson's income would be \$30,500 as shown below.

$$\begin{aligned}\text{Income} &= (\text{Contribution margin} \times \text{selling price} \times \text{units}) - \text{Fixed costs} \\ &= (.45 \times \$30 \times 3,000) - \$10,000 \\ &= \underline{\$30,500}\end{aligned}$$

19. Correct answer b. The maximum contribution margin that Cervine can generate is \$689,992 as shown below.

$$\begin{aligned}\text{Contribution Product A} &= \$100 - \$53 - \$10 &= \$37 \\ \text{Contribution Product B} &= \$80 - \$45 - \$11 &= \$24 \\ \text{Hours Product A} &= 10,000 \text{ units} \times 2 \text{ hours} &= 20,000 \text{ hours} \\ \text{Units Product B} &= (40,000 \text{ hrs.} - 20,000 \text{ hrs.}) \div 1.5 &= 13,000 \text{ units} \\ \text{Contribution} &= (\$37 \times 10,000) + (\$24 \times 13,333) &= \underline{\$689,992}\end{aligned}$$

20. Correct answer c. Specialty Cakes will break even by producing 4,947 round cakes and 14,842 heart-shaped cakes as shown below.

$$\begin{aligned}\text{Breakeven: } (.25 \times \$4A) + (.75 \times \$5A) &= \$94,000 \\ \$4.75A &= \$94,000 \\ A &= 19,789 \text{ units} \\ \text{Round cakes: } .25 \times 19,789 &= \underline{4,947} \\ \text{Heart-shaped cakes: } .75 \times 19,789 &= \underline{14,842}\end{aligned}$$

21. Correct answer a. If the change is implemented, Lazar's total contribution margin would increase by \$125,000 as shown below.

$$\begin{aligned}\text{Decrease in direct material: } .5 \times \$5 &= \$2.50 \\ \text{Increase in variable overhead: } (\$3 \div 2 \text{ hrs.}) \times 3.5 \text{ hrs.} - \$3 &= \$2.25 \\ \text{Reduction in cost: } \$2.50 - \$2.25 &= \$2.25 \\ \text{Increase in contribution: } \$2.25 \times 500,000 \text{ units} &= \underline{\$125,000}\end{aligned}$$

22. Correct answer c. If Ticker's sales mix shifts toward Product A, operating income will



decrease of the number of units sold remains constant. Since A's contribution margin is lower than Product B's, there will be less contribution toward covering fixed costs resulting in lower operating income.

23. Correct answer b. The maximum contribution that Lazar can generate is \$2,000,000 by producing 250,000 trunks. Since the contribution margin for trunks (\$8) is more than twice the contribution margin for crates (\$3), the fact that trunks utilize twice the machine hours is negated.
24. Correct answer b.
Note: Product 1 contribution margin ratio = $(12,000,000 - 4,800,000)/12,000,000 = 60\%$; Product 2 contribution margin ratio = $(3,000,000 - 1,500,000)/3,000,000 = 50\%$; Product 1 = $12,000,000/(12,000,000 + 3,000,000) = 80\%$ of sales dollars; Product 2 = 20% of sales dollars $(5,400,000 + 400,000)/[(.60 \times 80\%) + (.50 \times 20\%)]$
25. Correct answer b. Sunk costs are past, or historical costs.
26. Correct answer c.
 $60,000 - 50,000 =$ raise given to assistant manager; no new maintenance employees are needed and the current production manager will make the same salary so these payments would not differ between the alternatives
27. Correct answer d. The opportunity cost is Johnson's best alternative use of both the \$200 and the two hours. Opportunity cost is the contribution foregone by not using a limited resource in its next best alternative use.
28. Correct answer c. The benefits sacrificed by selecting an alternative use of resources is opportunity cost. Opportunity cost is the contribution foregone by not using a limited resource in its next best alternative use.
29. Correct answer d. Relevant costs and relevant revenues are those costs and revenues expected in the future that differ among alternative courses of action being considered. These are the items that affect decision making.
30. Correct answer a. A sunk cost is a past cost that cannot be changed no matter what action is taken. Therefore, joint costs incurred prior to a decision would be considered sunk.
31. Correct answer d. Since Blaze is uncertain what the sales of the new product will be and his risk tolerance is low, he should choose to pay 30% of his revenue to the mall management. As a consequence, his expenses will match his revenues and the project risk will be low.
32. Correct answer d. Benefits lost by choosing one alternative over another are referred



to as opportunity costs.

33. Correct answer c. The relevant unit cost to manufacture the ice-makers is \$30 each for a total relevant cost of \$600,000. Under either alternative, there would be \$4 per unit of fixed cost remaining, therefore, this \$4 becomes irrelevant to the decision and can be deducted from the total unit cost of \$34 leaving \$30 of relevant cost.
34. Correct answer c. Plan Z is the most profitable (\$28,000), Plan X is next (\$24,000) with Plan Y the least profitable (\$20,400).

$$\begin{array}{rcl} \text{Plan Z: } (\$32 - \$30) \times 14,000 & = & \underline{\$28,000} \\ (\$36 \times .1) \times 10,000 & = & \underline{\$24,000} \\ \text{Plan Y: } [\$38 - \$30 - (\$38 \times .1)] \times 12,000 & = & A + \$30,000 \\ \$50,400 & = & A + \$30,000 \\ A & = & \underline{\$20,400} \end{array}$$

35. Correct answer b. Auburn's average total cost at an output level of three units is \$850 as shown below.

$$\begin{array}{rcl} \text{Average total cost} & = & (\$2,000 \div 3) + (\$550 \div 3) \\ & = & \underline{\$850} \end{array}$$

36. Correct answer a. Kelso's average total cost at an output level of 11 units is \$113.64 as shown below.

$$\begin{array}{rcl} \text{Average total cost} & = & (\$1,000 \div 11) + (\$250 \div 11) \\ & = & \underline{\$113.64} \end{array}$$

37. Correct answer b. Harper's short-run marginal cost is \$130 per unit as calculated below.

$$\begin{array}{rcl} \text{Marginal cost} & = & (\$3,325,000 - \$3,000,000) \div (22,500 - 20,000) \\ & = & \underline{\$130} \end{array}$$

38. Correct answer b. Auburn's marginal cost for the 7th unit is \$210 as shown below.

$$\begin{array}{rcl} \text{Marginal cost} & = & \$1,250 - \$1,040 \\ & = & \underline{\$210} \end{array}$$

39. Correct answer a. Kelso's marginal cost for the 12th unit is \$180 as shown below.

$$\begin{array}{rcl} \text{Marginal cost} & = & \$480 - \$300 \\ & = & \underline{\$180} \end{array}$$



40. Correct answer a. If the total cost is \$800 and average variable cost is \$5 per unit, the average fixed cost is \$3 per unit.

$$\begin{array}{rcl} (\$5 \times 100 \text{ units}) + (A \times 100 \text{ units}) & = & \$800 \\ 100A & = & \$300 \\ A & = & \underline{\$3} \end{array}$$

41. Correct answer b. Crawford's marginal cost of the 23rd unit is \$40 as shown below.

$$\begin{array}{rcl} \text{Marginal cost} & = & \$1,330 - \$1,290 \\ & = & \underline{\$40} \end{array}$$

42. Correct answer c. The level that would produce the highest operating income for Parker is 14 units as shown below.

$$\begin{array}{rcl} 8 \text{ units: } 8(\$100,000 - \$50,000) - \$400,000 & = & 0 \\ 10 \text{ units: } 10(\$100,000 - \$50,000) - \$400,000 & = & \$100,000 \\ 14 \text{ units: } 14(\$100,000 - \$45,000) - \$600,000 & = & \underline{\$170,000} \\ 17 \text{ units: } 17(\$100,000 - \$45,000) - \$800,000 & = & \$135,000 \end{array}$$

43. Correct answer b.

Marginal revenue = change in total revenue / change in quantity

$$8 * \$450 = \$3,600$$

$$9 * \$445 = \$4,005$$

$$(\$4,005 - \$3,600) / (9 - 8) = \$405$$

44. Correct answer b

b. \$64 + 3; total variable costs

45. Correct answer a

Incremental or relevant costs include the variable costs of \$100 (\$40 direct materials + \$30 direct labor + \$24 variable overhead + \$6 variable selling costs). Furthermore, if the company does not have idle capacity, the unit price must cover the opportunity costs as well as the variable costs.

Given that the alternative use will generate a \$20,000 contribution, the 1,000 special order units will have to generate at least \$20 per unit (\$20,000/1,000 units) above their variable costs, a total of \$120 per unit.

46. Correct answer c. If Johnson accepted the special order, the company's operating income would increase by \$37,500 as shown below.

$$\begin{array}{rcl} \text{Special order price} & & \$7.50 \\ \text{Less variable cost*} & & \underline{5.00} \end{array}$$

Contribution margin	\$2.50
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Contribution to operating income: $15,000 \times \$2.50 = \underline{\underline{\$37,500}}$

*Fixed costs and selling costs are not relevant

47. Correct answer c. If the Robo Division submits a bid for \$8,000,000, the division will lose \$500,000 but GMT will gain \$1,700,000 as the transfer price is not relevant to GMT.

Robo Division: \$8,000,000 - \$3,700,000 - \$4,800,000 = (\$500,000)

$$\text{GMT Industries: } \$8,000,000 - \$1,500,000 - \$4,800,000 = \$1,700,000$$

48. Correct answer b. BCC should submit a bid of \$772 per unit as this price covers all incremental costs.

Material	\$500	
Direct labor	240	(\$20 x 12)
Variable overhead	24	(\$2 x 12)
Administrative costs	<u>8</u>	
Bid price	<u>\$772</u>	

49. Correct answer d. When making a special order decision, Bedford would need to cover incremental costs which include variable costs of the product (I) and direct fixed costs of the order (III). In addition, Bedford should consider if there is a more beneficial use of the idle capacity, the opportunity cost of the decision (IV).
50. Correct answer a. Since Raymund has idle capacity, the company needs to cover only the incremental variable costs of \$10 ($\$50,000 \div 5,000$) per unit so this should be the bid price to gain a new customer.
51. Correct answer b. The price that Hickory paid for the 4,500 pounds of Kaylene (\$3.40/lb.) is irrelevant; it is a sunk cost. The future price of Kaylene (\$4.05/lb.) is relevant to future operations.
52. Correct answer b. The minimum price that Gardner should charge for the special order is \$96.50 per unit. This price covers the variable cost of KT-6500 plus the forgone contribution from Product XR-2000 as shown below.

Hours required for 1,000 units of KT-6500	3,000 hours	Units of XR-2000 not produced: 3,000 hours ÷ 4	750 units
contribution: \$105 - \$24 - \$10 - \$5 - \$4			\$62 per unit
KT-6500 bid price:	=	[(750 x \$62) ÷ 1m000] + \$27 + 12 + \$6 + \$5	
	=	\$46.50 + \$27 + \$12 + \$6 + \$5	
	=	<u>\$96.50</u>	

53. Correct answer a. Green should accept the offer of \$280,000 as it will cover all



incremental costs and increase operating profit.

Selling price	\$280,000	
Direct material		66,000
Direct labor	120,000	
Variable overhead		48,000 (.4 x \$120,000)
Administrative costs		<u>12,000</u> (.1 x \$120,000)
Contribution		<u>\$ 34,000</u>

54. Correct answer c. The option (a) of purchasing externally is more costly the manufacturing internally, because Fixed OH costs are not avoidable. The option (b) is not possible due to the capacity restrictions. This leaves options (c) and (d), with option (d) being more costly than (c).

55. Correct answer c. The relevant cost to make the ice-makers is \$600,000; to buy the units, the relevant cost is \$528,000 as shown below.

Make:	20,000 x (\$34 - \$4*)	=	\$600,000
Buy:	(\$28 x 20,000) – (\$80,000 x .4)	=	\$528,000

*The \$4 of remaining fixed overhead applies to both alternatives and there irrelevant to the decision.

56. Correct answer b. Sunshine should not use the manufacturer's machine cost of \$.50 as it is based on 1.6 million units. Since Sunshine plans to produce 1.2 million units, the relevant cost is \$.67 (\$800,000 ÷ 1.2 million).

57. Correct answer d. For Aril to benefit from purchasing the units rather than making the units, the purchase price must be less than \$14 as shown below.

Remaining fixed cost/unit	=	(\$150,000 x .6) ÷ 30,000
	=	\$3
Relevant cost to make unit	=	\$3 + \$11
	=	<u>\$14</u>

58. Correct answer b. The \$50,000 trade-in allowance is relevant to Verla's decision as it decreases the cash outflow at time zero when the machine is purchased.

59. Correct answer a.

Solution: For the fixed costs, the 30% that remains is not relevant to the decision.

Only the 70% that is avoidable is relevant to the decision.

Relevant cost to make 17 + 16 + 4.50 = 37.50 plus the fixed portion that is relevant (6 x 70%) 4.20 =

41.70 x 100,000 units = 4,170,000

Cost to buy 45 x 100,000 = 4,500,000

Less opportunity cost of profit from alternative use (300,000)

=Net cost to buy 4,200,000



Compare make 4,170,000 to buy 4,200,000. If the company buys from outside supplier, the net income will decrease 30,000

60. Correct answer d. The relevant costs of making the motors are direct materials, direct labor, variable manufacturing overhead, rentals costs of the special machinery and the rental costs of the new warehouse. The fixed manufacturing overhead and the costs of the current warehouse space are not relevant because they will be incurred regardless of whether the motor is made or bought. Buying the motor will cost \$630,000 ($\$21 \times 30,000$). Making the motor will cost \$549,000 $\{[(\$8 \text{ DM} + \$4 \text{ DL} + \$3 \text{ VOH}) \times 30,000] + \$54,000 + \$45,000\}$. Hence, making the motor saves \$81,000 ($\$630,000 - \$549,000$).
61. Correct answer c.
Option C is correct. Processing the product up to Shaping stage will yield a marginal income of \$4/unit. This is computed as \$18.00 (selling price after Shaping) minus the costs up to Shaping ($\$8.00 + \$1.00 + \$5.00$). Alternatively, Shaping is the last stage where the marginal revenue is higher than the marginal cost. After the painting stage, the incremental revenue is just \$2.00, but the incremental cost of painting is \$3.00.
62. Correct answer b.
b. $\$375 - \$300 = \$75$ additional revenue per unit
 $\$75 \times 10,000 \text{ units} = \$750,000$
 $\$750,000 - \$500,000 \text{ additional cost} = \$250,000$ increase in operating income
63. Correct answer c. Jones should process Product C further because the incremental revenue exceeds the incremental cost. Product B should be sold at split-off as the incremental revenue is less than the incremental cost.
- | | | |
|--|---|------------------|
| Product C: $[70,000 \times (\$12.50 - \$10.25)] - \$140,000$ | = | \$17,500 Product |
| B: $[20,000 \times (\$8.00 - \$5.50)] - \$60,000$ | = | (\$10,000) |
64. Correct answer b. Oakes should continue to process Beracyl as the incremental revenue exceeds the incremental cost of processing; Mononate should be sold at split-off as the incremental revenue is less than the incremental cost of further processing.
- | | | |
|--|---|-----------|
| Beracyl: $[60,000 \times (\$18 - \$15)] - \$115,000$ | = | \$65,000 |
| Mononate: $[40,000 \times (\$10 - \$7)] - \$125,000$ | = | (\$5,000) |
65. Correct answer d. Whitman's contribution margin will be \$380,000 if the Restaurant segment is discontinued as shown below.

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$$\begin{aligned}\text{Contribution:} &= [.95 \times (\$400,000 + \$500,000)] - [.95 \times (\$300,000 + \$200,000)] \\ &= \$855,000 - \$475,000 \\ &= \underline{\underline{\$380,000}}\end{aligned}$$

66. Correct answer b.
(Contribution loss)- cost savings= (\$3,000)
\$9,000-\$6,000=\$3,000

67. Correct answer a. A different product may generate more profit.

68. Correct answer a. The company's segments have the following contribution margin ratios:

Alcohol	$\$700,000 - \$280,000 = \$420,000 \div \$700,000$	=	60%
Soft Drink	$\$430,000 - \$150,000 = \$280,000 \div \$430,000$	=	65%
Juice	$\$270,000 - \$170,000 = \$100,000 \div \$270,000$	=	37%

69. Correct answer a. The costs relevant to this decision are the incremental costs of production of \$20,000 material and \$5,000 labor. The cost of the machinery is a sunk cost and therefore irrelevant.

70. Correct answer c. Reynolds should continue to produce and sell the fertilizer as it contributes \$2.50 (\$18.50 - \$12.25 - \$3.75) per bag toward coverage of fixed costs.

71. Correct answer c. Parklin's operating income will go from \$500 to (\$1,500) if Segment B is closed, a decrease of \$2,000.

Sales	\$10,000	
Variable cost of goods sold	4,000	
Fixed cost of goods sold	2,500	(+\$1,000 from Segment B)
Gross margin	3,500	
Variable selling & admin.	2,000	
Fixed selling & admin.	3,000	(\$1,500 from Segment B)
Operating loss	<u>(\$1,500)</u>	

72. Correct answer b. Grapevine should consider items 1, 2, and 3. Item 1 will affect future revenue. Items 2 and 3 will be eliminated and lower Grapevine's future costs. Item 4 will continue and is irrelevant. Items 5 and 6 are sunk costs and also irrelevant.

73. Correct answer c. The production and sale of the new dolls would decrease the company's profit by \$39,200 as shown below.



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Contribution	\$400,000	[10,000 x (\$100 - \$60)]
Fixed costs	<u>456,000</u>	
Operating income	-56,000	
Tax savings @30%	<u>16,800</u>	
Net loss	<u><u>-\$39,000</u></u>	

74. Correct answer b. The company should continue the Oak Division as it is currently covering \$13,000 of its \$14,000 fixed costs. If the division is eliminated, \$7,000 of fixed costs will remain causing a \$6,000 decline in the company's operating profit (\$7,000 - \$1,000).

75. Correct answer a. If the company can produce all the units required (no constraint), the prime consideration should be the product's contribution margin. If production is constrained by the number of machine hours, the company should focus on the contribution margin per machine hour.

76. Correct answer b. The maximum net profit Elgers can earn is \$67,200 as shown below.

Contribution	\$160,000	
	[40,000 x (\$12 - \$8)]	
Fixed costs	<u>48,000</u>	
Operating profit		112,000
Tax @ 40%		
	<u>44,800</u>	
Net profit	<u>\$ 67,200</u>	

77. Correct answer a. If Dayton sold 30,000 units, the net income would be \$24,000.

Contribution	\$90,000	[30,000 x (\$10 - \$7)]
Fixed costs	<u>42,000</u>	
Gross profit		
48,000		
Tax @50%		
<u>24,000</u>		
Net income	<u>\$24,000</u>	

78. Correct answer b. If Raymund installs the automated process, the monthly operating income would be \$10,000 as shown below.

Reduction in variable costs: $(\$50,000 \div 5,000) = \$10 - \$5 = \5

Sales	\$100,000	
Variable manufacturing	25,000	(\$5 x 5,000)
Variable selling	<u>15,000</u>	
Contribution	60,000	
Fixed manufacturing	46,000	



Fixed selling	<u>4,000</u>
Operating income	<u>\$ 10,000</u>

79. Correct answer c. The only combination of factors that is correct is a variable cost ratio of 32% and operating income of \$9,600,000.

Variable cost ratio: $\$60 - (\$60 \times .2) = \$48 \div \$150 = 32\%$

Contribution margin	\$17,850,000
	[175,000 x (\$150 -
\$48)] Fixed costs*	<u>8,250,000</u>
Operating income	<u>\$ 9,600,000</u>

*Current fixed costs \$9,000 (\$60 x 150,000) - \$750,000 eliminated

80. Correct answer b. The relevant contribution margins per machine hour are Product A \$18.50 and Product B \$16.00 as shown below.

Product A:	$\$100 - \$53 - \$10 = \$37 \div 2 \text{ hours} =$	\$18.50
Product B:	$\$80 - \$45 - \$11 = \$24 \div 1.5 \text{ hours} =$	\$16.00

81. Correct answer a. Lark should make 30,000 units of Product A, 14,000 units of Product B (utilizing the remaining machine hours), and outsource 6,000 units of Product B because this alternative makes the greatest contribution as shown below.

Hours: (30,000 A units x 3 hours) = 90,000 hours
 160,000 hours – 90,000 hours = 70,000
 hours remaining 70,000 ÷ 5 hours for B unit
 = 14,000 units of Product B

Contribution: = [(\$75 - \$30) x 30,000] + [(\$125 - \$48) x 14,000] + [(\$125 - \$60) x
6,000]
 = \$1,350,000 + \$1,078,000 + \$390,000
 = \$2,818,000

82. Correct answer a. The demand curve would shift to the left (fewer bagels demanded) if the cost of muffins decreased making muffins more desirable.
83. Correct answer b. An increase in consumer income would increase demand and cause a shift to the right. An increase in price is movement along the curve to a higher price.
84. Correct answer c. If the demand for a product is elastic, a percentage change in price results in a larger percentage change in demand. If the product price is increased, the demand will decrease by a larger percentage resulting in a decrease in total revenue.



85. Correct answer a. Full costing does not simplify the identification of unit fixed costs with specific products. No matter what the costing method, fixed costs are generally arbitrarily allocated to products on a basis such as direct labor hours or machine hours.
86. Correct answer d. The market-clearing (equilibrium) price is the price where quantity demanded equals quantity supplied. The current market-clearing price is \$50; if prices increase in the long-run, \$70 is a reasonable equilibrium price.
87. Correct answer d. If the demand for a product is elastic, a percentage change in price results in a larger percentage change in demand. If the product price is increased by 1%, the demand will decrease by more than 1%.
88. Correct answer a. If the demand for a product is elastic, a percentage change in price results in a larger percentage change in demand. If the product price is decreased, the demand will increase by a larger percentage resulting in an increase in total revenue.

89. Correct answer c. Leader's markup percentage would be 133.3% as shown below.

$$\begin{aligned}\text{Per unit return on investment} &= (\$20,000,000 \times .2) \div 10,000 \\ &= \$400 \\ \text{Markup percentage} &= \$400 \div \$300 \\ &= \underline{133.3\%}\end{aligned}$$

90. Correct answer d. Cost-based pricing is particularly suited to suppliers who provide unique services and products. Therefore, the best situation presented is the make-to-order, state-of-the-art application.
91. Correct answer a. Cost-based pricing is particularly suited to suppliers who provide unique products and services.
92. Correct answer c. Market-based costing is particularly suited to companies operating in a competitive environment. Therefore, option c is not characteristic.
93. Correct answer a. Almelo's mark-up level is 12.5% as shown below.

$$\begin{aligned}\text{Markup: } & \$9 - \$6 \text{ cost} - \$2 \text{ Fixed overhead} = \$1 \\ \text{Markup \%: } & \$1 \div \$8 = \underline{12.5\%}\end{aligned}$$

94. Correct answer b.
- a. market-based approaches focus on customers and the competitive market
 - c. this is alternative description for market-based approach
 - d. life cycle costing bases pricing on long term costs of the product, including R&D, customer support, etc. This includes much more than just



manufacturing costs.

95. Correct answer d. Calculation or explanation of options: Value engineering is used in target costing to reduce product cost by analyzing the trade-offs between different types of product functionality or different types of product features and total product cost.

96. Correct answer d. Fennell's target price is \$268 as shown below.

15% after-tax ROI	=	(\$4,000,000 x .15)
	=	\$600,000
Per unit ROI	=	\$600,000 ÷ 25,000
	=	\$24
Target price	=	\$200 + (\$700,000 ÷ 25,000) + [\$24 ÷ (1 - .4)]
	=	\$200 + \$28 + \$40
	=	<u>\$268</u>

97. Correct answer a.
Option A is incorrect as Price should be able to cover (and earn a margin on) all of the costs in the value chain, not just at the beginning in manufacturing.

98. Correct answer a.
The current market condition where growth is slowing and competition is fierce is associated with the market maturity stage of a product's lifecycle. During the market maturity stage product prices drop substantially with volatility due to price wars and economic conditions. Profits also shrink during this period due to an increase in price competition.

99. Correct answer c. A monopolist seeking to maximize total profit will produce up to the output at which marginal revenue equals marginal cost. To sell beyond this point, the price would need to be lowered and marginal cost would exceed marginal revenue.

II. Tự luận

1. Price Elasticity

- a. Price elasticity is the percentage change in the quantity supplied or demanded of a commodity relative to (divided by) the percentage change in the price of that same commodity.



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b. If the price elasticity coefficient of a commodity is greater than one, the demand for that commodity is classified as elastic. This indicates the demand for the commodity is very sensitive to changes in price. If the price elasticity coefficient of a commodity is less than one, the demand for that commodity is classified as inelastic. This indicates the demand for the commodity is not sensitive to a change in price. A commodity with a price elasticity of one is classified as having unitary elasticity.

c. There is a relationship between changes in total revenue and the price elasticity of demand that would be useful to a firm's management. If demand is elastic, a change in price will cause total revenue to change in the opposite direction. If demand is inelastic, a change in price will cause total revenue to change in the same direction. When unit elasticity exists, an increase or decrease in price will leave total revenue unchanged.

2.

Answer A

The contribution margin is 75% (1) or \$3.75 per adult admission, and \$1.875 per student admission. The mix is 20% adult ($30 \div 150$) and 80% student ($120 \div 150$). The weighted average contribution margin is:

$$\text{WACM} = .20(\$3.75) + .80(\$1.875) = \$2.25$$

The breakeven point is Fixed cost $\div$ WACM

$$\$33,000 \div \$2.25 = 14,667 \text{ per season.}$$

(1) 100% – state fee of 10% - variable cost of 15%

Answer B

The highest number to break even assumes that all admissions are students:

$$\$33,000 \div \$1.875 = 17,600 \text{ per season}$$

Answer C

The lowest number to break even assumes that all admissions are at the adult rate:

$$\$33,000 \div \$3.75 = 8,800 \text{ per season}$$