Student: _____

1. Product costs are costs assigned to goods that were either purchased or manufactured for resale.
   True False

2. Product costs become expenses in the period they are purchased.
   True False

3. The product cost of merchandise inventory acquired by a retailer consists of the purchase cost of the inventory plus any shipping charges.
   True False

4. Inventoriable cost is another term for product costs.
   True False

5. Period costs are recognized as expenses by retailers, but are included in inventory by manufacturers.
   True False

6. The difference between sales revenue and cost of goods sold is called contribution margin.
   True False

7. The basic formula used to compute cost of goods sold is beginning inventory plus purchases plus ending inventory.
   True False

8. Marketing costs are considered period costs for retailers and product costs for manufacturers.
   True False

9. Cost of goods sold does not include the costs of selling merchandise.
   True False

10. Theoretically, the cost of employer paid health insurance premiums for direct labor personnel should be considered a manufacturing overhead cost.
    True False

11. Factory heating and air conditioning should be considered a product cost in a manufacturing operation.
    True False

12. Depreciation of office equipment is a manufacturing overhead cost at Dell Computer, a large manufacturer of personal computers.
    True False

13. Maintenance workers in the factory are considered a direct labor cost at Hewlett-Packard, a leading manufacturer of computers and computer equipment.
    True False

14. Lubricants used for production machinery should be considered a direct material cost at General Motors Corporation.
    True False

15. Before materials enter the production process, they are called raw materials.
    True False

16. After materials enter the production process, those used in products are called direct materials.
    True False

17. Employees who handle materials in the factory of a manufacturing plant are considered direct labor costs.
    True False

18. Overtime premium costs should theoretically be considered part of direct labor cost.
    True False

19. Prime costs include direct materials and direct labor costs.
    True False

20. Conversion costs equal direct materials and manufacturing overhead costs.
    True False

21. Nonmanufacturing costs include selling and adminstrative costs, which are not used to produce products.
    True False

22. Work-in-process inventory refers to partially completed units.
    True False

23. The cost of direct materials placed into production is computed by adding the cost of purchases to the ending inventory of raw materials.
    True False

24. In a manufacturing company, cost of goods manufactured consists of direct materials put into production, direct labor and manufacturing overhead incurred plus the beginning inventory of finished goods less the ending inventory of finished goods
    True False

25. A cost driver is a characteristic of an activity or event that causes that activity or event to incur cost.
    True False

26. Variable costs change in total direct proportion to a change in the activity of a cost driver.
    True False

27. Fixed costs per unit remain the same as volume of production increases.
    True False

28. As the volume of production increases, fixed costs per unit remain unchanged, while variable costs per unit will decrease.
    True False

29. The identification of a cost as fixed or variable is valid only within a specified range of output volume.
    True False

30. Unit-level costs are incurred for every unit of product manufactured or service performed.
    True False

31. Batch-level costs are incurred for each line of product service.
    True False

32. Facility-level costs are incurred to maintain the organization's overall facility and infrastructure.
    True False

33. All unit-level costs are variable costs.
    True False

34. All variable costs are unit-level costs.
    True False

35. Electricity and welding materials used by robotic welders would be considered unit-level costs.
True False

36. The costs of equipment, buildings, and purchased technology should be considered when making production decisions.
True False

37. Most management systems measure both opportunity costs and out of pocket costs.
True False

38. Opportunity cost is the current value of the foregone, next best alternative use of whatever is supplied or used.
True False

39. It is possible for a cost to be a direct cost of one cost object and an indirect cost of another.
True False

40. If a manager can control or heavily influence the level of a cost, then that cost is classified as a controllable cost.
True False

41. Tracing costs means attaching or assigning indirect costs by some reasonable but imprecise method of averaging.
True False

42. Tracing costs is generally considered a more accurate method of cost assignment than allocating costs.
True False

43. A committed cost may be changed quickly and easily.
True False

44. Sunk costs are past resource payments that cannot be changed by any current or future decision.
True False

45. Absorption costing uses sales less variable costs to measure the contribution to profit.
True False

46. Absorption costing measures use gross margin as the contribution to profit.
True False

47. Gross margin is sales less variable production costs.
True False

48. Throughput costing inventory contains no conversion and indirect costs.
True False

49. When inventory levels increase, absorption costing will result in a higher operating income than direct costing.
AASCB: Analytic
True False

50. When inventory levels remain constant, absorption and direct costing will result in the same operating income.
AASCB: Analytic
True False

51. When inventory levels decrease absorption costing will result in a higher operating income than direct costing.
AASCB: Analytic
True False

52. The difference in the amount of fixed overhead cost that is expensed to the income statement under absorption and variable costing is solely attributable to the difference between the number of units produced during the period and the number of units sold.
AASCB: Analytic
True False

53. Absorption costing can distort the costs to provide products and services if they represent greatly different levels of support from indirect resources.
True False

54. Throughout costing assigns only batch-level spending for direct costs of products or services.
True False

55. Throughout costing considers only unit-level spending for direct costs of products or services.
True False

Use the following to answer questions 56-59:
Crowley Company has gathered the following data related to its production process of two of its products for the week ended April 30:

Model	**#100 B**	**#250C**
Quantity produced	**60**	**100**
Unit-level material cost	$ 42,000	$ 100,000
Variable conversion cost	72,000	300,000
Total direct costs	$114,000	$ 400,000
Indirect costs		
Indirect manufacturing cost	163,200	272,000
Indirect operating cost	255,000	425,000
Total indirect costs	418,200	697,000
Total costs	$532,200	$1,097,000

56. If the cost behaviors exhibited in this chart continue and the company produces 90 units of product 100B during May, the expected total unit-level material cost of product 100 B would be:
A. $171,000
B. $63,000
C. $42,000
D. $114,000

57. The throughput cost per unit for Product 250C is:
A. $10,970
B. $4,000
C. $1,000
D. $6,970

58. The absorption cost per unit for product 250C was:
A. $1,900
B. $9,760
C. $6,970
D. $6,720

59. The costs above that appear to be allocated rather than traced are:
A. Unit level material costs
B. Variable conversion costs
C. Indirect production costs only
D. All indirect costs

60. Which of the following is **not** a name for indirect resources?
A. Overhead costs
B. Burden
C. Direct costs
D. Common costs

61. Which of the following should be considered part of a manufacturing company's direct labor cost?
    A. Factory supervisor's salary
    B. Forklift operator's hourly wages
    C. Employer-paid health insurance on factory assemblers' wages
    D. Cost of idle time

    Use the following to answer questions 62-71:

Beginning inventory in units	0
Units produced	4,800
Units sold	4,000
Sales	$400,000
Material cost (unit level or variable)	$ 96,000
Variable conversion cost used (Committed)	$ 48,000
Facility-level or fixed manufacturing cost	$ 72,000
Indirect operating costs (fixed)	$ 80,000

62. The throughput product cost of goods sold is:
    A. $96,000
    B. $120,000
    C. $144,000
    D. $80,000

63. The variable cost of goods sold is:
    A. $110,000
    B. $120,000
    C. $144,000
    D. $40,000

64. The absorption cost of goods sold is:
    A. $246,667
    B. $120,000
    C. $180,000
    D. $40,000

65. The throughput operating income is:
    A. $128,000
    B. $120,000
    C. $104,000
    D. $256,000
    E. ** ($20 x 4,000)

66. The variable operating income is:
    A. $120,000
    B. $140,000
    C. $104,000
    D. $128,000
    E. *** $30 per unit x 4,000 units sold

67. The absorption operating income is:
    A. $120,000
    B. $140,000
    C. $128,000
    D. $112,000
    E. ***$45 per unit x 4,000 units sold

68. The throughput ending inventory is:
    A. $16,000
    B. $18,000
    C. $20,000
    D. $24,000

69. The variable ending inventory is:
    A. $36,000
    B. $8,000
    C. $40,000
    D. $24,000

70. The absorption ending inventory is:
    A. $40,000
    B. $24,000
    C. $36,000
    D. $8,000

71. The difference between the variable ending inventory cost and the absorption ending inventory cost is:
    A. 800 units times $15 per unit indirect manufacturing cost
    B. 800 units times $10 per unit material cost
    C. 800 units times $20 per unit variable conversion cost plus $15 per unit indirect manufacturing cost
    D. 800 units times $20 per unit variable conversion cost plus $15 per unit indirect manufacturing cost plus $16.67 per unit indirect operating costs

72. Throughput costing:
    A. Measures **only** unit-level spending for direct costs of products or services
    B. Includes both committed and discretionary costs in the costs of products or services
    C. Includes both direct and indirect costs in the costs of products or services
    D. Includes only variable costs in the costs of products or services

73. Absorption costing measures contribution to profit as:
    A. Sales less unit- level costs spent of goods sold
    B. Sales less variable costs of goods sold
    C. Sales less absorption cost of goods sold
    D. Sales less all costs including operating expenses

74. Under variable costing, operating income is measured by:
    A. Gross margin minus operating expenses
    B. Throughput minus operating expenses
    C. Contribution margin minus indirect manufacturing and operating costs
    D. Sales minus variable costs

75. Oliveira"s operating income under absorption costing will be:
    In its first month of operations, Oliveira Corporation produced 100,000 units. 80,000 units were sold. The manufacturing cost per unit was as follows:

Direct materials cost:	$40
Direct labor cost	10
Variable overhead cost	30
Fixed overhead cost	50
Total per unit cost	$130

    A. Lower than variable costing by $1,000,000
    B. Higher than variable costing by $600,000
    C. Higher than variable costing by $1,000,000
    D. The same as variable costing

76. Which of the following statements is **True?**
    A. Operating income under variable costing equals contribution margin less operating expenses
    B. When sales exceed production, absorption costing income will be higher than variable costing income
    C. Throughput costing assigns all variable costs to cost of goods sold
    D. When production exceeds sales, absorption costing income will be higher than variable costing income

77. If units produced are greater than units sold:
    A. Variable costing will have a higher profit than absorption costing
    B. Throughput costing will have a higher profit than absorption costing
    C. Absorption costing will have a higher profit than throughput costing but a lower profit than variable costing
    D. Absorption costing will have a higher profit than both throughput costing and variable costing

78. Under throughput costing:
    A. Both conversion and indirect costs are added to inventory
    B. Neither conversion or indirect costs are added to inventory
    C. Conversion costs are added to inventory but indirect costs are not
    D. Indirect costs are added to inventory but conversion costs are not

79. Which of the following is **not** an argument in favor of throughput costing?
    A. Managers cannot hide committed costs or past resource spending by increasing production
    B. Only increases in sales will increase profits
    C. Increases in sales and production will increase profits
    D. Base production decisions should be based on resource supply and use only

80. Period costs
    A. Do not become part of the value of inventory for financial or tax reporting
    B. Become part of the value of inventory for financial reporting but not tax reporting
    C. Become part of the value of inventory for tax reporting but not financial reporting
    D. Are the same as indirect manufacturing costs

81. Which of the following would be considered an indirect product cost?
    A. Depreciation on sales staff automobiles
    B. President's salary
    C. Maintenance on factory equipment
    D. Direct Materials used in production

82. Wages paid to supervisors in the factory are typically classified as:
    A. Direct manufacturing labor costs
    B. Manufacturing overhead costs
    C. Prime costs
    D. Period costs

83. Which of the following is a fixed cost?
    A. A 5% sales commissions
    B. Direct labor personnel
    C. Rent
    D. Both A and C are fixed costs

84. Which of the following is **not** a conversion resource?
    A. Parts
    B. Labor
    C. Supervision
    D. Maintenance

85. Which of the following is **not** a material resource?
    A. Equipment
    B. Leather used in shoe manufacturing
    C. Components
    D. Assemblies

86. Which of the following is a conversion resource?
    A. Office supplies
    B. Supervisory labor
    C. Sales department
    D. Hard drives used in manufacture of computers

87. Theoretically, overtime premium paid to a machine operator should be accounted for as:
    A. A period cost
    B. Part of direct labor
    C. As indirect labor
    D. As part of manufacturing overhead

88. Idle time caused by equipment breakdown should be accounted for as:
    A. A period cost
    B. Direct labor cost
    C. A selling expense
    D. A manufacturing overhead cost

89. Prime costs are the same as:
    A. Manufacturing overhead costs
    B. Indirect labor costs
    C. Direct labor and direct materials used
    D. Direct labor and direct materials purchased

90. The cost of renting a car for the sales force should be accounted for as:
    A. Period cost
    B. Manufacturing overhead
    C. Prime cost
    D. Conversion cost

91. Depreciation on forklifts used to transport materials should be accounted for as:
    A. Manufacturing overhead cost
    B. Period cost
    C. Prime cost
    D. Part of the direct materials cost

92. Which of the following describes the formula for cost of goods manufactured?
    A. Direct materials used plus direct labor plus overhead minus beginning inventory of work- in-process plus ending inventory of work- in -process
    B. Direct materials used plus direct labor plus overhead plus beginning inventory of work- in- process minus ending inventory of work- in- process
    C. Beginning inventory of raw materials plus purchases of raw materials less ending inventory raw materials
    D. Beginning inventory of finished goods plus purchases of direct materials less ending inventory of finished goods

93. Which of the following best describes a variable cost?
    A. Per unit cost decreases as activity increases and increases as activity decreases
    B. Total cost decreases as activity increases and increases as activity decreases
    C. Per unit cost remains the same regardless of activity
    D. Total cost remains the same regardless of activity

94. Which of the following best describes a fixed cost?
    A. Per unit cost decreases as activity decreases and increases as activity increases
    B. Total cost decreases as activity increases and increases as activity decreases
    C. Per unit cost remains the same regardless of activity
    D. Total cost remains the same regardless of activity

95. Which of the following is an example of a unit-level cost?
    A. Factory maintenance
    B. Customer service
    C. Direct materials
    D. Set-up

96. Which of the following is an example of a batch-level cost?
    A. Factory maintenance
    B. Customer service
    C. Direct materials
    D. Set-up

97. Which of the following is an example of a product-level cost?
    A. Special packaging for a particular customer
    B. Moving materials for a batch of production
    C. Designing a product using computer-aided design software
    D. Random inspection of finished units

98. Which of the following is an example of a facility-level cost?
    A. Special packaging for a particular customer
    B. Electricity used by robotic welders
    C. General corporate advertising
    D. Insurance on the factory

99. Which of the following describes an opportunity cost?
    A. A cost is not intended to vary with production or sales volume
    B. Foregone benefit that could have been realized from the best alternative use of resources
    C. Past payments for resources that cannot be changed by any current or future decision
    D. Costs that can be changed quickly and easily

100. Which of the following describes a sunk cost?
    A. A cost that is not intended to vary with production or sales volume
    B. Foregone benefit that could have been realized from the best alternative use of resources
    C. Past resources payments that cannot be changed by any current or future decision
    D. Costs that can be changed quickly and easily

101. Which of the following is **not** a relevant cost for a decision?
    A. Variable cost
    B. Opportunity cost
    C. Direct cost
    D. Sunk cost

102. **Required:**

(a) Compute the operating income under variable costing and absorption costing for each month.
(b) Provide and explanation for the difference in operating income between the two methods in each month.
Below is presented information regarding the production process of Ghavidel Manufacturing for a two month period.

	Month 1	Month 2
Beginning inventory in units	0	200
Units Produced	1,000	1,000
Units Sold	800	1,200
Sales	$200,000	$240,000
Material Costs	$ 50,000	$ 50,000
Variable Conversion costs used	$ 20,000	$ 20,000
Indirect Conversion costs	$ 7,800	$ 7,800
Indirect Operating costs	$ 20,000	$ 20,000

103. **Required:**

(a) Prepare income statements for both years using absorption costing
(b) Prepare income statements for both years using variable costing
(c) Comment on the different operating income figures. Explain the management implications of any differences in operating profits between the two methods.
Below is presented information regarding the production process Chen Manufacturing for years 1 and 2

	Year 1	Year 2
Sales Units	1,000,000	1,000,000
Units Produced	1,000,000	1,250,000
Selling price per unit	$15	$15
Variable Manufacturing cost per unit	$6	$6
Annual fixed manufacturing costs	$3,000,000	$3,000,000
Variable Marketing and administrative costs per unit sold	$2	$2
Fixed marketing and administrative costs	$900,000	$900,000
Beginning inventory	$0	?

104. (a) Prepare an income statement under absorption costing for 2007 and 2008. Include a column for both years taken together.
(b) Prepare an income statement under variable costing for 2007 and 2008. Include a column for both years taken together.
(c) Comment on the results and reconcile any differences in income.
You have the following information regarding Crosby Company:
Sales 25,000 units per year at $45 per unit
Production 30,000 units in 2007 and 20,000 units in 2008
At the beginning of 2007 there was no inventory.
Variable manufacturing costs are $30.00 per unit
Fixed manufacturing costs are $150,000 per year
Marketing costs are all fixed at $75,000 per year
Required:

105. **Required:** Calculate cost of goods sold under throughput costing, variable costing and absorption costing.
The following data are available for the Saint Paul Manufacturing Company for the year 2007, its first year of operations:

Beginning inventory in units	0
Units produced	4,800
Units sold	4,000
Sales	$400,000
Material cost (unit level)	$48,000
Variable conversion cost used	$96,000
Indirect manufacturing cost	$72,000
Indirect operating costs	$80,000

106. **Required:**

(a) Calculate ending inventory under throughput costing, variable costing and absorption costing. Assume that management has committed to direct labor and manufacturing resources sufficient to produce the planned annual production of 2,400 units.

(b) Calculate operating income under throughput costing, variable costing and absorption costing. Assume that management has committed to direct labor and manufacturing resources sufficient to produce the planned annual production of 2,400 units.

(c) Explain the relationship between a and b above.

The following data are available for the Lawrence Manufacturing Company for the year 2007, its first year of operations:

Beginning inventory in units	0
Units produced	2,400
Units sold	2,000
Sales	$200,000
Material cost	$24,000
Variable conversion cost used	$48,000
Indirect manufacturing cost	$36,000
Indirect operating costs	$40,000

107. Required:

Calculate the following.

(a) The unit cost of ending inventory on the balance sheet prepared for stockholders.

(b) The unit cost of ending inventory on a variable cost balance sheet.

(c) The operating income using absorption costing

(d) The operating income using variable costing.

(e) The ending inventory using absorption costing.

(f) The ending inventory using variable costing.

(g) A reconciliation of the difference in operating income between absorption costing and variable costing using the shortcut method.

Dimmick Corporation produces and sells a single product at $40 per unit. During 2007, the company produced 200,000 units, 160,000 of which were sold during the year. All ending inventory was in finished goods inventory; there was no inventory on hand at the beginning of the year. The following data relate to the company's production process:

Direct materials	$550,000
Direct labor	400,000
Variable Manufacturing overhead	100,000
Fixed Manufacturing overhead	300,000
Variable marketing and administrative	160,000
Fixed marketing and administrative	110,000

108. Boylan Company had an operating profit of $400,000 using variable costing in April, 2007. Beginning inventory was 36,000 units and ending inventory was 46,000 units. The committed (fixed) overhead was $10 per unit for the beginning and ending inventory. Sales were $900,000 and committed (fixed) operating expenses were $50,000.
Required: Calculate the operating profit in April, 2007 using absorption costing.

109. Additional information:

- Sales revenue: $12,500,000
- Beginning inventory: $3,375,000
- The only spending increase was for material cost due to increased production. All other spending as shown above was unchanged.
- Sales of all parts are the same as the number of units produced.

Hinsley Machine Parts, Inc. uses the throughput costing method.
Required
(a) Compute the throughput contribution margin, operating income and ending inventory for Hinsley Machine Parts, Inc.
(b) Assume that production of part D-1251 increases by 25 units during the given period (sales remain constant). Re-compute the above figures.
(c) Diana Holinger, the production foreperson, argues that an overall average cost is good enough; it is a waste of resources to compute the costs of individual parts. According to her, Hero's products are better than that of competitors. Therefore, all that needs to be done is to produce more so that the average cost figure goes down. Do you agree? Why or why not?
Consider the following cost and production information for Hinsley Machine Parts, Inc.

Quantity	**Part C-1849**		**Part D-1251**		**All other parts**	
	72		**60**		**570**	
	Subtotal	Average Per unit	Subtotal	Average Per unit	Subtotal	Average Per unit
Direct costs						
Materials cost	$126,000	$ 1,750	$232,500	$ 3,875	$1,565,220	$ 2,746
Conversion cost	72,000	1,000	82,500	1,375	658,350	1,155
Total direct costs	$198,000	$ 2,750	$315,000	$5,250	$2,223,570	$ 3,901
Indirect Costs						
Indirect production Cost	500,400	6,950	417,000	6,950	3,961,500	6,950
Indirect operating Cost	390,600	5,425	325,500	5,425	3,092,250	5,425
Total indirect costs	$ 891,000	$12,375	$ 742,500	$12,375	$7,053,750	$12,375
Total costs	$1,089,000	$15,125	$1,057,500	$17,625	$9,277,320	$16,276

110. Quinn Machine Tools, Inc. uses the throughput costing method.

Required

(a) Compute the throughput contribution margin, operating income, and ending inventory for Quinn Machine Tools, Inc.

(b) Assume that sales of part D-1251 increases by 15 units during the given period (production remains constant). Re-compute the above figures.

(c) Joel Shukla, the production manager of Quinn Machine Tools, argues with the controller that computing costs for each different part is a waste of time. He asks: "Costs per unit of the different parts are average costs after all. How is that an improvement over using overall average cost?" Assume the role of the controller of Quinn Machine Tools, Inc. Explain to Joel why he is wrong.

Additional information:

Sales revenue:	$12,000,000
Beginning inventory:	$ 3,375,000
Sales of part D-1251:	40 units
Sales price of part D-1251:	$ 27,000 per unit
Sales of other parts:	same as production

Consider the following cost and production information for Quinn Machine Tools, Inc.

Quantity	**Part C-1849**		**Part D-1251**		**All other parts**	
	72		**60**		**570**	
	Subtotal	Average Per unit	Subtotal	Average Per unit	Subtotal	Average Per unit
Direct costs						
Materials cost	$126,000	$ 1,750	$232,500	$ 3,875	$1,565,220	$ 2,746
Conversion cost	72,000	1,000	82,500	1,375	658,350	1,155
Total direct costs	$198,000	$ 2,750	$315,000	$5,250	$2,223,570	$ 3,901
Indirect Costs						
Indirect manufacturing Cost	500,400	6,950	417,000	6,950	3,961,500	6,950
Indirect operating Cost	390,600	5,425	325,500	5,425	3,092,250	5,425
Total indirect costs	$ 891,000	$12,375	$ 742,500	$12,375	$7,053,750	$12,375
Total costs	$1,089,000	$15,125	$1,057,500	$17,625	$9,277,320	$16,276

111. Additional information:

- Sales revenue: $10,400,000
- Beginning inventory: $575,000
- The only spending increase was for material cost due to increased production. All other spending as shown above was unchanged.
- Sales of all parts are the same as the number of units produced.

Keenan Electronic Components, Inc. uses the variable costing method.

Required

(a) Compute the contribution margin, operating income, and ending inventory for Keenan Electronic Components, Inc.

(b) Assume that production of part D-1251 increases by 25 units during the given period (sales remain constant). Re-compute the above figures.

(c) Charles Simek, the cost manager of Keenan Electronic Components, argues with the controller that throughput costing is a better method for product costing. Using the information in part b above, re-compute the operating income for Hi-tec using throughput costing. Explain any differences in the operating incomes obtained under the two different methods.

Consider the following cost and production information for Keenan Electronic Components, Inc.

	Part C-1849		**Part D-1251**		**All other parts**	
Quantity	**72**		**60**		**570**	
		Average		Average		Average
	Subtotal	Per unit	Subtotal	Per unit	Subtotal	Per unit
Direct costs						
Materials cost	$ 90,000	$ 1,250	$202,500	$ 3,375	$1,223,220	$ 2,146
Conversion cost	36,000	500	64,500	1,075	487,350	855
Total direct costs	$126,000	$ 1,750	$267,000	$4,450	$1,710,570	$ 3,001
Indirect costs						
Indirect manufacturing cost	442,800	6,150	369,000	6,150	3,505,500	6,150
Indirect operating cost	361,800	5,025	301,500	5,025	2,864,250	5,025
Total indirect costs	$804,600	$11,175	$670,500	$11,175	$6,369,750	$11,175
Total costs	$930,600	$12,925	$937,500	$15,625	$8,080,320	$14,176

112.(a) Compute the contribution margin, operating income, and ending inventory for Bedell Metal Company
(b) Assume that sales of part D-1340 increases by 30 units to 110 units during the given period (production remains constant). Re-compute the above figures.
(c) Mary Keenan, the controller of Bedell Metal Company., is considering the use of absorption costing instead of variable costing to be in line with financial reporting requirements. She knows that the use of a different costing method will give rise to different incentives. Explain to her how alternative methods of calculating product costs create different incentives.
Additional information:

- Sales revenue: $20,000,000
- Beginning inventory: $1,150,000
- Sales of part D-1340: 80 units
- Sales of all other parts are the same as the number of units produced.
- Sales price of part D-1340: $35,500 per unit
- The only spending increase was for material cost due to increased production. All other spending as shown above was unchanged.

Bedell Metal Company uses the variable costing method.

Required

Consider the following cost and production information for Bedell Metal Company, Inc.

	Part C-2472		**Part D-1340**		**All other parts**	
Quantity	**144**		**120**		**1140**	
		Average		Average		Average
	Subtotal	Per unit	Subtotal	Per unit	Subtotal	Per unit
Direct costs						
Materials cost	$ 180,000	$ 1,250	$405,000	$ 3,375	$2,446,440	$ 2,146
Conversion cost	72,000	500	129,000	1,075	974.700	855
Total direct costs	$252,000	$ 1,750	$534,000	$4,450	$3,421,140	$ 3,001
Indirect costs						
Indirect production						
Cost	885,600	6,150	738,000	6,150	7,011,000	6,150
Indirect operating cost	723,600	5,025	603,000	5,025	5,728,480	5,025
Total indirect costs	$1,609,200	$11,175	$ 1,341,000	$11,175	$12,739,480	$11,175
Total costs	$1,861,200	$12,925	$ 1,875,000	$15,625	$16,160,620	$14,176

113.(a) Compute the gross margin, operating income, and ending inventory for Dover Automotive Components, Inc.
(b) Assume that production of part D-1251 increases by 25 units during the given period (sales remain constant). Re-compute the above figures.
(c) Ernest Murphy, the cost manager of Dover Automotive Components, argues with the controller that variable costing is a better method for product costing. Using the information in part b above, re-compute the operating income for Dover Automotive Components using variable costing. Explain any differences in the operating incomes obtained under the two different methods.
Additional information:

- Sales revenue: $5,200,000
- Beginning inventory: $275,000
- The only spending increase was for material cost due to increased production. All other spending as shown above was unchanged.
- Sales of all parts are the same as the number of units produced.

Dover Automotive Components, Inc. uses the absorption costing method.

Required

Consider the following cost and production information for Dover Automotive Components, Inc.

	Part C-1849		**Part D-1251**		**All other parts**	
Quantity	**72**		**60**		**570**	
		Average		Average		Average
	Subtotal	Per unit	Subtotal	Per unit	Subtotal	Per unit
Direct costs						
Materials cost	$ 45,000	$ 625	$101,400	$ 1,690	$ 611,610	$ 1,073
Conversion cost	18,000	250	32,400	540	243,960	428
Total direct costs	$ 63,000	$ 875	$133,800	$2,230	$ 855,570	$ 1,501
Indirect costs						
Indirect manufacturing cost	221,400	3,075	184,500	3,075	1,752,750	3,075
Indirect operating cost	181,080	2,515	150,900	2,515	1,433,550	2,515
Total indirect costs	$402,480	$ 5,590	$ 335,400	$ 5,590	$3,186,300	$ 5,590
Total costs	$465,480	$ 6,465	$ 469,200	$ 7,820	$4,041,870	$ 7,091

114.(a) Prepare a schedule of cost of goods manufactured for 2007.
(b) Prepare a schedule of cost of goods sold for 2007.
(c) Prepare an income statement for 2007.

Required:

Hurwitz Corporation had the following activities during 2007:

Raw Materials:	
Inventory January 1, 2007	$200,000
Purchases of raw materials	318,000
Inventory December 31,2007	210,000
Direct manufacturing labor	180,000
Utilities: plant	50,000
Depreciation: plant and equipment	40,000
Indirect materials	30,000
Indirect labor	150,000
Other manufacturing overhead	60,000
Sales revenues	1,250,000
Selling and administrative expenses	150,000
Income tax rate	30%
Work in process inventory, December 31,2007	120,000
Work in process inventory, January 1,2007	64,000
Finished goods inventory, January 1, 2007	80,000
Finished goods inventory, December 31, 2007	150,000

115.

Classify each of the following costs as inventoriable (I) or period (P) and indicate whether the cost is a variable cost (V) or a fixed cost (F).

	Description	Inventoriable or Period	Variable or Fixed
a	Direct materials		
b	Depreciation on corporate jet for sales force		
c	Lubricants for factory machinery		
d	Sales commissions at 5% of sales		
e	Factory insurance		
f	Product brochures		
g	Factory utilities		
h	President's salary		
i	Employer paid health insurance premiums on direct labor personnel		

116.

Classify each of the following costs as inventoriable (I) or period (P). If the cost is inventoriable, indicate whether it would be considered a direct cost (D) or a factory overhead cost. (O)

	Description	Inventoriable or Period	Direct or Overhead
a	Direct labor		
b	Glue for textbooks		
c	Leather used in leather couches		
d	Depreciation on office equipment		
e	Idle time		
f	Accounting staff salaries		
g	Factory supervisors salaries		
h	Factory rent		
i	Office telephone bill		

117. Assume the role of Molly Wright. Write a brief report outlining the basics of a cost management information system. Include in your report the following:

- Resources and costs
- Supply of resources vs. the use of resources
- Classification of costs (three dimensions of resources)
- Alternative costing systems

Lyon Toys, Inc. (LTI) manufactures a variety of electronic toys for children aged 3 to 14 years. The company started as a Ma & Pa basement operation, and grew steadily over the last nine years. It now employs over 100 people and has sales revenue of over $250 million. Katie Burger, the CEO of LTI also recognizes that competition has increased during this period; therefore future growth will not be easy. Burger recognizes that one of the areas of weakness is the accounting and costing system. Burger's maternal uncle, Martin, had maintained the accounts for the company. He meticulously kept track of all the invoices that were received, payments made, and painstakingly prepared crude annual reports. With Martin passing away at the age of 85, Burger decided to hire a professional cost management expert to keep track of the company's costs. She hired Molly Wright, who had just completed her CMA.

After acquainting Wright with the company and its people, Burger decided to get down to business. She called Wright to her office to have a serious conversation about accounting and costing, in particular.

Burger: Molly, I would like you to pay particular attention to developing an official costing system. Currently, we don't have one. I believe this should be your first priority because competition is rising and if we do not understand our costs, we might start losing to our rivals.

Wright: I understand your point very well, Ms. Burger.

Burger: Call me Katie.

Wright: Very well, Katie. I have a few ideas that I picked up from my CMA courses that I think are worth implementing. However, it looks like we need to start with the basics.

Required

118. Explain how producing more units than can be sold can **increase** operating income. Would this be an issue in a service company or is it only an issue in a manufacturing environment? Could a company employ this strategy indefinitely to show continuous increases in profits?

119. **Required**: For each of the cost terms listed below, define the term and give an example of a cost that might fit into that category at McCormick & Company.
(a) Unit- level costs
(b) Product costs
(c) Direct costs
(d) Manufacturing overhead costs
(e) Period costs
(f) Batch-level costs
The following description appeared in the 2005 annual report of McCormick & Company:
McCormick is a global leader in the manufacture, marketing and distribution of spices, herbs, seasonings and other flavors to the entire food industry. Customers range from retail outlets and food service providers to food manufacturers. Founded in 1889 and built on a culture of Multiple Management, McCormick has approximately 8,000 employees." (**McCormick & Company- 2005 Annual report)**

120. Briefly compare and contrast throughput costing, variable costing and absorption costing.
What are the theoretical arguments for and against each method?

121. Additional information:

- Sales prices:

$8,900 per unit of Model # AA2-S
16,700 per unit of Model AA2-L
10,000 per unit of all other models

- The only spending increase was for material cost because this increased production. All other spending as shown above was unchanged.
- Sales were as follows:

32 units of part Model # AA2-S
55 units of Model # AA2-L
350 units of all other models

Case

Sabrina Wood has recently inherited a medium-sized machine shop. Upon taking over, she finds that the business is not doing as well as her Dad had made it out to be. The list of dissatisfied customers has been steadily growing; she has had to do a lot of explaining to customers and promised to improve the situation. She called her Dad's loyal production manager, James Hurley, to her office in order to have a chat with him.

Wood: Good morning Mr. Hurley. How are you?
Hurley: Good morning. I'm doing fine. What can I do for you?
Wood: I'll be honest with you. I need your help and advice. You always were my Dad's most trusted employee.
Hurley: Any time, Ms. Wood. What seems to be the problem?
Wood: I have recently received calls from some long-time customers who are frustrated with our cost, quality and on-time delivery performance. They said they would soon take their business elsewhere if we do not improve. These people were good friends of my Dad and gave him their business only because of this friendship.
Hurley: To be honest, our production processes need improvement. The whole shop floor has become a bit chaotic during the last five years when more orders started coming in. We are just unable to cope. It is not that we do not have the capacity or the capabilities. Our problem is more because of the lack of discipline. I could not do a whole lot because your Dad was determined to continue in this manner.
Wood: My father was stubborn. I do not want to be like him. Please tell me if there are other problems that we need to deal with.
Hurley: The other problem is the lack of a cost management system. Your Dad ran the show by just recording all the costs and computing an average. We have no idea which products are making money and which are not. Do you mind if I call Lindsay Sawin, our new accountant, and ask her to join us? She can explain you what is going on, and can also make some suggestions to improve.
Wood: Please do. (She waits for Sawin to join the meeting.) Good morning, Lindsay. Mr. Hurley tells me that our costing system is in disarray.
Sawin: Yes. Currently, there is no order in the way that we measure costs. In fact, in the last three months since I joined this company, I have just been trying to understand the processes, the types of resources that are used, where they are used in the company's value-chain, and their traceability to decisions.
Wood: Thank you for doing this. What can we do? In fact, is there any hope for us? It is important that we understand costs and are able to compute the cost and profitability information for each of our products or at least product lines. Do you have any ideas?
Sawin: Yes, we can certainly do that. However, I must inform you that there are three alternative costing methods and each of these has its merits and limitations.
Wood: I did not realize that we have to make decisions about the type of the costing system we would like to use. We need to know a little more about each system. Can you show us what would happen under each costing system? In particular, I would like you to present a scenario where you use cost data to show us the product costs and operating incomes from using the three different costing methods. This might open the eyes of many of us around here. Together, we can work hard to keep my Dad's company alive.
Sawin: Please give me a month's time. I will put together something to present to you and several others. It would be nice if we can spend an entire afternoon on this so that I can get into some detail.

Required:

Assume the role of Lindsay Sawin. Identify all the issues raised and address them. For the computational requirement, consider the following information.

						All other
	Model#AA2-S		Model#AA2-L			models
Quantity	**40**		**55**			**400**
		Average		Average		Average
	Subtotal	Per unit	Subtotal	Per unit	Subtotal	Per unit
Direct costs						
Materials cost	$ 25,000	$ 625	$ 92,950	$ 1,690	$429,200	$ 1,073
Conversion cost	10,000	250	29,700	540	171,200	428
Total direct costs	$ 35,000	$ 875	$122,650	$ 2,230	$600,400	$ 1,501
Indirect costs						
Indirect manufacturing						
Cost	123,000	3,075	169,125	3,075	1,230,000	3,075
Indirect operating						
Cost	100,600	2,515	138,325	2,515	1,006,000	2,515
Total indirect costs	$223,600	$ 5,590	$ 307,450	$ 5,590	$2,236,000	$ 5,590
Total costs	$258,600	$ 6,465	$ 430,100	$ 7,820	$2,836,400	$ 7,091

2 Key

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53. TRUE

54. FALSE

55. TRUE

56. B

57. C

58. D

59. D

60. C

61. C

62. D

63. B

64. C

65. B

66. D

67. B

68. A

69. D

70. C

71. A

72. A

73. C

74. C

75. C

76. D

77. D

78. B

79. C

80. A

81. C

82. B

83. C

84. A

85. A

86. B

87. D

88. D

89. C

90. A

91. A

92. B

93. C

94. D

95. C

96. D

97. C

98. D

99. B

100. C

101. D

(b) In month 1, Variable costing absorption costing shows a higher net income by $1,560. This is because production exceeds sales by 200 units. Indirect production costs of $7.80 per unit times 200 units not sold ($1,560) have been inventoried under absorption costing, while these same costs have been considered period costs and expensed under variable costing. In the second month, the situation reverses itself and sales exceed production by 200 units. The $1,560 of inventoried costs are released under absorption costing as the 200 units are sold. Since these costs were previously expensed under variable costing, variable costing will show a higher income than absorption of $1,560.

Variable costing		
	Month 1	**Month 2**
Sales	$200,000	$240,000
Variable cost of goods sold:		
Unit level material costs		
800 x $50 per unit; 1200 x $50 per unit	40,000	60,000
Variable conversion costs		
800 x $20 per unit; 1200 x $20 per unit	16,000	24,000
Total variable cost of goods sold:	56,000	84,000
Contribution Margin	$144,000	$156,000
Operating Expenses:		
Indirect conversion costs	7,800	7,800
Indirect operating costs	20,000	20,000
Total Operating Expenses	27,800	27,800
Operating income:	$116,200	$128,200
Absorption costing		
Sales	$200,000	$240,000
Absorption cost of goods sold		
Unit level material costs		
800 x $50 per unit; 1200 x $50 per unit	40,000	60,000
Variable conversion costs		
800 x $20 per unit; 1200 x $20 per unit	16,000	24,000
Indirect production costs		
800 x $7.80 per unit; 1200 x 7.80 per unit	6,240	9,360
Total absorption cost of goods sold	$ 62,240	$ 93,360
Gross Margin	$137,760	$146,640
Operating expenses	20,000	20,000
Operating Income	$117,760	$126,640

102. (a)

(c) The operating profits remain the same under variable costing because profits vary with sales. All fixed costs are expensed as "period costs" in the period in which they are incurred. Changes in production levels do not affect profits. Under absorption costing, although sales remained the same, profits were higher when production levels were higher than sales in year 2. 250,000 units times $2.40 per unit of fixed manufacturing costs were inventoried under absorption costing that were expensed under variable costing, resulting in a $600,000 higher profit for absorption costing in year 2 versus variable costing in year 2. Absorption costing allows management to "hide" committed or past resource spending in inventory by making more units than they can sell.

	Variable costing	
	Year 1	**Year 2**
Sales	$15,000,000	$15,000,000
Variable cost of goods sold:		
Beginning inventory	0	0
Variable manufacturing costs	6,000,000	7,500,000
Total variable manufacturing costs	$6,000,000	$7,500,000
Less Ending inventory	0	1,500,000
Variable cost of goods sold	$6,000,000	$6,000,000
Variable marketing and administrative	2,000,000	2,000,000
Total variable costs	$8,000,000	$8,000,000
Contribution Margin	$7,000,000	$7,000,000
Fixed Costs:		
Manufacturing	$3,000,000	$3,000,000
Marketing and Administrative	900,000	900,000
Total Fixed costs	$3,900,000	$3,900,000
Operating Income	$3,100,000	$3,100,000

(b)

	Absorption costing	
	Year 1	**Year 2**
Sales	$15,000,000	$15,000,000
Absorption cost of goods sold:		
Beginning inventory	0	0
Variable manufacturing costs	6,000,000	7,500,000
Fixed manufacturing costs	3,000,000	3,000,000
Total manufacturing costs	$9,000,000	$10,500,000
Less ending inventory	0	2,100,000
Cost of goods sold	$9,000,000	$8,400,000
Gross Margin	$6,000,000	$6,600,000
Operating Expenses:		
Variable marketing and administrative	2,000,000	2,000,000
Fixed marketing and administrative	900,000	900,000
Total Operating Expenses	$2,900,000	$2,900,000
Operating income:	$3,100,000	$3,700,000

103. (a)

(c) In 2007, production exceeded sales by 5,000 units. $25,000 of committed production costs (150,000/30,000 = $5 per unit x 5,000 units) are inventoried under absorption costing but expensed under variable costing. This gives the appearance of a higher profit in 2007 for absorption costing. In 2008, the sales exceeded production. The inventoried costs from 2007 flow through to cost of goods sold in 2008 under absorption costing. These same costs had already been expensed in 2007 under variable costing. This gives variable costing the higher income. The total for both methods is the same for both years, since all revenues and costs are the same and no inventory remains at the end of 2008.

Variable costing			
	2007	**2008**	**Total**
Sales(25,000 x $45)	$1,125,000	$1,125,000	$2,250,000
Variable costs (25,000 x $30)	750,000	750,000	1,500,000
Contribution margin	375,000	375,000	750,000
Fixed Manufacturing costs	150,000	150,000	300,000
Fixed Marketing costs	75,000	75,000	150,000
Operating income	$150,000	$ 150,000	$ 300,000

(b)

Crosby Company Income Statement Absorption costing			
	2007	**2008**	**Total**
Sales (25,000x$45)	$1,125,000	$1,125,000	$2,250,000
Cost of goods sold:			
Beginning inventory	0	175,000	0
Current production	1,050,000	750,000	1,800,000
Ending inventory	(175,000)	0	0
Cost of goods sold:	875,000	925,000	1,800,000
Gross margin	250,000	200,000	450,000
Marketing costs	75,000	75,000	150,000
Operating income	$ 175,000	$ 125,000	$ 300,000

104. (a)

105.

	Throughput	**Variable**	**Absorption**
Manufacturing costs			
Inventoried:			
Materials	$48,000	$48,000	$ 48,000
Variable conversion		96,000	96,000
Indirect Manufacturing			72,000
Total	48,000	144,000	216,000
Units Produced	4,800	4,800	4,800
Cost per unit	10	30	45
Units Sold	4,000	4,000	4,000
Cost of goods sold	$40,000	$120,000	$180,000

Note: Ending inventory of absorption costing is $14,000 higher than throughput costing and operating income is also $14,000 higher.
(c) The difference in income is represented by the amount of costs that are inventoried. Throughput costing only inventories unit level costs (materials). Variable costing inventories both materials and variable conversion costs. The result is that the ending inventory under throughput costing is $8,000 less than that of variable costing, resulting in a profit that is $8,000 less. Absorption costing inventories all costs of production including indirect production costs. This results in a higher ending inventory than both throughput and variable costing and a higher operating income.

Variable costing		
Sales		$200,000
Variable cost of goods sold:		
Unit level material costs		20,000
Variable conversion		40,000
Contribution margin		140,000
Operating expenses		
Indirect Manufacturing		36,000
Indirect Operating		40,000
Operating Income		$64,000
Absorption Costing		
Sales		$200,000
Cost of goods sold:		
Materials		20,000
Variable conversion		40,000
Indirect Manufacturing		30,000
Gross margin		110,000
Operating expenses		40,000
Operating income		$ 70,000

Income Statements		**Throughput costing**	
Sales		$200,000	
Cost of goods sold		20,000	
Throughput		180,000	
Operating expenses:			
Conversion costs		48,000	
Indirect manufacturing		36,000	
Indirect operating		40,000	
Operating income		$ 56,000	

(b)

	Throughput	**Variable**	**Absorption**
Manufacturing costs			
Inventoried:			
Materials	$24,000	$24,000	$ 24,000
Variable conversion		48,000	48,000
Indirect manufacturing			36,000
Total	$24,000	$72,000	$ 108,000
Units Produced	2,400	2,400	2,400
Cost per unit	$10	$30	$45
Units Sold	2,000	2,000	2,000
Cost of goods sold	$20,000	$60,000	$ 90,000
Ending inventory:			
Beginning inventory	$ 0	$ 0	$ 0
Cost of goods			
Completed	24,000	72,000	108,000
Less cost of goods sold	20,000	60,000	90,000
Equals ending inventory	$ 4,000	$12,000	$ 18,000

106. (a)

Operating income, absorption costing	$5,050,000
Operating income, variable costing	4,990,000
Excess of absorption operating income over variable operating income	$60,000

Difference in fixed overhead	Change in inventory	Fixed-overhead
Expensed under absorption	= in units	x rate per unit
Costing and variable costing		

Fixed manufacturing overhead:	$300,000	
Units produced	200,000	= $1.50 per unit (absorption costing)

Change in inventory	Fixed-Overhead Rate	Difference in Fixed Overhead Expensed
40,000 units	x $1.50	= $60,000

(g)
(f) $210,000 (40,000 units x $5.25)
(e) $270,000 (40,000 units x $6.75)
(d) $4,990,000 (Sales ($6,400,000) - Variable cost of goods sold ($840,000) -Committed overhead ($300,000)- Marketing (270,000))
(c) $5,050,000 (Sales ($6,400,000) - Cost of goods sold ($1,080,000) - Marketing ($270,000))
(b) $5.25 ($550,000 + $400,000 + $100,000 = $1,050,000/200,000 = $5.25)
107. (a) $6.75 ($550,000 + $400,000 + $100,000 + $300,000 = $1,350,000/200,000 = $6.75)

$400,000 plus $10 per unit fixed overhead x the increase in inventory. $400,000 + 10(10,000)= $400,000 + $100,000 = $500,000. Sales and fixed operating expenses are included in the operating income of variable costing and are irrelevant to the calculation.
Computations:
108. $500,000

- Knowing individual costs allows managers to make decisions about how best to use scarce resources
- Pricing may be incorrect if average costs are used
- Profitability of individual products may be different
- There might be great variety among products

(c) Diana Holinger's argument would be appropriate if only one product were produced by the company. However, this is not the case. It is important to determine the costs of individual products for the following reasons:

Throughput inventory:		
Beginning inventory:	$3,375,000	(no change)
+ Cost of goods manufactured:	2,020,595	(increases by $96,875 for 25 units of Part D-1251
at $3,875 per unit)		
- Cost of goods sold:	1,923,720	(no change)
Ending inventory:	$3,471,875	

Sales revenue:		$12,500,000
Throughput cost of goods sold:		
Part C-1849:	$ 126,000	
Part D-1251:	232,500	
Other parts:	1,565,220	1,923,720
Throughput margin:		$10,576,280
Operating expense:		
Conversion costs:	$ 812,850	
Indirect production costs:	4,878,900	
Indirect operating costs:	3,808,350	$ 9,500,100
Operating income:		$ 1,076,180

(b)

Sales revenue:		$12,500,000
Throughput cost of goods sold:		
Part C-1849:	$ 126,000	
Part D-1251:	232,500	
Other parts:	1,565,220	1,923,720
Throughput margin:		$10,576,280
Operating expense:		
Conversion costs:	$ 812,850	
Indirect production costs:	4,878,900	
Indirect operating costs:	3,808,350	$ 9,500,100
Operating income:		$ 1,076,180
Throughput inventory:		
Beginning inventory:	$3,375,000	
+ Cost of goods manufactured:	1,923,720	
- Cost of goods sold:	1,923,720	
Ending inventory:	$3,375,000	

109. (a)

- Average unit-level costs by product will be much more accurate than the overall average costs
- Variations in resource consumption among individual products are accounted for
- Costs are traced to individual products

(c) Yes, the costs of individual products are also average costs, but these are averaged over all the units of a single product. It has several advantages over an overall single average cost for all products:

Note: Sales revenue and cost of goods sold increase due to the increase in 15 units of sales of part D-1251.

Throughput inventory:		
Beginning inventory:	$3,375,000	(no change)
+ Cost of goods manufactured: at $3,875 per unit)	1,923,720	(no change)
- Cost of goods sold:	1,904,345	(increase by $58,125 for 15 units of part D-1251 at $3,875) per unit
= Ending inventory	$3,394,375	

Sales revenue:		$12,405,000
Throughput cost of goods sold:		
Part C-1849:	$ 126,000	
Part D-1251:	213,125	
Other parts:	1,565,220	1,904,345
Throughput margin:		$10,500,655
Operating expense:		
Conversion costs:	$ 812,850	
Indirect manufacturing costs:	4,878,900	
Indirect operating costs:	3,808,350	$ 9,500,100
Operating income:		$ 1,000,555

(b)

Sales revenue:		$12,000,000
Throughput cost of goods sold:		
Part C-1849:	$ 126,000	
Part D-1251:	155,000	
Other parts:	1,565,220	1,846,220
Throughput margin:		$10,153,780
Operating expense:		
Conversion costs:	$ 812,850	
Indirect manufacturing costs:	4,878,900	
Indirect operating costs:	3,808,350	$ 9,500,100
Operating income:		$ 653,680
Throughput inventory:		
Beginning inventory:	$3,375,000	
+ Cost of goods manufactured:	1,923,720	
- Cost of goods sold:	1,846,220	
= Ending inventory	$3,452,500	

110. (a)

The difference in income between the two methods is $26,875. This difference comes entirely from the difference in the amount of indirect production costs accounted for by the two methods ($4,317,300 versus $4,290,425). Throughput costing treats all costs other than materials as fixed, whereas variable costing treats both materials and variable conversion costs as variable. Moreover, it adjusts the indirect production costs based on how much the variable conversion costs are increased or decreased.

Sales revenue:		$10,400,000
Throughput cost of goods sold:		
Materials:	$1,515,720	$ 1,515,720
Throughput margin:		$ 8,884,280
Operating expense:		
Variable conversion:	587,850	
Indirect production costs:	4,317,300	
Indirect operating costs:	3,527,550	$ 8,432,700
Operating income:		$ 451,580
Throughput inventory:		
Beginning inventory:	$2,575,000	
+ Cost of goods manufactured:	1,600,095	
- Cost of goods sold:	1,515,720	
Ending inventory:	$2,659,375	

(c)

Note: Indirect production cost decreases by $26,875 because this amount gets transferred to variable conversion costs of producing the additional 25 units. The cost of goods sold does not change but the cost of goods manufactured increases.

Inventory:		
+ Beginning inventory:	$ 575,000	
Cost of goods manufactured:	2,214,820	(increases by $111,250 for 25 units
		of part D-1251 at $4,450 per unit)
- Cost of goods sold:	2,103,570	
Ending inventory:	$ 686,250	

Sales revenue:		$10,400,000
Variable cost of goods sold:		
Materials:	$1,515,720	
Variable conversion:	587,850	$ 2,103,570
Contribution margin:		$ 8,296,430
Operating expense:		
Indirect manufacturing costs:	4,290,425	
Indirect operating costs:	3,527,550	$ 7,817,975
Operating income:		$ 478,455

(b)

Sales revenue:		$10,400,000
Variable cost of goods sold:		
Materials:	$1,515,720	
Variable conversion:	587,850	$ 2,103,570
Contribution margin:		$ 8,296,430
Operating expense:		
Indirect manufacturing costs:	4,317,300	
Indirect operating costs:	3,527,550	$ 7,844,850
Operating income:		$ 451,580
Inventory:		
Beginning inventory:	$ 575,000	
+ Cost of goods manufactured:	2,103,570	
- Cost of goods sold:	2,103,570	
Ending inventory:	$ 575,000	

111. (a)

- Absorption costing and also variable costing, to some extent, will motivate the manager to produce more in order to reduce the average costs.
- Sometimes the actions managers may take to maximize income may not be in the long-term best interests of the company.

What are the problems in managers trying to maximize income?

- Managers want to maximize income.
- Because managers are typically rewarded on the basis of income.

Why are these differences important?

- Producing more hides these costs in inventory.
- Some resources are unaffected by how those resources are used.
- Variable and absorption costing add costs of resources used to products without considering whether spending to supply resources is affected.
- Because of the way in which resource costs are included in determining the income numbers

(c) Alternative costing methods typically result in different income numbers. Why?

Note: Variable cost of goods sold is based on 144 units of part C-2472, 110 units of part D-1340 and 1,140 units of all other parts. Notice also that revenues have increased by $1,065,000 for 30 additional units of part D-1340 at $35,500 per unit. Variable expenses have increased by $133,500 for the additional 30 units of part D-1340 at $4,450 per unit. Overall, the contribution margin and operating income are $931,500 higher than in requirement a ($1,065,000 - $133,500 = $931,500).

Sales revenue:		$21,065,000
Variable cost of goods sold:		
Materials:	$2,997,690	
Variable conversion:	1,164,950	$ 4,162,640
Contribution margin:		$ 16,902,360
Operating expense:		
Indirect manufacturing costs:	8,634,600	
Indirect operating costs:	7,055,080	$ 15,689,680
Operating income:		$ 1,212,680
Inventory:		
Beginning inventory:	$1,150,000	
+ Cost of goods manufactured:	4,207,140	
- Cost of goods sold:	4,162,640	
Ending inventory:	$ 1,194,500	

(b)

Note: Variable cost of goods sold is based on 144 units of part C-2472, 80 units of part D-1340 and 570 units of all other parts. The increase in inventory from $1,150,000 to $1,328,000 ($178,000) equals 40 units of part D-1340 x variable cost per unit of $4,450.

Sales revenue:		$20,000,000
Variable cost of goods sold:		
Materials:	$2,896,440	
Variable conversion:	1,132,700	$ 4,029,140
Contribution margin:		$ 15,970,860
Operating expense:		
Indirect manufacturing costs:	8,634,600	
Indirect operating costs:	7,055,080	$ 15,689,680
Operating income:		$ 281,180
Inventory:		
Beginning inventory:	$ 1,150,000	
+ Cost of goods manufactured:	4,207,140	
- Cost of goods sold:	4,029,140	
Ending inventory:	$ 1,328,000	

112. (a)

The difference in operating income from the use of variable versus absorption costing is $73,766, which comes entirely from the amount of indirect production costs considered in the two methods ($2,145,150 - $2,071,384). Under absorption costing, this amount is carried to inventory as the indirect production costs for the 25 additional units produced ($2,145,150 /727 units = $2,950.69; $2,950.69 X 25 units x $73,767). $2,158,650 - $13,500 = $2,145,150. The amount of $13,500 is the variable conversion cost assigned to the 25 additional units of part D-1251 that are produced ($540 X 25 units = $13,500); this amount is deducted from indirect production costs.

Note: Variable cost of goods sold is based on 72 units of part C-1849, 60 units of part D-1251 and 570 units of all other parts. Indirect production cost has changed from $2,158,650 to $2,145,150 as follows:

Inventory:		
Beginning inventory:	$ 275,000	
+ Cost of goods manufactured:	1,108,120	(includes an additional $42,250 for the materials
		costs and $13,500 for the variable conversion
		costs incurred for the 25 additional units
		of part D-1251
- Cost of goods sold:	1,052,370	
Ending inventory:	$ 330,750	

Sales revenue:		$5,200,000
Variable cost of goods sold:		
Materials:	$ 758,010	
Variable conversion:	294,360	$1,052,370
Contribution margin:		$4,147,630
Operating expense:		
Indirect manufacturing:	2,145,150	
Indirect operating costs:	1,765,530	$3,910,680
Operating income:	$ 236,950	

(c)

The amount of $13,500 is the variable conversion cost assigned to the 25 additional units of part D-1251 that are produced ($540 X 25 units = $13,500); this amount is deducted from indirect production costs.

$2,158,650 - $13,500 = $2,145,150; $2,145,150 /727 units =$2,950.69 per unit; =$2,950.69 X 702 units =$2,071,384.

Note: Absorption cost of goods sold is based on 72 units of part C-1849, 60 units of part D-1251 and 570 units of all other parts. Indirect production cost has changed from $2,158,650 to $2,071,384 as follows:

Inventory:		
Beginning inventory:	$ 275,000	
+ Cost of goods manufactured:	3,253,270	(increases by $42,250 for the materials costs
		Incurred for the 25 additional units of part
		D-1251 produced, at $1,690 per unit)
- Cost of goods sold:	3,123,754	
Ending inventory:	$ 404,516	

Sales revenue:		$5,200,000
Absorption cost of goods sold:		
Materials:	$ 758,010	
Variable conversion:	294,360	
Indirect manufacturing:	2,071,384	$3,123,754
Gross margin:		$2,076,246
Operating expense:		
Indirect operating costs:	1,765,530	$1,765,530
Operating income:		$ 310,716

(b)

Note: Absorption cost of goods sold is based on 72 units of part C-1849, 60 units of part D-1251 and 570 units of all other parts.

Sales revenue:		$5,200,000
Absorption cost of goods sold:		
Materials:	$ 758,010	
Variable conversion:	294,360	
Indirect manufacturing:	2,158,650	$3,211,020
Gross margin:		$1,988,980
Operating expense:		
Indirect operating costs:	1,765,530	$1,765,530
Operating income:		$ 223,450
Inventory:		
Beginning inventory:	$ 275,000	
+ Cost of goods manufactured:	3,211,020	
- Cost of goods sold:	3,211,020	
Ending inventory	$ 275,000	

113. (a)

Hurwitz Corporation Income Statement For the year ended December 31, 2007	
Sales revenue	$1,250,000
Cost of goods sold	692,000
Gross margin	558,000
Selling and administrative expenses	150,000
Income before income taxes	408,000
Income tax expense	122,400
Net income	$ 285,600

Hurwitz Corporation Schedule of Cost of Goods Sold For the year ended December 31, 2007	
Beginning inventory finished goods	$80,000
Cost of goods manufactured	762,000
Ending inventory finished goods	(150,000)
Cost of goods sold	$692,000

(a)

Hurwitz Corporation Schedule of Cost of Goods Manufactured For the year ended December 31, 2007		
Direct materials used:		
Beginning inventory raw materials	$200,000	
Purchases of raw materials	318,000	
Ending inventory raw materials	(210,000)	
Direct materials used		$308,000
Direct labor		180,000
Manufacturing overhead:		
Utilities: plant	$50,000	
Depreciation plant and equipment	40,000	
Indirect materials	30,000	
Indirect labor	150,000	
Other manufacturing overhead	60,000	330,000
Total manufacturing costs		$818,000
Beginning work-in-process		64,000
Ending work-in-process		(120,000)
Cost of goods manufactured		$762,000

114.

	Description	Inventoriable or Period	Variable or Fixed
a	Direct materials	I	V
b	Depreciation on corporate jet for sales force	P	F
c	Lubricants for factory machinery	I	V
d	Sales commissions at 5% of sales	P	V
e	Factory insurance	I	F
f	Product brochures	P	V
g	Factory utilities	I	V
h	President's salary	P	F
i	Employer paid health insurance premiums on direct labor personnel	I	F

115.

	Description	Inventoriable or Period	Direct or Overhead
a	Direct labor	I	D
b	Glue for textbooks	I	O
c	Leather used in leather couches	I	D
d	Depreciation on office equipment	P	NA
e	Idle time	I	O
f	Accounting staff salaries	P	NA
g	Factory supervisors' salaries	I	O
h	Factory rent	I	O
i	Office telephone bill	P	NA

116.

- Absorption costing
- Variable costing
- Throughput costing
- Three alternative costing systems exist:
- The nature of supply and use of resources gives rise to different costing systems

Alternative costing systems

- how traceable a resource is to a particular decision (direct, indirect)
- how the resource is used (production, non-production)
- type of resource acquired (material, conversion, operating)
- Resources are identified by three dimensions:

The dimensions of resources

- Additional demand may require acquiring additional resources.
- The resources acquired may not all be used, thereby creating excess capacity
- Some resources are acquired in advance, whereas others are acquired as needed
- A distinction must be made between resources acquired and resources used

Supply versus use of resources

- Resources are not free
- Resources are consumed by organizations to transform inputs into outputs

Resources and costs

117. A cost manager implementing a costing system must make other individuals aware of the following basics of cost management systems.

118. If a company is using absorption costing, some committed product costs will be allocated to units produced. If production levels exceed sales levels, some of these costs will be inventoried instead of expensed in the accounting period in question. Since services cannot be inventoried as products, this is not an issue in a service company. Continuously producing inventories for the sake of production rather than sales will ultimately lead to an unsustainable buildup in inventory levels, storage costs or obsolete inventory. Ultimately the costs will either be written off or the units will be sold. At that time, the "hidden" costs will be released.

f) Batch-level costs - Costs incurred for every batch of product or service produced. Examples could include moving materials in batch quantity to the production line for a batch of a particular brand of spice.
e) Period costs - Costs identified with the time period in which they are incurred rather than with units of purchased or produced goods. Examples could be activities related to selling and distributing McCormick's products to retail outlets, food service providers, and food manufacturers.
d) Manufacturing overhead costs - All costs of transforming material into a finished product other than direct material and direct labor. Examples might include factory rent, supervision, utilities, and insurance.
c) Direct costs - Costs traceable to a particular cost object. Examples might be materials used in spices.
b) Product costs - costs of all resources used to produce a product. They included direct and indirect production costs, including direct materials, direct labor and manufacturing overhead costs.
a) Unit level costs: Costs of resources that are supplied and used on individual products. Examples might be ingredients used in spice products or direct manufacturing labor.

119. Students answers may vary.

120. **Throughput costing** uses only unit level costs as the costs of products or services. Advocates of throughput costing argue that using any other indirect, past or committed cost to product costs drives down the average cost per unit and creates improper incentives to manufacture, since making more units reduces the average cost per unit. Throughput costing avoids this because the cost per unit depends only on unit level spending. Opponents would argue that, since absorption costing is required for both financial reporting and tax purposes, it is difficult to justify the cost of another set of information based on unit level costs. Managers may be evaluated on the method that is used publicly and may be reluctant to make decisions that are not compatible with reported performance. Also, although this approach appears very simplistic, it can have its shortcomings if applied to large organizations as a whole. **Average costing** measures the cost of a product or service according to the resources **used** to provide it. The only difference between throughput costing and variable costing is that variable costing includes traced costs of resources **used** even if additional spending is not required to supply the resource. **Absorption costing** allocates indirect manufacturing costs to products in addition to unit-level and variable production costs. By allocating indirect manufacturing costs, absorption costs may misstate consumption of indirect production resources. Absorption costing may lead to poor decision making, as managers choose to manufacture units because the manufacturing process will absorb some committed costs. Ultimately, this may lead to a buildup of inventories with associated costs and possible obsolete units. Proponents would argue that, since absorption costing is the only allowed method for both external financial reporting and tax purposes, decisions should be made based on data that are compatible with those reports.

Note: Cost of goods sold is computed using the number of units sold. Materials, variable conversion and indirect production costs vary with respect to the number of units, only the indirect operating expenses remain fixed.

Sales revenue:		$4,703,300
Variable cost of goods sold:		
Materials	$ 488,500	
Variable conversion	187,500	
Indirect production	1,343,775	2,019,775
Gross margin		$2,683,525
Operating expenses:		
Indirect operating	1,244,925	$1,244,925
Operating income		$1,438,600

Absorption costing income is computed as follows:

Variable costing income is computed as follows:

Sales revenue:		$4,703,300
Variable cost of goods sold:		
Materials	$488,500	
Variable conversion	187,500	676,000
Contribution margin		$4,027,300
Operating expenses:		
Indirect production	1,522,125	
Indirect operating	1,244,925	$2,767,050
Operating income		$1,260,250

Note: Cost of goods sold is computed using the number of units sold. The materials and variable conversion costs vary with respect to the number of units, other costs remain fixed.

Note: Cost of goods sold is computed using the number of units sold. Only the materials costs vary with respect to the number of units, other costs are treated as fixed.

Throughput costing income is computed as follows:

Sales revenue:		$4,703,300
Throughput cost of goods sold:		
Materials	$ 488,500	488,500
Throughput margin		$4,214,800
Operating expenses:		
Variable conversion	210,900	
Indirect production	1,522,125	
Indirect operating	1,244,925	$2,977,950
Operating income		$1,236,850

- Some may view variable costing as a compromise between absorption costing and throughput costing
- this method does not motivate managers to produce and stock
- unit-level costs are the only ones that vary when production increases
- Supporters of throughput argue that
- It is the method used for financial reporting purposes
- It makes managers aware of the indirect resources
- It covers "all" costs including indirect costs
- Supporters of absorption costing will argue that it is the best method because

Which method is superior?

costs is potentially misleading

- Absorption costing reports a cost per unit but this amount is not the marginal cost; in fact, this "unitization" of unit.
- Absorption costing, in particular, motivates managers to produce more in order to reduce the average cost per
- The three methods give rise to different incentives; managers are typically rewarded on the basis of income.

Why are these differences important?

- Producing more hides these costs in inventory.
- Some resources are unaffected by how those resources are used.

supply resources is affected.

- Variable and absorption costing add costs of resources used to products without considering whether spending to
- Because of the way in which resource costs are included in determining the income numbers

Alternative costing methods typically result in different income numbers. Why?

Throughput costing system:	$1,236,850
Variable costing system:	1,260,250
Absorption costing system:	1,438,600

Incomes resulting from the use of alternative costing systems

- Absorption costing
- Variable costing

- Throughput costing
- Three alternative costing systems exist
- The nature of supply and use of resources gives rise to different costing systems

Alternative costing systems

- how traceable a resource is to a particular decision (direct, indirect)
- how the resource is used (production, non-production)
- type of resource acquired (material, conversion, operating)
- Resources are identified by three dimensions:

The dimensions of resources

- Additional demand may require acquiring additional resources.
- The resources acquired may not all be used, thereby creating excess capacity
- Some resources are acquired in advance, whereas others are acquired as needed
- A distinction must be made between resources acquired and resources used

Supply versus use of resources

- Resources are not free
- Resources are consumed by organizations to transform inputs into outputs

Resources and costs

121. This case addresses several issues: the classification of resources used, where the resources are used in the company's value-chain, their traceability to decisions, the types of costing systems used, incomes resulting from the use of different costing methods, the different incentives resulting from the use of alternative *methods, and performance evaluation and reward issues.*

2 Summary

Category	*# of Questions*
AACSB: Analytic	27
AACSB: Communications	1
AACSB: Reflective Thinking	36
AICPA BB: Critical Thinking	44
AICPA BB: Industry	1
AICPA FN: Decision Making	1
AICPA FN: Measurement	31
Difficulty: Easy	23
Difficulty: Hard	13
Difficulty: Medium	84
Difficulty: Medium 7	1
Hilton - Chapter 02	123
Learning Objective: 1	7
Learning Objective: 2	5
Learning Objective: 3	31
Learning Objective: 4	19
Learning Objective: 5	13
Learning Objective: 6	25
Learning Objective: 7	25
Learning Objective: 8	17