

Section: Cost and Management Accounting

1. Red Sauce Canning Company is a large food processing company. It processes 240,000 pounds of tomatoes at a cost of \$360,000 to yield 50,000 pounds of product A, 150,000 pounds of product B, and 40,000 pounds of product C. Product A is processed further at a cost of \$50,000 and sold for \$10 per pound. Product B is sold without further processing at \$2 per pound. Product C is considered a byproduct and is processed further at a cost of \$40,000 and sold for \$4 per pound.

Required: Assume the company uses the NRV method to allocate joint costs and accounts for the byproduct using the production method, calculate the gross margin percentage for product A and B. (10%)

2. YouCook Corporation manufactures and sells cutting boards. It began operations on January 1, 2013. Costs incurred for 2013 are as follows (V stands for variable; F stands for fixed):

Direct materials used	\$144,500V
Direct manufacturing labor costs	22,750V
Plant energy costs	4,000V
Indirect manufacturing labor costs	15,000V
Indirect manufacturing labor costs	20,050F
Other indirect manufacturing labor costs	5,000V
Other indirect manufacturing labor costs	26,700F
Marketing, distribution, and customer-service costs	127,050V
Marketing, distribution, and customer-service costs	40,250F
Administration costs	54,000F

Variable manufacturing costs are variable to units produced. Variable marketing, distribution, and customer-service costs are variable to units sold. Production in 2013 was 106,250 units. Two pounds of direct materials were used to make one unit of finished product.

Inventory data are as follows:

	January 1, 2013	December 31, 2013
Direct materials (pounds)	0	1,900
Work in process (units)	0	0
Finished goods (units)	0	?

Revenues in 2013 were \$481,250. The selling price per unit and the purchase price per pound of direct materials were stable throughout the year. The company's ending inventory of finished goods is carried at the average unit manufacturing cost for 2013. Finished-goods inventory at December 31, 2013 was \$22,400.

Required:

- (1) Determine the selling price in 2013. (5%)
- (2) Determine the breakeven point in units. (5%)

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(3) If the standard usage for direct materials is 1.8 pounds and the standard purchase price for direct materials is \$0.7 per pound, calculate the direct materials price variance (based on purchases) and direct materials efficiency variance in dollars. (10%)

3. Hazelett, Inc., operates at capacity and makes plastic combs and hairbrushes. Although the combs and brushes are a matching set, they are sold individually and so the sales mix is not 1:1. Hazelett's management is planning its annual budget for fiscal year 2014. Here is information for 2014.

Input Prices

Direct materials	
Plastic	\$0.30 per ounce
Bristles	\$0.75 per brunch
Direct manufacturing labor	\$18 per direct labor hour

Input Quantities per Unit of Output

	Combs	Brushes
Direct materials		
Plastic	5 ounces	8 ounces
Bristles	-	16 brunches
Direct manufacturing labor	0.05 hours	0.2 hours
Machine hours (MH)	0.025 MH	0.1 MH

Inventory Information, Direct Materials

	Plastic	Bristles
Beginning inventory	1,600 ounces	1,820 brunches
Target ending inventory	1,766 ounces	2,272 brunches
Cost of beginning inventory	\$456	\$1,419

Sales and Inventory Information, Finished Goods

	Combs	Brushes
Expected sales in units	12,000	14,000
Selling price	\$ 9	\$ 30
Target ending inventory in units	1,200	1,400
Beginning inventory in units	600	1,200
Beginning inventory in dollars	\$ 2,700	\$ 27,180

Hazelett uses a FIFO cost flow assumption for direct materials and finished goods inventory. Combs are manufactured in batches of 200, and brushes are manufactured in batches of 100. It takes 20 minutes to set up for a batch of combs, and 1 hour to set up for a batch of brushes. Hazelett uses activity-based costing and has classified all overhead costs as shown in the following table. Budgeted fixed overhead costs vary with capacity. Hazelett operates at capacity so budgeted fixed overhead cost per unit equals the budgeted fixed overhead costs divided by the budgeted quantities of the cost allocation base.

Cost Type	Budgeted Variable	Budgeted Fixed	Cost Allocation Base
Manufacturing			
Materials handling	\$17,235	\$22,500	Number of ounces of plastic used
Setup	10,245	16,650	Setup hours
Processing	11,640	30,000	Machine hours
Inspection	10,500	1,560	Number of units produced
Nonmanufacturing			
Marketing	\$21,150	\$90,000	Sales revenue
Distribution	0	1,170	Number of deliveries

Delivery trucks transport units sold in delivery sizes of 1,000 combs or 1,000 brushes.

Required:

- (1) Prepare the direct material purchases budgets in dollars (round to whole dollars). (10%)
- (2) Determine the unit cost of ending finished goods inventory for brushes. (10%)

4. Arundel Enterprise develops buildings for leasing to industrial firms. The company is exploring the construction of a 9-story industrial building that is located in Taipei and has floor space of 9,200 square feet per story. The construction period is estimated to take two years. Arundel's accounting office estimates that land and construction costs will amount to \$75 and \$135 per square foot of floor area, respectively. Other costs including interest payment during construction period, property taxes, and general overhead are expected to total 40% of land and construction costs. Arundel also expects additional expenditures per story as follows:

Front door furnishing and accessories	\$ 216,000
Cleaning supplies	\$ 20,600
Marketing	\$ 41,800

In the case of considering estimation errors, the accounting office suggests that 8% be added to the total of all preceding costs.

Required:

- (1) Arundel's current practice of pricing decision is to set annual rental rate to 1.2% of cost. Upon completion, comparable industrial buildings are expected to charge annual rental of \$35,000 per story (9,200 square feet). Suppose that Arundel decides to adopt target costing. Arundel will set the target price as the comparable annual rental of \$35,000, while will also keep the current practice of annual rental rate as 1.2% of cost. Due to the possible estimation errors, determine the range of cost reduction per story to meet the target cost. (10%)
- (2) Benson, Inc., and industrial firm, decides to rent at a rate of \$35,000 for a story of Arundel's newly developed building once it is completed. The purpose of the rented story is used for Benson's Taipei

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Division to produce electronic components JC33 that has a strong domestic market. The variable production cost is \$1,420 and Taipei Division can sell its entire output for \$3,200 to the outside market. Benson is subject to a 20% income tax rate in Taiwan.

Alternatively, Taipei Division can ship its JC33 to Benson's Kaohsiung Division or Italy Division as a component for the production of a smartphone. Kaohsiung and Italy Divisions' information of producing and selling smartphone per unit is as follows (In NT dollars).

	Kaohsiung Division	Italy Division
Selling price	\$8,300	\$10,500
Labor, overhead, and additional material costs of smartphone	\$1,470	\$2,000
Shipping and handling fees for the transfer from Taipei	\$150	\$410
	(Paid by Kaohsiung)	(Paid by Italy)
Transfer price from Taipei Division	\$2,880	\$3,420

Italy Division is subject to 40% income tax rate and has to pay an import duty equal to 15% of the transfer price. To maximize Benston's profit, should Taipei Division transfer its JC33 to Kaohsiung or Italy Division? Show your computations. (10%)

5. Medley Company manufactures woolen blankets by an assembly-line process and uses weighted average process costing system. All direct materials are added at the start of the process, and conversion cost is incurred evenly throughout manufacturing. An entry level accountant examined Medley's Work-in-Process account for June and found the following selected information:

Debit side—

June 1 balance: 4,000 units, 60% complete; cost, \$433,000 (including direct material of \$280,000 and conversion cost of \$153,000)

Production started: 24,000 units

Direct materials used during June: \$850,000

Conversion cost incurred during June: \$532,000

Ending work-in-process in June was 65% complete

Credit side—

Production completed: ? units (missing information)

The accountant further discovered that journal entry to record the completed production in June was as follows:

Finished-Goods Inventory	1,290,528	
Work-in-Process Inventory		1,290,528

Required: Suppose Medley changes its process costing system to FIFO method. Calculate the cost of goods completed during June. (10%)

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6. Kangaroo Inc. is a producer of digital camera Model S. The monthly demand ranges from 780 to 1,150 units. The average demand is 930 units. The plant operates 36,000 hours a month and unit production time for Model S takes 13 hours. If the firm adds a new product line Model X, the initial demand is estimated to be 240 per month. Each model X will take 10 hours to produce. The waiting time on production line causes hourly carrying cost of \$12 and \$8 for each unit of Model S and Model X, respectively.

Due to constrained production capacity, Kangaroo is considering an assembly line expansion that will decrease manufacturing time for all products by 15%. However, the expansion will increase the unit costs of Model S from \$4,200 to \$5,600 and Model X from \$2,400 to 2,800. The reduction in manufacturing time as resulted from expansion will cause increases in unit prices from \$7,800 to \$8,450 for Model S and from \$4,800 to \$5,400 for Model X.

Required:

- (1) If Kangaroo adds the new product line Model X, determine the incremental profit (loss) of expanding the assembly line. (10%)
- (2) Kangaroo currently purchases at \$900 per unit for component DC36 that is used for the production of all models of digital camera. Due to an ongoing quality problem, the company is considering the internal production of DC36 in an idle plant. Annual volume for the next eight years is expected to total 12,600 units at variable manufacturing cost of \$880 per unit.

Kangaroo needs to acquire \$750,000 of new equipment for the production of DC36. The new equipment has an eight-year service life with salvage value \$58,000 and will be depreciated by straight-line method. Repairs and maintenance are expected to \$55,000 in each of years 2, 4, and 6. The equipment will be sold at the end of its life. Use net-present-value method and a 14% hurdle rate to determine whether Kangaroo should make or buy DC36. Show your computations. (10%)

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