

Problem 1 [20%]

Renato Cosmetics purchases direct materials and processes them into perfume. From a certain mix of direct materials, a joint production process generates Luxury, a high-grade perfume, and Mystery, a medium-grade perfume.

In October, \$480,000 of direct materials were processed at a cost of \$720,000, resulting in 16,000 ounces of Luxury and 4,000 ounces of Mystery. Luxury sells for \$35 per ounce and Mystery sells for \$60 per ounce. Management generally processes each of these perfumes further in separable processes to manufacture more refined products. Luxury is processed separately at a cost of \$18 per ounce, with the resulting product, LuxuryX. Mystery is processed separately at a cost of \$24 per ounce, with the resulting product, MysteryX.

If both Luxury and Mystery are processed into refined products, the sales value of two final products totals \$2,688,000. If Renato uses the net-realizable-value method to allocate joint production costs, the joint production cost allocated to Luxury is \$750,000.

Required:

1. If Renato uses the relative-sales-value method to allocate joint production costs, compute the costs allocated to Luxury and Mystery. (10%)
2. If Renato uses the physical-units method to allocate joint production costs, from a profitability perspective, should Mystery be processed into MysteryX? Show your calculations. (10%)

Problem 2 [20%]

Svenson Corporation manufactures two types of fishing rods, Basic and Deluxe. The Basic type requires 60 hours of labor and 24 machine-hours per unit. Deluxe type requires 102 labor-hours and 60 machine-hours per unit. Basic type has a unit contribution margin of \$384, and Deluxe type has a unit contribution margin of \$2,160.

The demand for Basic type exceeds Svenson's production capacity, which is limited by available machine-hours and direct manufacturing labor-hours. The maximum demand for Deluxe type is 240 per month. Direct manufacturing labor is limited to 4,800 hours per week and machine-hours are limited to 3,600 per week.

Management desires a product mix that will maximize the weekly contribution toward fixed costs and profits. The management uses a linear programming approach, where B represents Basic type and D represents Deluxe type.

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Required:

Formulate the objective function (5%) and constraints (15%) necessary to determine the optimal product mix.

Problem 3 [20%]

In 2019, Clark Corporation starts its operation and prepares the accounting information as follows:

Direct materials used	\$ 360,000
Direct labor	192,000
Variable manufacturing overhead	72,000
Fixed manufacturing overhead	240,000
Variable selling and administrative costs	122,400
Fixed selling and administrative costs	144,000
Sales revenues	1,500,000

In 2019, the gross profit ratio derived from 2019 throughput costing income statement is 85%.

Required:

1. Compute the net income that would be reported on a variable-costing income statement. (10%)
2. Compute the cost of the company's year-end inventory if Clark adopts an absorption costing. (10%)

Problem 4 [20%]

FootLove Corporation manufactures quality walking shoes and uses a weighted average process costing system. All direct materials are introduced at the start of the process, and conversion cost is incurred evenly throughout manufacturing.

An examination of the company's Work-in-Process account for September revealed the following selected information:

Debit side—

September 1 balance: 2,100 units, 40% complete. Direct material cost of \$105,000 and direct manufacturing labor cost of \$20,440.

Production started: 6,300 units

Direct materials used during August: \$315,000

Credit side—

Production completed: 4,900 units

Costs of transferred-out unit: \$392,000

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Conversations with manufacturing personnel revealed that the ending work in process was 80% complete. Accounting personnel cannot disclose the information of conversion costs added in September, but manufacturing overhead is applied by 150% of direct manufacturing labor costs.

Required: (Round cost per equivalent unit to the nearest hundredth)

1. If FootLove uses a FIFO process costing system, calculate the cost of goods completed during September. (10%)
2. If FootLove uses a FIFO process costing system, determine the cost of the September 30 work-in-process inventory. (10%)

Problem 5 [20%]

Sanchez Corporation is a manufacturing company that processes direct materials A and B into two products: X and Y. Although the X and Y are a matching set, they are sold individually and so the sales mix is not 1:1. Sanchez is planning annual budget for fiscal year 2020. Here is information for 2020:

Input Prices

Direct materials		
A	\$ 1.8 per pound	
B	\$ 0.72 per pound	
Direct manufacturing labor	\$ 54 per direct manufacturing labor-hour	

Input Quantities per Unit of Output

	X	Y
Direct materials		
A	—	16 pounds
B	5 pounds	8 pounds
Direct manufacturing labor	0.04 hours	0.16 hours
Machine-hours (MH)	0.06 MH	0.24 MH

Direct Materials Inventory Information

	A	B
Beginning inventory	1,820 pounds	1,600 pounds
Target ending inventory	2,272 pounds	1,766 pounds
Cost of beginning inventory	\$3,406	\$1,095

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Sanchez accounts for direct materials using a FIFO cost flow.

Sales and Inventory Information, Finished Goods

	X	Y
Expected sales in units	12,000	14,000
Selling price	\$ 21.6	\$ 72
Target ending inventory in units	1,200	1,400
Beginning inventory in units	600	1,200
Beginning inventory in dollars	\$ 6,480	\$65,232

Sanchez uses a FIFO cost flow assumption for finished goods inventory. X is manufactured in batches of 200, and Y is manufactured in batches of 100. It takes 20 minutes to set up for a batch of X and 1 hour to set up for a batch of Y. Sanchez uses activity-based costing and has classified all overhead costs into activity cost pools as shown in the following table.

Activity Type	Overhead Costs	Cost Driver/Allocation Base
Manufacturing		
Materials handling	\$ 95,364	Number of ounces of B used
Setup	64,548	Setup-hours
Processing	99,936	Machine-hours
Inspection	28,944	Number of units produced
Nonmanufacturing		
Marketing	\$266,760	Sales revenue
Distribution	2,808	Number of deliveries*

*Delivery trucks transport units sold in delivery sizes of 1,000 Xs or 1,000 Ys.

Required:

1. Compute the budgeted purchasing costs of direct material A (5%) and B (5%) on the direct material purchases budget for the year 2020.
2. Determine the budgeted net income (ignore income taxes) for the year 2020. (10%)

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