

1. Princess Corporation grows, processes, packages, and sells three apple products: slices that are used in frozen pies, applesauce, and apple juice. The outside skin of the apple, which is removed in the cutting department and processed as animal feed, is treated as a by-product. Princess uses the net realizable value method to assign costs of the joint process to its main products. The apple skin by-product net realizable value is used to reduce the joint production costs prior to allocation to the main products. Details of Princess' production process follow:

- The cutting department washes the apples and removes the outside skin. The department then cores and trims the apples for slicing. At this point, each of the three main products and the by-product are recognizable. Each product is then transferred to the next department for final processing.
- The slicing department receives the trimmed apples and slices and freezes them. Any juice generated during the slicing operation is frozen with the slices.
- The crushing department trims pieces of apple and processes them into applesauce. The juice generated during this operation is used in the applesauce.
- The juicing department pulverizes the core and any surplus apple from the cutting department into a liquid. This department experiences a loss equal to 8 percent of the weight of the good output produced.
- The feed department chops the outside skin into animal food and packages it. A total of 270,000 pounds of apples entered the cutting department during November. The following information shows the costs incurred in each department, the proportion by weight (based on pounds) transferred to the four final processing departments, and the selling price of each end product. Assume no beginning or ending inventory of apple slices, applesauce, or juice.

Department	Costs Incurred	Proportion of Product by Weight Transferred to Departments	Selling Price per Pound of Final Product
Cutting	\$ 60,000	-	-
Slicing	11,280	33 %	\$ 0.80
Crushing	8,550	30 %	0.55
Juicing	3,000	27 %	0.40
Feed	700	10 %	0.10
Total	\$ 83,530	100 %	

Required:

Calculate the gross margin in dollars for apple juice. (10%)

2. Outback Corporation manufactures tactical LED flashlights in Brisbane, Australia. The firm uses an absorption costing system for internal reporting purposes; however, the company is considering using variable costing. Data regarding Outback's planned and actual operations for 20x1 follow:

	Budgeted Costs		Actual Costs
	Per Unit	Total	
Direct material	\$ 12.70	\$1,689,100	\$1,562,100
Direct labor	9.30	1,236,900	1,143,900
Variable manufacturing overhead	5.10	678,300	627,300
Fixed manufacturing overhead	4.80	638,400	648,400
Variable selling expenses	7.80	1,037,400	881,400
Fixed selling expenses	7.90	1,050,700	1,050,700
Variable administrative expenses	2.80	372,400	316,400
Fixed administrative expenses	2.10	279,300	286,300
Total	\$ 52.50	\$6,982,500	\$6,516,500

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	Planned Activity	Actual Activity
Beginning finished-goods inventory in units	38,000	38,000
Sales in units	133,000	113,000
Production in units	133,000	123,000

The budgeted per-unit cost figures were based on Outback producing and selling 133,000 units in 20x1. Outback uses a predetermined overhead rate for applying manufacturing overhead to its product. A total manufacturing overhead rate of \$9.90 per unit was employed for absorption costing purposes in 20x1. Any overapplied or underapplied manufacturing overhead is closed to the Cost of Goods Sold account at the end of the year. The 20x1 beginning finished-goods inventory for absorption costing purposes was valued at the 20x0 budgeted unit manufacturing cost, which was the same as the 20x1 budgeted unit manufacturing cost. There are no work-in-process inventories at either the beginning or the end of the year. The planned and actual unit selling price for 20x1 was \$71.70 per unit.

Required:

- (1) Determine the overapplied or underapplied manufacturing overhead. (5%)
 - (2) Using the actual data, calculate the operating income under variable costing. (5%)
 - (3) Using the actual data, calculate the operating leverage under absorption costing. Round your answer to the second decimal place. (5%)
 - (4) Calculate the breakeven point in units under absorption costing. (5%)
3. Redtop Co. uses a standard cost system and flexible budgets. The following flexible budget was prepared at the 80% operating level for the year:

Standard direct labor hours (DLHs)	28,800
Budgeted variable manufacturing overhead cost	\$149,760
Total manufacturing overhead rate per DLH	\$18.70
Standard DLHs per unit of output	4.0
Excess of actual manufacturing overhead cost incurred over the flexible budget for total overhead based on units produced during the period	\$12,000
Excess of actual fixed overhead cost over budgeted fixed overhead cost for the period	\$5,000

For purposes of calculating the standard fixed overhead application rate, the company defined the “denominator volume” as the 90% capacity level. During the year, Redtop worked 33,600 DLHs to manufacture 8,500 units. The actual manufacturing overhead cost incurred was \$12,000 greater than the flexible-budget amount for the units produced, of which \$5,000 was due to fixed overhead.

Required:

- (1) Determine the fixed overhead production-volume variance. (10%)
- (2) Determine the variable overhead spending variance. (10%)

4. Cramer Company produces smartphone components. In Cramer, regular components are manufactured to meet forecasted orders, and specialized components are made after an order is received. With the recent downturn in the smartphone industry, Cramer's financial performance has suffered. This month, Cramer received from Easecom Company an order inquiry, in which Easecom offers to purchase 6,900 units of XYZ, one type of specialized components, from Cramer. XYZ component has the following manufacturing cost structure.

Item	Details	Unit Cost
Direct materials		\$103.5
Direct labor	2 hours at \$34.5 per hour	\$69
Manufacturing overhead	2 hours at \$80.5 per hour	\$161

The normal selling price of XYZ components is \$364. However, Easecom has offered Cramer only \$215 because of the large quantity it is willing to purchase.

Easecom's special order requires a design modification that will allow a \$9.2 reduction in direct-material cost. This design change causes Cramer's to incur \$20,010 in additional set-up costs and will have to purchase a \$7,590 special device to manufacture these units. The device will be discarded once the special order is completed.

Total manufacturing overhead costs are applied to production at the rate of \$80.5 per labor hour. This figure is based, in part, on budgeted yearly fixed overhead of \$3,300,960 and planned production activity of 55,200 labor hours. Cramer currently uses 34,500 labor hours. Cramer will allocate \$15,000 of existing fixed administrative costs (resources to maintain the headquarter operations) to this order.

Required:

Should Cramer accept or reject Easecom's special order? Show calculations to support your answer. (10%)

5. The VanCooper Company is an equipment parts supplier that uses computer numerical control (CNC) machine to automatically manufacture precision parts from copper bars. VanCooper's required rate of return on investment is 25% per year. VanCooper's budgeted income statement for the year ending December 31, 20X2 (in thousands) is as follows:

Revenues (1,260,000 units)		\$ 15,120
Cost of goods sold		
Variable costs	\$ 5,670	
Fixed costs	<u>2,030</u>	
Total costs of goods sold		<u>7,700</u>
Gross margin		7,420
Marketing and distribution costs		
Variable costs	\$ 1,260	
Fixed costs	<u>2,100</u>	
Total marketing and distribution costs		<u>3,360</u>
Operating income		<u>\$ 4,060</u>

VanCooper's inventory of raw copper averages \$840,000. VanCooper is concerned about the costs of carrying inventory and considering to adopt a JIT inventory program. VanCooper's copper supplier, currently charging ordering costs \$800 per order, is willing to supply copper in smaller lots at no additional charge. VanCooper identifies the following effects of adopting a JIT purchasing program to virtually eliminate copper inventory:

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- Without scheduling any overtime, lost sales due to stockouts would increase by 49,000 units per year. However, by incurring overtime premiums of \$56,000 per year, the increase in lost sales could be reduced to 28,000 units per year. This would be the maximum amount of overtime that would be feasible for VanCooper.
- Two warehouses currently used for copper bar storage would no longer be needed. VanCooper rents one warehouse from another company under a cancelable leasing arrangement at an annual cost of \$84,000. The other warehouse is owned by VanCooper and contains 16,800 square feet. A 75% of the space in the owned warehouse could be rented for \$2.10 per square foot per year. Insurance and property tax costs totaling \$19,600 per year would be eliminated.

Required

- (1) Before deciding whether to adopt the JIT purchasing program, use EOQ model to compute the relevant total costs at optimal order quantity for raw copper. (10%)
 - (2) Should VanCooper adopt the JIT purchasing program? Show calculations to support your answer. (10%)
6. The Hiro Corporation is a manufacturer of wine glasses. It produces all of its products in one department. The FIFO process costing method is used. Direct materials are added at the beginning of the process. Factory overhead is applied at a rate equal to 37.5% of direct manufacturing labor. All spoilage is normal and is detected at the end of the process. Spoilage is recognized. The information for June is as follows:

Beginning work-in-process	60,000 units
Units started	88,000 units
Units completed and transferred out	12,000 units
Ending work-in-process	23,200 units
Spoilage	4,800 units
Beginning work-in-process direct materials	\$40,000
Beginning work-in-process conversion	\$16,000
Direct materials added during month	\$182,000
Direct manufacturing labor during month	\$64,032

Beginning work-in-process was 25% complete as to conversion. The ending work-in-process shows its completion rate as a missing information on record.

The information for July is as follows:

Beginning work-in-process	23,200 units
Units started	49,000 units
Units completed and transferred out	60,000 units
Ending work in process	9,600 units
Spoilage	2,600 units
Beginning work-in-process direct materials	\$47,982
Beginning work-in-process conversion	\$10,931
Direct materials added during month	\$72,000
Direct manufacturing labor during month	\$26,182

Ending work-in-process was 55% complete as to conversion.

Required:

- (1) Determine the costs for spoilage units during June. (10%)
- (2) Prepare journal entry for transferring out units to the finished goods during July. (10%)

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