EXERCISE 7–1 ABC Cost Hierarchy [LO1]

The following activities occur at Greenwich Corporation, a company that manufactures a variety of products.

a. Various individuals manage the parts inventories.
b. A clerk in the factory issues purchase orders for a job.
c. The personnel department trains new production workers.
d. The factory's general manager meets with other department heads such as marketing to coordinate plans.
e. Direct labor workers assemble products.
f. Engineers design new products.
g. The materials storekeeper issues raw materials to be used in jobs.
h. The maintenance department performs periodic preventive maintenance on general-use equipment.

Required:

Classify each of the activities above as either a unit-level, batch-level, product-level, or organization-sustaining activity.

EXERCISE 7–2 First-Stage Allocation [LO2]

VaultOnWheels Corporation operates a fleet of armored cars that make scheduled pickups and deliveries for its customers in the Phoenix area. The company is implementing an activity-based costing system that has four activity cost pools: Travel, Pickup and Delivery, Customer Service, and Other. The activity measures are miles for the Travel cost pool, number of pickups and deliveries for the Pickup and Delivery cost pool, and number of customers for the Customer Service cost pool. The Other cost pool has no activity measure because it is an organization-sustaining activity. The following costs will be assigned using the activity-based costing system:

Driver and guard wages	$ 840,000
Vehicle operating expense	270,000
Vehicle depreciation	150,000
Customer representative salaries and expenses	180,000
Office expenses	40,000
Administrative expenses	340,000
Total cost	$1,820,000

The distribution of resource consumption across the activity cost pools is as follows:

	Travel	Pickup and Delivery	Customer Service	Other	Totals
Driver and guard wages	40%	45%	10%	5%	100%
Vehicle operating expense	75%	5%	0%	20%	100%
Vehicle depreciation	70%	10%	0%	20%	100%
Customer representative salaries and expenses	0%	0%	85%	15%	100%
Office expenses	0%	25%	35%	40%	100%
Administrative expenses	0%	5%	55%	40%	100%

Required:

Complete the first-stage allocations of costs to activity cost pools as illustrated in Exhibit 7–5.

EXERCISE 7–3 Compute Activity Rates [LO3]

As You Like It Gardening is a small gardening service that uses activity-based costing to estimate costs for pricing and other purposes. The proprietor of the company believes that costs are driven primarily by the size of customer lawns, the size of customer garden beds, the distance to travel to customers, and the number of customers. In addition, the costs of maintaining garden beds depends on whether the beds are low-maintenance beds (mainly ordinary trees and shrubs) or high-maintenance beds (mainly flowers and exotic plants). Accordingly, the company uses the five activity cost pools listed below:

Activity Cost Pool	Activity Measure
Caring for lawn	Square feet of lawn
Caring for garden beds—low maintenance	Square feet of low-maintenance beds
Caring for garden beds—high maintenance	Square feet of high-maintenance beds
Travel to jobs	Miles
Customer billing and service	Number of customers

The company has already completed its first-stage allocations of costs. The company's annual costs and activities are summarized as follows:

Activity Cost Pool	Estimated Overhead Cost	Expected Activity
Caring for lawn	$77,400	180,000 square feet of lawn
Caring for garden beds—low maintenance	$30,000	24,000 square feet of low-maintenance beds
Caring for garden beds—high maintenance	$57,600	18,000 square feet of high-maintenance beds
Travel to jobs	$4,200	15,000 miles
Customer billing and service	$8,700	30 customers

Required:

Compute the activity rate for each of the activity cost pools.

EXERCISE 7–4 Second-Stage Allocation [LO4]

Larner Corporation is a diversified manufacturer of industrial goods. The company's activity-based costing system contains the following six activity cost pools and activity rates:

Activity Cost Pool	Activity Rates
Supporting direct labor	$7.00 per direct labor-hour
Machine processing	$3.00 per machine-hour
Machine setups	$40.00 per setup
Production orders	$160.00 per order
Shipments	$120.00 per shipment
Product sustaining	$800.00 per product

Activity data have been supplied for the following products:

	Total Expected Activity	
	J78	W52
Direct labor-hours	1,000	40
Machine-hours	3,200	30
Machine setups	5	1
Production orders	5	1
Shipments	10	1
Product sustaining	1	1

Required:

Determine the total overhead cost that would be assigned to each of the products listed above in the activity-based costing system.

EXERCISE 7–5 Product and Customer Profitability Analysis [LO4, LO5]

Updraft Systems, Inc., makes paragliders for sale through specialty sporting goods stores. The company has a standard paraglider model, but also makes custom-designed paragliders. Management has designed an activity-based costing system with the following activity cost pools and activity rates:

Activity Cost Pool	Activity Rate
Supporting direct labor	\$18 per direct labor-hour
Order processing	\$192 per order
Custom designing	\$261 per custom design
Customer service	\$426 per customer

Management would like an analysis of the profitability of a particular customer, Eagle Wings, which has ordered the following products over the last 12 months:

	Standard Model	Custom Design
Number of gliders	10	2
Number of orders	1	2
Number of custom designs	0	2
Direct labor-hours per glider	28.50	32.00
Selling price per glider	\$1,650	\$2,300
Direct materials cost per glider	\$462	\$576

The company's direct labor rate is \$19 per hour.

Required:

Using the company's activity-based costing system, compute the customer margin of Eagle Wings.

PROBLEM 7–17 Comparing Traditional and Activity-Based Product Margins [LO1, LO3, LO4, LO5]

Precision Manufacturing Inc. (PMI) makes two types of industrial component parts—the EX300 and the TX500. An absorption costing income statement for the most recent period is shown below:

Precision Manufacturing Inc. Income Statement	
Sales	$1,700,000
Cost of goods sold	1,200,000
Gross margin	500,000
Selling and administrative expenses	550,000
Net operating loss	$ (50,000)

PMI produced and sold 60,000 units of EX300 at a price of $20 per unit and 12,500 units of TX500 at a price of $40 per unit. The company's traditional cost system allocates manufacturing overhead to products using a plantwide overhead rate and direct labor dollars as the allocation base. Additional information relating to the company's two product lines is shown below:

	EX300	TX500	Total
Direct materials	$366,325	$162,550	$ 528,875
Direct labor	$120,000	$42,500	162,500
Manufacturing overhead			508,625
Cost of goods sold			$1,200,000

The company has created an activity-based costing system to evaluate the profitability of its products. PMI's ABC implementation team concluded that $50,000 and $100,000 of the company's advertising expenses could be directly traced to EX300 and TX500, respectively. The remainder of the selling and administrative expenses was organization-sustaining in nature. The ABC team also distributed the company's manufacturing overhead to four activities as shown below:

Activity Cost Pool (and Activity Measure)	Manufacturing Overhead	Activity EX300	Activity TX500	Activity Total
Machining (machine-hours)	$198,250	90,000	62,500	152,500
Setups (setup hours)	150,000	75	300	375
Product-sustaining (number of products)	100,000	1	1	2
Other (organization-sustaining costs)	60,375	NA	NA	NA
Total manufacturing overhead cost	$508,625			

Required:

1. Using Exhibit 7–12 as a guide, compute the product margins for the EX300 and TX500 under the company's traditional costing system.
2. Using Exhibit 7–10 as a guide, compute the product margins for EX300 and TX500 under the activity-based costing system.
3. Using Exhibit 7–13 as a guide, prepare a quantitative comparison of the traditional and activity-based cost assignments. Explain why the traditional and activity-based cost assignments differ.