Exercises: Set B

E17-1B Colt Inc. has two types of handbags: standard and custom. The controller has decided to use a plantwide overhead rate based on direct labor costs. The president has heard of activity-based costing and wants to see how the results would differ if this system were used. Two activity cost pools were developed: machining and machine setup. Presented below is information related to the company's operations.

Assign overhead using traditional costing and ABC. (SO 1, 4)

	Standard	Custom
Direct labor costs	$50,000	$100,000
Machine hours	1,000	1,000
Setup hours	100	400

Total estimated overhead costs are $270,000. Overhead cost allocated to the machining activity cost pool is $170,000, and $100,000 is allocated to the machine setup activity cost pool.

Instructions

(a) Compute the overhead rate using the traditional (plantwide) approach.
(b) Compute the overhead rates using the activity-based costing approach.
(c) Determine the difference in allocation between the two approaches.

E17-2B Renfro Inc. has conducted the following analysis related to its product lines, using a traditional costing system (volume-based) and an activity-based costing system. Both the traditional and the activity-based costing systems include direct materials and direct labor costs.

Explain difference between traditional and activity-based costing. (SO 1)

		Total Costs	
Products	Sales Revenue	Traditional	ABC
Product 440X	$200,000	$60,000	$50,000
Product 137Y	160,000	50,000	35,000
Product 249S	80,000	15,000	40,000

Instructions

(a) For each product line, compute operating income using the traditional costing system.
(b) For each product line, compute operating income using the activity-based costing system.
(c) Using the following formula, compute the percentage difference in operating income for each of the product lines of Renfro: Operating Income (ABC) − Operating Income (traditional cost) ÷ Operating Income (traditional cost). (Round the percentage to two decimals.)
(d) Provide a rationale as to why the costs for Product 440X are approximately the same using either the traditional or activity-based costing system.

E17-3B American Fabrics has budgeted overhead costs of $900,000. It has allocated overhead on a plantwide basis to its two products (wool and cotton) using direct labor hours which are estimated to be 450,000 for the current year. The company has decided to experiment with activity-based costing and has created two activity cost pools and related activity cost drivers. These two cost pools are: Cutting (cost driver is machine hours) and Design (cost driver is number of setups). Overhead allocated to the Cutting cost pool is $360,000 and $540,000 is allocated to the Design cost pool. Additional information related to these pools is as follows.

Assign overhead using traditional costing and ABC. (SO 1, 4)

	Wool	Cotton	Total
Machine hours	100,000	100,000	200,000
Number of setups	1,000	500	1,500

Instructions

(a) Determine the amount of overhead allocated to the wool product line and the cotton product line using activity-based costing.
(b) What is the difference between the allocation of overhead to the wool and cotton product lines using activity-based costing versus the traditional approach, assuming direct labor hours were incurred evenly between the wool and cotton?

Assign overhead using traditional costing and ABC. (SO 1, 4)

E17-4B Baston Inc. manufactures two products: car wheels and truck wheels. To determine the amount of overhead to assign to each product line, the controller, Tony Masasi has developed the following information.

	Car	Truck
Estimated wheels produced	40,000	10,000
Direct labor hours per wheel	1	3

Total estimated overhead costs for the two product lines are $840,000.

Instructions

(a) Compute the overhead cost assigned to the car wheels and truck wheels, assuming that direct labor hours is used to allocate overhead costs.

(b) Masasi is not satisfied with the traditional method of allocating overhead because he believes that most of the overhead costs relate to the truck wheel product line because of its complexity. He therefore develops the following three activity cost pools and related cost drivers to better understand these costs.

Activity Cost Pools	Expected Use of Cost Drivers	Estimated Overhead Costs
Setting up machines	1,000 setups	$260,000
Assembling	70,000 labor hours	280,000
Inspection	1,200 inspections	300,000

Compute the activity-based overhead rates for these three cost pools.

(c) Compute the cost that is assigned to the car wheels and truck product lines using an activity-based costing system, given the following information.

Expected Use of Cost Drivers per Product		
	Car	Truck
Number of setups	200	800
Direct labor hours	40,000	30,000
Number of inspections	100	1,100

(d) What do you believe Masasi should do?

Assign overhead using traditional costing and ABC. (SO 1, 4)

E17-5B Clear Look installs window coverings for both commercial and residential customers. The following information relates to its budgeted operations for the current year.

	Commercial		Residential	
Revenues		$300,000		$480,000
Direct material costs	$ 30,000		$ 70,000	
Direct labor costs	100,000		300,000	
Overhead costs	50,000	180,000	150,000	520,000
Operating income (loss)		$120,000		($ 40,000)

The controller, Linda Estes, is concerned about the residential product line. She cannot understand why this line is not more profitable given that the installations of window coverings are less complex to install for residential customers. In addition, the residential client base resides in close proximity to the company office, so travel costs are not as expensive on a per client visit for residential customers. As a result, she has decided to take a closer look at the overhead costs assigned to the two product lines to determine whether a more accurate product costing model can be developed. Here are the three activity cost pools and related information she developed:

Activity Cost Pools	Estimated Overhead	Cost Drivers
Scheduling and travel	$84,000	Hours of travel
Setup time	70,000	Number of setups
Supervision	46,000	Direct labor cost

Expected Use of Cost Drivers per Product		
	Commercial	**Residential**
Scheduling and travel	1,000	500
Setup time	450	250

Instructions

(a) Compute the activity-based overhead rates for each of the three cost pools, and determine the overhead cost assigned to each product line.
(b) Compute the operating income for the each product line, using the activity-based overhead rates.
(c) What do you believe Linda Estes should do?

E17-6B Vincent Corporation manufactures safes—large mobile safes, and large walk-in stationary bank safes. As part of its annual budgeting process, Vincent is analyzing the profitability of its two products. Part of this analysis involves estimating the amount of overhead to be allocated to each product line. The following information relates to overhead.

Assign overhead using traditional costing and ABC. (SO 1, 4)

	Mobile Safes	**Walk-in Safes**
Units planned for production	200	50
Material moves per product line	300	200
Purchase orders per product line	450	350
Direct labor hours per product line	600	1,800

Instructions

(a) The total estimated manufacturing overhead was $204,000. Under traditional costing (which assigns overhead on the basis of direct-labor hours), what amount of manufacturing overhead costs are assigned to:
  (1) One mobile safe?
  (2) One walk-in safe?
(b) The total estimated manufacturing overhead of $204,000 was comprised of $120,000 for material-handling costs and $84,000 for purchasing activity costs. Under activity-based costing (ABC):
  (1) What amount of material handling costs are assigned to:
    (a) One mobile safe?
    (b) One walk-in safe?
  (2) What amount of purchasing activity costs are assigned to:
    (a) One mobile safe?
    (b) One walk-in safe?
(c) Compare the amount of overhead allocated to one mobile safe and to one walk-in safe under the traditional costing approach versus under ABC.

E17-7B Mordica Instruments manufactures two products: range instruments and pressure gauges. During April, 50 range instruments and 300 pressure gauges were produced, and overhead costs of $81,000 were estimated. An analysis of estimated overhead costs reveals the following activities.

Compute overhead rates and assign overhead using ABC. (SO 4, 5)

Activities	**Cost Drivers**	**Total Cost**
1. Materials handling	Number of requisitions	$30,000
2. Machine setups	Number of setups	27,000
3. Quality inspections	Number of inspections	24,000

The cost driver volume for each product was as follows.

Cost Drivers	**Instruments**	**Gauges**	**Total**
Number of requisitions	400	600	1,000
Number of setups	150	300	450
Number of inspections	200	400	600

Instructions

(a) Determine the overhead rate for each activity.
(b) Assign the manufacturing overhead costs for April to the two products using activity-based costing.
(c) Write a memorandum to the president of Mordica Instruments explaining the benefits of activity-based costing.

Assign overhead using traditional costing and ABC; classify activities as value- or non-value-added.
(SO 1, 4, 6)

E17-8B Ace Clothing Company manufactures its own designed and labeled sports attire and sells its products through catalog sales and retail outlets. While Ace has for years used activity-based costing in its manufacturing activities, it has always used traditional costing in assigning its selling costs to its product lines. Selling costs have traditionally been assigned to Ace's product lines at a rate of 75% of direct material costs. Its direct material costs for the month of March for Ace's "high intensity" line of attire are $400,000. The company has decided to extend activity-based costing to its selling costs. Data relating to the "high intensity" line of products for the month of March are as follows.

Activity Cost Pools	Cost Drivers	Overhead Rate	Number of Cost Drivers Used per Activity
Sales commissions	Dollar sales	$0.05 per dollar sales	$950,000
Advertising—TV/Radio	Minutes	$300 per minute	250
Advertising—Newspaper	Column inches	$10 per column inch	2,000
Catalogs	Catalogs mailed	$2.50 per catalog	66,000
Cost of catalog sales	Catalog orders	$1 per catalog order	9,000
Credit and collection	Dollar sales	$0.03 per dollar sales	$950,000

Instructions

(a) Compute the selling costs to be assigned to the "high-intensity" line of attire for the month of March: (1) using the traditional product costing system (direct material cost is the cost driver), and (2) using activity-based costing.
(b) By what amount does the traditional product costing system undercost or overcost the "high-intensity" product line?
(c) Classify each of the activities as value-added or non–value-added.

Assign overhead using traditional costing and ABC; classify activities as value- or non-value-added.
(SO 1, 4, 6)

E17-9B Tastee Products, Inc., uses a traditional product costing system to assign overhead costs uniformly to all products. To meet Food and Drug Administration requirements and to assure its customers of safe, sanitary, and nutritious food, Tastee engages in a high level of quality control. Tastee assigns its quality-control overhead costs to all products at a rate of 18% of direct-labor costs. Its direct-labor cost for the month of June for its low-calorie dessert line is $55,000. In response to repeated requests from its financial vice president, Tastee management agrees to adopt activity-based costing. Data relating to the low-calorie dessert line for the month of June are as follows.

Activity Cost Pools	Cost Drivers	Overhead Rate	Number of Cost Drivers Used per Activity
Inspections of material received	Number of pounds	$0.65 per pound	6,000 pounds
In-process inspections	Number of servings	$0.33 per serving	10,000 servings
FDA certification	Customer orders	$12.00 per order	450 orders

Instructions

(a) Compute the quality-control overhead cost to be assigned to the low-calorie dessert product line for the month of June: (1) using the traditional product costing system (direct labor cost is the cost driver), and (2) using activity-based costing.
(b) By what amount does the traditional product costing system undercost or overcost the low-calorie dessert line?
(c) Classify each of the activities as value-added or non–value-added.