

19. What is the difference between operations costing and a process cost system?
20. How does a company decide whether to use a job order or a process cost system?
- *21. Soria Co. started and completed 2,000 units for the period. Its beginning inventory is 800 units 25% complete and its ending inventory is 400 units 20% complete. Soria uses the FIFO method to compute equivalent units. How many units were transferred out this period?
- *22. Reyes Company transfers out 12,000 units and has 2,000 units of ending work in process that are 25% complete. Materials are entered at the beginning of the process and there is no beginning work in process. Reyes uses the FIFO method to compute equivalent units. Assuming unit materials costs of \$3 and unit conversion costs of \$7, what are the costs to be assigned to units (a) transferred out and (b) in ending work in process?

BRIEF EXERCISES

Journalize entries for accumulating costs.

(LO 4), AP

Journalize the assignment of materials and labor costs.

(LO 4), AP

Journalize the assignment of overhead costs.

(LO 4), AP

Compute equivalent units of production.

(LO 5), AP

Compute unit costs of production.

(LO 6), AP

Assign costs to units transferred out and in process.

(LO 6), AP

Compute unit costs.

(LO 6), AP

Prepare cost reconciliation schedule.

(LO 6), AP

Compute equivalent units of production.

(LO 5), AP

BE3-1 Weber Company purchases \$45,000 of raw materials on account, and it incurs \$60,000 of factory labor costs. Journalize the two transactions on March 31 assuming the labor costs are not paid until April.

BE3-2 Data for Weber Company are given in BE3-1. Supporting records show that (a) the Assembly Department used \$24,000 of raw materials and \$35,000 of the factory labor, and (b) the Finishing Department used the remainder. Journalize the assignment of the costs to the processing departments on March 31.

BE3-3 Factory labor data for Weber Company are given in BE3-2. Manufacturing overhead is assigned to departments on the basis of 200% of labor costs. Journalize the assignment of overhead to the Assembly and Finishing Departments.

BE3-4 Goode Company has the following production data for selected months.

Month	Beginning Work in Process	Units Transferred Out	Ending Work in Process	
			Units	% Complete as to Conversion Cost
January	-0-	35,000	10,000	40%
March	-0-	40,000	8,000	75
July	-0-	45,000	16,000	25

Compute equivalent units of production for materials and conversion costs, assuming materials are entered at the beginning of the process.

BE3-5 In Lopez Company, total material costs are \$36,000, and total conversion costs are \$54,000. Equivalent units of production are materials 10,000 and conversion costs 12,000. Compute the unit costs for materials, conversion costs, and total manufacturing costs.

BE3-6 Trek Company has the following production data for April: units transferred out 40,000, and ending work in process 5,000 units that are 100% complete for materials and 40% complete for conversion costs. If unit materials cost is \$4 and unit conversion cost is \$7, determine the costs to be assigned to the units transferred out and the units in ending work in process.

BE3-7 Production costs chargeable to the Finishing Department in June in Cascio Company are materials \$16,000, labor \$29,500, overhead \$18,000. Equivalent units of production are materials 20,000 and conversion costs 19,000. Compute the unit costs for materials and conversion costs.

BE3-8 Data for Cascio Company are given in BE3-7. Production records indicate that 18,000 units were transferred out, and 2,000 units in ending work in process were 50% complete as to conversion cost and 100% complete as to materials. Prepare a cost reconciliation schedule.

BE3-9 The Smelting Department of Mathews Company has the following production and cost data for November:

Production: Beginning work in process 2,000 units that are 100% complete as to materials and 20% complete as to conversion costs; units transferred out 8,000 units; and ending work in process 7,000 units that are 100% complete as to materials and 40% complete as to conversion costs.

Assembly \$10,600, and Finished Goods \$31,000. During July, the following transactions occurred.

1. Purchased \$62,500 of raw materials on account.
2. Incurred \$60,000 of factory labor. (Credit Wages Payable.)
3. Incurred \$70,000 of manufacturing overhead; \$40,000 was paid and the remainder is unpaid.
4. Requisitioned materials for Cutting \$15,700 and Assembly \$8,900.
5. Used factory labor for Cutting \$33,000 and Assembly \$27,000.
6. Applied overhead at the rate of \$18 per machine hour. Machine hours were Cutting 1,680 and Assembly 1,720.
7. Transferred goods costing \$67,600 from the Cutting Department to the Assembly Department.
8. Transferred goods costing \$134,900 from Assembly to Finished Goods.
9. Sold goods costing \$150,000 for \$200,000 on account.

Instructions

Journalize the transactions. (Omit explanations.)

E3-5 In Wayne Company, materials are entered at the beginning of each process. Work in process inventories, with the percentage of work done on conversion costs, and production data for its Sterilizing Department in selected months during 2014 are as follows.

Compute physical units and equivalent units of production.
(LO 5, 6), AP

Month	Beginning Work in Process		Units Transferred Out	Ending Work in Process	
	Units	Conversion Cost%		Units	Conversion Cost%
January	-0-	—	9,000	2,000	60
March	-0-	—	12,000	3,000	30
May	-0-	—	16,000	7,000	80
July	-0-	—	10,000	1,500	40

Instructions

- (a) Compute the physical units for January and May.
- (b) Compute the equivalent units of production for (1) materials and (2) conversion costs for each month.

E3-6 The Cutting Department of Cassel Company has the following production and cost data for July.

Determine equivalent units, unit costs, and assignment of costs.

Production	Costs
1. Transferred out 12,000 units.	Beginning work in process \$ -0-
2. Started 3,000 units that are 60% complete as to conversion costs and 100% complete as to materials at July 31.	Materials 45,000
	Labor 16,200
	Manufacturing overhead 18,300

(LO 5, 6), AP

Materials are entered at the beginning of the process. Conversion costs are incurred uniformly during the process.

Instructions

- (a) Determine the equivalent units of production for (1) materials and (2) conversion costs.
- (b) Compute unit costs and prepare a cost reconciliation schedule.

Prepare a production cost report.

E3-7 The Sanding Department of Richards Furniture Company has the following production and manufacturing cost data for March 2014, the first month of operation.

(LO 5, 6, 7), AP

Production: 9,000 units finished and transferred out; 3,000 units started that are 100% complete as to materials and 20% complete as to conversion costs.

Manufacturing costs: Materials \$33,000; labor \$24,000; overhead \$36,000.

Instructions

Prepare a production cost report.

E3-8 The Blending Department of Luongo Company has the following cost and production data for the month of April.

Determine equivalent units, unit costs, and assignment of costs.

(LO 5, 6), AP

QUESTIONS

- Under what conditions is direct labor a valid basis for allocating overhead?
- What has happened in recent industrial history to reduce the usefulness of direct labor as the primary basis for allocating overhead to products?
- In an automated manufacturing environment, what basis of overhead allocation is frequently more relevant than direct labor hours?
- What is generally true about overhead allocation to high-volume products versus low-volume products under a traditional costing system?
- What are the principal differences between activity-based costing (ABC) and traditional product costing?
- What is the formula for computing activity-based overhead rates?
- What steps are involved in developing an activity-based costing system?
- Explain the preparation and use of a value-added/non-value-added activity flowchart in an ABC system.
- What is an activity cost pool?
- What is a cost driver?
- What makes a cost driver accurate and appropriate?
- What is the formula for assigning activity cost pools to products?
- What are the benefits of activity-based costing?
- What are the limitations of activity-based costing?
- Under what conditions is ABC generally the superior overhead costing system?
- What refinement has been made to enhance the efficiency and effectiveness of ABC for use in managing costs?
- Of what benefit is classifying activities as value-added and non-value-added?
- In what ways is the application of ABC to service industries the same as its application to manufacturing companies?
- What is the relevance of the classification of levels of activity to ABC?
- (a) Describe the philosophy and approach of just-in-time processing.
(b) Identify the major elements of JIT processing.

BRIEF EXERCISES

Identify differences between costing systems.

(LO 1), AP



BE4-1 Warner Inc. sells a high-speed retrieval system for mining information. It provides the following information for the year.

	Budgeted	Actual
Overhead cost	\$1,000,000	\$950,000
Machine hours	50,000	45,000
Direct labor hours	100,000	92,000

Overhead is applied on the basis of direct labor hours. (a) Compute the predetermined overhead rate. (b) Determine the amount of overhead applied for the year. (c) Explain how an activity-based costing system might differ in terms of computing a predetermined overhead rate.

Identify differences between costing systems.

(LO 1), AP

BE4-2 Finney Inc. has conducted an analysis of overhead costs related to one of its product lines using a traditional costing system (volume-based) and an activity-based costing system. Here are its results.

	Traditional Costing	ABC
Sales revenue	\$600,000	\$600,000
Overhead costs:		
Product RX3	\$ 34,000	\$ 50,000
Product Y12	36,000	20,000
	<u>\$ 70,000</u>	<u>\$ 70,000</u>

Explain how a difference in the overhead costs between the two systems may have occurred.

Identify cost drivers.

(LO 4), AP

BE4-3 Storrer Co. identifies the following activities that pertain to manufacturing overhead: materials handling, machine setups, factory machine maintenance, factory supervision, and quality control. For each activity, identify an appropriate cost driver.

BE4-4 Mason Company manufactures four products in a single production facility. The company uses activity-based costing. The following activities have been identified through the company's activity analysis: (a) inventory control, (b) machine setups, (c) employee training, (d) quality inspections, (e) material ordering, (f) drilling operations, and (g) building maintenance.

For each activity, name a cost driver that might be used to assign overhead costs to products.

Identify cost drivers.
(LO 4), AP

BE4-5 Mordica Company identifies three activities in its manufacturing process: machine setups, machining, and inspections. Estimated annual overhead cost for each activity is \$150,000, \$325,000, and \$87,500, respectively. The cost driver for each activity and the expected annual usage are: number of setups 2,500, machine hours 25,000, and number of inspections 1,750. Compute the overhead rate for each activity.

Compute activity-based overhead rates.
(LO 4), AP

BE4-6 Weisman, Inc. uses activity-based costing as the basis for information to set prices for its six lines of seasonal coats. Compute the activity-based overhead rates using the following budgeted data for each of the activity cost pools.

Compute activity-based overhead rates.
(LO 4), AP

Activity Cost Pools	Estimated Overhead	Expected Use of Cost Drivers per Activity
Designing	\$ 450,000	10,000 designer hours
Sizing and cutting	4,000,000	160,000 machine hours
Stitching and trimming	1,440,000	80,000 labor hours
Wrapping and packing	336,000	32,000 finished units

BE4-7 Hollins, Inc., a manufacturer of computer chips, employs activity-based costing. The budgeted data for each of the activity cost pools is provided below for the year 2014.

Compute activity-based overhead rates.
(LO 4), AP

Activity Cost Pools	Estimated Overhead	Expected Use of Cost Drivers per Activity
Ordering and receiving	\$ 90,000	12,000 orders
Etching	480,000	60,000 machine hours
Soldering	1,760,000	440,000 labor hours

For 2014, the company had 11,000 orders and used 50,000 machine hours, and labor hours totaled 500,000. What is the total overhead applied?

BE4-8 Rich Novelty Company identified the following activities in its production and support operations. Classify each of these activities as either value-added or non-value-added.

Classify activities as value- or non-value-added.
(LO 6), AN

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|-------------------------|-----------------------------|
| (a) Machine setup. | (d) Moving work in process. |
| (b) Design engineering. | (e) Inspecting and testing. |
| (c) Storing inventory. | (f) Painting and packing. |

BE4-9 Mendle and Kiner is an architectural firm that is contemplating the installation of activity-based costing. The following activities are performed daily by staff architects. Classify these activities as value-added or non-value-added: (a) designing and drafting, 2.5 hours; (b) staff meetings, 1 hour; (c) on-site supervision, 2 hours; (d) lunch, 1 hour; (e) consultation with client on specifications, 1.5 hours; (f) entertaining a prospective client for dinner, 2 hours.

Classify service company activities as value- or non-value-added.
(LO 6, 8), AN

BE4-10 Kwik Pix is a large digital processing center that serves 130 outlets in grocery stores, service stations, camera and photo shops, and drug stores in 16 nearby towns. Kwik Pix operates 24 hours a day, 6 days a week. Classify each of the following activity costs of Kwik Pix as either unit-level, batch-level, product-level, or facility-level.

Classify activities according to level.
(LO 7, 8), AN

- Color printing materials.
- Photocopy paper.
- Depreciation of machinery.
- Setups for enlargements.
- Supervisor's salary.
- Ordering materials.
- Pickup and delivery.

11. Labeling and boxing. Each bottle is labeled, as is each nine-bottle case, with the name of the vintner, vintage, and variety.
12. Storing. Packaged and boxed bottles are stored awaiting shipment.
13. Shipping. The wine is shipped to distributors and private retailers.
14. Heating and air-conditioning of plant and offices.
15. Maintenance of buildings and equipment. Printing, repairs, replacements, and general maintenance are performed in the off-season.

Instructions

For each of Verde's 15 activity cost pools, identify a probable cost driver that might be used to assign overhead costs to its three wine varieties.

E4-10 Wilmington, Inc. manufactures five models of kitchen appliances at its Mesa plant. The company is installing activity-based costing and has identified the following activities performed at its Mesa plant.

Identify activity cost drivers.
(LO 4), AN

1. Designing new models.
2. Purchasing raw materials and parts.
3. Storing and managing inventory.
4. Receiving and inspecting raw materials and parts.
5. Interviewing and hiring new personnel.
6. Machine forming sheet steel into appliance parts.
7. Manually assembling parts into appliances.
8. Training all employees of the company.
9. Insuring all tangible fixed assets.
10. Supervising production.
11. Maintaining and repairing machinery and equipment.
12. Painting and packaging finished appliances.

Having analyzed its Mesa plant operations for purposes of installing activity-based costing, Wilmington, Inc. identified its activity cost centers. It now needs to identify relevant activity cost drivers in order to assign overhead costs to its products.

Instructions

Using the activities listed above, identify for each activity one or more cost drivers that might be used to assign overhead to Wilmington's five products.

E4-11 Major Instrument, Inc. manufactures two products: missile range instruments and space pressure gauges. During April, 50 range instruments and 300 pressure gauges were produced, and overhead costs of \$94,500 were estimated. An analysis of estimated overhead costs reveals the following activities.

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

Activities	Cost Drivers	Total Cost
1. Materials handling	Number of requisitions	\$40,000
2. Machine setups	Number of setups	27,500
3. Quality inspections	Number of inspections	27,000
		<u>\$94,500</u>



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	200	300	500
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 Major Instrument explaining the benefits of activity-based costing.

E4-12 Kragan Clothing Company manufactures its own designed and labeled sports attire and sells its products through catalog sales and retail outlets. While Kragan has for years used activity-based costing in its manufacturing activities, it has always used traditional

Assign overhead using traditional costing and ABC.
(LO 1, 4, 6), AP