Ch. 15 – Allocation of Support Department Costs, Common Costs, and Revenue

1. The Central Valley Company has prepared department overhead budgets for normal-volume levels before allocations, as follows:

Support departments:		
Building and grounds	$10,000	
Personnel	1,000	
General factory administration	26,090	
Cafeteria – operating loss	1,640	
Storeroom	2,670	
Total		$ 41,400
Operating departments:		
Machining	$34,700	
Assembly	48,900	
Total		83,600
Total for both departments		$125,000

Management has decided that the most appropriate inventory costs are achieved by using individual department overhead rates. These rates are developed after support department costs are allocated to operating departments.

Bases for allocation are to be selected from the following:

Department	Direct Manufacturing Labor-Hours	Number of Employees	Sq. Ft. of Floor Space Occupied	Manufacturing Labor-Hours	Total Number of Requisitions
Building and grounds	0	0	0	0	0
Personnel*	0	0	2,000	0	0
General factory administration	0	35	7,000	0	0
Cafeteria	0	10	4,000	1,000	0
Storeroom	0	5	7,000	1,000	0
Machining	5,000	50	30,000	8,000	2,000
Assembly	15,000	100	50,000	17,000	1,000
Total	20,000	200	100,000	27,000	3,000

*Basis used is number of employees.

Required:

1. Using a worksheet, allocate support department costs by the step-down method. Develop overhead rates per direct manufacturing labor-hour for machining and assembly. Allocate the support departments in the order given in this problem. Use the allocation base for each support department you think is most appropriate.

2. Using the direct method, rework requirement 1.

3. Based on the following information about two jobs, determine the total overhead costs for each job by using rates developed (a) in requirement 1 and (b) requirement 2.

	Direct Manufacturing Labor Hours	
	Machining	Assembly
Job 88	18	2
Job 89	3	17

Allocating costs of support departments; step-down and direct methods.

	Building & Grounds	Personnel	General Plant Admin.	Cafeteria Operating Loss	Storeroom	Machining	Assembly
1. Step-down Method:	<u>$10,000</u>	$1,000	$26,090	$1,640	$2,670	$34,700	$48,900
(1) Building & grounds							
(2) Personnel							
(3) General plant administration							
(4) Cafeteria							
(5) Storeroom							
(6) Costs allocated to operating depts.							

	Building & Grounds	Personnel	General Plant Admin.	Cafeteria Operating Loss	Storeroom	Machining	Assembly
2. Direct method:	$10,000	$1,000	$26,090	$1,640	$2,670	$34,700	$48,900
(1) Building & grounds							
(2) Personnel							
(3) General plant administration,							
(4) Cafeteria							
(5) Storeroom							
(6) Costs allocated to operating depts.							

3.

Comparison of Methods:

Step-down method: Job 88:

Job 89:

Direct method: Job 88:

Job 89:

4.

2. The fixed costs of operating the maintenance facility of General Hospital are $4,500,000 annually. Variable costs are incurred at the rate of $30 per maintenance-hour. The facility averages 40,000 maintenance-hours a year. Budgeted and actual hours per user for 20x3 are as follows:

	Budgeted hours	**Actual hours**
Building and grounds	10,000	12,000
Operating and emergency	8,000	8,000
Patient care	21,000	22,000
Administration	1,000	1,200
Total	40,000	43,200

Assume that budgeted maintenance-hours are used to calculate the allocation rates.

Required:
a. If a single-rate cost-allocation method is used, what amount of maintenance cost will be budgeted for each department?
b. If a single-rate cost-allocation method is used, what amount of maintenance cost will be allocated to each department based on actual usage? Based on budgeted usage?
c. If a dual-rate cost-allocation method is used, what amount of maintenance cost will be budgeted for each department?
d. If a dual-rate cost-allocation method is used, what amount of maintenance cost will be allocated to each department based on actual usage? Based on budgeted usage for fixed operating costs and actual usage for variable operating costs?

3. Blaster Drive-In is a fast-food restaurant that sells burgers and hot dogs in a 1950s environment. The fixed operating costs of the company are $5,000 per month. The controlling shareholder, interested in product profitability and pricing, wants all costs allocated to either the burgers or the hot dogs. The following information is provided for the operations of the company:

	Burgers	**Hot Dogs**
Sales for January	4,000	2,400
Sales for February	6,400	2,400

Required:
a. What amount of fixed operating costs is assigned to the burgers and hot dogs when actual sales are used as the allocation base for January? For February?
b. Hot dog sales for January and February remained constant. Did the amount of fixed operating costs allocated to hot dogs also remain constant for January and February? Explain why or why not. Comment on any other observations.

4. Gotham University offers only high-tech graduate-level programs. Gotham has two principal operating departments, Engineering and Computer Sciences, and two support departments, Facility and Technology Maintenance and Enrollment Services. The base used to allocate facility and technology maintenance is budgeted total maintenance hours. The base used to allocate enrollment services is number of credit hours for a department. The Facility and Technology Maintenance budget is $350,000, while the Enrollment Services budget is $950,000. The following chart summarizes budgeted amounts and allocation-base amounts used by each department.

	Budget	*Services Provided: (Annually)*			
		Engineering	Computer Sciences	F&T Maintenance	Enrollment Service
F&T Maintenance (in hours)	$350,000	2,000	5,000	Zero	1,000
Enrollment Service (in credit hrs)	$950,000	24,000	36,000	2,000	Zero

Required:

Use the direct method to allocate support costs to each of the two principal operating departments, Engineering and Computer Sciences. Prepare a schedule showing the support costs allocated to each department.

5. Gotham University offers only high-tech graduate-level programs. Gotham has two principal operating departments, Engineering and Computer Sciences, and two support departments, Facility and Technology Maintenance and Enrollment Services. The base used to allocate facility and technology maintenance is budgeted total maintenance hours. The base used to allocate enrollment services is number of credit hours for a department. The Facility and Technology Maintenance budget is $350,000, while the Enrollment Services budget is $950,000. The following chart summarizes budgeted amounts and allocation-base amounts used by each department.

		Services Provided: (Annually)			
	Budget	**Engineering**	**Computer Sciences**	**F&T Maintenance**	**Enrollment Service**
F&T Maintenance (in hours)	$350,000	1,000	2,000	Zero	5,000
Enrollment Service (in credit hrs)	$950,000	24,000	36,000	2,000	Zero

Required:
Prepare a schedule, which allocates service department costs using the step-down method with the sequence of allocation based on the highest-percentage support concept. Compute the total amount of support costs allocated to each of the two principal operating departments, Engineering and Computer Sciences.

6. Gotham University offers only high-tech graduate-level programs. Gotham has two principal operating departments, Engineering and Computer Sciences, and two support departments, Facility and Technology Maintenance and Enrollment Services. The base used to allocate facility and technology maintenance is budgeted total maintenance hours. The base used to allocate enrollment services is number of credit hours for a department. The Facility and Technology Maintenance budget is $350,000, while the Enrollment Services budget is $950,000. The following chart summarizes budgeted amounts and allocation-base amounts used by each department.

| | | Services Provided: (Annually) | | | |
	Budget	Engineering	Computer Sciences	F&T Maintenance	Enrollment Service
Engineering	$3,500,000				
Computer Sciences	$1,400,000				
F&T Maintenance (in hours)	$350,000	2,000	1,000	Zero	5,000
Enrollment Service (in credit hrs)	$950,000	24,000	36,000	2,000	Zero

Required:
a. Set up algebraic equations in linear equation form for each activity.
b. Determine total costs for each department by solving the equations from part (a) using the reciprocal method.
(Engineering= Eng; Computer Sciences = CS; Facility and Technical Maintenance = FTM; Enrollment Service = ES)

7. The Maintenance Department has been servicing Gizmo Production for four years. Beginning next year, the company is adding a Scrap-Processing Department to recycle the materials from Gizmo Production. As a result, maintenance costs are expected to increase from $480,000 per year to $500,000 per year. The Scrap-Processing Department will utilize 25% of the maintenance efforts.

   Required:
   a. Using the stand-alone cost-allocation method, identify the amount of maintenance cost that will be allocated to Gizmo Production and the Scrap-Processing Department next year.

   b. Using the incremental cost-allocation method, identify the amount of maintenance cost that will be allocated to Gizmo Production and the Scrap-Processing Department next year.

8.   Software For You encounters revenue-allocation decisions with its bundled product sales. Here, two or more units of the software are sold as a single package. Managers at Software For You are keenly interested in individual product-profitability figures. Information pertaining to its three bundled products and the stand-alone selling prices of its individual products is as follows:

	Stand-Alone Selling Price	Cost
Word Processing (WP)	$125	$18
Spreadsheet (SS)	$150	$20
Accounting Software (AS)	$225	$25

Package	Packaged Price
WP & SS	$220
WP & AS	$280
All three	$380

Required:

a.   Using the stand-alone revenue-allocation method, allocate the $380 packaged price of "All Three" to the three software products
   1.   with selling prices as the weights.
   2.   with individual product costs as the weights.
   3.   based on physical units.

b.   Allocate the $380 packaged price of "All Three" to the three software products using the incremental revenue-allocation method. Assume Word Processing is the primary product, followed by Spreadsheet, and then Accounting Software.