

- 1 A number of costs that are commonly allocated are listed in the following table followed by two alternative cost allocation bases.

<u>Cost Description</u>	<u>Allocation Base Alternatives</u>	
Cafeteria costs	Direct labor costs	Number of employees
Computer system costs	Number of departments	Amount of computer time used
Indirect labor costs	Direct labor hours	Number of supervisors
Indirect materials	Direct labor hours	Direct material dollars
Factory rent	Number of departments	Square footage
Fringe benefits costs	Number of departments	Number of employees
Housekeeping costs	Square footage	Number of employees
Joint costs	Number of joint products	Sales value at split-off
Maintenance costs	Machine hours	Number of employees
Personnel department costs	Number of employees	Number of departments

Required:

For each cost listed, circle the cost allocation base that you believe would be more appropriate for allocating the cost.

Feedback:

<u>Cost Description</u>	<u>Allocation Base Alternatives</u>	
Cafeteria costs		Number of employees
Computer system costs		Amount of computer time used
Indirect labor costs	Direct labor hours	
Indirect materials		Direct material dollars
Factory rent		Square footage
Fringe benefits costs		Number of employees
Housekeeping costs	Square footage	
Joint costs		Sales value at split-off
Maintenance costs	Machine hours	
Personnel department costs	Number of employees	

2. Martin's is a store with three departments, Appliances, Tools, and Home Improvements. The company expects to incur the following indirect costs related to its operations:

Store manager's salary  
 Store supplies  
 Electric bill  
 Clerical staff salaries  
 Payroll taxes  
 Office supplies  
 Water bill  
 Sewer bill  
 Medical insurance  
 Vacation pay

**Required:**

- 1) Organize the indirect costs into three cost pools: Store Administration, Utilities, and Fringe Benefit Costs, assuming that each department is a cost object
- 2) Identify an appropriate cost driver for each cost pool.

Feedback:

1) Cost Pools

Store Administration: store manager's salary, store supplies, clerical staff salaries, office supplies

Utilities: Water bill, electric bill, sewer bill

Fringe Benefit Costs: Payroll taxes, medical insurance, vacation pay

2) Cost Drivers

Store Administration: dollar amount of sales or square feet occupied by each department

Utilities: square feet occupied by each department

Fringe Benefit Costs: number of employees

3. Jefferson Company expects to incur \$450,000 in manufacturing overhead costs during 2014. Other budget information follows:

	Department A	Department B	Department C
Direct labor hours	15,000	5,000	20,000
Machine hours	8,000	10,000	12,000

**Required:**

- 1) Use direct labor hours as the cost driver to compute the allocation rate. Determine the amount of budgeted overhead cost for each department.
- 2) Use machine hours as the cost driver to compute the allocation. Determine the amount of budgeted overhead cost for each department.
- 3) Assume that Department A manufactured a product that required 160 direct labor hours and 85 machine hours. If overhead is allocated based on direct labor hours, how much overhead would be allocated to this product?
- 4) Assume that Department A manufactured a product that required 160 direct labor hours and 85 machine hours. If overhead is allocated based on machine hours, how much overhead would be allocated to this product?

Feedback:

1) Allocation rate =  $\$450,000 / 40,000$  direct labor hours = \$11.25 per direct labor hour

Amount of overhead allocated to Department A =  $15,000 \times \$11.25 = \$168,750$

Amount of overhead allocated to Department B =  $5,000 \times \$11.25 = \$56,250$

Amount of overhead allocated to Department C =  $20,000 \times \$11.25 = \$225,000$

2) Allocation rate =  $\$450,000 / 30,000$  machine hours = \$15 per machine hour

Amount of overhead allocated to Department A =  $8,000 \times \$15 = \$120,000$

Amount of overhead allocated to Department B =  $10,000 \times \$15 = \$150,000$

Amount of overhead allocated to Department C =  $12,000 \times \$15 = \$180,000$

3)  $160$  direct labor hours  $\times$  \$11.25 = \$1,800

4)  $85$  machine hours  $\times$  \$15 = \$1,275

4. Harrison Company expects to incur \$600,000 in manufacturing overhead for the coming year. The company makes two products, A and B, and it has accumulated the following budget information for the products:

	Product A	Product B	Total
Number of units to be produced	10,000	5,000	15,000
Direct labor hours	25,000	5,000	30,000
Machine hours	15,000	30,000	45,000

Required:

- 1) Use direct labor hours as the cost driver to compute the allocation rate. Determine the amount of budgeted overhead to be allocated to each unit of product A.
- 2) Use machine hours as the cost driver to compute the allocation rate. Determine the amount of budgeted overhead to be allocated to each unit of product A.
- 3) How should Harrison decide between machine hours and direct labor hours as the cost driver for its manufacturing overhead?

Feedback:

1) Allocation rate =  $\$600,000/30,000$  direct labor hours =  $\$20/\text{hour}$

Amount of overhead per unit of product A =  $(25,000 \times \$20)/10,000$  units =  $\$50$

2) Allocation rate =  $\$600,000/45,000$  machine hours =  $\$13.33/\text{hour}$

Amount of overhead per unit of product A =  $(15,000 \times \$13.33)/10,000$  units =  $\$20$

- 3) Harrison should consider which of the two possible cost drivers, labor hours or machine hours, is more likely to have a cause-and-effect relationship with overhead costs.

5. The management accountant at Morrison, Inc. provided the following estimated costs for producing 2,500 units of a specialty product manufactured by the firm:

Direct Materials	\$10,000
Direct Labor (1 hour per unit)	5,000
Unit-level support costs	10,000
Batch level support costs	5,000
Product-level support costs	3,000
Facility-level support costs	7,000

The company believes that direct labor hours are the most appropriate cost driver for assigning overhead costs to its product.

**Required:**

- 1) Compute the predetermined overhead rate for this company.
- 2) Compute the specialty product's total estimated cost per unit.
- 3) Why do firms assign overhead costs using a predetermined overhead rate instead of assigning actual costs?

Feedback:

- 1) Predetermined overhead rate:

Total overhead = \$10,000 + \$5,000 + \$3,000 + \$7,000 = \$25,000;

Predetermined rate = \$25,000/2,500 = \$10.00 per direct labor hour

- 2) Cost per unit:

Direct materials (\$10,000/2,500)	\$ 4.00
Direct labor (\$5,000/2,500)	2.00
Overhead (1 hour x \$10)	<u>10.00</u>
Total cost per unit	\$ 16.00

- 3) Using a predetermined rate allows management to determine the cost of the product in a more timely manner. In addition, it smoothes out or annualizes overhead costs so that unit costs are more stable.

6. Old Virginia Meat Processing Plant processes hogs to produce three joint products: bacon, sausage, and pork chops. The company incurs common processing costs of \$100,000 per batch. Each batch yields 15,000 pounds of bacon, 18,000 pounds of sausage, and 7,000 pounds of pork chops. Pork chops can be sold for \$3.00 per pound. The bacon and sausage products are sold at the split-off point for \$3.25 per pound and \$3.50 per pound, respectively.

Required:

- 1) Allocate Old Virginia's joint costs using pounds produced as the allocation base.
- 2) Allocate Old Virginia's joint costs using the relative sales value at split-off method.
- 3) Assume that the pork chops are processed further after the split-off point at an additional cost of \$4,000 and that joint costs are allocated based on pounds produced. What would be the total cost assigned to pork chops?

Feedback:

- 1) Allocation of joint costs using pounds produced:

Bacon:  $15,000/40,000 = .375$ ; 37.5% of \$100,000 = \$37,500

Sausage:  $18,000/40,000 = .45$ ; 45% of \$100,000 = \$45,000

Pork chops:  $7,000/40,000 = .175$ ; 17.5% of \$100,000 = \$17,500

- 2) Allocation of joint costs using the relative sales value method:  $(15,000 * \$3.25) + (18,000 * \$3.50) + (7,000 * \$3.00) = \$132,750$

Bacon:  $(15,000 * \$3.25)/\$132,750 = .36723$ ; 36.723% of \$100,000 = \$36,723

Sausage:  $(18,000 * \$3.50)/\$132,750 = .47458$ ; 47.458% of \$100,000 = \$47,458

Pork chops:  $(7,000 * \$3.00)/\$132,750 = .15819$ ; 15.819% of \$100,000 = \$15,819

- 3) Total cost of pork chops = \$17,500 in joint costs + \$4,000 of additional processing costs for a total of \$21,500.