Managerial Accounting

Further Exercises

Session 3

E14-32

Toon Town Toy Company considering outsourcing their packaging department.

- Packaging has $11,000 of allocated rent for its use of space, if not used, the space will be converted to storage space
- Currently, the company pays $13,000 rent on a storage space offsite, which would no longer be needed

1. Which of these figures are relevant? Why?
2. What type of cost is the $13,000 warehouse rental from perspective of packaging dept.?

E14-32

1. - $11,100 allocation of rent on factory building: Irrelevant
     - Toon Town Toy Company will rent the entire factory building regardless of whether it continues to operate the Packaging Department. If the department is eliminated, the space will be converted to storage space.

   - $13,000 rental of storage space in warehouse: Relevant
     - this cost will be incurred only if the Packaging Department is kept in operation. If the department is eliminated, this $13,000 rental cost will be avoided.

2. The $13,000 warehouse rental cost is the opportunity cost associated with using space in the company's factory building for the Packaging Department.

Session 4

E7-30

Brad's Bicycle Shop sells two types of speed bikes – high quality & medium quality.

- 70% of the sales are medium quality bikes
- Fixed costs are $148,500 per year.

Product Type	Sales Price	Invoice Cost	Sales Commission
High	1,000	550	50
Medium	600	270	30

1. Compute unit contribution margin for each product.
2. What is the sales mix?
3. Compute the weighted average contribution margin.
4. What is B/E margin in sales dollars?
5. How many bikes of each kind must be sold to achieve target net income of $99,000?

E7-30

1.

Bicycle Type	Sales Price	Unit Variable Cost	Unit Contribution Margin
High-quality	$1,000	$600 ($550 + $50)	$400
Medium-quality	600	300 ($270 + $30)	300

2. Sales mix:

High-quality bicycles	30%
Medium-quality bicycles	70%

3. Weighted-average unit contribution margin = ($400 × 30%) + ($300 × 70%)

= $330

E7-30

4.

$$\text{Break-even point (in units)} = \frac{\text{fixed expenses}}{\text{weighted-average unit contribution margin}}$$

$$= \frac{\$148{,}500}{\$330} = 450 \text{ bicycles}$$

Bicycle Type	Break-Even Sales Volume	Sales Price	Sales Revenue
High-quality bicycles	135 (450 × .30)	$1,000	$135,000
Medium-quality bicycles	315 (450 × .70)	600	189,000
Total			$324,000

E7-30

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5. **Target net income:**

$$\text{Sales volume required to earn target net income of \$99,000} = \frac{\$148,500 + \$99,000}{\$330}$$

$$= 750 \text{ bicycles}$$

This means that the shop will need to sell the following volume of each type of bicycle to earn the target net income:

High-quality	**225 (750 × .30)**
Medium-quality	**525 (750 × .70)**

Session 5

P5-52

Rapid City Technology, Inc. manufactures chemicals. Controller gathered following info for ABC

Activity Cost Pool	Budgeted OH costs	Cost driver	Budgeted Level for cost driver	Pool rate
Machine setups	1,000,000	Nr. of setups	250	$ 4,000 per setup
Material Handling	300,000	Weight of raw material	75,000 lbs.	$ 4 per lbs.
Hazardous waste control	100,000	Weight of haz. Chemicals	10,000 lbs.	$ 10 per lbs.
Quality control	300,000	Nr. of inspections	2,000	$ 150 per inspection
Other OH	800,000	Machine hours	40,000	$20 per MH
total	**2,5000,000**			

P5-52

An order of 1,000 boxes of the chemicals JLRP requires:

Machine setups	6 setups
Material handling	9,000 pounds
Hazardous waste control	2,100 pounds
Quality control	8 inspections
Other overhead costs	550 machine hours

1. Assign OH to order using ABC
2. OH costs per box?
3. Assume firm uses POHR based on machine hours. Compute POHR
4. How much OH would be assigned when using POHR
   a) To the order (b) per box
5. Explain why the two system result in so widely differing cost.

P5-52

1. Overhead to be assigned to chemical order:

Activity Cost Pool	Pool Rate		Level of Cost Driver	Assigned Overhead Cost
Machine setups	$4,000 per setup	×	6 setups	$24,000
Material handling	$4 per pound	×	9,000 pounds	36,000
Hazardous waste control	$10 per pound	×	2,100 pounds	21,000
Quality control	$150 per inspection	×	8 inspections	1,200
Other overhead costs	$20 per machine hour	×	550 machine hours	11,000
Total				$93,200

2. Overhead cost per box of chemicals = $\frac{\$93{,}200}{1{,}000\ \text{boxes}} = \$93.20\ \text{per box}$

P5-52

3. Predetermined overhead rate = $\frac{\text{total budgeted overhead cost}}{\text{total budgeted machine hours}} = \frac{\$2{,}500{,}000}{40{,}000}$

= $62.50 per machine hr.

4. Overhead to be assigned to a chemical order, given a single predetermined overhead rate:

   a. Total overhead assigned = $62.50 per machine hr. $\times$ 550 machine hr.

   = $34,375

   b. Overhead cost per box of chemicals = $\frac{\$34{,}375}{1{,}000 \text{ boxes}} = \$34.375 \text{ per box}$

P5-52

5. The OH costs associated with this order only relate to machine hours (POHR is based on machine hours) to a small extent (<12%).
   - These chemicals entail a relative large number of machine setups, and a large amount of material handling and hazardous materials
   - Thus, they are quite costly in terms of driving overhead costs. Use of a single predetermined overhead rate obscures the these characteristic of the production job.

   ➢ Could lead to poor pricing decisions

   Suppose the firm wants to use a single POHR. What would you recommend as the cost driver?

Session 6

Case 6-47

Outside Environment Inc.: landscaping business

Preliminary cost estimates per 1,000 sq feet

Direct material	$ 390
Direct Labor (5 DL hours at $11/h)	$ 55
Overhead (at $18 per DL hour)	$ 90
Total cost	$ 535

- Overhead estimate is based on the last 12 month: total OH costs/total direct labor hours
- The owner is not convinced of the estimate and runs a least-squares regression with the following result:
- OH = $52,400 + $9.25 DLH

Case 6-47

1. Explain the difference between the two estimates
2. Using the least-squares regression, determine total variable costs
3. The owner is asked for a bid on a 50,000 sq feet landscaping job. About 30% of the required DL hours will be on overtime (premium is 50% of DL wage rate). Calculate the incremental costs that should be included in a bid that is submitted on this project.
4. Should management rely on the least-squares regression as the basis for the variable component of its cost estimate?

Case 6-47

1. Explain the difference between the two estimates

Cairns' preliminary estimate for overhead of $18.00 per direct-labor hour does not distinguish between fixed and variable overhead. This preliminary rate is applicable only to the activity level at which it was computed (72,000 direct-labor hours per year) and may not be used to predict total overhead at other activity levels.

The overhead rate developed from the least-squares regression recognizes the relationship between cost and volume in the data. The regression suggests that there is a component of the cost ($52,400 per month) that is unrelated to total direct-labor hours.
Thus, the least-squares regression results in a cost function with two components: fixed cost per month and variable cost per direct-labor hour. This cost formula can be used to predict total overhead at any activity level within the relevant range.

Case 6-47

2. Using the least-squares regression, determine total variable costs

Direct material	$390.00
Direct labor (5 DLH* × $11.00 per DLH)	55.00
Variable overhead (5 DLH × $9.25 per DLH)	46.25
Total variable cost per 1,000 square feet	$491.25

Case 6-47

3. The owner is asked for a bid on a 50,000 sq feet landscaping job. About 30% of the required DL hours will be on overtime (premium is 50% of DL wage rate). Calculate the incremental costs that should be included in any bid that is submitted on this project.

The minimum bid should include the following incremental costs of the project.:	
Direct material ($390.00 × 50)	$19,500.00
Direct labor ($55.00 × 50)	2,750.00
Variable overhead ($9.25 per DLH × 5 DLH × 50)	2,312.50
Overtime premium ($5.50 per DLH × 5 DLH × 50 × .3)	412.50
Minimum bid	$24,975.00

Case 6-47

4. Should management rely on the least-squares regression as the basis for the variable component of its cost estimate?

   Yes, as long as management realizes there are some short comings.

   - Estimate is based on historical costs which might change in the future
   - If the size of the project is outside the relevant range, the cost predictions are likely to be less accurate

Session 7

P10-38

- Valport made 15,600 units in March at the following costs:
  - DL – 80,200 hours @ $10.95 per hour
  - DM purchased – 50,000 pounds at $5.20 per lb.
  - DM used – 46,200 pounds
- Standard costs per unit were:
  - DM 3 pounds @$5.00 per pound
  - DL – 5 hours @ $11.25 per hour

1. Compute standard production costs for March based on actual units
2. Compute variances for direct material and direct labor, indicate if favorable or unfavorable.

P10-38

1. Standard production costs for March based on actual units

		Standard Costs
Direct material	15,600 units × 3 lbs. × $5.00	$ 234,000
Direct labor	15,600 units × 5 hrs. × $11.25	877,500
Total standard production costs		$1,111,500

P10-38

2. DM Variances

DM price variance	=	(AQ × AP) – (AQ × SP)
	=	(46,200 × $5.20) – (46,200 × $5.00)
	=	$9,240 Unfavorable
DM purchase price variance	=	(PQ × AP) – (PQ × SP)
	=	(50,000 × $5.20) – (50,000 × $5.00)
	=	$10,000 Unfavorable
DM quantity variance	=	(AQ × SP) – (SQ × SP)
	=	(46,200 × $5.00) – (46,800* × $5.00)
	=	$3,000 Favorable

*15,600 units × 3 lbs. per unit = 46,800 lb.

P10-38

2. DL Variances

DL rate variance	=	(AH × AR) – (AH × SR)
	=	(80,200 × $10.95) – (80,200 × $11.25)
	=	$24,060 Favorable
DL efficiency variance	=	(AH × SR) – (SH × SR)
	=	(80,200 × $11.25) – (78,000* × $11.25)
	=	$24,750 Unfavorable

*15,600 units × 5 hours per unit = 78,000 hr.