Solutions manual for Managerial Accounting 15th Edition Ray Garrison , Eric Noreen , Peter Brewer

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Chapter 2

Managerial Accounting and Cost Concepts

Solutions to Questions

2-1 The three major elements of product costs in a manufacturing company are direct materials, direct labor, and manufacturing overhead.

2-2

a. Direct materials are an integral part of a finished product and their costs can be conveniently traced to it.

b. Indirect materials are generally small items of material such as glue and nails. They may be an integral part of a finished product but their costs can be traced to the product only at great cost or inconvenience.

c. Direct labor consists of labor costs that can be easily traced to particular products. Direct labor is also called "touch labor."

d. Indirect labor consists of the labor costs of janitors, supervisors, materials handlers, and other factory workers that cannot be conveniently traced to particular products. These labor costs are incurred to support production, but the workers involved do not directly work on the product.

e. Manufacturing overhead includes all manufacturing costs except direct materials and direct labor. Consequently, manufacturing overhead includes indirect materials and indirect labor as well as other manufacturing costs.

2-3 A product cost is any cost involved in purchasing or manufacturing goods. In the case of manufactured goods, these costs consist of direct materials, direct labor, and manufacturing overhead. A period cost is a cost that is taken directly to the income statement as an expense in the period in which it is incurred.

2-4

a. Variable cost: The variable cost per unit is constant, but total variable cost changes in direct proportion to changes in volume.
b. Fixed cost: The total fixed cost is constant within the relevant range. The *average* fixed cost per unit varies inversely with changes in volume.
c. Mixed cost: A mixed cost contains both variable and fixed cost elements.

2-5

a. Unit fixed costs decrease as volume increases.
b. Unit variable costs remain constant as volume increases.
c. Total fixed costs remain constant as volume increases.
d. Total variable costs increase as volume increases.

2-6

a. Cost behavior: Cost behavior refers to the way in which costs change in response to changes in a measure of activity such as sales volume, production volume, or orders processed.
b. Relevant range: The relevant range is the range of activity within which assumptions about variable and fixed cost behavior are valid.

2-7 An activity base is a measure of whatever causes the incurrence of a variable cost. Examples of activity bases include units produced, units sold, letters typed, beds in a hospital, meals served in a cafe, service calls made, etc.

2-8 The linear assumption is reasonably valid providing that the cost formula is used only within the relevant range.

2-9 A discretionary fixed cost has a fairly short planning horizon—usually a year. Such costs arise from annual decisions by management to spend on certain fixed cost items, such as advertising, research, and management development. A committed fixed cost has a long planning horizon—generally many years. Such costs relate to a company's investment in facilities, equipment, and basic organization. Once such costs have been incurred, they are "locked in" for many years.

2-10 Yes. As the anticipated level of activity changes, the level of fixed costs needed to support operations may also change. Most fixed costs are adjusted upward and downward in large steps, rather than being absolutely fixed at one level for all ranges of activity.

2-11 The high-low method uses only two points to determine a cost formula. These two points are likely to be less than typical because they represent extremes of activity.

2-12 The formula for a mixed cost is Y = a + bX. In cost analysis, the "a" term represents the fixed cost and the "b" term represents the variable cost per unit of activity.

2-13 The term "least-squares regression" means that the sum of the squares of the deviations from the plotted points on a graph to the regression line is smaller than could be obtained from any other line that could be fitted to the data.

2-14 The contribution approach income statement organizes costs by behavior, first deducting variable expenses to obtain contribution margin, and then deducting fixed expenses to obtain net operating income. The traditional approach organizes costs by function, such as production, selling, and administration. Within a functional area, fixed and variable costs are intermingled.

2-15 The contribution margin is total sales revenue less total variable expenses.

2-16 A differential cost is a cost that differs between alternatives in a decision. An opportunity cost is the potential benefit that is given up when one alternative is selected over another. A sunk cost is a cost that has already been incurred and cannot be altered by any decision taken now or in the future.

2-17 No, differential costs can be either variable or fixed. For example, the alternatives might consist of purchasing one machine rather than another to make a product. The difference between the fixed costs of purchasing the two machines is a differential cost.

The Foundational 15

1.

Direct materials	$ 6.00	
Direct labor	3.50	
Variable manufacturing overhead	1.50	
Variable manufacturing cost per unit	$11.00	
Variable manufacturing cost per unit (a)	$11.00	
Number of units produced (b)	10,000	
Total variable manufacturing cost (a) × (b)		$110,000
Average fixed manufacturing overhead per unit (c)	$4.00	
Number of units produced (d)	10,000	
Total fixed manufacturing cost (c) × (d)		40,000
Total product (manufacturing) cost		$150,000

Note: The average fixed manufacturing overhead cost per unit of $4.00 is valid for only one level of activity—10,000 units produced.

2.

Sales commissions	$1.00	
Variable administrative expense	0.50	
Variable selling and administrative per unit	$1.50	
Variable selling and admin. per unit (a)	$1.50	
Number of units sold (b)	10,000	
Total variable selling and admin. expense (a) × (b)		$15,000
Average fixed selling and administrative expense per unit ($3 fixed selling + $2 fixed admin.) (c)	$5.00	
Number of units sold (d)	10,000	
Total fixed selling and administrative expense (c) × (d)		50,000
Total period (nonmanufacturing) cost		$65,000

Note: The average fixed selling and administrative expense per unit of $5.00 is valid for only one level of activity—10,000 units sold.

The Foundational 15 (continued)

3.

Direct materials	$ 6.00
Direct labor	3.50
Variable manufacturing overhead	1.50
Sales commissions	1.00
Variable administrative expense	0.50
Variable cost per unit sold	$12.50

4.

Direct materials	$ 6.00
Direct labor	3.50
Variable manufacturing overhead	1.50
Sales commissions	1.00
Variable administrative expense	0.50
Variable cost per unit sold	$12.50

5.

Variable cost per unit sold (a)	$12.50
Number of units sold (b)	8,000
Total variable costs (a) × (b)	$100,000

6.

Variable cost per unit sold (a)	$12.50
Number of units sold (b)	12,500
Total variable costs (a) × (b)	$156,250

7.

Total fixed manufacturing cost (see requirement 1) (a)	$40,000
Number of units produced (b)	8,000
Average fixed manufacturing cost per unit produced (a) ÷ (b)	$5.00

8.

Total fixed manufacturing cost (see requirement 1) (a)	$40,000
Number of units produced (b)	12,500
Average fixed manufacturing cost per unit produced (a) ÷ (b)	$3.20

9.

Total fixed manufacturing cost (see requirement 1)	$40,000

The Foundational 15 (continued)

10. Total fixed manufacturing cost

(see requirement 1)	$40,000	

11.

Variable overhead per unit (a)	$1.50	
Number of units produced (b)	8,000	
Total variable overhead cost (a) × (b)		$12,000
Total fixed overhead (see requirement 1)		40,000
Total manufacturing overhead cost		$52,000
Total manufacturing overhead cost (a)		$52,000
Number of units produced (b)		8,000
Manufacturing overhead per unit (a) ÷ (b)		$6.50

12.

Variable overhead per unit (a)	$1.50	
Number of units produced (b)	12,500	
Total variable overhead cost (a) × (b)		$18,750
Total fixed overhead (see requirement 1)		40,000
Total manufacturing overhead cost		$58,750
Total manufacturing overhead cost (a)		$58,750
Number of units produced (b)		12,500
Manufacturing overhead per unit (a) ÷ (b)		$4.70

13.

Selling price per unit	$22.00
Variable cost per unit sold (see requirement 4)	12.50
Contribution margin per unit	$ 9.50

The Foundational 15 (continued)

14.

Direct materials per unit	$6.00	
Direct labor per unit	3.50	
Direct manufacturing cost per unit (a)	$9.50	
Number of units produced (b)	11,000	
Total direct manufacturing cost (a) × (b)	$104,500	
Variable overhead per unit (a)	$1.50	
Number of units produced (b)	11,000	
Total variable overhead cost (a) × (b)		$16,500
Total fixed overhead (see requirement 1)		40,000
Total indirect manufacturing cost		$56,500

15.

Direct materials per unit	$6.00
Direct labor per unit	3.50
Variable manufacturing overhead per unit	1.50
Incremental cost per unit produced	$11.00

Note: Variable selling and administrative expenses are variable with respect to the number of units sold, not the number of units produced.

Exercise 2-1 (15 minutes)

	Cost	*Cost Object*	*Direct Cost*	*Indirect Cost*
1.	The wages of pediatric nurses	The pediatric department	X	
2.	Prescription drugs	A particular patient	X	
3.	Heating the hospital	The pediatric department		X
4.	The salary of the head of pediatrics	The pediatric department	X	
5.	The salary of the head of pediatrics	A particular pediatric patient		X
6.	Hospital chaplain's salary	A particular patient		X
7.	Lab tests by outside contractor	A particular patient	X	
8.	Lab tests by outside contractor	A particular department	X	

Exercise 2-2 (10 minutes)

1. The cost of a hard drive installed in a computer: direct materials.

2. The cost of advertising in the *Puget Sound Computer User* newspaper: selling.

3. The wages of employees who assemble computers from components: direct labor.

4. Sales commissions paid to the company's salespeople: selling.

5. The wages of the assembly shop's supervisor: manufacturing overhead.

6. The wages of the company's accountant: administrative.

7. Depreciation on equipment used to test assembled computers before release to customers: manufacturing overhead.

8. Rent on the facility in the industrial park: a combination of manufacturing overhead, selling, and administrative. The rent would most likely be prorated on the basis of the amount of space occupied by manufacturing, selling, and administrative operations.

Exercise 2-3 (15 minutes)

	Product Cost	*Period Cost*
1. Depreciation on salespersons' cars		X
2. Rent on equipment used in the factory	X	
3. Lubricants used for machine maintenance.............	X	
4. Salaries of personnel who work in the finished goods warehouse...		X
5. Soap and paper towels used by factory workers at the end of a shift	X	
6. Factory supervisors' salaries................................	X	
7. Heat, water, and power consumed in the factory ...	X	
8. Materials used for boxing products for shipment overseas (units are not normally boxed).............		X
9. Advertising costs		X
10. Workers' compensation insurance for factory employees...	X	
11. Depreciation on chairs and tables in the factory lunchroom	X	
12. The wages of the receptionist in the administrative offices		X
13. Cost of leasing the corporate jet used by the company's executives		X
14. The cost of renting rooms at a Florida resort for the annual sales conference		X
15. The cost of packaging the company's product	X	

Exercise 2-4 (15 minutes)

1.

	Cups of Coffee Served in a Week		
	2,000	*2,100*	*2,200*
Fixed cost	$1,200	$1,200	$1,200
Variable cost	440	462	484
Total cost	$1,640	$1,662	$1,684
Average cost per cup served *	$0.820	$0.791	$0.765

* Total cost ÷ cups of coffee served in a week

2. The average cost of a cup of coffee declines as the number of cups of coffee served increases because the fixed cost is spread over more cups of coffee.