Chapter 06

Variable Costing and Segment Reporting: Tools for Management

Exercise 6-1 (15 minutes)

1. Under absorption costing, all manufacturing costs (variable and fixed) are included in product costs. (All currency values are in thousands of rupees, denoted by R.)

Direct materials	R120
Direct labor	140
Variable manufacturing overhead	50
Fixed manufacturing overhead (R600,000 ÷ 10,000 units)	60
Absorption costing unit product cost	R370

2. Under variable costing, only the variable manufacturing costs are included in product costs. (All currency values are in thousands of rupees, denoted by R.)

Direct materials	R120
Direct labor	140
Variable manufacturing overhead	50
Variable costing unit product cost	R310

Note that selling and administrative expenses are not treated as product costs under either absorption or variable costing. These expenses are always treated as period costs and are charged against the current period's revenue.

Exercise 6-2 (20 minutes)

1. 2,000 units in ending inventory × R60 fixed manufacturing overhead per unit = R120,000.

2. The variable costing income statement appears below:

Sales		R4,000,000
Variable expenses:		
Variable cost of goods sold (8,000 units × R310 per unit)	R2,480,000	
Variable selling and administrative (8,000 units × R20 per unit)	160,000	2,640,000
Contribution margin		1,360,000
Fixed expenses:		
Fixed manufacturing overhead	600,000	
Fixed selling and administrative	400,000	1,000,000
Net operating income		R 360,000

The difference in net operating income between variable and absorption costing can be explained by the deferral of fixed manufacturing overhead cost in inventory that has taken place under the absorption costing approach. Note from part (1) that R120,000 of fixed manufacturing overhead cost has been deferred in inventory to the next period. Thus, net operating income under the absorption costing approach is R120,000 higher than it is under variable costing

Exercise 6-3 (20 minutes)

1.

	Year 1	*Year 2*	*Year 3*
Beginning inventories	180	150	160
Ending inventories	150	160	200
Change in inventories	(30)	10	40
Fixed manufacturing overhead in beginning inventories (@$450 per unit)	$ 81,000	$ 67,500	$72,000
Fixed manufacturing overhead in ending inventories (@$450 per unit)	67,500	72,000	90,000
Fixed manufacturing overhead deferred in (released from) inventories (@$450 per unit)	$(13,500)	$ 4,500	$ 18,000
Variable costing net operating income	$292,400	$269,200	$251,800
Add (deduct) fixed manufacturing overhead cost deferred in (released from) inventory under absorption costing	(13,500)	4,500	18,000
Absorption costing net operating income	$278,900	$273,700	$269,800

2. Because absorption costing net operating income was greater than variable costing net operating income in Year 4, inventories must have increased during the year and hence, fixed manufacturing overhead was deferred in inventories. The amount of the deferral is just the difference between the two net operating incomes or $27,000 = $267,200 – $240,200.

Exercise 6-4 (10 minutes)

	Total	*CD*	*DVD*
Sales*	$750,000	$300,000	$450,000
Variable expenses**	435,000	120,000	315,000
Contribution margin	315,000	180,000	135,000
Traceable fixed expenses	183,000	138,000	45,000
Product line segment margin	132,000	$ 42,000	$ 90,000
Common fixed expenses not traceable to products	105,000		
Net operating income	$ 27,000		

* CD: 37,500 packs × $8.00 per pack = $300,000;
DVD: 18,000 packs × $25.00 per pack= $450,000.

** CD: 37,500 packs × $3.20 per pack = $120,000;
DVD: 18,000 packs × $17.50 per pack= $315,000.

Problem 6-16 (45 minutes)

1. a. The unit product cost under absorption costing is:

Direct materials	$15
Direct labor	7
Variable manufacturing overhead	2
Fixed manufacturing overhead (640,000 ÷ 40,000 units)	16
Absorption costing unit product cost	$40

b. The absorption costing income statement is:

Sales (35,000 units × $60 per unit)	$2,100,000
Cost of goods sold (35,000 units × $40 per unit)	1,400,000
Gross margin	700,000
Selling and administrative expenses (35,000 units × $2 per unit) + $560,000	630,000
Net operating income	$ 70,000

2. a. The unit product cost under variable costing is:

Direct materials	$15
Direct labor	7
Variable manufacturing overhead	2
Variable costing unit product cost	$24

b. The variable costing income statement is:

Sales (35,000 units × $60 per unit)		$2,100,000
Variable expenses:		
Variable cost of goods sold ($35,000 × $24 per unit)	$840,000	
Variable selling expense (35,000 units × $2 per unit)	70,000	910,000
Contribution margin		1,190,000
Fixed expenses:		
Fixed manufacturing overhead	640,000	
Fixed selling and administrative expense	560,000	1,200,000
Net operating loss		$ (10,000)

3. The difference in the ending inventory relates to a difference in the handling of fixed manufacturing overhead costs. Under variable costing, these costs have been expensed in full as period costs. Under absorption costing, these costs have been added to units of product at the rate of $16 per unit ($640,000 ÷ 40,000 units produced = $16 per unit). Thus, under absorption costing a portion of the $640,000 fixed manufacturing overhead cost of the month has been added to the inventory account rather than expensed on the income statement:

Added to the ending inventory (5,000 units × $16 per unit)	$ 80,000
Expensed as part of cost of goods sold (35,000 units × $16 per unit)	560,000
Total fixed manufacturing overhead cost for the month	$640,000

Because $80,000 of fixed manufacturing overhead cost has been deferred in inventory under absorption costing, the net operating income reported under that costing method is $80,000 higher than the net operating income under variable costing, as shown in parts (1) and (2) above.