Activity based costing case solution PPTs

Destin Brass

	Valves	Pumps	Flow Controllers
Material	$16.00	$20.00	$22.00
Set-up Labor	.02	.05	.48
Direct Labor	4.00	8.00	6.40
Machine Depreciation	12.50	12.50	5.00
Receiving and Materials Handling	.88	3.34	42.90
Engineering	2.67	2.40	12.50
Packing and Shipping	.24	1.10	10.95
Maintenance	1.40	1.39	.53
Total Cost per Unit	$37.71	$48.78	$100.76
Margin % at Actual Selling Price	35%	40%	(4%)

	Valves	Pumps	Flow Controllers
Direct Labor Cost Based Allocations (DLC)	$37.56	$63.12	$56.50
Material and Machine-Hour-Based Allocation (MMH)	49.00	58.95	47.96
Activity-Based Costs (ABC)	37.71	48.78	100.76

Profit Margins at Current Prices			
DLC	35%	22%	42%
MMH	15%	27%	51%
ABC	35%	40%	(4%)

Cortland

Question 1

The case states that overhead ($196 million) is attached to computers on the basis of machine hours, and the question says to assume that inspecting, soldering, and assembly time comprise machine hours. With production budgeted at 500,000 machine hours (200,000 + 200,000 + 100,000), the overhead per machine hour is $392 ($196,000,000 ÷ 500,000).

Under the current product costing system, the full cost of a computer would be computed as follows:

Cost Item	Cortland 1000	Cortland 2000
Raw material $1,000	$2,500	
Direct labor 200	400	
Overhead (a)	1,960	1,568
Total cost $3,160	$4,468	
Plus markup (50%)	1,580	2,234
Target price $4,740	$6,702	

Note (a): 5 hours for a Cortland 1000 and 4 hours for a Cortland 2000 (see Exhibit 3), multiplied by $392 per hour. Since the Cortland 1000 and 2000 are only two of the computers the company manufactures, they consume only 120,000 machine hours (5 * 20,000 for the Cortland 1000 and 4 * 5,000 for the Cortland 2000). The other computers that the company manufactures will consume the remaining 380,000 machine hours (500,000 - 120,000).

Overhead by Activity for all computers

Activity	Cost Driver	Budgeted Activity Level	Budgeted Cost	Unit Cost	
Raw material handling	Received orders	200	$90,000,000	$450,000	per order
Machine adjusting	Setups	2,000	12,000,000	6,000	per setup
Packing	Batches	500	60,000,000	120,000	per batch
Raw material inspecting	Inspecting hours	200,000	10,000,000	50	per hour
Soldering	Soldering hours	200,000	12,000,000	60	per hour
Assembly	Assembly hours	100,000	12,000,000	120	per hour
			$ 196,000,000		

Current System Overhead Allocation

Total overhead	$ 196,000,000
Budgeted machine hours (for inspecting, soldering, assembly)	500,000
Overhead rate per machine hour	$392

ABC System Overhead Allocation

Item	Measure		
Budgeted production	computers	20,000	5,000
Received order size	Order	10,000	500
Batch size	Batch	5,000	100
Machine setups	per batch	5	6
Raw material inspecing time	hours per computer	1	2
Soldering time	hours per computer	3	1
Assembly time	hours per computer	1	1

Formulas	Number of		Cost per	÷	Number of Computers		Cost per Computer
Raw material handling	Received orders		Order				
Cortland 1000	2	$	450,000.00		20,000	$	45.00
Cortland 2000	10	$	450,000.00		5,000	$	900.00
Machine adjusting	Setups		Setup				
Cortland 1000	20	$	6,000.00		20,000	$	6.00
Cortland 2000	300	$	6,000.00		5,000	$	360.00
Packing	Batches		Batch				
Cortland 1000	4	$	120,000.00		20,000	$	24.00
Cortland 2000	50	$	120,000.00		5,000	$	1,200.00
Raw material inspecting	Hours		Hour				
Cortland 1000	20,000	$	50.00		20,000	$	50.00
Cortland 2000	10,000	$	50.00		5,000	$	100.00
Soldering	Hours		Hour				
Cortland 1000	60,000	$	60.00		20,000	$	180.00
Cortland 2000	5,000	$	60.00		5,000	$	60.00
Assembly	Hours		Hour				
Cortland 1000	20,000	$	120.00		20,000	$	120.00
Cortland 2000	5,000	$	120.00		5,000	$	120.00

Full Production Cost and Price	**Cortland 1000**	**Cortland 2000**	
Current System			
Direct materials	$1,000	$2,500	
Direct labor	200	400	
Mfg overhead	1,960	1,568	
Full production cost per computer	$3,160	$4,468	
Markup	50%	50%	
Target selling price per computer	$4,740	$6,702	
Contribution to SG&A per computer	$1,580	$2,234	
Total contribution to SG&A	$31,600,000	$11,170,000	$42,770,000

ABC System			
Direct materials	$1,000	$2,500	
Direct labor	200	400	
Raw material handling	45	900	
Machine adjusting	6	360	
Packing	24	1,200	
RM Inspecting	50	100	
Soldering	180	60	
Assembly	120	120	
Full production cost	$1,625	$5,640	
Markup per computer	50%	50%	
Target selling price per computer	$2,438	$8,460	
Contribution to SG&A per computer	$813	$2,820	
Total contribution to SG&A	$16,250,000	$14,100,000	$30,350,000

Asante Teaching

EXHIBIT TN-1: MINUTES AVAILABLE PER YEAR

Position	Total Hours	Days Off Hours	Training Hours	Available Hours	Available Minutes
OB/GYN	2,184	218.4	104	1,861.6	111,696
Paediatrician	2,184	218.4	104	1,861.6	111,696
Midwife/Nurse	2,184	218.4	104	1,861.6	111,696
Resident	4,160	416.0	104	3,640.0	218,400
Registration Clerk	2,184	218.4	104	1,861.6	111,696
Practical Nurse	2,184	218.4	104	1,861.6	111,696

Note: OB/GYN = Obstetrician/Gynecologist; Total hours: 42 hours/week x 52 weeks/year = 2,184 hours/year; Days off hours: 8 days + 6 days + 12 days = 26 days; 26 days x 42 hours/week ÷ 5 days/week = 218.4 hours; Training hours: 2 hours/week x 52 weeks/year = 104 hours/year; Resident; Total hours: 80 hours/week x 52 weeks/year = 4,160 hours/year; Days off hours: 8 days + 6 days + 12 days = 26 days; 26 days x 80 hours/week ÷ 5 days/week = 416 hours; Training hours: 2 hours/week x 52 weeks/year = 104 hours/year.

EXHIBIT TN-2: COST PER MINUTE (IN R)

Position	Cost/Employee	Cost with Benefits	Cost/Minute
OB/GYN	11,801,150	14,515,415	129.95
Paediatrician	5,869,285	7,219,220	64.63
Midwife/Nurse	114,557	140,905	1.26
Resident	231,841	285,164	1.31
Registration Clerk	9,092	11,183	0.10
Practical Nurse	7,122	8,760	0.08

Note: OB/GYN = Obstetrician/Gynecologist; Cost with benefits: plus 23 per cent for benefits and taxes; Cost/minute: cost with benefits ÷ available minutes.

EXHIBIT TN-3: ACTIVITY-BASED COSTING ALLOCATIONS

	Total Maternity Overhead	Relevant Overhead	Driver	Cost/Driver	Level 1	Level 2	Level 3
OB/GYN		14,515,415	Minutes	129.95	3,899	4,808	10,396
Paediatrician		7,219,220	Minutes	64.63	2,779	3,555	4,589
Midwife/Nurse		140,905	Minutes	1.26	1,794	1,794	2,018
Resident		285,164	Minutes	1.31	294	313	538
Registration Clerk		11,183	Minutes	0.10	4	4	6
Practical Nurse		8,760	Minutes	0.08	8	8	9
Equipment Depreciation	363,672	145,469	Patient	30.37	30	30	30
General and Administrative	314,622	125,849	Reg. Clerk Minutes	1.13	48	48	68
Insurance	233,991	93,596	Patient	19.54	20	20	20
Utilities	7,454,026	2,981,610	Length of Stay	202.01	606	606	808
Rent	16,195,458	6,478,183	Length of Stay	438.90	1,317	1,317	1,756
Housekeeping	206,241	82,496	Length of Stay	5.59	17	17	22
Laundry	395,295	158,118	Length of Stay	10.71	32	32	43
Information Technology	6,119,349	2,447,740	Length of Stay	165.84	498	498	663
Dining Hall	856,684	342,674	Length of Stay	23.22	70	70	93
Security	302,076	120,830	Patient	25.23	25	25	25
Groundskeeping	898,940	359,576	Patient	75.07	75	75	75
Marketing	105,412	42,165	Patient	8.80	9	9	9
				TOTAL COST	**11,524**	**13,229**	**21,168**
				PRICE	**13,829**	**15,874**	**25,402**