SOLUTIONS

CHAPTER 2

(a)	Raw materials used in production 1.50	$230,000
	Plus: Raw materials inventory, ending 1.00	25,000
	Raw materials available for use	255,000
	Less: Raw materials inventory, beginning 1.25	45,000
	Raw material purchased	$210,000

(b)	DL for the month (10,000 hrs × $25) 1.50	$250,000
	Plus: Beginning of the month accrual 1.00	30,000
		280,000
	Less: End of the month accrual 1.25	10,000
	Cash disbursements for labour	$270,000

(c)	Work in process inventory, beginning 0.75	$ 35,000
	Plus: Materials used in production 0.75	230,000
	Labour costs (10,000 hrs × $25) 0.75	250,000
	Manufacturing overhead 0.75	150,000
		665,000
	Less: Work in process inventory, ending 0.75	45,000
	Cost of goods transferred to finished goods.....	$620,000

(d)	Cost of goods sold 1.75	$750,000
	Plus: Finished goods inventory, ending0.75	75,000
	Goods available for sale	825,000
	Less: Transferred from work in process (c) 1.25*	620,000
	Finished goods inventory, beginning	$ 205,000

* Please be careful for carrying errors from C

CHAPTER 3

Note: Some letters cannot be determined until subsequent letters are solved.

(a) $202,000 = ($175,000 1.5 Mark + $27,000 1.5 Mark). = 3 Marks

(b) $103,000 = ($15,000 + $290,000 – $202,000 1 Mark)*. = 1 Mark
*** Please be careful for carrying errors from a**

(c) $80,000 = ($57,000 1 Mark + $23,000 1 Mark). = 2 Marks

(d) $142,500 = ($114,000 ÷ 80%). 3 Marks = 3 Marks

(e) $114,000 = (Given in Manufacturing Overhead account) 1 Mark

(f) $464,500 1 Mark = 1 Mark
=($80,000* + $175,000 + $142,500* + $114,000* – $47,000*).
Please be careful for carrying errors from g, c, d, e

(g) $47,000 = [$20,000 0.75+ $15,000 0.75 + ($15,000 × 80%)1.5 Marks].
= 3 Marks

(h) $245,000 1 Mark = (Given in other data).

(i) $464,500 1 Mark = (See (f) above).

(j) $559,500 = ($245,000 + $464,500 – $150,000).

(k) $150,000 1 Mark = (Given in other data).

(l) $165,500 = (Same as (m)). 1 Mark

(m) $165,500 = ($142,500 1.5 Mark + $23,0001.5 Mark). = 3 Marks

(n) $61,000 = ($114,000 - $3,000 2 marks – $27,000 1 Mark – $23,000 1 Mark) = 4 Marks

CHAPTER 4 –

Since I modified the question slightly, the solution will be done in class.

CHAPTER 5

(a) Predetermined overhead rate using direct labour hours: $550,000 ÷ 250,000 hours = $2.20 per DLH 2 MARKS

(b) Manufacturing cost per stair under traditional costing (4 MARKS)

Direct materials 1 MARK	$158,250
Direct labour1 MARK	112,000
Overhead (14,500 × $2.2) 1 MARK	31,900
Total cost of 280 stairs	$302,150
Cost per stair ($302,150 ÷ 280) 1 MARK	$1,079.11

(c) Manufacturing cost per stair under activity-based costing: (10 MARKS)

Determine activity-based overhead rates: (0.75 MARK EACH)

Total

Purchasing: $60,000 ÷ 600 = $100 per order

Handling materials: $80,000 ÷ 16,000 = $5 per move

Production: $250,000 ÷ 100,000 = $2.50 per direct labour hour

Setting-up: $70,000 ÷ 350 = $200 per set-up

Inspecting: $90,000 ÷ 6,000 = $15 per inspection

Assign overhead to the order (0.75 MARK EACH)

Purchasing ($100 × 60 orders)	$6,000
Handling materials ($5 × 800 moves)	4,000
Production ($2.50 × 14,500 direct labour hrs)	36,250
Setting-up ($200 × 50 set-ups)	10,000
Inspecting ($15 × 450 inspections)	6,750
Total overhead applied to this order	$63,000

manufacturing cost per stair under ABC:

Direct materials .5 MARK	$ 158,250
Direct labour.5 MARK	112,000
Overhead.5 MARK	63,000
Total cost of 280 stairs	$ 333,250
Total cost per stair ($333,250 ÷ 280) 1 MARK	$1,190.18

(d)

Activity-based costing is the preferred costing system for setting prices because the FOH costs are more accurately reflected. The greater accuracy is a result of differentiate between unit based level such as production (cutting) and non-unit based batch level such as purchasing, handling, setting-up, and inspection for multiple, more relevant activity cost drivers under ABC than the single cost driver used with the traditional unit volume-based system.

CHAPTER 6 – PART ONE

(a) Operating leverage: Manual System: $2,400,000 ÷ $1,200,000 = 2.0 1 PT
Computerized System: $3,200,000 ÷ $200,000 = 2.67 1 PT

(b) For any increase in sales, Computerized System would produce a higher operating income, because it has a higher operating leverage and CMR by CMR 0.64 X $500,000 = $320,000 2 PTS

(c) To determine margin of safety, first calculate the sales at break-even:
Manual System: $1,200,000 ÷ ($2,400,000 ÷ $5,000,000) = $2,500,000, .5 PT
Computerized System: $2,000,000 ÷ ($3,200,000 ÷ $5,000,000) = $3,125,000 .5 PT

Margin of Safety: Manual: $5,000,000 – $2,500,000= $2,500,000 .5 PT
Computerized: $5,000,000–$3,125,000= $1,875,000 .5 PT

Margin of Safety Ratio:
Manual: $2,500,000 / $5,000,000 = 50% .5 PT
Computerized: $1,875,000 / $5,000,000 = 37.5% .5 PT

Manual System has 1.333 times the safety margin that Computerized System has, so would be in a far better position to withstand a greater decline in sales before operating at a loss. 1 PT

CHAPTER 6 – PART TWO

(1) The contribution margin ratio is 30% ($883,920 ÷ $2,937,120):

Waterways Corporation
Contribution Margin Income Statement for Water Control and Timer
For the Year 2008

		Unit Cost	
Sales (696,000 units)	$2,937,120	$4.22	100%
Variable expenses	2,053,200	2.95	70%
Contribution margin	883,920	1.27	30%
Fixed Expenses	683,338		
Net income from product	$ 200,582		

(2) Break-even point in units = 538,061 units

Fixed expenses	$683,338	
Unit CM	$1.27	= 538,061 units (rounded)

Break-even point in sales dollars = $2,277,793

Fixed expenses	$683,338	
CM ratio	.30	= $2,277,793 (rounded)

(3) Margin of safety in dollars = $659,327

Sales	$2,937,120
Less: Break-even in dollars	2,277,793
	$ 659,327

Margin of safety ratio = 22.45%

Margin of safety in dollars	$659,327	
Sales	$2,937,120	= 22.45%

(4) 10% increase in income =$ 20,058.20 / $1.27 = 15,794 additional units

(5) INCREASE IN UNITS 71,090 X CM PER UNIT $1.27 = $90,284.30

Part 3

(1) Total units = 450,000 + 1,500,000 + 50,000 = 2,000,000

Sales mix

$$\text{Sprinklers} = \frac{450{,}000}{2{,}000{,}000} = 22.5\%$$

$$\text{Valves} = \frac{1{,}500{,}000}{2{,}000{,}000} = 75\%$$

.75 PT (.25 EACH)

$$\text{Controllers} = \frac{50{,}000}{2{,}000{,}000} = 2.5\%$$

	Sprinklers	Valves	Controllers
Sales price	$ 26.50	$ 11.20	$ 42.50
Variable costs			
Manufacturing	13.96	7.95	29.75
Selling & admin.	1.30	0.50	3.41
	15.26	8.45	33.16
Contribution margin	$ 11.24	$ 2.75	$ 9.34
	.75 PT	**.75 PT**	**.75 PT**

Weighted-Average Unit Contribution Margin

	Unit CM ×	Sales Mix % =	Weighted-Avg Unit CM
Sprinklers	$ 11.24	22.5%	$ 2.53
Valves	2.75	75.0%	2.06
Controllers	9.34	2.5%	0.23
		1 PT	$ 4.82

Break-even Point in Units 2 PTS

Fixed Costs	$2,360,000*		
Weighted Average Unit CM	$4.82	489,627	units

***($760,000 + $1,600,000)**

22.5% X 489,627 = 110,166 units Sprinklers **.5PT**

75.0 %X 489,627 = 367,220 units Valves **.5PT**

2.5% X 489,627 = 12, 241 units Controllers **.5PT**