

Vol. 1, Chapter 11 – Cost Approaches to Pricing

Problem 1: Solution

Monthly fixed costs = \$40,000
 Variable cost % = 60%
 Owner's equity = \$240,000
 Desired ROI = 20% (\$48,000)
 Average tax rate = 30%

1. Monthly breakeven sales:

Breakeven sales = Fixed costs / CMR
 CMR = 1-VC% = 40%
 = \$100,000

2. Monthly revenues when desired profit earned:

Monthly desired net income = Owner's Equity × ROI × (1/12)
 = \$240,000 × 20% × (1/12)
 = \$4,000
 Pretax income = Net income / (1-tax rate)
 = \$4,000 / (1-.3)
 = \$5,714
 Required revenue = (Pretax income + FC) / CMR; CMR=1-VC%
 = (\$5,714 + \$40,000) / (1-.6)
 = \$114,285.71

3. Average food service check:

Seats available = 100
 Seat turnover = 2
 Days open = 24
 Estimated meals = 4800
 Required revenue = \$114,285.71
 Average check = required monthly revenue / estimated meals
 = \$114,285.71 / 4,800
 Avg. check = \$23.81

Problem 2: Solution

ADR = \$48
 Rooms sold per night = 24
 Total daily revenue = \$1,152

Room Rates for Dbls. vs. Sgls.	Assumed Sales Mix		ADR	
	Singles	Doubles	Singles	Doubles
1. +\$10	12	12	\$43	\$53
2. +\$20	8	16	\$34.67	\$54.67
3. 10% higher	10	14	\$45.35	\$49.89
4. 30% higher	12	12	\$41.74	\$54.26

1. Let x = room rate

$12x + 12(x+10) = \$1,152$
 $12x + 12x + 120 = \$1,152$
 $24x = \$1,032$
 $x = \underline{\$43}$

Problem 2: Solution (continued)

2. Let x = room rate
 $8x + 16(x+20) = \$1,152$
 $8x + 16x + \$320 = \$1,152$
 $24x = \$832$
 $x = \underline{\$34.67}$

3. Let x = room rate
 $10x + 14(1.1x) = \$1,152$
 $10x + 15.4x = \$1,152$
 $25.4x = \$1,152$
 $x = \underline{\$45.35}$

4. Let x = room rate
 $12x + 12(1.3x) = \$1,152$
 $12x + 15.6x = \$1,152$
 $27.6x = \$1,152$
 $x = \underline{\$41.74}$

Problem 3: Solution

Rack rate =	\$80
Marginal cost per room =	\$15
Paid Occ. % =	80%
Rooms =	100

1. Daily room revenue
 $\text{Rooms} \times \text{Occ \%} \times \text{Rack Rate}$
 $= \underline{\$6,400}$

2. Daily Room Contribution Margin
 $(\text{Rooms} \times \text{Occ \%} \times \text{Rack Rate}) - (\text{Rooms} \times \text{Occ \%} \times \text{Marginal Cost})$
 $= \underline{\$5,200}$

3. Equivalent Room Occupancy
 $\text{ERO} = \text{Current Occ\%} \times ((\text{Rack Rate} - \text{Marginal Cost}) / (\text{Rack Rate} \times (1 - \text{Discount Rate}) - \text{Marginal Cost}))$
 $= 80\% \times ((\$80 - 15) / (\$80 \times (1 - 10\%) - \$15))$
 $= \underline{91.23\%}$

Problem 4: Solution

	<u>1</u>	<u>2</u>
Net income desired =	\$10,000	\$15,000
Fixed costs =	\$30,000	\$40,000
Seats available =	100	100
Avg. tax rate =	25%	25%
Variable cost % =	60%	60%
Seat turnover per month =	30	40

1. Avg. food service cover:

$$\begin{aligned}\text{Required revenue} &= (\text{Pretax income} + \text{FC}) / \text{CMR}; \text{CMR}=1-\text{VC}\% \\ \text{Pretax income} &= \$10,000 / .75 = \$13,333 \\ &= (\$13,333 + \$30,000) / .4 = \$108,333 \\ \$108,333 &= \text{Seats available} \times \text{seat turnover} \times \text{avg. check} \\ \$108,333 &= 100 \times 30 \times \text{Avg. check} \\ \text{Avg. check} &= \underline{\$36.11}\end{aligned}$$

2. Avg. food service cover:

$$\begin{aligned}\text{Required revenue} &= (\text{Pretax income} + \text{FC}) / \text{CMR}; \text{CMR}=1-\text{VC}\% \\ \text{Pretax income} &= \$15,000 / .75 = \$20,000 \\ &= (\$20,000 + \$40,000) / .4 = \$150,000 \\ \$150,000 &= \text{Seats available} \times \text{seat turnover} \times \text{avg. check} \\ \$150,000 &= 100 \times 40 \times \text{avg. check} \\ \text{Avg. check} &= \underline{\$37.50}\end{aligned}$$

Problem 5: Solution

Investment =	\$500,000
Variable Cost % =	60%
Monthly Fixed Costs =	\$30,000
Monthly Covers =	10,000
Average Tax Rate =	20%

1. Average food service check to break even:

$$\begin{aligned}\text{B/E} &= \text{FC} / \text{CMR}; \text{CMR}=1-\text{VC}\% \\ \text{B/E} &= 30,000 / .4 = \$75,000 \\ \$75,000 &= \text{Covers} \times \text{avg. check} \\ \$75,000 &= 10,000 \times \text{avg. check} \\ \text{Avg. check} &= \underline{\$7.50}\end{aligned}$$

2. Average food service check for a profit of \$5,000:

$$\begin{aligned}\text{Revenue} &= (\text{Pretax income} + \text{FC}) / \text{CMR}; \text{CMR}=1-\text{VC}\% \\ \text{Pretax income} &= \$5,000 / .8 = \$6,250 \\ \text{Revenue} &= (\$6,250 + \$30,000) / .4 = \$90,625 \\ \$90,625 &= \text{Covers} \times \text{avg. check} \\ \$90,625 &= 10,000 \times \text{avg. check} \\ \text{Avg. check} &= \underline{\$9.06}\end{aligned}$$

Problem 6: Solution

1. Required ADR

Net Income	\$400,000	\$2,000,000 (.2)
Pretax Income	\$571,429	\$400,000/(1 - .3)
Interest Expense	240,000	\$2,000,000 (.12)
Other Fixed Charges	600,000	
Other Profit	<u>(10,000)</u>	
	\$1,401,429	

$$X = 1,401,429 + .05X + .25X + .05X + 200,000$$

$$X = 2,463,736$$

Management Fees	\$123,187	2,463,736 (.05)
Rooms Dept. Expenses	\$615,934	2,463,736 (.25)
UOE	\$323,186	2,463,736 (.05) + 200,000
Total Revenue	\$2,463,736	
Rooms Sold	38,325	.7(150) × 365
ADR	<u>\$64.29</u>	\$2,463,736/38,325

2.

Doubles Sold	30,660	38,325 (.8)
Singles Sold	7,665	
ADR for doubles	<u>\$68.29</u>	7,665X + 30,660(X + 20) = 2,463,736
		X = \$48.29

Problem 7: Solution

1. Price elasticity of demand

	<u>Formula</u>	<u>Result</u>
Super Burger	$[(450 - 400)/450] / [(5.45 - 4.95)/4.95]$	1.1
Golden Chicken	$[(1,000 - 800)/800] / [(6.45 - 5.95)/6.45]$	3.225
Ocean Delight	$[(600 - 400)/600] / [(6.95 - 6.45)/6.45]$	4.3

2. The price elasticity of demand for each item is greater than one. These results suggest the demand is elastic for each item and the fall off in demand was greater than the percentage price increase. Therefore, Kay Rae should carefully consider rolling back the prices to increase demand.

Problem 8: Solution

- $(100/3,000) \div (0.5/8.75) = .58$
- Based on the above calculations, demand is inelastic, since .58 is less than 1. A one-percent change in price would result in a less than one percent change in demand.

Problem 9: Solution

1.	Net income	$.15 \times \$1,000,000$	=	\$ 150,000
2.	After-tax income	$\$150,000 / (1 - .4)$	=	250,000
3.	Interest expense	$\$2,400,000 \times .08$	=	<u>192,000</u>
	EBIT			\$442,000
4.	Fixed charges			
	Property taxes	\$120,000		
	Insurance	30,000		
	Depreciation—building	50,000		
	Depreciation—equipment	<u>100,000</u>		\$ <u>300,000</u>
	Gross operating profit			742,000
5.	Undistributed operating expenses (fixed)			<u>300,000</u>
				1,042,000
6.	Rooms cost	30,000		<u>30,000</u>
				1,072,000
7.	Room sales	$\$1,072,000 / (1 - .25)$		1,429,333
8.	Rooms available	$50 \times 365 \times .7$		12,775
9.	Average daily rate	$\$1,429,333 / 12,775$		\$ <u>111.89</u>

Problem 10: Solution

Part 1

Required funds:	
Cost of motel	\$750,000
Working capital	<u>50,000</u>
Total	<u>\$800,000</u>
Source of funds:	
Loan	\$400,000
Equity	<u>400,000</u>
Total	<u>\$800,000</u>

Calculation of average price/room:

	<u>Amount</u>	<u>Calculation</u>
Net income	<u>\$60,000</u>	<u>\$400,000(.15)</u>
Pretax income	\$ 80,000	<u>\$60,000</u> 1 - .25
Interest expense	40,000	
\$400,000(.10)		
Other unallocable expenses	480,000	
Direct expenses (room)	<u>61,320</u>	
30(.8)(365)(7)		
Total rooms revenue	<u>\$661,320</u>	

$$\text{Rooms sold} = .8(365)(30) = \underline{8,760}$$

$$\text{Average room rate} = \frac{\text{Room revenue}}{\text{Rooms sold}} = \frac{661,320}{8,760} = \underline{\$75.49}$$

Part 2

$$\text{Doubles sold} = \text{Rooms sold}(.4) = 8,760(.4) = \underline{3,504}$$

$$\begin{aligned} 5,256x + 3,504(\$10 + x) &= \$661,320 \\ 5,256x + \$35,040 + 3,504x &= \$661,320 \\ 8,760x &= \$626,280 \\ x &= \underline{\$71.49} \text{ (singles)} \end{aligned}$$

$$\text{Doubles} = \underline{\$81.49}$$

Part 3

$$\$661,320 - \$20,000 = \$641,320$$

$$\frac{\$641,320}{8,760} = \underline{\$73.21}$$

$$\$75.49 - \$73.21 = \underline{\$2.28}$$

Problem 11: Solution

1.

Required Funds:

Cost of Motel	\$10,000,000
Working Capital	<u>200,000</u>
Total	\$10,200,000

Source of Funds:

Loan	\$ 8,000,000
Equity	<u>2,200,000</u>
Total	\$10,200,000

Calculation of Average Price/Room

	<u>Amount</u>	<u>Calculations</u>
Net Income	\$ 330,000	2,200,000(.15)
Pretax Income	\$ 471,429	NI / (1 - .3)
Interest Expense	\$ 960,000	8,000,000(.12)
Other Unallocated Expenses	\$1,200,000	
less Restaurant Contribution	\$ (100,000)	
Rooms Department Income	\$2,861,429	
Rooms Expense	\$ 840,357	$X = 2,861,429 + 100,000 + .2X$
Rooms Sales	\$3,701,786	
Rooms Sold	25,550	$.7(100) \times 365$
Average Room Rate	<u>\$144.88</u>	$3,701,786/25,550$
2. Single/ Double Rates		
Doubles Sold	20,440	$25,550(.8)$
Singles Sold	5,110	
Single Rate	<u>\$120.74</u>	$5,110X + 20,440(X + .25X) = 3,701,786$
Double Rate	<u>\$150.93</u>	120.74×1.25
3. New average room rate		
Restaurant loss	\$ 50,000	
New rooms revenue w/o expenses	3,011,429	$2,861,429 + 100,000 + 50,000$
Rooms Expense	877,857	$X = 3,011,429 + 100,000 + .2X$
Rooms Sales	\$3,889,286	
Rooms Sold	25,550	
Average Room Rate	<u>\$152.00</u>	$3,889,286 / 25,550$

Problem 12: Solution

1. Average dinner check:

The calculation is based on the assumptions that interest expense and depreciation are in addition to the \$100,000 of occupation costs and that controllable costs of \$750,000 do not include the cost of food sold.

Desired profits	$\$500,000 \times .15$	\$ 75,000.00
Pretax profits	$\$75,000 / (1 - \text{tax rate})$	115,384.62
Interest expense	$\$500,000 \times .1$	50,000.00
Depreciation		60,000.00
Other occupational costs		100,000.00
Controllable costs		750,000.00
Profits plus expenses except cost of sales		1,075,384.62
Food revenue	$\frac{\$1,075,385}{1 - \text{cost of food sold \%}}$	1,654,437.87

Average dinner check:

$$\text{Food revenue/expected meals to be served} = \underline{\underline{\$35.58}}$$

Expected meals to be served:

$$\text{Seat turnover} \times \text{number of seats} \times \text{days open} = 46,500$$

2. Profits plus expenses except cost of sales as determined in Part 1 above:

as determined in Part 1 above:	\$1,075,384.62
Less: other pretax profits	(20,000.00)
Required profits and expenses related to meals	1,055,384.62
Required food revenue*	1,623,668.64

*Required profits, etc./ $(1 - \text{food cost \%})$

$$\text{Average dinner check} = \underline{\underline{\$34.92}}$$

Thus, the average dinner check could be reduced from \$35.58 to \$34.92, or by only \$.66.

Problem 13: Solution

1. Average price per meal

	<u>Amount</u>	<u>Calculations</u>
Net Income	\$ <u>45,000</u>	300,000(.15)
Pretax income	\$ 60,000	45,000/(1 - .25)
Interest Expense	40,000	400,000(.1)
Fixed Charges	100,000	
Fixed Labor cost	150,000	
Other costs	<u>100,000</u>	
	<u>450,000</u>	
		X = 450,000 + .3X + .15X
		X = 818,181
Variable Labor	122,727	818,181(.15)
Food Costs	<u>245,454</u>	818,181(.3)
Total Revenue	<u>\$ 818,181</u>	
Total Covers	62,600	2×100×313
Ave. meal price	<u>\$ 13.07</u>	818,181 / 62,600

2)

Lunch Revenue	\$ 327,272	818,181(.4)
Dinner Revenue	\$ 490,909	818,181(.6)
Lunch Covers	37,560	1.2×100×313
Dinner Covers	25,040	.8×100×313
Lunch Average	<u>\$ 8.71</u>	327,272 / 37,560
Dinner Average	<u>\$ 19.60</u>	490,909 / 25,040

Problem 14: Solution

1. Total sales:

	<u>Selling Price</u>	<u>Number Sold</u>	<u>Sales</u>
Pork Barrel	3.95	50	\$ 197.50
Lamb Leg	3.75	40	150.00
Chicken Breast	3.95	150	592.50
Burger Delight	3.45	300	1,035.00
Super Burger	4.95	190	940.50
Roast Beef	4.95	250	1,237.50
Ocean Catch	4.45	200	890.00
Tuna Salad	3.50	175	612.50
Egg Salad	3.25	150	487.50
Cheese Mix	2.95	60	<u>177.00</u>
	Total sales		<u>\$6,320.00</u>

2. Cost of sandwich sales:

	<u>Cost</u>	<u>Number Sold</u>	<u>Cost of Sales</u>
Pork Barrel	\$1.30	50	\$ 65.00
Lamb Leg	1.00	40	40.00
Chicken Breast	1.40	150	210.00
Burger Delight	0.85	300	255.00
Super Burger	1.25	190	237.50
Roast Beef	1.50	250	375.00
Ocean Catch	1.20	200	240.00
Tuna Salad	0.60	175	105.00
Egg Salad	0.35	150	52.50
Cheese Mix	0.40	60	<u>24.00</u>
	Total cost of sandwich sales		<u>\$1,604.00</u>

3. Food cost percentage

Total cost of sandwich sales/total sandwich sales

$$\$1,604.00 \div \$6,320.00 = \underline{25.38\%}$$

4. Average contribution margin for all sandwiches

(Total sales - Cost of sales) ÷ number of sandwiches sold

$$(\$6,320 - \$1,604) \div 1,565 = \underline{\$3.01}$$

Problem 14: Solution (continued)

5. The classification of each sandwich

	<u>Popularity*Profitability**</u>		<u>Classification</u>
Pork Barrel	L	L	dog
Lamb Leg	L	L	dog
Chicken Breast	H	L	plowhorse
Burger Delight	H	L	plowhorse
Super Burger	H	H	star
Roast Beef	H	H	star
Ocean Catch	H	H	star
Tuna Salad	H	L	plowhorse
Egg Salad	H	L	plowhorse
Cheese Mix	L	L	dog

	<u>Percent Sold to Total</u>	<u>Contribution Margin</u>
Pork Barrel	3.19%	\$2.65
Lamb Leg	2.56%	2.75
Chicken Breast	9.58%	2.55
Burger Delight	19.17%	2.60
Super Burger	12.14%	3.70
Roast Beef	15.97%	3.45
Ocean Catch	12.78%	3.25
Tuna Salad	11.18%	2.90
Egg Salad	9.58%	2.90
Cheese Mix	3.83%	2.55
Total	100.00%	

* Popularity was determined by comparing the percent sold of each sandwich to 7%.

** Profitability was determined by comparing the contribution margin of each sandwich to the average contribution margin.

Problem 15: Solution

1. Average room rate:

<u>Total cost</u>	
Construction	\$5,000,000
Other	<u>200,000</u>
Total	<u>\$5,200,000</u>
<u>Financing</u>	
Debt	\$3,000,000
Equity	<u>2,200,000</u>
Total	<u>\$5,200,000</u>

Problem 15: Solution (continued)

Net income	2,200,000 (.18)	=	<u>\$396,000</u>
Pretax income	396,000 ÷ (1 - .25)	=	\$528,000
Amortization	100,000 ÷ 5	=	20,000
Depreciation	(5,000,000 - 200,000) ÷ 24	=	200,000
Interest	3,000,000 × .12	=	360,000
Other unallocable costs		=	1,500,000
Food service profits		=	(300,000)
Subtotal			<u>\$2,308,000</u>
Rooms revenue*	\$2,308,000 ÷ .72	=	\$3,205,556
Projected rooms sold	.70(100)365	=	25,550
Average room rate	\$3,205,556 ÷ 25,550	=	<u>\$125.46</u>

*Room department costs of 25% and management fees of 3% equal 28%. Therefore, the subtotal is 72% of rooms revenue.

2. Modification of average room rate:

Telephone department loss	\$50,000
divided by (1 - variable cost %) ÷	<u>.72</u>
	69,444
Projected rooms sold	÷ <u>25,550</u>
Increase in room rate	<u>\$ 2.72</u>

3. Average room rate for suites and doubles:

	<u>Sales Mix</u>	
	<u>Percent</u>	<u>No. of Rooms</u>
Singles	30%	7,665
Doubles	50	12,725
Suites	<u>20</u>	<u>5,110</u>
Total	<u>100%</u>	<u>25,550</u>

x = price of a single room

$$.3x + .5(x + 10) + .2(1.25(x + 10)) = 125.46$$

$$.3x + .5x + 5 + .25x + 2.5 = 125.46$$

$$1.05x = 117.96$$

$$x = \$112.34$$

$$\text{Price of double} = 112.34 + 10 = \underline{\underline{\$122.34}}$$

$$\text{Price of suite} = 122.34(1.25) = \underline{\underline{\$152.93}}$$

Problem 16: Solution

<u>1. Sales Mix #1</u>	<u>Total revenue</u>	<u>Food cost</u>	<u>Gross profit</u>
Chicken	\$2,380	\$ 712	\$1,668
Fish	2,085	729	1,356
Pork chops	1,790	716	1,074
Steak	<u>1,195</u>	<u>597</u>	<u>598</u>
Total	<u>\$7,450</u>	<u>\$2,754</u>	<u>\$4,696</u>

$$\text{Food cost percentage} = \frac{2,754}{7,450} = \underline{36.97\%}$$

<u>Sales Mix #2</u>	<u>Total revenue</u>	<u>Food cost</u>	<u>Gross profit</u>
Chicken	\$2,082.50	\$ 623.00	\$1,459.50
Fish	2,085.00	729.00	1,356.00
Pork chops	1,790.00	716.00	1,074.00
Steak	<u>1,792.50</u>	<u>895.50</u>	<u>897.00</u>
Total	<u>\$7,750.00</u>	<u>\$2,963.50</u>	<u>\$4,786.50</u>

$$\text{Food cost percentage} = \frac{2,963.50}{7,750} = \underline{38.24\%}$$

<u>Sales Mix #3</u>	<u>Total revenue</u>	<u>Food cost</u>	<u>Gross profit</u>
Chicken	\$ 595.00	\$ 178.00	\$ 417.00
Fish	1,042.50	364.50	678.00
Pork chops	2,237.50	895.00	1,342.50
Steak	<u>5,975.00</u>	<u>2,985.00</u>	<u>2,990.00</u>
Total	<u>\$9,850.00</u>	<u>\$4,422.50</u>	<u>\$5,427.50</u>

$$\text{Food cost percentage} = \frac{4,422.50}{9,850} = \underline{44.90\%}$$

<u>2.</u>	<u>Gross Profit</u>	
	<u>Mix #1</u>	<u>Mix #2</u>
Mix #3	\$5,427.50	\$5,427.50
Mixes #1 & #2	<u>4,696.00</u>	<u>4,786.50</u>
Difference	731.50	641.00
Average gross profit	<u>4.70</u>	<u>4.79</u>
Additional meals	<u>155.64</u>	<u>133.82</u>

3. Mix #3 results in \$641 more gross profit than the next best alternative.

Problem 17: Solution

	<u>ALTERNATIVES</u>				
	<u>#1</u>	<u>#2</u>	<u>#3</u>	<u>#4</u>	<u>#5</u>
Net Income	\$ <u>280,000</u> ⁽¹⁾	\$ <u>300,000</u>	\$ <u>320,000</u>	\$ <u>340,000</u>	\$ <u>360,000</u>
Pretax Income	\$400,000 ⁽²⁾	\$ 428,571	\$ 457,143	\$ 485,714	\$ 514,286
Interest Exp.	960,000 ⁽³⁾	960,000	1,040,000	1,120,000	1,120,000
Other Fixed Charges	700,000	700,000	700,000	700,000	700,000
Undist. Oper. Expenses	3,000,000	3,000,000	3,500,000	3,500,000	3,500,000
Food Dept. Inc.	(300,000)	(300,000)	(400,000)	(450,000)	(450,000)
Telephone Dept. Income	(10,000)	(10,000)	(10,000)	(10,000)	(10,000)
Room Dept. Exp.	<u>1,067,625</u> ⁽⁴⁾	<u>1,149,750</u>	<u>1,423,500</u>	<u>1,642,500</u>	<u>1,752,000</u>
Subtotal	5,817,625	5,928,321	6,710,643	6,988,214	7,126,286
Management Fees	<u>179,927</u>	<u>183,350</u>	<u>207,546</u>	<u>218,382</u>	<u>222,696</u>
Room Sales	\$ <u>5,997,552</u> ⁽⁵⁾	\$ <u>6,111,672</u>	\$ <u>6,918,189</u>	\$ <u>7,279,390</u>	\$ <u>7,423,214</u>
Est. Rooms Sold	<u>71,175</u>	<u>76,650</u>	<u>71,175</u>	<u>82,125</u>	<u>87,600</u>
Avg. Daily Rate	\$ <u>84.26</u> ⁽⁶⁾	\$ <u>79.73</u>	\$ <u>97.20</u>	\$ <u>88.64</u>	\$ <u>84.74</u>

NOTES:

⁽¹⁾Desired ROI times her investment
 $\$2,000,000 \times .14 = \$280,000$

⁽²⁾Pretax income = net income divided by one minus the tax rate
 $\$280,000 \div (1 - .30) = \$400,000$

⁽³⁾Interest expense = amount of debt times the interest rate.
 $\$8,000,000 \times .12 = \$960,000$

⁽⁴⁾Room dept. expense = no. of rooms times occupancy percent times days in year times variable costs per room sold
 $300 \times .65 \times 365 \times 15 = \$1,067,625$

⁽⁵⁾Subtotal divided by one minus the management fee percentage
 $\$5,817,625 \div .97 = \$5,997,552$

⁽⁶⁾Average daily rate = room sales divided by number of rooms sold
 $\$5,787,242 \div (300 \times .65 \times 365) = \81.31

Problem 18: Solution

Part 1

Menu Engineering Worksheet												
Restaurant: Bobbie's Place		Date: _____		Meal Period: Recent month								
(A) Menu Item Name	(B) Number Sold (MM)	(C) Menu Mix %	(D) Item Food Cost	(E) Item Selling Price	(F) Item CM (E-D)	(G) Menu Costs (D*B)	(H) Menu Revenues (E*B)	(L) Menu CM (F*B)	(P) CM Category	(R) MM% Category	(S) Menu Item Classification	(T) Decision
Sirloin Steak	240	20.17	3.00	9.95	6.95	720	2,388	1,668	Low	High	Plowhorse	
King Crab	50	4.20	6.00	15.95	9.95	300	797.50	497.50	High	Low	Puzzle	
Lobster	60	5.04	8.00	18.45	10.45	480	1,107	627	High	Low	Puzzle	
Prime Rib	300	25.21	4.25	14.50	10.25	1,275	4,350	3,075	High	High	Star	
Whitefish	80	6.72	2.50	8.75	6.25	200	700	500	Low	Low	Dog	
New York Strip	180	15.13	5.75	12.45	6.70	1,035	2,241	1,206	Low	High	Plowhorse	
Chicken a la King	280	23.53	2.60	8.50	5.90	728	2,380	1,652	Low	High	Plowhorse	
Column Totals: 1,190												
		K = I/J			O = M/N	Q = (100%/Items)(70%)						
					.3394							
Additional Computations:						7.75						

Problem 18: Solution (continued)

Part 2

- Consider removing whitefish (the dog) from the menu.
- Consider raising the prices of the plowhorses: sirloin steak, New York strip, and chicken a la king--especially the chicken, since its CM is considerably lower than the other two plowhorses.
- Consider heavy promotion of the puzzles and the star.

Problem 19: Solution

1. First menu engineering worksheet

MENU MIX ANALYSIS

<u>Item Name</u>	<u>MM Count</u>	<u>% MM Share</u>	<u>Group Rank</u>	<u>% CM Share</u>	<u>Contr. Margin</u>	<u>Group Rank</u>	<u>Menu Class</u>
Hamb. Deluxe	180	15.93	High	15.89	3.45	Low	Plowhorse
Cheese Deluxe	120	10.62	High	11.21	3.65	High	**Star**
Turkey Sandwich	80	7.08	High	6.14	3.00	Low	Plowhorse
Ham & Cheese	220	19.47	High	25.61	4.55	High	**Star**
Egg Salad Sand.	50	4.42	Low	3.65	2.85	Low	<<Dog>>
Fishwich	80	7.08	High	6.55	3.20	Low	Plowhorse
Pizzaburger	100	8.85	High	5.50	2.15	Low	Plowhorse
Chicken Delight	140	12.39	High	14.87	4.15	High	**Star**
Taco Salad	60	5.31	Low	3.68	2.40	Low	<<Dog>>
Chef Salad	100	8.85	High	6.91	2.70	Low	Plowhorse

MENU ENGINEERING SUMMARY

Total sales level	5,558.50
Potential food cost	1,650.00
Food cost percentage	29.68
Total demand factor	1130
Menu contribution margin	3,908.50
Average contribution margin	3.46

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*****
*
*           PLOWHORSE
*
*   Hamburger Deluxe
*   Turkey Sandwich
*   Fishwich
*   Pizzaburger
*   Chef Salad
*
*****
*
*           STAR
*
*   Cheese Deluxe
*   Ham & Cheese
*   Chicken Delight
*
*****
*
*           DOG
*
*   Egg Salad Sandwich
*   Taco Salad
*
*****
*
*           PUZZLE
*
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*
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Problem 19: Solution (continued)

2. Number sold

<u>Items</u>	<u>Original Count</u>	<u>Revisions</u>				<u>Revised Count</u>	
		<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>		
Hamb. Deluxe	180	8	-	(9)	-	-	179
Cheeseburg. Deluxe	120	6	-	-	-	-	126
Turkey Sandwich	80	4	-	(4)	-	-	80
Ham & Cheese on Rye	220	10	-	-	-	-	230
Egg Salad Sandwich	50	(50)	-	-	-	0	
Fishwich	80	4	-	(4)	-	-	80
Pizzaburger	100	5	-	(5)	-	-	100
Chicken Delight	140	6	-	-	-	-	146
Taco Salad	60	2	-	-	-	-	62
Chef Salad	<u>100</u>	<u>5</u>		<u>(5)</u>		<u>-</u>	<u>100</u>
Total	<u>1,130</u>	<u>0</u>	<u>0</u>	<u>(27)</u>		<u>0</u>	<u>1,103</u>

Revisions

A - Egg Salad Sandwich dropped once it contributed only \$142.50 to

total gross profits.

B - None, since there are no puzzles.

C - Decreased original count of plowhorses by 5%.

D - No change in number of items sold.

Prices

Original Price

Revised
C D

Revised Price

Puzzles

None

Plowhorses

Hamburger Deluxe	\$4.95	+.25	-	\$5.20
Turkey Sandwich	4.25	+.21	-	4.46
Fishwich	4.50	+.23	-	4.73
Pizzaburger	3.00	+.15	-	3.15
Chef Salad	3.95	+.20	-	4.15

Stars

Cheeseburger Deluxe	5.25	-	+.20	5.45
Ham & Cheese	6.25	-	+.20	6.45
Chicken Delight	6.25	-	+.20	6.45

Revisions

C - Prices of plowhorses increased 5%.

D - Prices of stars increased to next \$X.45.

Problem 19: Solution (continued)

Second menu engineering worksheet

MENU MIX ANALYSIS

<u>Item Name</u>	<u>MM Count</u>	<u>% MM Share</u>	<u>Group Rank</u>	<u>% CM Share</u>	<u>Contr. Margin</u>	<u>Group Rank</u>	<u>Menu Class</u>
Hamb. Deluxe	179	16.23	High	16.25	3.70	High	**Star**
Cheese Deluxe	126	11.42	High	11.90	3.85	High	**Star**
Turkey Sand.	80	7.25	High	6.30	3.21	Low	Plowhorse
Ham & Cheese	230	20.85	High	26.81	4.75	High	**Star**
Fishwich	80	7.25	High	6.73	3.43	Low	Plowhorse
Pizzaburger	100	9.07	High	5.64	2.30	Low	Plowhorse
Chicken Delight	146	13.24	High	15.59	4.35	High	**Star**
Taco Salad	62	5.62	Low	3.65	2.40	Low	<<Dog>>
Chef Salad	100	9.07	High	7.12	2.90	Low	Plowhorse

MENU ENGINEERING SUMMARY

Total Sales Level	5,709.40
Potential Food Cost	1,634.40
Food Cost Percentage	28.63
Total Demand Factor	1103
Menu Contribution Margin	4,075.00
Average Contribution Margin	3.69

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*****
*
*           PLOWHORSE
*
*   Turkey Sandwich
*   Fishwich
*   Pizzaburger
*   Chef Salad
*
*
*
*****
*
*           DOG
*
*   Taco Salad
*
*
*
*****
*
*           STAR
*
*   Hamb. Deluxe
*   Cheese Deluxe
*   Ham & Cheese
*   Chicken Delight
*
*
*
*****
*
*           PUZZLE
*
*
*
*****

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Problem 19: Solution (continued)

3. Comparing the results:

	<u>First analysis</u>	<u>Second analysis</u>	<u>Difference</u>
A. Number of items sold	1130	1103	(27)
B. Total sales	\$5,558.50	\$5,709.40	\$150.90
C. Average CM	\$3.46	\$3.69	\$ 0.23
D. Total CM	\$3,908.50	\$4,075.00	\$166.50
E. Number of dogs	2	1	(1)
Number of stars	3	4	1