

SECTION A

$$\textcircled{1} \text{ (a) Contribution margin per unit} = \frac{\text{selling price/unit} - \text{variable cost/unit}}{1} \\ = \$18 - 8 \\ = \underline{\underline{\$10}}$$

$$\text{(b) Contribution margin ratio} = \frac{\text{contribution margin per unit}}{\text{selling price per unit}} \times 100 \\ = \frac{10}{18} \times 100 = 55.6\% = \underline{\underline{55.6\%}}$$

$$\text{(c) Required units} = \frac{\text{fixed costs} + \text{Desired operating income}}{\text{contribution margin per unit}} \\ = \frac{45000 + 4800}{10 \text{ [from a]}} = \underline{\underline{4980 \text{ burgers}}}$$

$$\text{(d) Break even point [in units]} = \frac{\text{fixed costs}}{\text{contribution margin per unit}} \\ = \frac{45000}{10} = \underline{\underline{4500 \text{ burgers}}}$$

$$\text{(e) New variable cost per unit} = \$[8 + 8 \times 10\%] = \$8.8$$

$$\text{Break even point in units} = \frac{\text{fixed costs}}{\text{selling price per unit} - \text{variable cost/unit}} \\ 4500 = \frac{45000}{\text{selling price per unit} - 8.8}$$

$$\text{selling price per unit} = \frac{4500 + 8.8}{4500} = \underline{\underline{\$18.8}}$$

$$\textcircled{2} \text{ Break-even sales in units} = 56000$$

$$\text{Unit contribution Margin} = \$6$$

$$\text{Required units} = \frac{\text{fixed costs} + \text{Desired operating income}}{\text{unit contribution Margin}}$$

$$= \frac{56000 \times 6 + 48000}{6} = \underline{\underline{64000 \text{ units}}}$$

$$\textcircled{3} \text{ fixed costs} = \$231000$$

$$\text{Variable cost ratio} = 35\% = \frac{35}{100} \times 231000 = 80850$$

$$\text{(Selling price - variable cost per unit) (Break even units)} = \text{fixed costs}$$

$$\text{Break even sales} = \text{fixed costs} + \text{variable cost} = 231000 + 80850 \\ = \underline{\underline{\$311850}}$$

$$\textcircled{4} \$15 \text{ per guest} = \text{contribution Margin per unit}$$

$$\text{(a) Sales revenue} = \$600000$$

$$\text{variable costs} = 240000$$

$$\text{fixed costs} = 132000$$

$$\text{Break even sales revenue} = 132000 + 240000$$

$$= \underline{\underline{\$372,000}}$$

(b) Operating income = Sales revenue - Break even sales
 $= 650,000 - 372,000 = \underline{\underline{\$278,000}}$

(c) At 600,000

$$\text{Operating income} = 600,000 - 372,000 = 228,000$$

$$\begin{aligned} \text{Guests served} &= \frac{\text{Fixed Costs} + \text{Operating income}}{\text{Cost per unit margin}} \\ &= \frac{132,000 + 228,000}{15} = 24,000 \text{ guests} \end{aligned}$$

At 570,000

$$\text{Operating income} = 570,000 - 372,000 = 198,000$$

$$\begin{aligned} \text{Guests served} &= \frac{\text{Fixed costs} + \text{Operating income}}{15} \\ &= \frac{132,000 + 198,000}{15} = \frac{330,000}{15} = 22,000 \text{ guests} \end{aligned}$$

$$\text{Difference} = 24,000 - 22,000 = \underline{\underline{2,000}} \text{ less guests}$$

⑥ Fixed costs = 359,640
 Variable costs = 876,000
 Occupancy level = 80%

(a) % Occupancy per room = $80\% \times 100 = 80 \text{ rooms}$
 Number of days in a year = 365
 Total rooms available in a year = $365 \times 80 = 29,200$
 Variable cost per room = $\frac{876,000}{29,200} = \underline{\underline{\$30}}$

(b) Break even units per year = $\frac{\text{Fixed costs}}{\text{Contribution per unit}} = \frac{359,640}{110 - 30} = 4,495.5 \text{ or } \underline{\underline{4,496 \text{ rooms}}}$

(c) Break even occupancy = $\left(\frac{\text{Break even units}}{\text{Total available units}} \right) 100\%$
 $= \frac{4,496}{36,500} \times 100 = \underline{\underline{12.32\%}}$

(d) Targetted units = $\frac{\text{Fixed cost} + \text{targetted operating income}}{\text{Contribution per unit}}$
 $= \frac{359,640 + 120,000}{80} = \underline{\underline{5,995.5 \text{ or } 5,996 \text{ rooms}}}$

$$\text{Targetted sales revenue} = 5,996 \times 110 = \underline{\underline{\$659,560}}$$

$$(5996 \times 36500)100 = 16.43\%$$

⑥ Annual sales revenue = 320000
 Fixed costs = \$108000
 Variable costs = 120000

(a) Break even sales revenue = fixed costs = \$108000

(b) Targeted sales = Fixed costs + targeted operating income
 = 108000 + 120000 = \$228000

⑦ Contribution Margin per unit = selling price/unit - variable cost/unit
 = 10 - 4 = \$6

Total monthly fixed costs = \$15000

Contribution margin for 1000 pizzas = Contribution Margin/unit x no. of pizzas
 = 6 x 1000 = \$6000

⑧ Ratio of sales L: S
 1:3

S = \$4 variable cost of \$2
 L = \$5 variable cost of \$2.80

(a) Average sales price per unit ~~target = 5.28~~ \$2.2
~~actual = 4.2~~ \$2

(b) ~~Average variable cost per unit~~

$$= \frac{4 \times 3 + 5 \times 1}{3 + 1} = \underline{\underline{\$4.25}}$$

(c) average variable cost per unit =
$$\frac{3 \times 2 + 2.80 \times 1}{3 + 1} = \underline{\underline{\$2.2}}$$

(d) Weighted average contribution margin

Contribution Margin = selling price - variable cost/unit
 = 4.25 - 2.2 = \$2.05

(e) Monthly fixed cost = \$24600

Break even units =
$$\frac{\text{Fixed costs}}{\text{Contribution per unit Margin}} = \frac{24600}{2.05} = 12000$$

12000 coffees

(f) Targeted sales =
$$\frac{\text{Fixed cost} + \text{operating income}}{\text{contribution per unit Margin}} = \frac{24600 + 12300}{2.05}$$

$$= 18000 \text{ coffee}$$

$$\text{ratio of L:S} = 1:3$$

$$\text{Large} = \frac{1}{4} \times 18000 = \underline{\underline{4500}}$$

$$\text{Small} = \frac{3}{4} \times 18000 = \underline{\underline{13500}}$$

(9) 90 rooms

$$40\% \times 90 = 36 \text{ - single room } \$80 \text{ per night}$$

$$35\% \times 90 = 31.5 = 32 \text{ double room } \$100 \text{ per night}$$

$$25\% \times 90 = 22.5 = 22 \text{ triple room } \$120 \text{ per night}$$

$$\text{Annual fixed cost} = \$591600$$

$$\text{Variable cost average} = \$39 \text{ per room}$$

$$(a) \text{ Weighted average room rate per night} = \frac{36 \times 80 + 32 \times 100 + 22 \times 120}{90}$$

$$= \underline{\underline{\$96.89}} = 96.90$$

(b) Average contribution Margin per room

$$= \text{Rate per room} - \text{Variable cost per room}$$

$$= 96.89 - 39$$

$$= \underline{\underline{\$66.89}}$$

$$(c) \text{ Break even in units in a year} = \frac{\text{Fixed Costs}}{\text{Contribution Margin/unit}}$$

$$= \frac{591600}{66.89} = 8844.4 \text{ rooms}$$

$$= \underline{\underline{8845 \text{ rooms}}}$$

$$(d) \text{ Rooms available per year} = 90 \times 365$$

$$= 32850$$

$$\% \text{ of rooms} = \frac{8845}{32850} \times 100 = \underline{\underline{26.93\%}}$$

$$(e) \text{ No. of units} = \frac{\text{Fixed costs} + \text{operating income}}{\text{Cost per unit margin}} = \frac{591600 + 313200}{66.89}$$

$$= \underline{\underline{13527 \text{ rooms}}}$$

$$\% = \frac{13527}{32850} \times 100 = \underline{\underline{41.2\%}}$$

(10.) Cafe 0.55 sales revenue
bar 0.45 sales revenue

Cafe 42% variable cost
bar 25% variable cost.

Increase in sales revenue = \$170976
operating income

let fixed cost be x.

$$\text{Sales} = \frac{\text{fixed cost} + \text{operating income}}{\text{cost per unit} - \text{margin}}$$

$$\text{Sales} = \frac{x + 170976}{0.55 - 0.42}$$

$$(9) \frac{55}{10} \times 170976 = 94036.8$$

let sales be x
let operating income = y

$$X = 0.55y - \text{Variable cost}$$

$$X_1 = 0.55y - 0.42C$$

$$X_2 = 0.45y - 0.25C$$

(11) operating income = 12000

Variable expense = 40% sales

fixed expense = 9000

$$\text{Break even} = \frac{\text{fixed expense} + \text{operating income}}{\text{Sales}} = \frac{9000 + 12000}{0.60} = 21000$$

(12) selling price = \$2.50
 variable cost/unit = \$1.20
 fixed costs = 6136

(a) Sales = fixed costs + operating income
 = 6136 + 15340 = 21476

(b) Coffee sold at an income operating of 7670

$$\text{Units} = \frac{\text{Fixed costs} + \text{operating income}}{\text{Contribution per unit margin}}$$

$$= \frac{6136 + 7670}{2.50 - 1.2} = \frac{13806}{1.3} = 10620$$

before increasing variable costs by 10%

At increased variable cost

$$\text{Variable cost} = 1.2 \times 1.1 = 1.32$$

$$\text{Contribution Margin per unit} = 2.50 - 1.32 = 1.18$$

$$\text{Units required} = \frac{13806}{1.18} = 11700$$

$$\text{Difference} = 11700 - 10620 = \underline{\underline{\$1080}}$$

(c) selling price - variable cost = \$1.3 to maintain his operating income

$$\begin{aligned} \text{selling price} &= \text{variable cost} + 1.3 \\ &= 1.32 + 1.3 = 2.62 \end{aligned}$$

$$\% \text{ increase} = \frac{2.62 - 2.5}{2.5} \times 100 = \underline{\underline{4.8\%}}$$