TUTORIAL 2 Solution

QUESTION 1
Outer Banks shirt shop manufacturing

1.   a, d, g, i

2.   a, d, g, j

3.   b, f

4.   b, d, g, k

5.   a, d, g, k

6.   a, d, g, j

7.   b, c, f

8.   b, d, g, k

9.   b, c and d*, e and f and g*, k*

   *The building is used for several purposes.

10.   b, c, f

11.   b, c, h

12.   b, c, f

13.   b, c, e

14.   b, c and d†, e and f and g†, k†

   †The building that the furnace heats is used for several purposes.

15.   b, d, g, k

QUESTION 2:
Mighty Muffler

	Number of Muffler Replacements		
	500	**600**	**700**
Total costs:			
Fixed costs..	(a) $42,000	$42,000	(b) $42,000
Variable costs	(c) 25,000	30,000	(d) 35,000
Total costs	(e) $67,000	$72,000	(f) $77,000
Cost per muffler replacement:			
Fixed cost	(g) $ 84	(h) $ 70	(i) $ 60
Variable cost..	(j) 50	(k) 50	(l) 50
Total cost per muffler replacement......................	(m) $134	(n) $120	(o) $110

Explanatory Notes:

(a) **Total fixed costs do not vary with activity.**

(c) **Variable cost per replacement = $30,000/600 = $50.**

Total variable cost for 500 replacements = $50 × 500 = $25,000.

(g) **Fixed cost per replacement = $42,000/500 = $84.**

(j) **Variable cost per replacement = $25,000/500 = $50.**

QUESTION 3.
Stratford Sdn Bhd

1. The CM ratio is 60%:

Sale price	$15	100%
Less variable expenses	6	40
Contribution margin	$ 9	60%

2. $\dfrac{\text{Fixed expenses, } \$180,000}{\text{CM ratio, } 0.60} = \$300,000$ sales to break even

3. $45,000 increased sales × 60% CM ratio = $27,000 increased contribution margin. Since fixed costs will not change, net income should also increase by $27,000.

4.

	Last Year: 28,000 units		Proposed: 42,000 units*	
	Total	**Per Unit**	**Total**	**Per Unit**
Sales	$420,000	$15	$567,000	$13.50**
Less variable expenses	168,000	6	252,000	6.00
Contribution margin	252,000	$ 9	315,000	$ 7.50
Less fixed expenses	180,000		250,000	
Net income	$ 72,000		$ 65,000	

*28,000 units × 1.5 = 42,000 units
**$15 × 0.90 = $13.50

No, the changes should not be made.

5. Expected total contribution margin:
    28,000 units × 200% × $7*.. $392,000
    Present total contribution margin:
    28,000 units × $9 252,000
    Incremental contribution margin, and the amount
    by which advertising can be increased with net
    income remaining unchanged $140,000

   *$15 – ($6 + $2) = $7

QUESTION 4

GameCo Sdn Bhd

1. $$\textbf{Unit contribution margin} = \frac{\textbf{\$625,000} - \textbf{\$375,000}}{\textbf{25,000 units}}$$

    $$= \textbf{\$10 per unit}$$

    $$\textbf{Break-even point (in units)} = \frac{\textbf{fixed costs}}{\textbf{unit contribution margin}}$$

    $$= \frac{\textbf{\$150,000}}{\textbf{\$10}} = \textbf{15,000 units}$$

2. $$\begin{matrix}\textbf{Number of sales units required} \\ \textbf{to earn target net profit}\end{matrix} = \frac{\textbf{fixed costs} + \textbf{target net profit}}{\textbf{unit contribution margin}}$$

    $$= \frac{\textbf{\$150,000} + \textbf{\$140,000}}{\textbf{\$10}} = \textbf{29,000 units}$$

3. $$\textbf{New break-even point (in units)} = \frac{\textbf{new fixed costs}}{\textbf{new unit contribution margin}}$$

    $$= \frac{\textbf{\$150,000} + (\textbf{\$18,000/6})^*}{\textbf{\$10} - \textbf{\$2}^\dagger} = \textbf{19,125 units}$$

    *Annual straight-line depreciation on new machine
    †\$2.00 = \$4.50 – \$2.50 *increase* in the unit cost of the new part

4. **Number of sales units required to earn target net profit, given manufacturing changes** $= \dfrac{\textbf{new fixed costs} + \textbf{target net profit}}{\textbf{new unit contribution margin}}$

$$= \frac{\$153{,}000 + \$100{,}000^*}{\$8}$$

$$= \textbf{31{,}625 units}$$

*Last year's profit: ($25)(25,000) – $525,000 = $100,000

5. $\qquad$ **Contribution-margin ratio** $= \dfrac{\textbf{unit contribution margin}}{\textbf{sales price}}$

$$\textbf{Old contribution-margin ratio} = \frac{\$10}{\$25^*} = \textbf{.40}$$

*Sales price = $25 = $625,000 ÷ 25,000 units.
Let *P* denote the price required to cover increased direct-material cost and maintain the same contribution margin ratio:

$$\frac{P - \$15^* - \$2^\dagger}{P} = .40$$

$$P - \$17 = .40P$$

$$.60P = \$17$$

$$P = \$28.33 \text{ (rounded)}$$

*Old unit variable cost = $15 = $375,000 ÷ 25,000 units

†Increase in direct-material cost = $2
Check:

$$\textbf{New contribution-margin ratio} = \frac{\$28.33 - \$15 - \$2}{\$28.33}$$

$$= \textbf{.40 (rounded)}$$