

## **Foreword**

This resource material provides teachers with examples of cost accounting cases for reference and is by no means exhaustive. Teachers are advised to adapt the materials according to the diverse learning needs of students if deemed necessary.

## Kids & Nature Clothing Limited

Since its establishment in Hong Kong in 1990, Kids & Nature Clothing Limited has formulated its vision to be a caring Hong Kong brand in kids' apparel retailing. By providing kids' apparel in simple design with good quality and affordable prices, the company seeks to fulfil kids' daily needs and enrich kids' lives.

The founder of the company believes that living in a simple lifestyle can reduce carbon footprint and eliminate waste of precious resources on earth. The company targets on parents who care environment, enjoy simple lifestyle and look for clothes which are simple, long-lasting, comfortable and economical.

Currently, Kids & Nature Clothing Limited has a flagship store on Hong Kong Island and 5 retail stores in Kowloon. It sells both tops and bottoms for kids under 12 years old. Although tops are in different colours and have minor difference in design, production process is almost the same and resources consumed are similar for all tops. Similarly, bottoms are produced using almost the same production process and technology regardless of their colours and design. Sales units are expected to be in a standard sales mix of 2:1 for tops and bottoms respectively and the total budgeted sales revenue is \$20,000,000 for the coming year. The company does not keep any inventories. **Table 1** shows the budgeted data for tops and bottoms for the coming year.

**Table 1: Budget for Tops and Bottoms**

	<b>Tops</b>	<b>Bottoms</b>
	<b>\$ per unit</b>	<b>\$ per unit</b>
Selling price	150	200
Direct materials	30	35
Direct labour	20	30
Variable production overheads	10	20
Variable selling overheads	15	15

Total fixed production overheads and total fixed selling overheads are budgeted as \$2,600,000 and \$2,000,000 respectively.

Besides the aforementioned plan, the management of Kids & Nature Clothing Limited also considers the following two plans for the coming year.

**Plan 1:** The company will place an advertisement in a popular local parent magazine to boost sales. It is expected that total sales volume will increase by 5% as a result of the advertisement and the advertising expense will be \$1,700,000 per year for 12 insertions. At the same time, the larger production and sales volume will help the company lower variable costs of both tops and bottoms by 20%.

**Plan 2:** The company will introduce "shoes" as a new product line to expand its business. Sales units of tops and bottoms will remain in a standard sales mix of 2:1.

**Table 2** summarizes budget information related to the production and selling of shoes.

**Table 2: Budget for Shoes**

	<b>Shoes \$</b>
Selling price per pair	300
Variable cost per pair	150
Additional fixed cost for producing and selling shoes	2,195,000

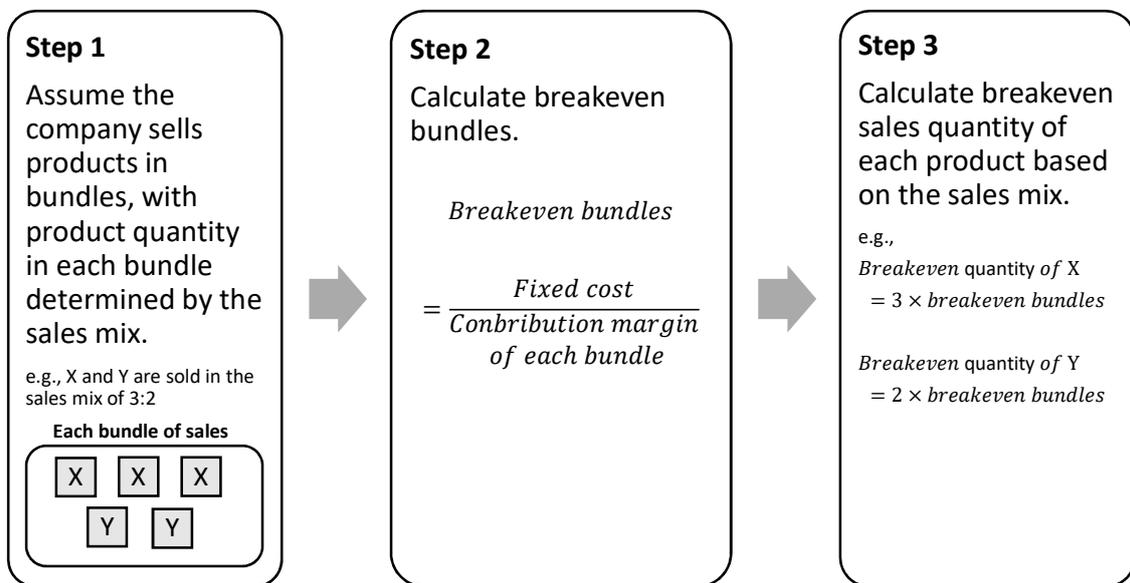
**REQUIRED:**

- (a) Assuming both Plan 1 and Plan 2 are not adopted, calculate the budgeted sales quantity of tops and bottoms respectively for the coming year. (4 marks)
- (b) Assuming both Plan 1 and Plan 2 are not adopted, calculate the breakeven sales quantity of both tops and bottoms for the coming year. (4 marks)
- (c) Assuming the company adopts Plan 1, calculate the breakeven sales quantity of both tops and bottoms for the coming year. Based on financial information only, suggest whether Plan 1 should be adopted. (9 marks)
- (d) Assuming the company adopts Plan 2 and plans to produce 30,000 units of tops, calculate the sales quantity of shoes that will make the company breakeven for the coming year. (4 marks)
- (Total: 21 marks)

## Case Analysis

The pedagogical objective of this case is to provide students with an introduction to the cost-volume-profit (CVP) analysis for multiple products in a realistic but still fabricated business scenario. The case demonstrates how to calculate breakeven sales quantity and how to use CVP analysis to plan for operation when multiple products exist. Upon completion of this case study, students should be able to 1) compute breakeven sales quantity of multiple products; 2) compute target sales quantity of multiple products when a target sales revenue is given; and 3) analyze the financial impact of operating activities using CVP structure.

**Figure 1: Cost-volume-profit Analysis for Multiple Products**



### Marking Scheme

(a)

	Marks
According to the standard sales mix of 2:1 for tops and bottoms, sales revenue for each bundle of sales is	
$\$150 \times 2 + \$200 \times 1 = \$500$ per bundle	1
Total number of bundles that are required to be sold to earn sales of \$20,000,000 is $\$20,000,000 / \$500 = 40,000$ bundles	1
Target sales quantity of tops: $40,000 \times 2 = 80,000$ units	1
Target sales quantity of bottoms: $40,000 \times 1 = 40,000$ units	1

**Explanatory note:**

When the company sells multiple products in a standard sales mix, we assume the company sells products in bundles. For each bundle in this case, there are 2 tops and 1 bottom.

(b)

	Marks
Total fixed cost $= 2,600,000 + 2,000,000 = \$4,600,000$	
Unit contribution margin of tops $= \$150 - \$30 - \$20 - \$10 - \$15 = \$75$ per unit	
Unit contribution margin of bottoms $= \$200 - \$35 - \$30 - \$20 - \$15 = \$100$ per unit	
Contribution margin for each bundle of sales $= \$75 \times 2 + \$100 = \$250$ per bundle	1
Breakeven bundles $= \$4,600,000 / \$250 = 18,400$ bundles	1
Breakeven sales quantity of tops $= 18,400 \times 2 = 36,800$ units	1
Breakeven sales quantity of bottoms $= 18,400 \times 1 = 18,400$ units	1

**Explanatory note:**

At breakeven point, total contribution margin is equal to total fixed cost. As a result, the company does not have net profit or loss.

Breakeven bundles are calculated first. Then breakeven sales quantity of each product is calculated according to the standard sales mix.

(c)

		Marks																		
Total fixed cost = \$4,600,000 + \$1,700,000 = \$6,300,000		1																		
Unit contribution margin of tops = \$150 - (\$30 + \$20 + \$10 + \$15) × (1 - 20%) = \$90 per unit																				
Unit contribution margin of bottoms = \$200 - (\$35 + \$30 + \$20 + \$15) × (1 - 20%) = \$120 per unit																				
Contribution margin for each bundle of sales = \$90 × 2 + \$120 = \$300 per bundle		1																		
Breakeven bundles = \$6,300,000 / \$300 = 21,000 bundles		1																		
Breakeven sales quantity of tops = 21,000 × 2 = 42,000 units		0.5																		
Breakeven sales quantity of bottoms = 21,000 × 1 = 21,000 units		0.5																		
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th style="text-align: center;">Without Advertisement</th> <th style="text-align: center;">With Advertisement</th> </tr> <tr> <th></th> <th style="text-align: center;">\$</th> <th style="text-align: center;">\$</th> </tr> </thead> <tbody> <tr> <td>Sales revenue</td> <td style="text-align: right;">20,000,000</td> <td style="text-align: right;">21,000,000 (W1)</td> </tr> <tr> <td>Less: Variable cost</td> <td style="text-align: right;">10,000,000 (W2)</td> <td style="text-align: right;">8,400,000 (W3)</td> </tr> <tr> <td>Fixed cost</td> <td style="text-align: right;"><u>4,600,000</u></td> <td style="text-align: right;"><u>6,300,000</u></td> </tr> <tr> <td><b>Net profit</b></td> <td style="text-align: right;"><b>5,400,000</b></td> <td style="text-align: right;"><b>6,300,000</b></td> </tr> </tbody> </table>		Without Advertisement	With Advertisement		\$	\$	Sales revenue	20,000,000	21,000,000 (W1)	Less: Variable cost	10,000,000 (W2)	8,400,000 (W3)	Fixed cost	<u>4,600,000</u>	<u>6,300,000</u>	<b>Net profit</b>	<b>5,400,000</b>	<b>6,300,000</b>	1
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<b>Net profit</b>	<b>5,400,000</b>	<b>6,300,000</b>																		
(W1) Sales revenue with advertisement = \$20,000,000 × (1 + 5%) = \$21,000,000		1																		
(W2) Total variable cost without advertisement = (\$30 + \$20 + \$10 + \$15) × 80,000 + (\$35 + \$30 + \$20 + \$15) × 40,000 = \$75 × 80,000 + \$100 × 40,000 = \$10,000,000		1																		

(W3) Total variable cost with advertisement = $\$75 \times (1-20\%) \times 80,000 \times (1+5\%) + \$100 \times (1-20\%) \times 40,000 \times (1+5\%)$ = $\$60 \times 84,000 + \$80 \times 42,000$ = $\$5,040,000 + \$3,360,000$ = $\$8,400,000$  Therefore, Plan 1 should be adopted as net profit will increase by \$900,000.	1
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**Explanatory note:**

Plan 1 affects sales volume, fixed cost and variable cost simultaneously. All changes should be considered when conducting CVP analysis to calculate breakeven sales quantity and analyse the financial impact of Plan 1.

As the impact of the increase in revenue and the saving in variable cost outweighs the impact of the increase in fixed cost, Plan 1 helps the company earn higher net profit.

(d)

	Marks
Total fixed cost = $\$4,600,000 + \$2,195,000 = \$6,795,000$	1
Budgeted sales quantity of bottoms = $30,000 / 2 = 15,000$ units	
Contribution margin of tops and bottoms = $\$75 \times 30,000 + \$100 \times 15,000 = \$3,750,000$	1
Breakeven sales quantity of shoes = $\frac{6,795,000 - 3,750,000}{300 - 150} = 20,300$ pairs	2

**Explanatory note:**

Budgeted sales quantity of tops is given. Budgeted sales quantity of bottoms can be calculated through the standard sales mix 2:1. Contribution margin of tops and bottoms can then be calculated.

At break-even point,

Contribution margin of tops and bottoms + Contribution margin of shoes = Total fixed cost

Thus, sales quantity of shoes that can make the company breakeven

$$= \frac{\text{Total fixed cost} - \text{Contribution margin of tops and bottoms}}{\text{Contribution margin per unit of shoes}}$$

$$= \frac{6,795,000 - 3,750,000}{300 - 150} = 20,300 \text{ pairs}$$