

## **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.

## HoWatch Limited

Hong Kong is a world-leading exporter of watches and clocks with long history and large trading volume. Among all export watches and clocks, battery-powered wristwatches account for the largest proportion with diverse ranges from analogue to digital, plastic to metal, classic to fashion, and to sports watches<sup>1</sup>.

HoWatch Limited is a Hong Kong based wristwatch manufacturer producing and exporting plastic fashion watches and sports watches. The watches sold by the company are well known for their good quality and stylish design.

Watch movement is the heart of a timepiece. However, the production of watch movement requires substantial investment. Like most watch manufacturers in Hong Kong, HoWatch Limited does not produce watch movements. Instead, it purchases quartz movements from suppliers in Japan and other components from suppliers in the Mainland. In its factory, the watch components, including quartz movements, dials, hands, LED displays, cases and wrist straps, are assembled into fashion watches and sports watches. After that, a series of tests are conducted to ensure watches can operate properly in different situations. These tests include but not limit to accuracy test, drop-test, temperature test and waterproof test. Upon the completion of various tests, fashion watches and sports watches that meet quality standards are packaged for delivery. The whole watch manufacturing process is labour intensive.

The information provided in **Table 1** is extracted from HoWatch Limited's budget for year 20X2. The company expected to produce at full capacity in 20X2. A single pre-determined production overhead absorption rate was used to calculate production overheads absorbed by products.

**Table 1: Budget for Production Overheads**

<b>Budgeted Production Overheads (\$)</b>	<b>Budgeted Direct Labour Hours</b>	<b>Budgeted Machine Hours</b>
4,620,000	70,000	17,500

Based on market trend analysis and past sales data, HoWatch Limited adopts a pricing strategy of setting selling price as budgeted unit production cost plus 50% mark-up. It usually determines selling price at the beginning of each year when sales budget is prepared. However, the actual selling price of watches in that year may be different from the budgeted selling price due to shortage of raw materials, unexpected market condition change, supply chain disruption, etc. **Table 2** shows the budgeted data for fashion watches and sports watches respectively for 20X2.

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<sup>1</sup> Nicholas Fu, "Watches & Clocks Industry in Hong Kong", HKTDC Research, Feb 22, 2021, assessed Jan 20, 2022, <https://research.hktdc.com/en/article/MzEzOTYyODY5>.

**Table 2: Budget for Fashion Watches and Sports Watches**

	<b>Fashion Watches</b>	<b>Sports Watches</b>
Direct material cost per unit (\$)	46	190
Direct labour hours per unit	4	6.5
Machine hours per unit	1	1.5
Direct labour was expected to be paid at \$50 per hour.		

At the end of 20X2, HoWatch Limited has actual data summarized in **Table 3**. There was no inventory on 1 January 20X2.

**Table 3: Actual Data for Fashion Watches and Sports Watches**

	<b>Fashion Watches</b>	<b>Sports Watches</b>	<b>Total</b>
Selling price (\$)	750	1,500	
Production and sales (units)	10,000	6,000	16,000
Direct materials (\$)	500,000	600,000	1,100,000
Direct labour costs (\$)	2,247,875	2,312,100	4,559,975
Direct labour hours	35,000	36,000	71,000
Machine hours	8,500	8,400	16,900
Production overheads (\$)			4,700,000
Variable selling and distribution costs (\$ per unit)	40	60	
Fixed selling and distribution costs (\$)			1,800,000

**REQUIRED:**

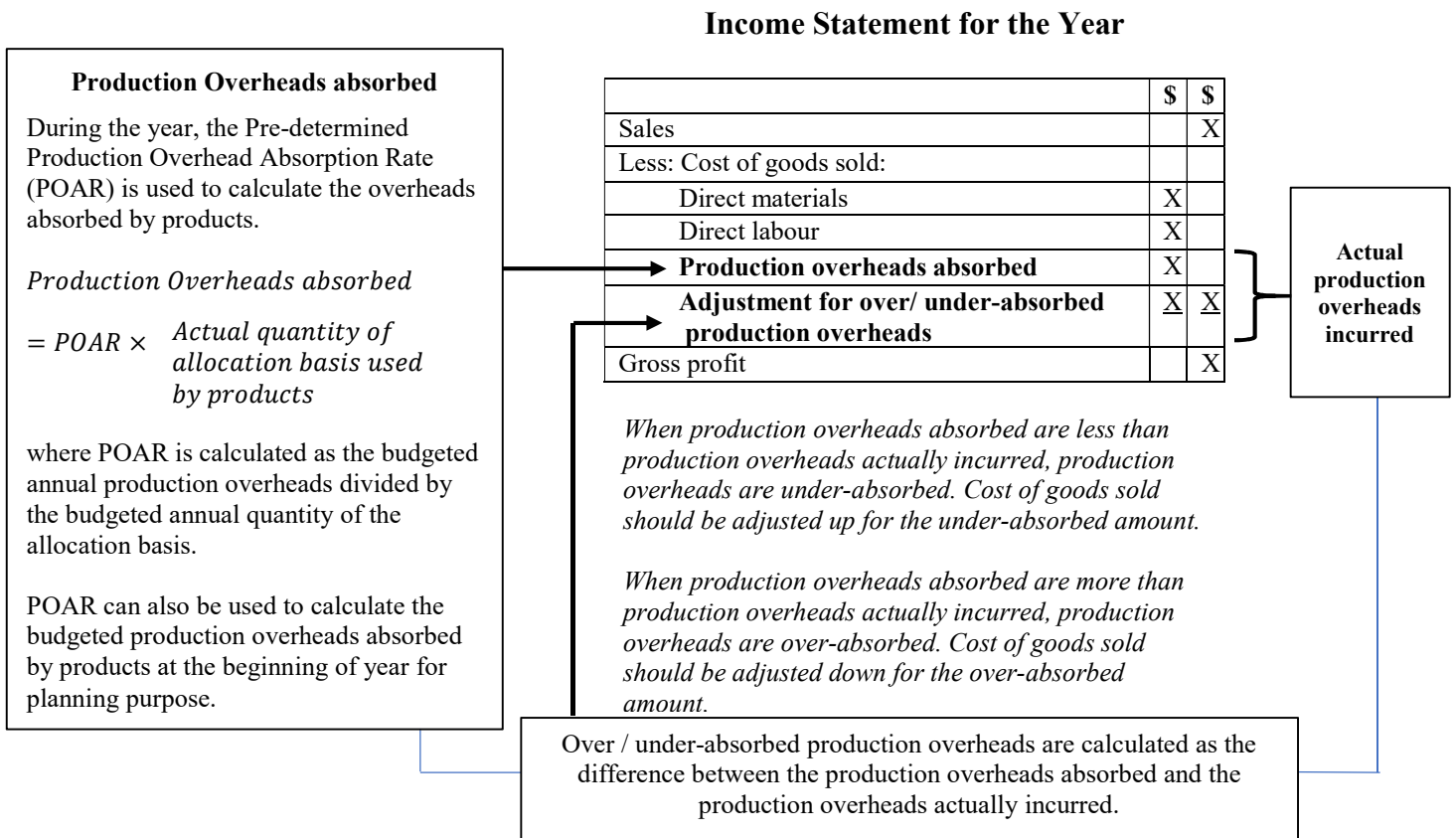
- Compute the pre-determined production overhead absorption rate for 20X2. Explain the appropriate absorption basis chosen for computation. (2 marks)
- Calculate the budgeted selling price of fashion watches and sports watches respectively. (9 marks)
- Calculate the production overheads absorbed by fashion watches and sports watches for 20X2. (2 marks)
- Calculate the over or under-absorption of production overheads for 20X2. (2 marks)
- Prepare the income statement for HoWatch Limited for the year ended 31 December 20X2 using the actual data. Assume that absorption costing is used and any adjustments for over or under-absorption of production overheads for the year are charged to cost of goods sold directly. (6 marks)

(Total: 21 marks)

## Case Analysis

The pedagogical objective of this case is to provide students with an introduction to the absorption costing system in a realistic but still fabricated business scenario. More specifically, the case helps students understand how production overhead costs are absorbed by different products using the Pre-determined Production Overhead Absorption Rate (POAR). It further shows how to calculate relevant product cost for decision making and how to prepare an Income Statement under the absorption costing system. Upon completion of this case study, students should be able to 1) compute and apply the POAR; 2) work out product cost for pricing decisions; 3) calculate and interpret the over/ under-absorption of production overheads; and 4) prepare an Income Statement under the absorption costing system.

**Figure 1: Absorption Costing**



## Marking Scheme

(a)

	Marks
Pre-determined production overhead absorption rate for 20X2 is $\$4,620,000 \div 70,000 = \$66$ per direct labour hour	1
Direct labour hours are used as the absorption basis. As the manufacturing process is labour intensive, it is more appropriate to choose direct labour hours as the absorption basis than machine hours.	1

### Explanatory note:

The pre-determined production overhead absorption rate is calculated as the budgeted annual production overheads divided by the budgeted annual direct labour hours. It is calculated using budgeted number because companies want timely cost information to make decisions and do cost control during the year.

(b)

	Marks																					
<table border="1" style="width: 100%; border-collapse: collapse; margin: 0 auto;"> <thead> <tr> <th style="width: 40%;"></th> <th style="text-align: center;">Fashion Watch \$</th> <th style="text-align: center;">Sports Watch \$</th> </tr> </thead> <tbody> <tr> <td>Direct material cost per unit</td> <td style="text-align: center;">46</td> <td style="text-align: center;">190</td> </tr> <tr> <td>Direct labour cost per unit (W1)</td> <td style="text-align: center;">200</td> <td style="text-align: center;">325</td> </tr> <tr> <td>Production overheads absorbed per unit (W2)</td> <td style="text-align: center;"><u>264</u></td> <td style="text-align: center;"><u>429</u></td> </tr> <tr> <td>Production cost per unit</td> <td style="text-align: center;">510</td> <td style="text-align: center;">944</td> </tr> <tr> <td>Plus 50% mark-up (W3)</td> <td style="text-align: center;"><u>255</u></td> <td style="text-align: center;">472</td> </tr> <tr> <td><b>Selling price</b></td> <td style="text-align: center;"><b><u>765</u></b></td> <td style="text-align: center;"><b><u>1,416</u></b></td> </tr> </tbody> </table>		Fashion Watch \$	Sports Watch \$	Direct material cost per unit	46	190	Direct labour cost per unit (W1)	200	325	Production overheads absorbed per unit (W2)	<u>264</u>	<u>429</u>	Production cost per unit	510	944	Plus 50% mark-up (W3)	<u>255</u>	472	<b>Selling price</b>	<b><u>765</u></b>	<b><u>1,416</u></b>	1 2 2 1 2 1
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<p><b>Working:</b></p> <p>(W1) Director labour cost for a fashion watch = <math>\\$50 \times 4</math> hours = \$200 per unit Direct labour cost for a sports watch = <math>\\$50 \times 6.5</math> hours = \$325 per unit</p> <p>(W2) Production overheads absorbed by a fashion watch = <math>\\$66 \times 4</math> hours = \$264 per unit Production overheads absorbed by a sports watch = <math>\\$66 \times 6.5</math> hours = \$429 per unit</p> <p>(W3) Mark-up for a fashion watch = <math>\\$510 \times 50\%</math> = \$255 per unit Mark-up for a sports watch = <math>\\$944 \times 50\%</math> = \$472 per unit</p>	1																					

### Explanatory note:

Production overheads absorbed by each type of watch are calculated as the pre-determined production overhead absorption rate multiplied by the budgeted direct labour hours consumed by that type of watch. Budgeted selling prices are determined at the beginning of the year when the actual direct labour hours are unknown. Therefore, budgeted direct labour hours are used to calculate production overheads absorbed per unit.

(c)

		Marks
	<b>Fashion Watches</b>	1
	<b>\$</b>	
Production overheads absorbed (\$66 x 35,000)	2,310,000	
Production overheads absorbed by fashion watches are \$2,310,000.		
	<b>Sports Watches</b>	1
	<b>\$</b>	
Production overheads absorbed (\$66 x 36,000)	2,376,000	
Production overheads absorbed by sports watches are \$2,376,000.		

**Explanatory note:**

Production overheads absorbed by each type of products during the year are calculated as the pre-determined production overhead absorption rate multiplied by the actual labour hours of that product. By doing this, managers can know the cost of watches right after those watches are produced. This timely cost information helps managers make decisions and control cost before year end.

(d)

		Marks
	<b>\$</b>	1
Production overheads absorbed (2,310,000+2,376,000)	4,686,000	
Production overheads incurred	4,700,000	1
<b>Production overheads under-absorbed</b>	<b>14,000</b>	

**Explanatory note:**

When production overheads absorbed are less than production overheads actually incurred, production overheads are under absorbed. Cost of goods sold should be adjusted up for the under-absorbed amount.

(e)

HoWatch Limited			Marks
Income statement for the year ended 31 December 20X2			
	\$	\$	
Sales (W1)		16,500,000	1
Less: <u>Cost of goods sold:</u>			
Direct materials (W2)	1,100,000		1
Direct labour (W3)	4,559,975		1
Production overheads absorbed	4,686,000		0.5
Production overheads under-absorbed	<u>14,000</u>	<u>10,359,975</u>	0.5
Gross profit		6,140,025	
Less: <u>Selling and distribution costs:</u>			
Variable selling and distribution costs (W4)	760,000		1
Fixed selling and distribution costs	<u>1,800,000</u>	<u>2,560,000</u>	0.5
Net profit		<u>3,580,025</u>	0.5
Working:			
(W1) Sales = \$750 x 10,000 + \$1,500 x 6,000 = \$16,500,000			
(W2) Direct materials = \$500,000 + \$600,000 = \$1,100,000			
(W3) Direct labour = \$2,247,875 + \$2,312,100 = \$4,559,975			
(W4) Variable selling and distribution costs = \$40 x 10,000 + \$60 x 6,000 = \$760,000			

**Explanatory note:**

The production overheads absorbed during the year are different from the actual production overheads incurred. Since the data reported on the income statement should be actual data, adjustments on the over/ under-absorbed production overheads are required. As given in the question, all adjustments are charged to cost of goods sold directly. Under-absorbed production overheads are added to cost of goods sold in this case to reflect the actual production overheads.