BASIC COST ACCOUNTING

(COSTING FOR LABOUR AND COSTING FOR OVERHEAD)

POLYTECHNIC SERIES

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PREFACE

Cost Accounting is part of quality management and has become one of the most important approaches to assist the management team in their key tasks including planning, evaluating, analysing, controlling, and monitoring the organization's activities for either manufacturing or services sectors. Everyone who works in an organization needs to learn about costs, strive to enhance quality and deliver improvements for their product or services offered in the market.

This e-book's second series contains 2 more chapters, Costing for Labours and Costing for Overhead. Costing for labours enables readers to differentiate between direct labour and indirect labour, develop knowledge of the method for recording and control of labour cost, remuneration methods and calculate labour productivity and labour turnover.

Costing for Overhead enables readers to learn the concept of how direct expenses trace to products, understand the classification of overhead, production and service departments and distinguish between allocation overhead, apportionment and reapportionment of overhead. This chapter also enables readers to apply the overhead absorption rate to production cost.

We hope that students or everyone who is planning to join and work in an organization in the future and everyone who has just joined an organization will benefit from this book. Happy Reading!

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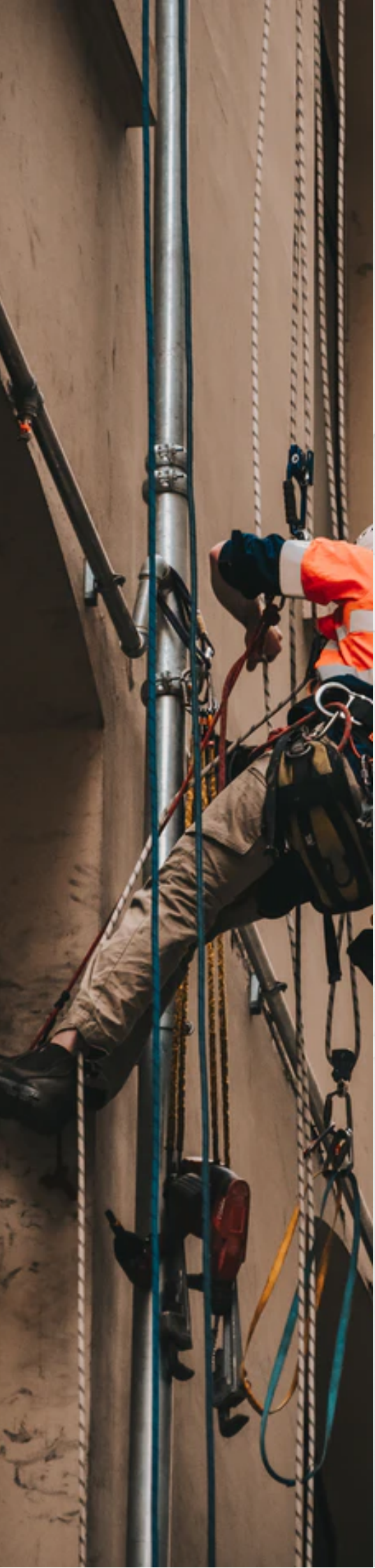
CHAPTER THREE
COSTING FOR LABOURS

LEARNING OUTCOME :

1. Define the direct labour and indirect labour
2. Explain recording and control labour costs
3. Explain the different types of remuneration method
4. Calculate the remuneration using the different methods
5. Explain advantages & disadvantages of various remuneration methods
6. Explain the labour productivity and the effects of labour turnover



DIRECT LABOUR VS INDIRECT LABOUR

Chartered Institute of Management Accounting define

Direct labour cost relates to the 'cost of remuneration for employees' efforts and skills applied directly to a product or saleable service, while indirect labour cost is wages cost other than direct wages.

Example of direct labour cost is direct wages to production workers in a normal course of duty and indirect labour cost is payment of overtime premium and salary of a supervisor. Direct labour cost is classified as prime cost and indirect labour cost as production overheads.

Example

JOB	TYPE OF BUSINESS	DIRECT OR INDIRECT LABOR	REASON
Accountant	Manufacturing	Indirect	Not directly involved in product production
Accountant	Service	Direct	Directly provides services to customers
Welder	Manufacturing	Direct	Directly involved in product production
Assembly worker	Manufacturing	Direct	Directly involved in product production
Machinist	Manufacturing	Direct	Directly involved in product production

JOB	TYPE OF BUSINESS	DIRECT OR INDIRECT LABOR	REASON
Quality control	Manufacturing	Indirect	Quality control oversees all products so it cannot be tied back to one individual product
Administrative assistant	Service	Indirect	Not directly involved in providing services
Security	Service	Indirect	Not directly involved in providing services
Security	Manufacturing	Indirect	Not directly involved in providing services
Painter	Manufacturing	Direct	Directly involved in product production

Recording and Control of Labour Costs

Human Resource Department
- Mainly responsible for managing the people issues in an organization and the preparation of payroll

Time-keeping Department
- The job scope is to handle the process of recording employee work time

Cost Accounting Department
- The primary purpose of this department is to ascertain cost which includes labour cost

HUMAN RESOURCE DEPARTMENT

Typical roles include :

- The recruitment of suitable candidates for the organization
- Preparing the payroll for the employees
- Designing a suitable remuneration package
- Identifying and meeting the training needs of existing staff
- Ensuring employee welfare and working environment is safe for employees

TIME KEEPING DEPARTMENT

The Time-keeping Department is responsible for recording :

a. Employee attendance
- A daily register where every day employees sign in when they arrive for work and sign out when they leave
- Clock card is a popular method of recording attendance
- Electronic swipe cards is where employees use an electronic swipe card to record attendance

b. The time spent by each employee in the factory and/ or on each job
- The time spent by an employee in the factory or a job is recorded or booked in a time sheet on a daily, weekly or monthly basis.

Methods of recording attendance :

Swipe card

Finger Print

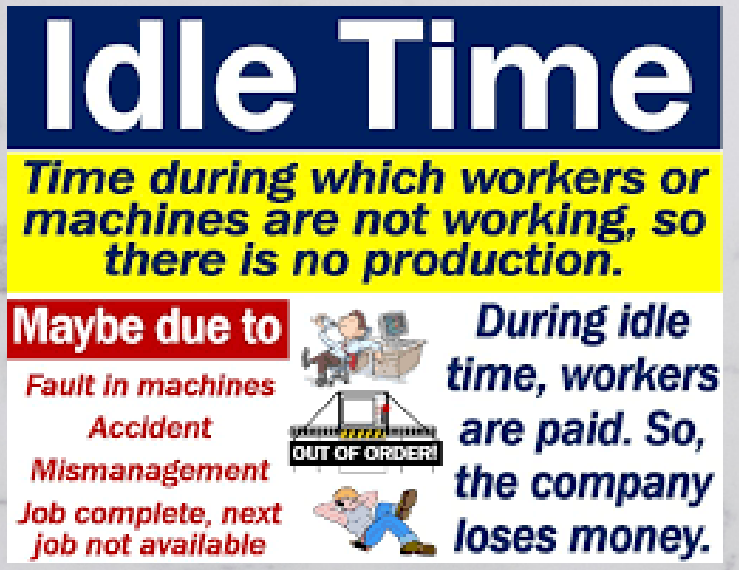
Clock card

Biometric Authentication

TIME-KEEPING VS TIME BOOKING

The time spent by an employee in the factory or a job is recorded or booked in a time sheet, labour cost card/ job card or operation card on a daily, weekly or monthly basis. It is also known as **time booking**. In this sheet, the employee records the time he spent on different jobs.

The total time in the time sheet should match the time shown in the clock card. If the time sheet hours are less than the clock card hours, the idle time is recorded. Idle time occurs when employees, through no fault of theirs, cannot get their work done. This may arise due to machine breakdowns or delay in raw material stocks.

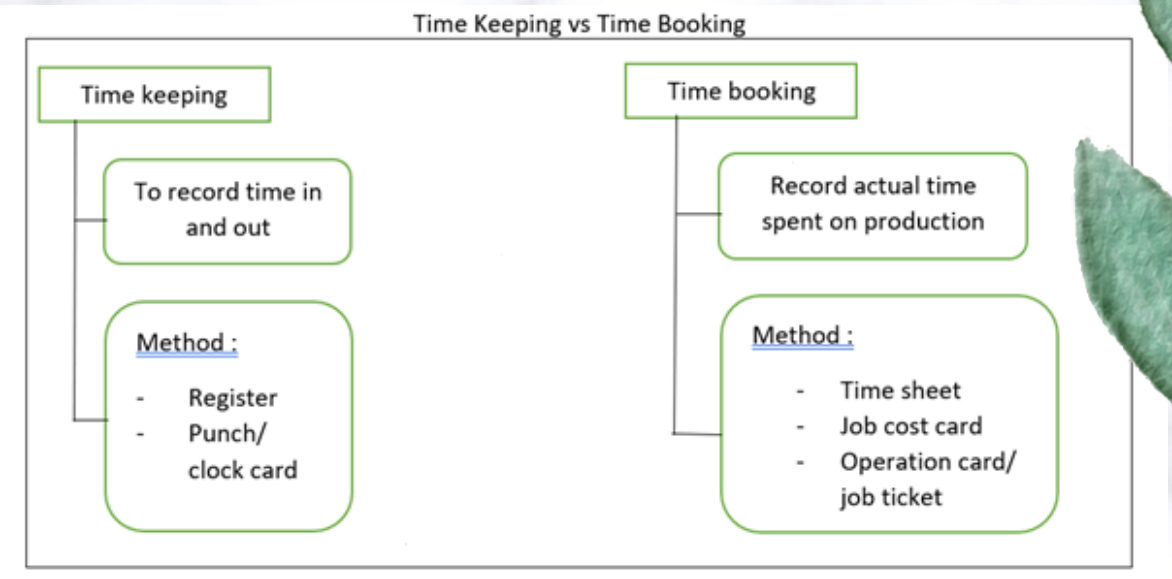


The idle time ratio is calculated as follows :

Idle time ratio = Idle hours/Total hours X 100

THE OBJECTIVE OF TIME BOOKING

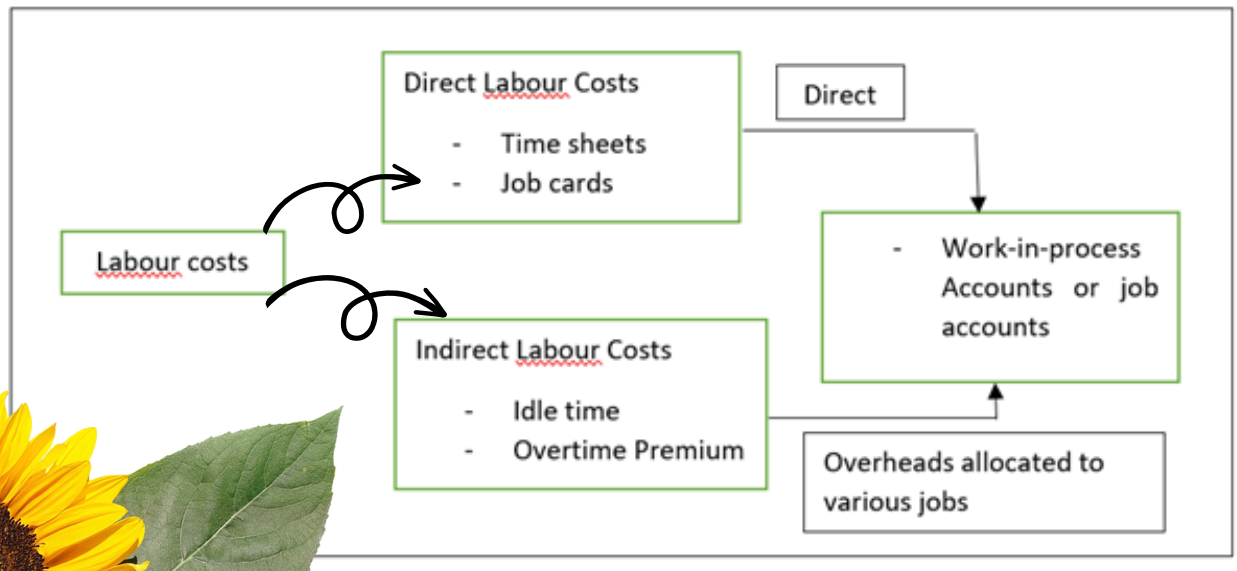
- to ascertain the employee's productive hours and idle time.
- to allocate the labour hours to individual jobs for the purpose of labour costing.
- to calculate the remuneration including bonus payable, if any, under the incentive scheme.
- to calculate the overtime applicable on each
- job/product for the purpose of the overhead calculation.
- to calculate the overtime applicable on each job/product for the purpose of performance control.
- to determine labour efficiency



COST ACCOUNTING DEPARTMENT

The primary purpose of cost accounting is to ascertain costs, which include labour cost. Labour cost is ascertained by maintaining a job cost card for each job. A job card can be created for each worker or for each job. The details of the labour time spent in each job and the agreed wage rate provides the basis for the calculation of labour costs for each job. If an employee, due to no fault of his, is unoccupied for a certain period of time, then an idle time report should be recorded and attached with the time sheet.

Idle time has a cost because employees will still be paid their wages for the unproductive hours. However, idle time will be treated as an indirect labour cost. Similarly, when workers work overtime to compensate the time lost due to machine breakdown, then the overtime premium will be an indirect labour cost.



METHODS OF REMUNERATION

- Time-based/ Hourly based Scheme
- Piecework/ Output Based Scheme
- Bonus/ Incentive Scheme

The labour remuneration method a company adopt has a direct impact on the cost of finished product and the morality of workers.

TIME-BASED SCHEME

The simplest form of a time-based remuneration scheme is a day rate system where worker is paid on the basis of hours worked. Workers would be paid for the number of hours worked at a basic rate per hour.

Example :

A company employs two workers, Amin and Badrul with normal working hours of working hours per week. The wage rates for Amin and Badrul are RM4 and RM6 per hour respectively. Amin worked for 36 hours while Badrul worked for 40 hours in the first week of April. Assuming that each worker works the same hours per week, how much is the remuneration for both employees during the month of April?

Answer :

Amin: 36 hours x 4 weeks x RM4 per hour = RM576

Badrul: 40 hours x 4 weeks x RM6 per hour = RM960

Time-based Scheme

Advantages

- Easy to understand and administer
- Does not involve any complex wage negotiation

Disadvantages

- No real incentive to increase the production output
- Employees regardless of their performance are paid the same basic rate
- High supervision cost is necessary

PIECEWORK SCHEMES

Worker is paid based on production output. The more output is produced, the higher will be the earnings.

- Straight Piecework
- Piecework Scheme
- Differential Piece Rate

Straight Piecework

Flat rate for all units produced

Wages = Units produced x Rate of pay per unit

Number of units produced : 200 units
Wage rate = RM3 per unit
Find the basic wage

Answer :
Basic wages = 200 units x RM3 per unit
= RM600

Piecework with guaranteed day rate

The workers are paid a guaranteed minimum and not penalized on account of low production. It is normal for pieceworkers to be offered a guaranteed minimum wage, so they do not suffer loss of earnings when production is low through no fault of their own.

Piecework with guaranteed day rate

Example :
Razali will be paid RM1.00 for each towel he weaves, but he is guaranteed a minimum wage of RM30.00 daily if his output falls below 30 units per day. What will be his wage if he produces 26, 35 and 58 units per day?

Solution :

Output units	Gross wages
26	26 x RM1.00= RM26.00 (minimum RM30.00)
35	35 x RM1.00 = RM35.00
58	58 x RM1.00 = RM58.00

As the output increases, the wage increases and at the same time unit costs of output are reduced.

Differential piece rate

The piece rates vary at different levels of efficiency. The aim is to provide incentives to employees to increase their output by paying higher rates for increased levels of production so as to reach the maximum production. The wages are based upon level of output multiplied by a piecework rate per unit. The rate per unit increases on additional units produced when a certain output level is reached.

Example :
Jamilah produced 230 units of outputs.
The rates paid will be as follows :
- Up to 100 units per week is RM0.40 per unit
- 101 – 150 units per week is RM0.60 per unit
- 151 – 200 units per week is RM0.80 per unit
- 201 and above per week is RM1.20 per unit

What will be her gross wage?

Differential piece rate

Solution :
Gross wage :
100 units x RM0.40 = RM 40.00
50 units x RM0.60 = RM 30.00
50 units x RM0.80 = RM 40.00
30 units x RM1.20 = RM 36.00
230 units = RM146.00

Advantages of Piecework Schemes

- This system acts as an inducement for the workers to earn more. The reward for the worker is related to his effort.
- The system can lead to increased productivity as the worker will target higher output.
- This is a fair system of rewarding the workers.
- The quality of goods is assured as the workers are only paid for finished products that are acceptable.
- There is less material wastages as the finished goods are carefully produced with minimum rejects.
- This system is useful in preparing estimates as the cost of labour per unit of product is known.

BONUS/ INCENTIVE SCHEME

Disadvantages of Piecework Schemes

- Machinery maybe overworked by workers trying to produce the optimum output. Breakdown in machinery maybe costly to the company.
- In an effort to produce more and earn more, workers may exert themselves, thus causing fatigue
- Workers will feel insecure because they will not earn any wages when they are absent from work.
- This system will increase clerical works where up to date records of output by each worker must be maintained.

BONUS/INCENTIVE SCHEME

The main aim of an incentive scheme is to increase labour efficiency and it will reduce the unit cost of a product.

Key features of the schemes are:

- Employees are rewarded for their efficiency.
- The savings or profits from increased productivity are shared between employer and employees.
- Employees are more motivated when their efforts are duly recognized and rewarded by their employer.

FOUR TYPES OF BONUS/ INCENTIVE SCHEMES

No. 01 **High Day Rate Scheme**

No. 02 **Individual Bonus Scheme**

No. 03 **Group Bonus Scheme**

No. 04 **Profit-Sharing Scheme**

HIGH DAY RATE SCHEME

A scheme where employees are paid a high hourly rate. An employee is expected to be motivated to work more efficiently.

Example :

If an employee produces 200 units in a 40 hour week and he would be paid RM2 per hour, but if he produces 250 units and he would be paid RM2.25 per hour. The labour cost per unit of output would be as follows :

Labour cost per unit of output on the low rate scheme :
(40 x RM2)/ = RM0.40 per unit
200 units

Labour cost per unit of output on the high rate scheme :
(40 x RM2.25)/ = RM0.36 per unit
250 units

High Day Rate Scheme

Advantages :

a. Simple to calculate
b. Motivates employees and guarantees a consistently high wage for committed employees.

Disadvantages :

a. Supervision maybe necessary to ensure quality and a high level of productivity is maintained
b. Employees may prefer to work at a normal rate of output.

INDIVIDUAL BONUS SCHEME

A scheme where individual employees receive a bonus above their basic wage. The greater an individual employee's efficiency, the higher is his bonus. The scheme is appropriate when the work done by an individual is independently measured. The work should be fairly routine so that standard times can be set and the bonus should be calculated based on individual time savings.

There are three different schemes under individual bonus :

- i. Halsey Bonus Scheme.
- ii. Halsey-Weir Bonus Scheme.
- iii. Rowan Bonus Scheme/

INDIVIDUAL BONUS SCHEME

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The common type of individual bonus schemes are :

a. Halsey : 50% of time saved x Rate per hour
b. Halsey Weir : $33\frac{1}{3}$ % of time saved x Rate per hour
c. Rowan : $\frac{\text{Time taken}}{\text{Time allowed}}$ x Time saved x Rate per hour

INDIVIDUAL BONUS SCHEME

Example :
Direct wages rate is RM1 per hour. The time allowed is 50 hours. The time taken is 40 hours. Calculate the basic wage, bonus pay and total pay based on the :

a. Halsey 50% scheme
b. Halsey Weir $33\frac{1}{3}$ % scheme
c. Rowan scheme

Solution :

	Halsey
Basic Pay	40 hours x RM1 = RM40
Bonus Pay	50% (50 hours – 40 hours) x RM1 per hour = RM5
Total Pay	RM45

	Halsey Weir
Basic Pay	40 hours x RM1 = RM40
Bonus Pay	$33\frac{1}{3}$ % (50 hours – 40 hours) x RM1 per hour = RM3.33
Total Pay	RM43.33

	Rowan
Basic Pay	40 hours x RM1 = RM40
Bonus Pay	$\frac{40 \text{ hours}}{50 \text{ hours}}$ x 10 hours x RM1 per hour = RM8
Total Pay	RM48

ADVANTAGES & DISADVANTAGES

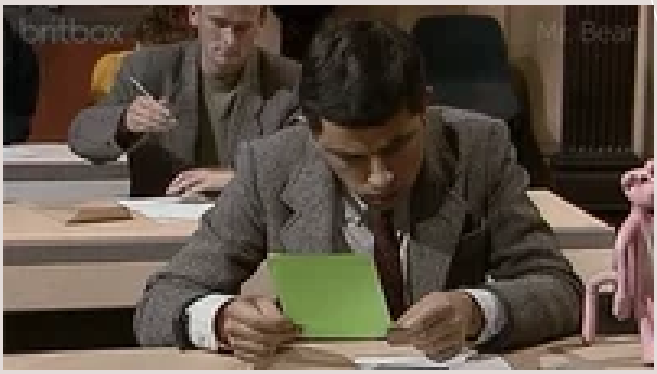
THE INDIVIDUAL BONUS SCHEME

Advantages of Individual Bonus Scheme

1. Employees are individually motivated for a higher level of performance in the organization.
2. Organizational ability will increase due to individual's satisfaction at work.
3. Individual incentives will result in greater job satisfaction and organizational productivity.
4. Individual incentive reduces organizational expenses.
5. Individual incentives can be easily administered and applied.

Disadvantages of Individual Bonus Scheme

1. Since the individual incentive is provided with an additional output, employees tend to increase their output as far as possible and they give less importance to the quality.
2. Goal conflict occurs between individual goals and organizational goals.
3. The quality of work life is reduced.
4. The living standard of employees will be uncertain.
5. Individual incentive does not promote teamwork,
6. Bonuses are nor directly linked to employees performance.



EXAMPLE 1

Salim and Sally were two workers in a sewing machine production. They have agreed to a wage of RM10 per hour for 8 hours a day and 5 days a week. Company has set a standard time to complete 10 units of sewing machine at 5 hours.

These are the data for the first week of January on Salim's and Sally's :

Day	Total hours worked	Unit complete
1	10	25
2	7	15
3	8	20
4	7	15
5	8	15
	40	90

Calculate wage using : a) Time-based scheme b) bonus with Halsey premium scheme
c) bonus with Halsey-Weir premium scheme

EXAMPLE 2

Mrs Sara was an owner of Kedai Bakery Timoor. She has two worker named Hadija and Salmah. Below are the activities of the two workers for a week. Total hours work per week is 40 hours.

	Hadija	Salmah
Wage rate per hour	RM3.20	RM2.75
Unit produced	180	150

Calculate the total wage per week received by the workers using :

a) Time-based scheme
b) Straight piecework at the rate of RM0.75 per unit
c) Differential piecework
   Until 100 unit – RM0.50 per unit
   101 – 150 unit – RM0.80 per unit
   151 and above – RM1.10 per unit

Example

Smart Craft is considering two remuneration methods – time based and output based. The top management would like to know which method will give the better remuneration for its three carvers, Aman, Zahidi and Ang. Zahidi is a skilled worker and the other two are semi-skilled workers. The skilled and semi-skilled workers are paid RM5 and RM3 per hour respectively. The company decided to pay for the good units produced only.

The following data relating to the three carvers was extracted from a job records for the month of February.

	Carvers		
Actual hours worked	Aman (200)	Zahidi (220)	Ang (230)
Output (units)			
Windows	50	40	50
Doors	40	50	40
Tables	45	38	40

The standard operating time and the rate payable are as follows :

Output	Standard time per unit	Rate per unit
Windows	1.5 hours	RM4
Doors	2 hours	RM5
Tables	1.5 hours	RM4.50

10% of total doors and total windows carved did not meet the qualifications and were rejected during the quality control test. Required :

1.Calculate the remuneration for each of the carvers using :

i) The time-based system

ii) The output-based system

b. Which method will the company choose. Why?

YET ANOTHER MILESTONE ACHIEVED!

Answer Question 1:

Unit produced = 90
Time taken = 40 hours
Standard time to produced 90 units = 90/10 x 5 = 45 hours
Time saved = 45 – 40 =5 hours

a. Time-based scheme = 40 hours x RM10
= RM400

b. Halsey = Basic pay : 40 hours x RM10 = RM400
Bonus : 50% x 5 hours x RM10 = RM 25
RM425

c. Halsey-Weir = Basic pay : 40 hours x RM10 = RM400.00
Bonus : 33 1/3 x 5 hours x RM10 = RM 16.67
RM416.67

Answer Question 2

	Hadija	Salmah
Time-based scheme	40 hours x RM3.20 = RM128	40 hours x RM2.75 = RM110
Straight piecework	180 unit x RM0.75 = RM135	150 unit x RM0.75 = 112.50
Differential Piecework	100 x RM0.50 = RM50 50 x RM0.80 = RM40 30 x RM1.10 = RM33 = RM123	100 x RM0.50 = RM50 50 x RM0.80 = RM40 = RM90

Answer Question 3:
a) Time-based system

	Aman	Zahidi	Ang
Total wages	200 x RM3 = RM600.00	220 x RM5 = RM1,100.00	230 x RM3 = RM690.00

Output based system

	Anis	Kimi	Mogana
Window	45 x RM4.00= RM180.00	36 x RM4.00= RM144.00	45 x RM4.00 = RM180.00
Door	36 x RM5.00= RM180.00	45 x RM5.00= RM225.00	36 x RM5.00 = RM180.00
Table	45 x RM4.50= RM202.50	38 x RM4.50= RM171.00	40 x RM4.50= RM180.00
TOTAL	RM562.50	RM540.00	RM540.00

b) Company should choose **output based system** because it can reduce company's labour cost.

GROUP BONUS SCHEME

It is an incentive plan that relates to the performance of a group of workers, a department or the whole factory. It is often related to the output performance of the group members. The bonus is paid when individual efforts cannot be measured and when teamwork is compulsory.

The main advantage are :
a.Easier to administer as the bonus is not calculated for individual efforts, but for entire group
b.It encourages teamwork and increase cooperation between workers.

Main draw back of this method is employee groups may demand low efficiency standards as a condition of accepting the scheme.

GROUP BONUS SCHEME

Example :

The standard weekly production is 35 units of toys. Ten workers are involved in the assembly process. Every time production increases above 20%, a bonus of RM100 will be paid to the group to be divided equally. At the end of the week, 50 units of toys were produced.

How much bonus will each worker receive?

Solution :

Percentage of increase = 15/35 x 100%
= 31% (more than 20%)

The amount of bonus receivable
= RM90 for every 20% increase

Each worker will get = RM90/10
= RM9.00

PROFIT-SHARING SCHEME

In this scheme, employee receive a certain proportion of the company's annual profits.

The main advantage are :
a.The company will be obliged to pay a bonus out of its actual profit to all employees regardless they are productive or not.

Main draw back of this method is employee has to wait until the year end for bonus. Apart from that, too many employees are involved in a single scheme for it to have a sufficient motivating effect on individuals.

Example :
A company practices a profit-sharing scheme with its employees under a trade union agreement, whereby 10% of its net profit after tax and dividend payments is allocated to this scheme. The paid-up capital of the company as at 31 December 2015 is 50,000 ordinary shares at RM1.00. The profit after tax for the year ending 31 December 2015 is RM75,000. The tax rate is 25%. Dividend payable is RM0.10 per ordinary share.

Calculate the amount that can be allocated to the profit-sharing scheme.

Answer :

	RM
Net profit before tax and dividend	100,000
Taxation at 25%	25,000
Profit after tax	75,000
Less : Dividend Payable	5,000
Net profit after tax and dividend	70,000

The amount allocated for the profit-sharing scheme = 10% x RM70,000 = RM7,000.

OVERTIME PREMIUM

Overtime is time worked over and above the normal working time or more hours than the basic daily requirement. It is calculated as a percentage of the extra hours worked. Usually quoted with terms like a time and a half.

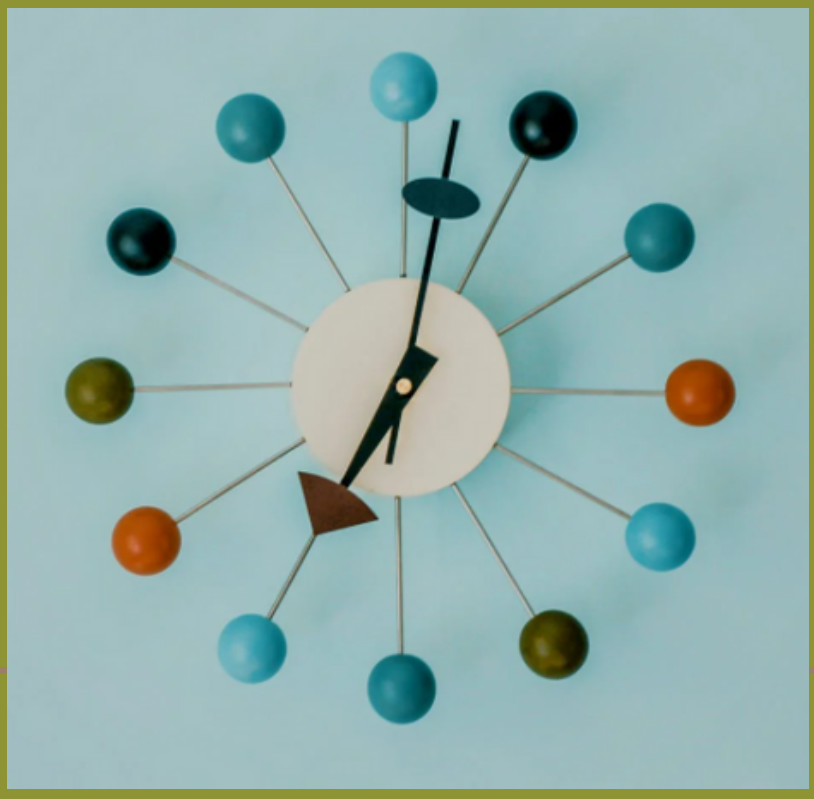
Overtime hours will usually be paid at a premium rate.
Employment Act in Malaysia set the overtime rates as follows :
Overtime worked on an ordinary working day
= 1 ½ times the normal rate
Overtime worked on a rest day
= 2 times the normal hourly rate
Overtime worked on a public holiday
= 3 times the normal rate

Overtime pay = Basic pay of overtime + Overtime premium

OVERTIME PREMIUM

If the basic day rate of a machine operator is RM5.00 per hour and overtime is paid at time and a half, and he works six hours of overtime, calculate his basic wage and the overtime premium. His normal working hours is eight hours.

Basic wage	**14 hours x RM5.00**	**= RM70**
Overtime premium	6 hours x RM5.00 x ½	= RM15
Total wage		RM85
OR		
Ordinary wage	8 hours x RM5.00	= RM40
Overtime wage	6 hours x RM5.00 x 1 ½	= RM45
Total wage		RM85



LABOUR PRODUCTIVITY

It is a measure of efficiency and indicates an organization's effectiveness of utilizing its labour force. Cost reduction can be reduced with improved productivity.

Example :

Kay Sdn Bhd is a small manufacturing organization with 6 factory workers. Each of the workers is paid RM150 per week. Each worker works a 40-hour week. The supervisor has been given the task to increase production.

In week one, the workers produce 600 units. Productivity is measured in units of output per man hour.
Production: 600 units
Total labour costs = (RM150 x 6 workers)
= RM900
Cost per unit = (RM900/ 600)
= RM1.50

In week two, the workers increase their output and produce 750 unit in normal time.
Production – 750 units
Total labour costs = (RM150 x 6 workers)
= RM900
Cost per unit = (RM900/750)
= RM1.20

Increase in productivity has reduced cost per unit of RM0.30.

LABOUR TURNOVER

Labour turnover is the rate at which employees leave a company and are being replaced during a period.

The more the workers leave, the higher the labour turnover.

High labour turn over is costly and should be avoided.

Formula :

$$\text{Labour turnover} = \frac{\text{Average number leaving who have to be replaced}}{\text{Average number of employees during the period}} \times 100$$

$$\text{Average number of employees leaving who have to be replaced} = \frac{\text{(number of employees who left + Addition to workforce)}}{2}$$

$$\text{Average number employed} = \frac{\text{No of employees at the beginning + No of employees at the end}}{2}$$

Example:

The following information is available on Department 3 of Ershad Manufacturing Ltd for a period of six month.

Number of people employed at the beginning of the period: 36
Additions to the workforce during the period: 7
Number of employees who left during the period: 5

What is the labour turnover rate?

LABOUR TURNOVER

Answer :

Average number of employees leaving who have to be replaced
= (number of employees who left + Addition to workforce)/2
= (5 + 7)/ 2 = 6

Number of employees at the end = (36 + 7 – 5)
= 38

Average number employed
= (Number employed at the beginning + Number employed at the end)/2
= (36 + 38)/2
= 37

Labour turnover rate

$$= \frac{\text{Average number of employees leaving who have to be replaced}}{\text{Average number employed}} \times 100$$

$$= \frac{6}{37} \times 100$$

= 16%

UNAVOIDABLE REASONS FOR LABOUR TURNOVER

01
Illness, accident, retirement or death

02
Family relocating to another city

03
Marriage, pregnancy or childcare problems

04
Misbehaviour or indiscipline

05
Low wage rate compared to market

06
Unsafe working conditions

07
Conflicts with management

08
Lack of opportunity for career enhancement

PREVENTIVE COSTS OF LABOUR TURNOVER

Include all the costs which are incurred to prevent workers from leaving the organization and keeping them satisfied

Some examples of preventive costs :

1. Costs of medical benefits
2. Providing security for employee
   such as pension schemes
3. Social welfare benefits such as canteen and sport facilities
4. Administration costs in maintaining good relationship with employees.

REPLACEMENT COSTS OF LABOUR TURNOVER

Include the costs which are incurred for the recruitment and training of new workers.

Replacement costs consider the following factors :

- The increase in costs of the personnel department due to the recruitment of new workers
- The lost Loss of productivity - Period between employee leaving & replacing new employee
- Increased wastage and spoilage - Lack of expertise of new employee

HOW TO REDUCE LABOUR TURNOVER

Paying attractive remuneration

Creating a health relationship between member of the workforce

Provide training and employment development opportunities

Invest in the investigation of the cause of high labour turnover

Good and safe working condition

Offering reasonable working hours

Review Questions Chapter Three

1. Jasa Damai Co. produced the details about the labor turnover for its employees.

	Cutting Department	Sewing Department
No of employees at the beginning of the period	66	40
The addition of employees during the period	16	11
No of employees leaving during the period	12	5

You are required to calculate:

a) The number of employees at the end of the period for each department
b) Labor turnover rate for each department

2. Healthy Farm is a supplier of bean curd for several Chinese restaurants in Banting area. Mei Mei is one of the workers who was paid based on the number of bean curd pieces produced. However, Healthy Farm promised her a guaranteed minimum wage of RM30 per day. On Thursday, Mei Mei produced 60 bean curd. The table below shows the pay rate for Mei Mei based on the production units.

Units	Rate per unit
First 10	RM0.35
11 - 25	RM0.38
26 - 42	RM0.40
43 – 62	RM0.45
63 - 85	RM0.55

You are required to calculate total wages for Mei Mei which she is entitled to receive for the bean curd that she produced on Thursday.

3. Amin works as a production worker in the Cutting Department of a manufacturing organization. He works on a 40-hour work a week. He is paid RM10.00 per hour, but overtime is paid at one and one third. On a particular week, he works for 48 hours.

You are required to calculate:

a) Basic pay
b) Overtime pay

Review Questions Chapter Three

4. Sunshine Sdn Bhd has skilled worker and unskilled worker. The following is the data for the five employees in March:

Employees	Working hours	Units produced		Units Rejected	
		Product A	Product B	Product A	Product B
Sani	35 hours	150	220	2	5
Jayjay	38 hours	180	150	6	6
Azmi	42 hours	200	250	3	1
Zizan	35 hours	250	150	1	2
Arjuna	25 hours	160	150	6	7

Additional information:

i) Sani, Azmi and Zizan are skilled workers and the rest are unskilled workers.
ii) Skilled workers are paid based on output, meanwhile unskilled workers are paid based on their working hours.
iii) Rate per hour is RM15.
iv) Rate per output is RM2.20 per product A and RM2.50 for product B. The company decided to pay for good units produced and not rejected.

Calculate their wages.

5. The information regarding three employees of Purnama Sdn Bhd are compiled in the following table.

	Salam	Salmah	Salmi
Units produced	200	240	200
Time allowed per unit (minutes)	15	10	15
Time taken (hours)	35	42	45
Rate per hour (RM)	1.20	1.20	1.25
Rate per unit (RM)	0.25	0.45	0.40

You are required to calculate total wages for each employees by using:

a) Units produced
b) Rowan Scheme
c) Piecework Scheme where the first 100 units will be paid as agreed above. For the next 50 units employees will be given incentives of RM0.35.

Review Questions Chapter Three

6. Maycee Company uses a differential piece rate to motivate its employees. The following differential rates apply:

- 80% of piece rate below standard

- 120% of piece rate at above standard.

Worker A produces 200 units per day and Worker B produces 320 units per day.

Calculate the earnings for Worker A and B under the differential piece rate system from the following particulars:

a) Normal rate per hour at RM3.60 and
b) Standard time per unit at 2 minutes.

7. A normal working week consists of 5 days of 8 hours per day. The normal rate of pay is RM2.40 per week. Overtime rate is calculated at time and a half. Average output per operative for a 40-hour week = 120 articles.

a) Calculate the earnings of Employee A if he worked for 46 hours in the third week of March.

b) In order to increase output and eliminate overtime, the company decided to change to a system of payment by results. The information on the new system is as follows:

- Time rate: RM2.40 per hour
- Basic time allowed for 15 articles is 5 hours
- Piece work rate – 20% higher than the current rate per unit

Calculate the earnings of Employee B if he produces 160 articles in a week.

ANSWER'S GUIDE

Question 1

a. Department Cutting - 70
   Department Sewing - 46

b. Labour tur over rate (Cutting) - 20.6%
   Labour turn over rate (Sewing) - 18.6%

Question 2

Mei Mei wages for Thursday is RM 30.00.

Question 3

a. Basic pay = RM 400.00

b. Overtime pay = RM 106.64

Question 4

Wages paid - skilled workers:
Sani = RM863.10
Azmi = RM1,055.90
Zizan = RM917.80

Wages paid - unskilled workers
Jay Jay = RM570
Arjuna = RM375

Question 5

a. Units produced
Salam = RM50
Salmah = RM108
Salmi =RM80

ANSWER'S GUIDE

Question 5

b. Rowan

Salam = RM54.60

Salmah = RM50.40

Salmi = RM61.88

c. Piecework Scheme

Salam = RM102.50

Salmah = RM202.50

Salmi = RM110.50

Question 6

Worker A = RM23.04

Worker B = RM34.56

Question 7

Employee A - Total earnings RM117.60

Employee B - Total earnings RM153.60

CHAPTER FOUR
COSTING FOR OVERHEADS

LEARNING OUTCOME :

1. Identify the concept and how direct expenses trace to products.
2. Explain classification of overhead, production and service departments.
3. Distinguish between allocation overhead, apportionment and reapportionment overhead.
4. Explain the overhead absorption rate and methods.
5. Calculate overhead or predetermined absorption rates - one rate for one department and one rate for several departments.
6. Calculate over or under absorption of overhead.

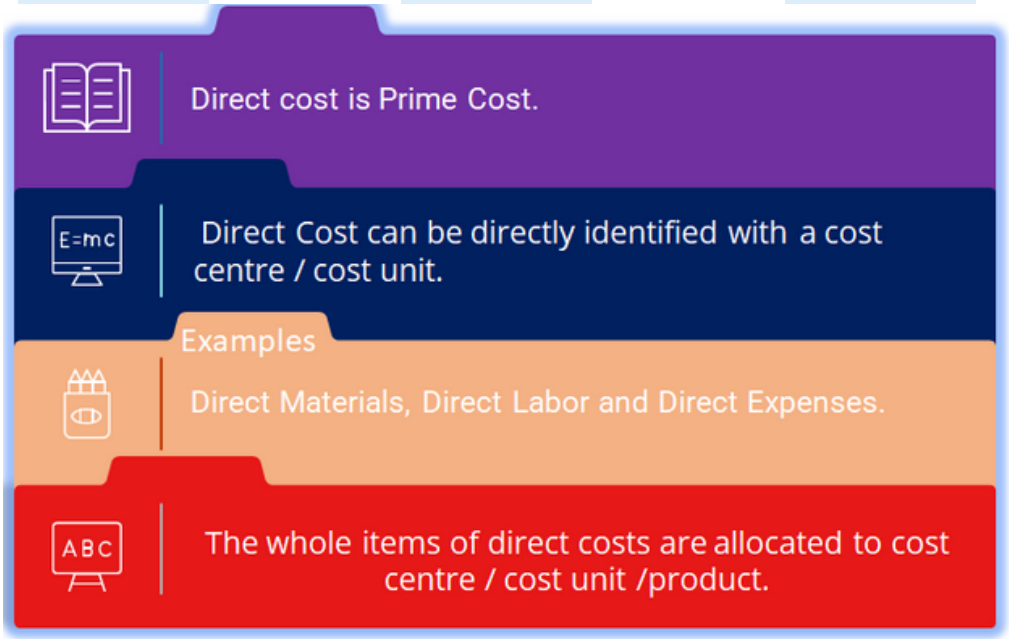
4.1

THE CONCEPT OF DIRECT COST TO PRODUCT

CIMA, defines overhead as "Expenditure on labour, materials or services which can not be economically identified with a specific saleable cost unit".

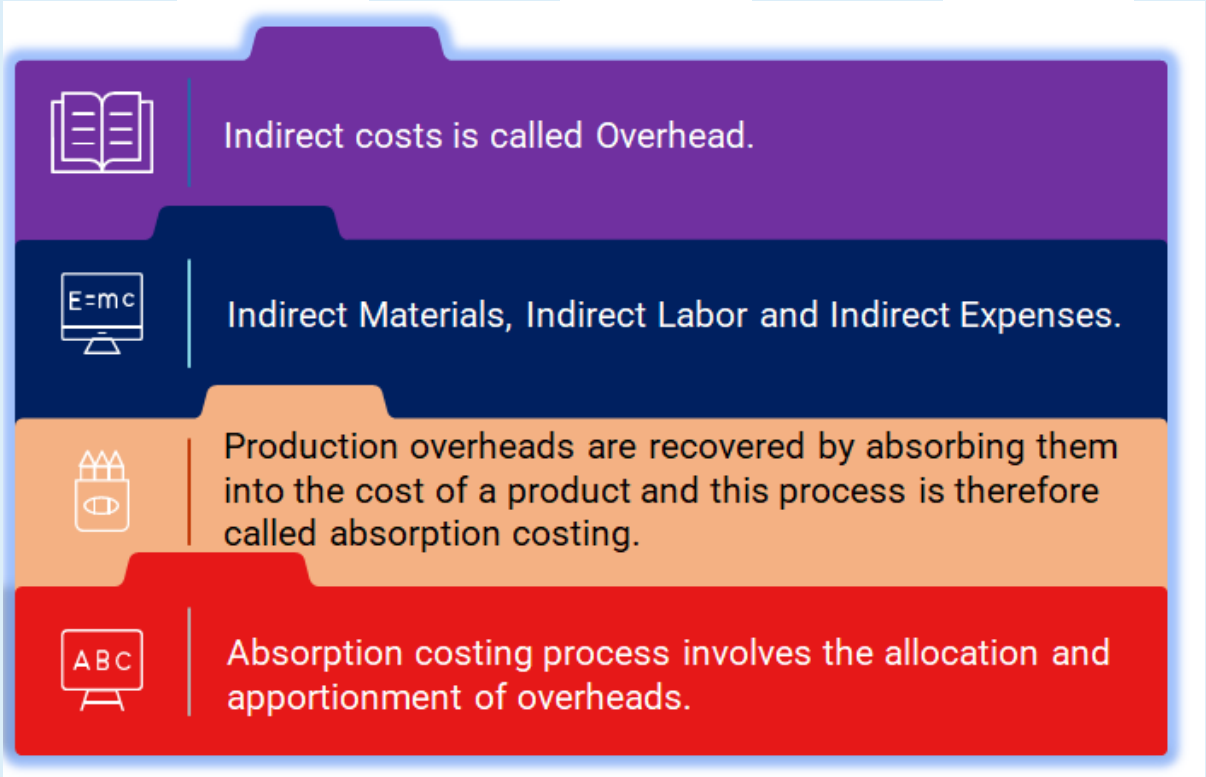
Direct cost can be directly identified with a cost centre or cost unit. In other word, it can be allocated directly to the product while indirect costs are apportioned expenditure because it cannot be trace directly to the cost centre but contribute to the company operational activities as a whole.

DIRECT COST

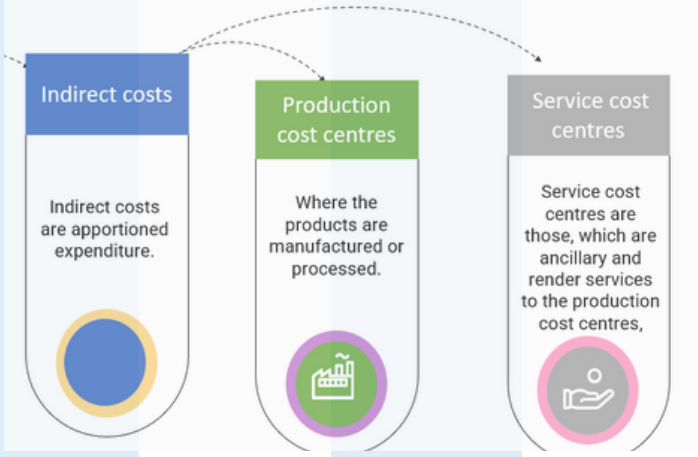


Direct costs are costs **traceable** to a particular product or service. For example, in a bakery shop, flour, butter and sugar used in baking bread is direct materials cost to the production of bread. Wages paid to baker, machine operator and cake decorator are direct labour cost. This cost can be **easily identified** to the product. Therefore the whole items of **direct cost are allocated to the product.**

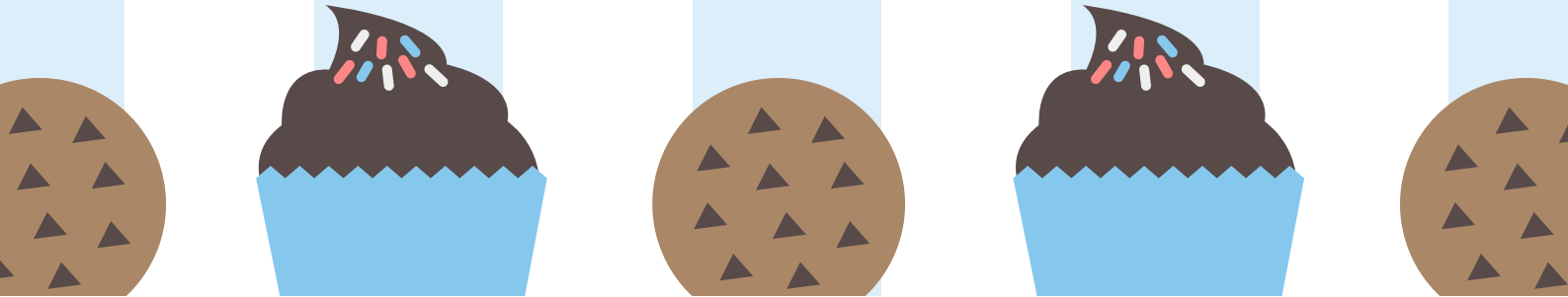
INDIRECT COST



Indirect costs are "those which are incurred for common or joint objectives and therefore **cannot be identified** readily and specifically with a particular cost unit/cost centre. A few examples of such expenses are rent, insurance, depreciation, repairs and maintenance, fuel and lighting.



In a bakery shop, making and baking are **PRODUCTION COST CENTRES** while administration, information technology, stores and accounts are **SERVICE COST CENTRES.**



4.2

CLASSIFICATION OF OVERHEAD

Classification of overheads refers to the process of grouping costs according to their common characteristics.

CLASSIFICATION OF OVERHEAD

01

NATURE

Indirect Material, Indirect Labor and Indirect Expenses.

02

FUNCTION

Based on the purpose of the expenditure. Example: Production or manufacturing cost, administration cost, selling and distribution cost.

03

VARIABILITY/BEHAVIOUR

Fixed overhead, Variable overhead, and Semi-fixed or semi-variable overhead

04

CONTROL

Controllable Cost and Uncontrollable Cost

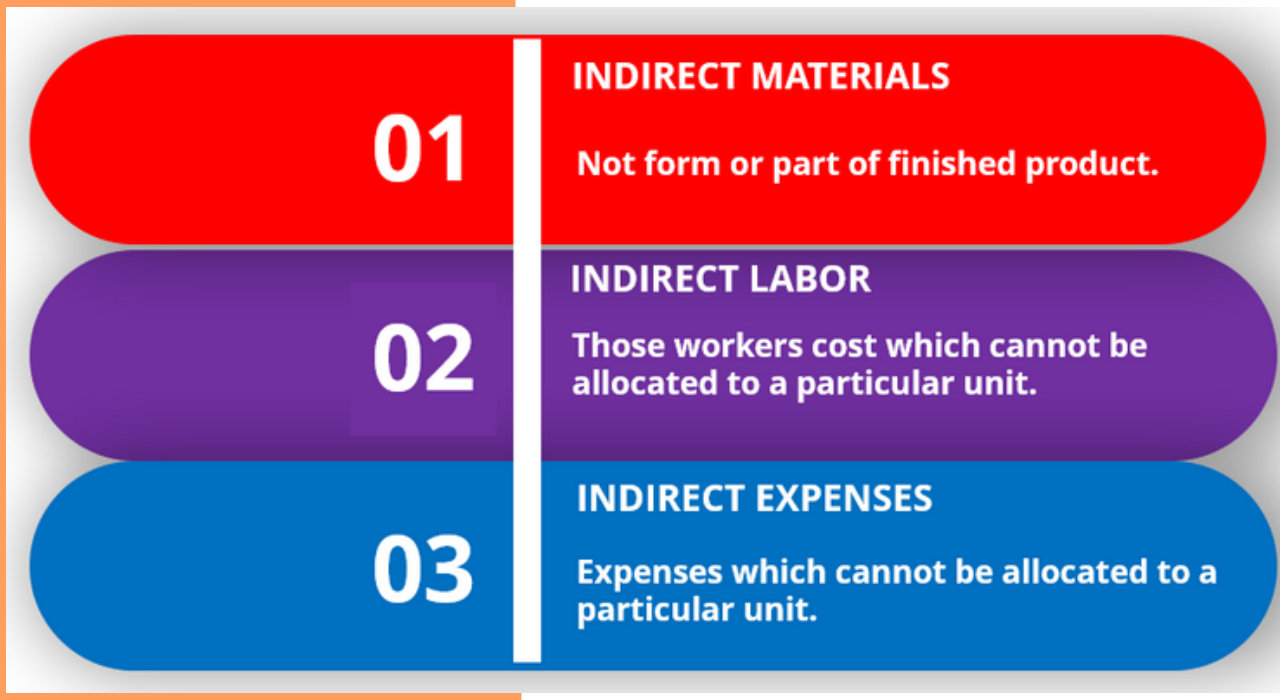
05

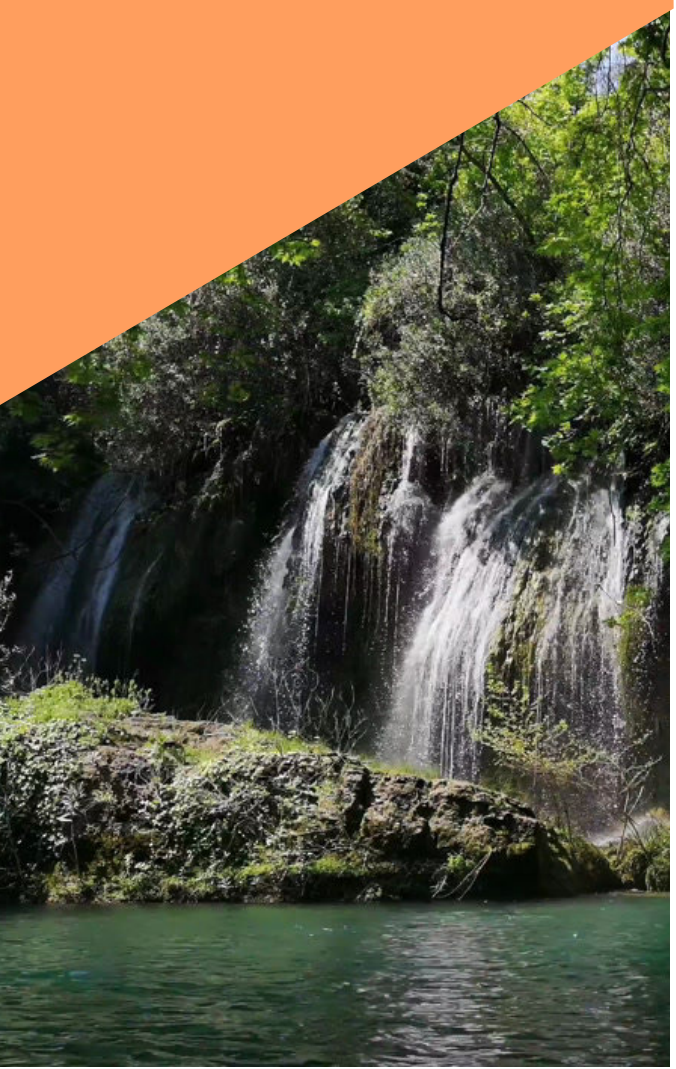
NORMALITY

Normal Overheads And Abnormal Overheads.

Overhead can be classified into 5 category, which is by nature, function, behaviour, controllable and normality.

OVERHEAD BY NATURE





INDIRECT MATERIALS

Examples: nuts, screws, glue, fuel, lubricants.

INDIRECT LABOR

Examples: wages of foreman, maintenance and repair work.

INDIRECT EXPENSES

Examples: Electricity, deprecation of machine, insurance, canteen, taxes, rates and rent.

OVERHEAD BY FUNCTION

Production/Manufacturing Overhead

Indirect expenses incurred in the factory premises in connection with the production of any goods and services

Selling Overhead

Cost incurred in promoting sales and retaining customers.

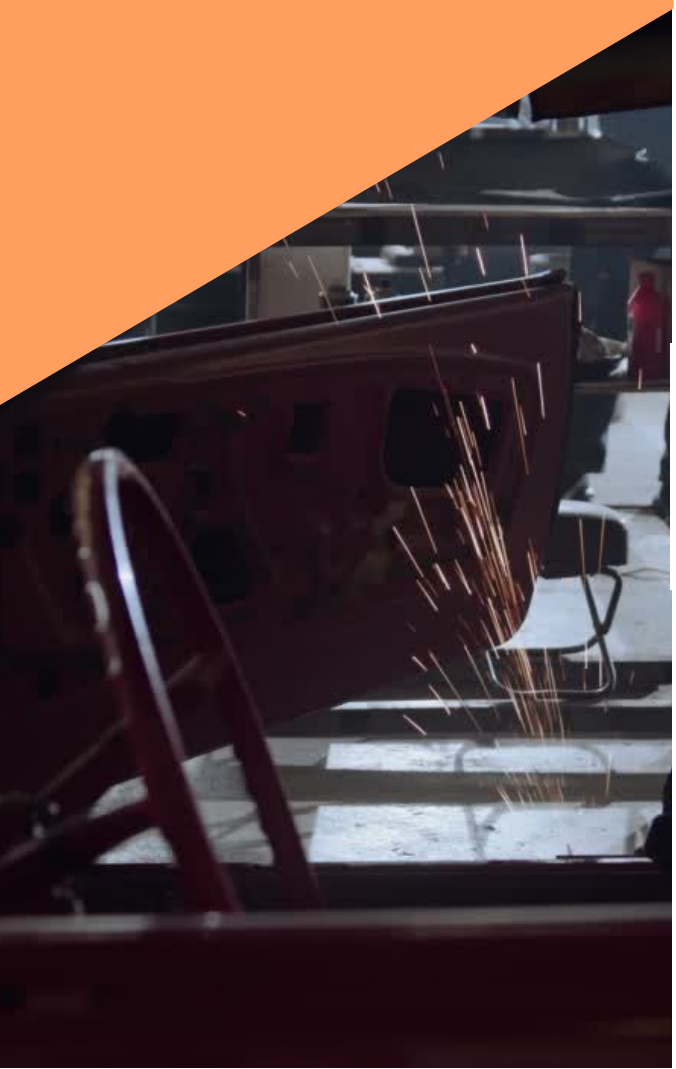
Administration Overhead

Costs of formulating the policy, directing the organization and controlling the operations.

Distribution Overhead

Cost of making the packed product available for dispatch and ends with returned empty package available for reuse.

OVERHEAD BY BEHAVIOUR



Fixed Overhead

Fixed overheads also known as period cost.
Remain constant even if the output changes.

Example:
Rent, Insurance, maintenance, depreciation

Variable Overhead

Vary in direct proportion to changes in the volume of output.

Example:
Indirect materials, Electricity, Water, Telephone Charges, Overtime Premium.

Semi-Variable Overhead

Partly fixed and partly variable.
Remain constant at certain level of output while vary at other levels, but not in the proportion of changes in the output.

Example:
Electricity, Telephone Charges, Sales Commision.

OVERHEAD BY CONTROL

CONTROLLABLE COST

Expenses which can be controlled by the management through the efficient use of resources like Idle Time wastages.

UNCONTROLLABLE COST

Costs which is not under the control of management. All fixed expenses are uncontrollable costs.

OVERHEAD BY NORMALITY

Normal cost

Incurred in the process of output and generally are unavoidable.

Abnormal costs

Abnormal costs are those costs which are not expected to occur in the process of production.

ACTIVITIES

In group of 4, choose any business or industry. Identify overhead cost in the business or industry chosen.

PRESENT YOUR FINDINGS IN CLASS

4.3

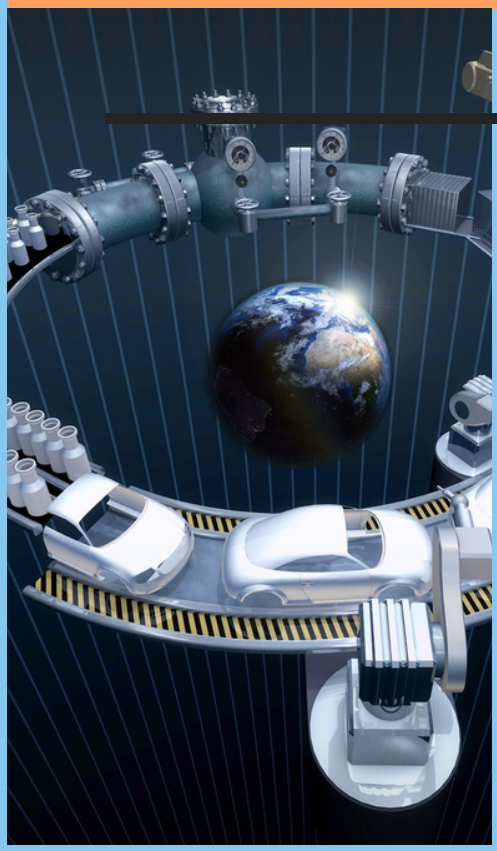
ALLOCATION, APPORTIONMENT AND REAPPORTIONMENT OVERHEAD

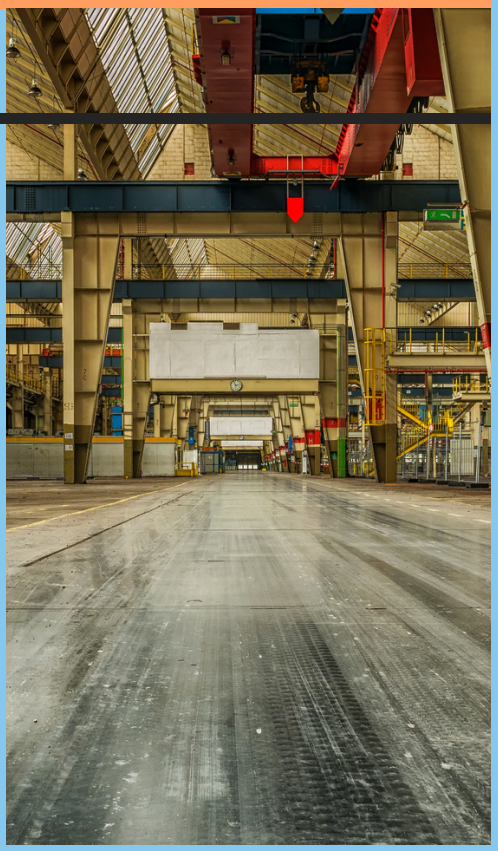
- Direct Method
- Step Down Method
- Reciprocal Method

ALLOCATION AND APPORTIONMENT

OVERHEAD ANALYSIS

Overhead cost comprises indirect material, indirect labour and indirect expenses. Since overheads cannot be trace directly to the cost units as fairly and as accurately as possible, an overhead analysis needed to determine the overhead cost for each cost centre. This is achieved through the process of allocation and apportionment. Cost allocation is possible when we can identify a cost as specifically attributable to a particular cost centre. Cost apportionment is necessary when it is not possible to allocate a cost to a specific cost centre. In this case the cost is shared out over two or more cost centres based on suitable basis.





COST ALLOCATION

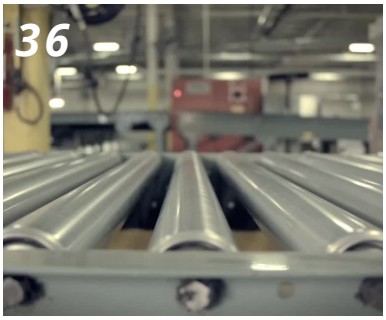
According to the Chartered Institute of Management Accountants, cost allocation is "that part of cost attribution which charges a specific cost to a cost centre or cost unit".

COST APPORTIONMENT

According to the Chartered Institute of Management Accountants, cost apportionment is "that part of cost attribution which shares costs among two or more cost centres or cost units in proportion to the estimated benefit received, using a proxy".

ALLOCATION

Allocation involves charging overheads directly to specific departments (production and service).



As the amount incurred is not traceable to each unit of production in a direct manner, overhead cost will be allocate using either direct method, step down or reciprocal method.

ALLOCATION OVERHEAD

Allocation Definition

- CIMA (Charted Institute of Management Accounting) defines allocation as the allotment of the whole item of cost to the cost centres or cost units.
- **Overhead allocation** is the apportionment of indirect costs to produced goods.

Method

- Allocation can be made either directly using the direct method or by using a two-stage approach using the step-down method or reciprocal method.
- Two-stage approach relates to the two steps of assigning overheads to production departments and service departments, then reassigning the service overheads back to the production departments afterwards.

Direct Method

Overheads are charged directly, with the amount assigned to particular departments only.

Step-down Method

Overheads are partly reassigned to sub-departments as the latter consumes the particular amount of overheads in proportions that have been decided beforehand.

Reciprocal Method.

Overheads are charged and reassigned or reallocated by a prorate mechanism, so the amount of overheads reassigned reciprocate with or compensate the overheads used.

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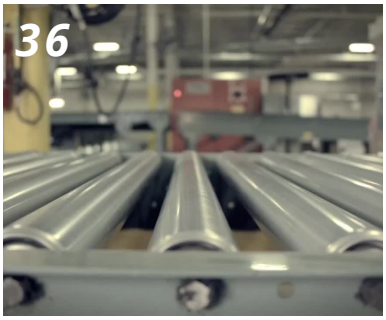


As the amount incurred is not traceable to each unit of production in a direct manner, overhead cost will be allocate using direct method or step down method or reciprocal method.

OVERHEAD ALLOCATION

Direct Method

The direct allocation method is a technique for charging the cost of service departments to other parts of a business.

This concept is used to fully load operating departments with those overhead costs for which they are responsible.

The overheads that are charged can be directly allocated to the cost centres with two conditions:

i. The cost centre must have caused the overheads to incur.
ii. The exact amount of overheads must be known.

Example 1:

Anggun Bergaya Manufacturing has two service departments and two production departments as shown below:

Department	Service Department		Production Department	
	Accounting	Human Resource	Cutting	Assembling
Cost	RM 250,000	RM 50,000	RM 500,000	RM 700,000
No. of Employee	20	50	30	60

The two service departments provide service to production departments. The service department cost is to be allocated to production department on the basis of employee.

Required: Allocate the cost of service departments to operating departments using direct method of cost allocation.

ANSWER

EXAMPLE 1

Department	Service Department		Production Department	
	Accounting	**Human Resource**	**Cutting**	**Assembling**
Cost	RM 250,000	RM 50,000	RM 500,000	RM 700,000
No. of Employee	20	50	40	60
Allocation:				
Accounting	(RM 250,000)		250,000 x 40/100 = 100,000	250,000 x 60/1 = 150,000
Human Resource		(RM 50,000)	50,000 x 40/100 = 20,000	50,000 x 60/1 = 30,000
TOTAL	0	0	RM 620,000	RM 880,000

ADVANTAGES AND DISADVANTAGES

Direct Method

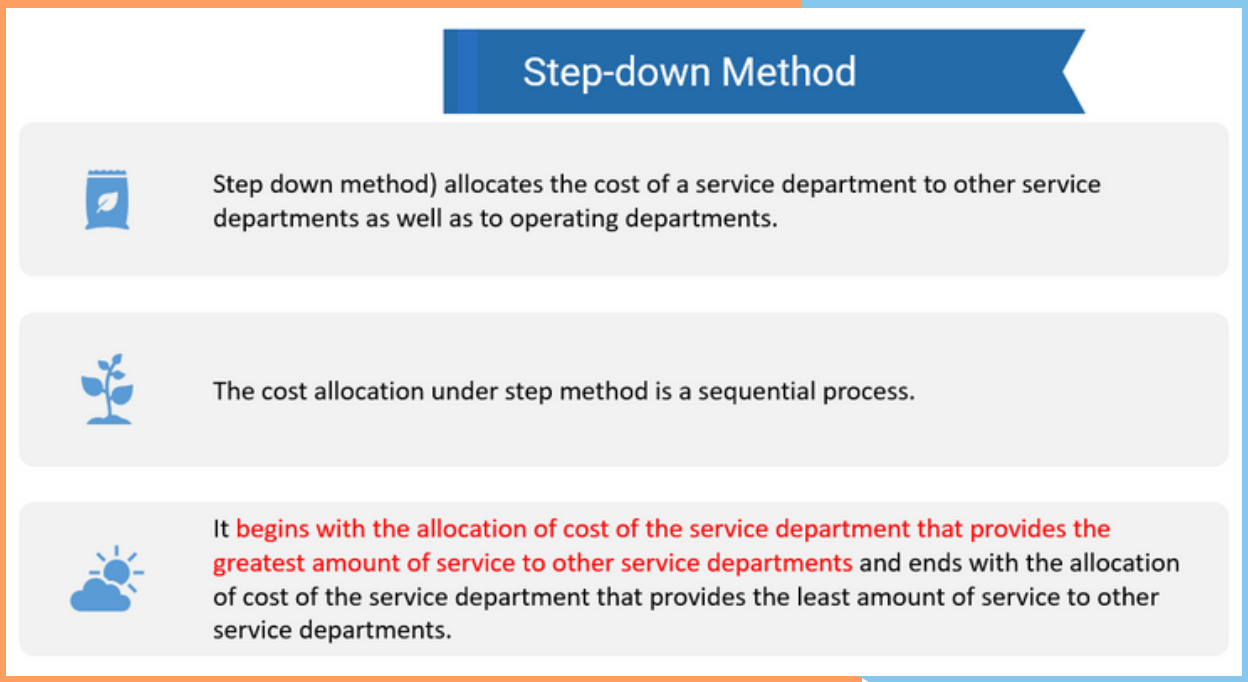
Advantages

It is very simple and easy to employ.

Disadvantages

1. It ignores interdepartmental services and can therefore lead to distorted products and services cost.
2. It is commonly considered a less accurate method when compared with other methods available for departmental cost allocation.

OVERHEAD ALLOCATION



Example 2:

Selendang Merah Manufacturing has two service departments and two production departments as shown below:

Department	Service Department		Production Department	
	Information Technology	Storage	Cutting	Sewing
Cost	RM 60,000	RM 70,000	RM 300,000	RM 200,000
Square feet of space occupied	5000	10000	40000	100000

The two service departments provide service to each other as well as to production departments. The service department cost is to be allocated to others department on the basis of square feet of space occupied.

Required: Allocate the cost of service departments to operating departments using step down method of cost allocation.

ANSWER

EXAMPLE 2

Department	Service Department		Production Department	
	Information Technology	Storage	Cutting	Sewing
Cost	RM 60,000	RM 70,000	RM 300,000	RM 200,000
Square feet of space occupied	5000	10 000	40 000	50 000
Allocation: Begin with the greatest cost of service department				
Storage	70 000 x 5000/95000 = 3 684	(70,000)	70 000 x 40 000/95000 = 29, 474	70 000 x 50 000/95000 = 36, 842
Information Technology	60,000 + 3684 = (63 684)		63 684 x 40 000/90000 = 28 304	63 684 x 50 000/90000 = 35 380
TOTAL	0	0	RM 357,778	RM 272, 222

ADVANTAGES AND DISADVANTAGES

Step-down Method

Advantages

i. Moderate level of simplicity.
ii. Clear and easy to use

Disadvantages

1. Only a partial recognition of interdepartmental services. because it allocates costs forward – never backward
2. Not the most theoretically correct.

OVERHEAD ALLOCATION

Reciprocal Method.

- The reciprocal method uses simultaneous equations technique.
- Also referred algebraic method of departmental cost allocation.
- Fully recognizes interdepartmental services.
- Provides greater exactness in allocating the cost of a servi departments to other departments.

The reciprocal method uses simultaneous equations to allocate the costs incurred by service departments to other departments.

RECIPROCAL METHOD

Although it is the most accurate, it is also the most complicated.

OVERHEAD APPORTIONMENT

Overhead cost which can directly identified with a particular department or cost centre can be allocated specifically to the department. However, some overhead cost for example electricity, rents and insurance cannot be identified and charged directly to the department. So the cost must be apportioned to the department utilizing that overhead cost. This is call primary distribution overhead.

PRIMARY DISTRIBUTION

Primary distribution involves apportionment or allocation of overhead among all department in the factory in suitable basis.

SECONDARY DISTRIBUTION

The second step is to distribute the total cost of service departments among the related departments.

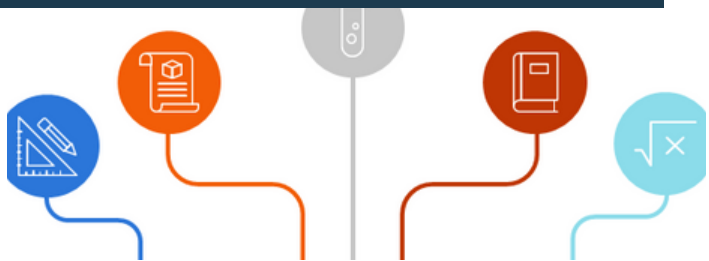
Apportionment Definition

- CIMA defines apportioning as 'the allotment to two or more cost centres of proportions of the common items of cost on the estimated basis of benefit received'.
- Apportionment means distributing of overhead items to cost centers on a fair and reasonable basis. Thus the principle is that if an overhead cannot be wholly allocated to a particular cost center, it must be apportioned over related cost centers.

Method

If overheads relate to more than one specific department, they must be shared between these departments using apportionment method : Direct Method / Step Down Method

Overheads must be apportioned among related production and service departments on a fair basis.



OVERHEAD RE-APPORTIONMENT

SECONDARY DISTRIBUTION

The second step is to distribute the total cost of service departments among related departments.

DIRECT METHOD

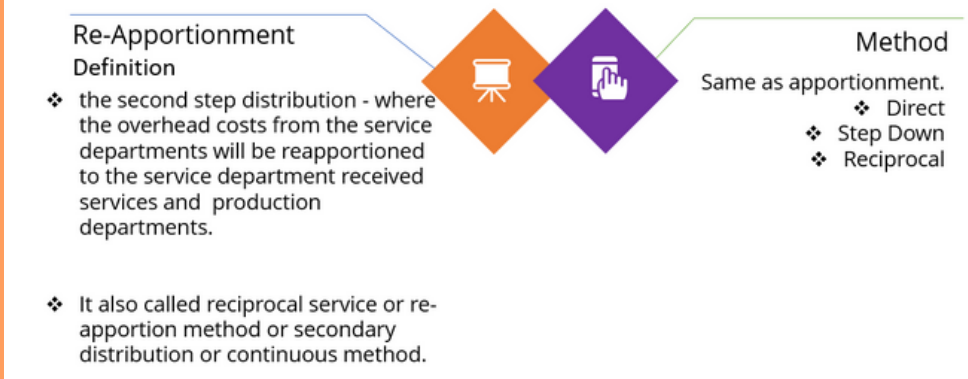
Overhead cost of service department distribute to the production department only.

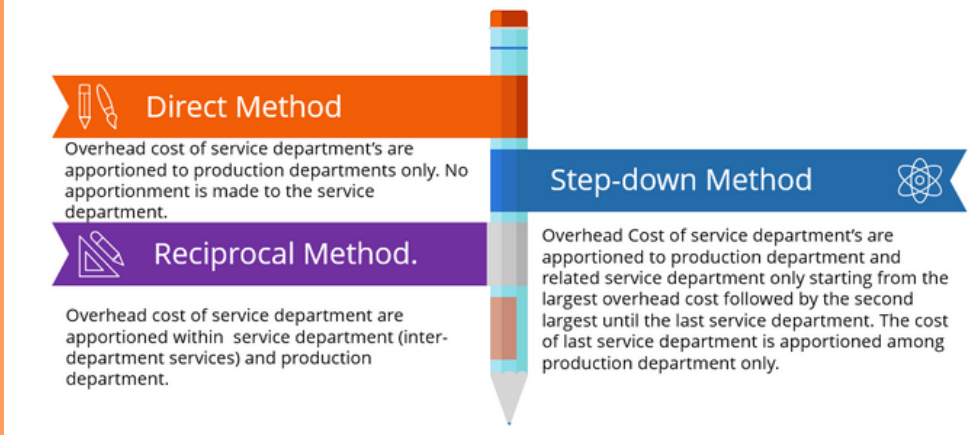
STEP DOWN METHOD

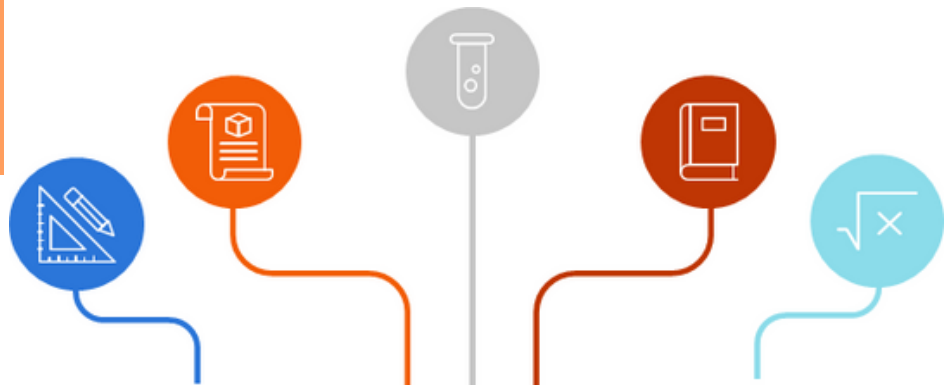
Overhead cost of service department distribute to production department and the another service department only.

RECIPROCAL METHOD

Overhead cost of service department distribute to production department and inter service department. Reciprocal Method also known as Continuous Method.







APPORTIONMENT BASIS

APPORTIONMENT BASIS FOR OVERHEAD COST

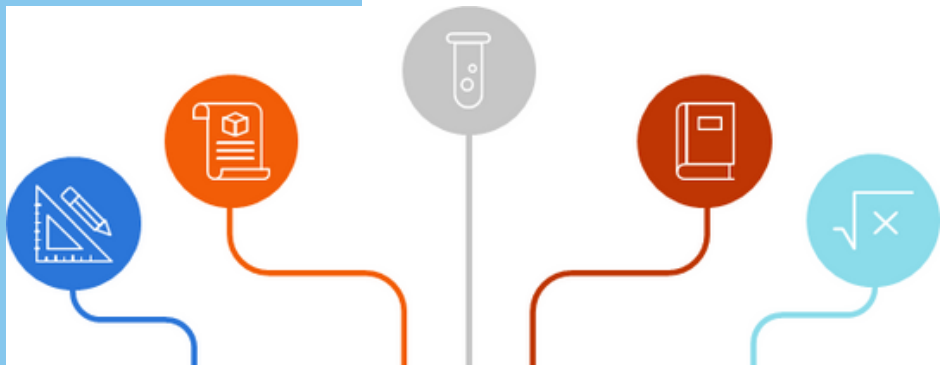
Overheads	Basis of Apportionment
Rent, rates, electricity of building, depreciation of building, building services	Floor area
Tool Room, Labour Costs, Storekeeping	Labour Hours
Machine Department Cost	Machine Hours
Depreciation of Machinery	Value of asset
Canteen Expenses, Supervision	Number of Employees
Others	Wages, materials cost, sales or prime cost.

Suggested basis of apportionment of overhead cost among department.

APPORTIONMENT BASIS FOR SERVICE DEPARTMENT

Service Department Cost	Basis of apportionment
Accounts	Number of employee. Value of purchases.
Canteen	Number of employee. Hours Worked
Repair and Maintenance	Labour Hours
Stores	Number of requisition Cost of Materials
Building Services / Management	Floor Area

Suggested basis of apportioning the service department costs to the production departments.



Example 3:

Selendang Merah Manufacturing has two service departments and two production departments as shown below:

Electricity : RM60,000.
Rent : RM50,000.

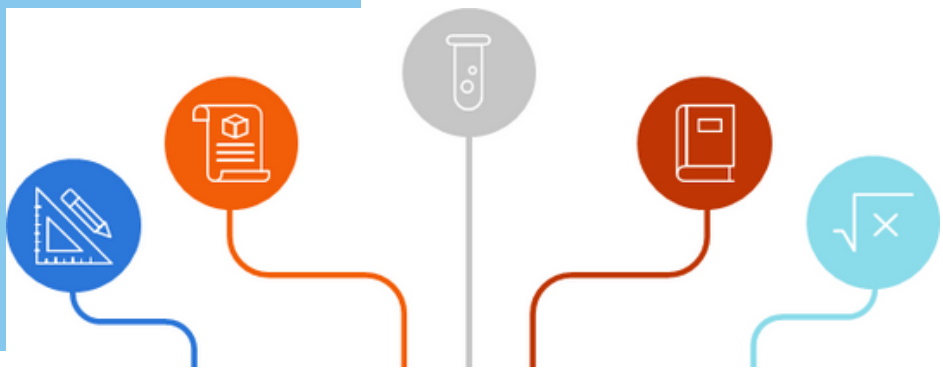
The total floor area of the building: 25,000 square metres.
The Assembly Department covers up to 10,000 square metres.
The Maintenance Department covers up to 5,000 square metres.

Required : Calculate overhead cost apportionment to the Assembly Department and the Maintenance Department using floor area basis.

ANSWER

EXAMPLE 3

Overhead	Assembly Department	Maintenance Department
Electricity	60 000 x 10 000/25 000 = 24 000	60 000 x 5 000/25 000 = 12 000
Rent	50 000 x 10 000/25 000 = 20 000	50 000 x 5 000/25 000 = 10 000



Example 4:

Menjadi Sdn Bhd has two production departments, Grinding and Mixing and two service departments, Maintenance and Purchasing. Both service department give service to the production departments. The overhead costs for Menjadi Sdn Bhd in total are as follows:

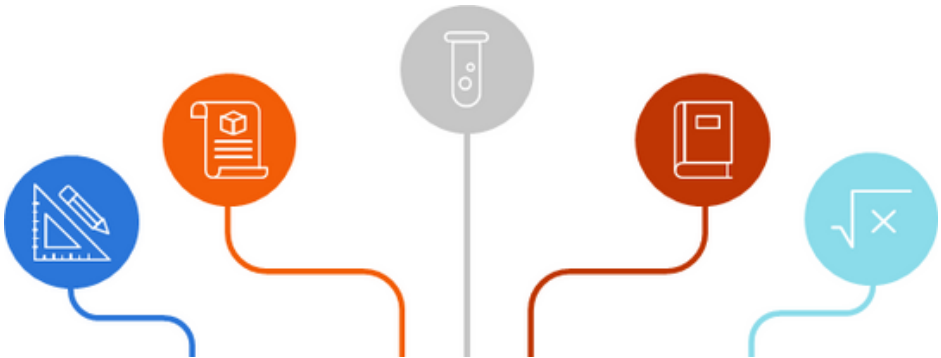
Overheads cost RM
Rent and rates 30,000
Power 12,000
Insurance for building 2,000
Depreciation of the machinery 6,000

There are also costs that have been allocated directly to the departments:
RM
Grinding Department 7,000
Mixing Department 8,000
Maintenance 5,000
Purchasing 2,000

The following information are related to overhead cost of Menjadi Sdn Bhd:

	Total	Grinding	Mixing	Maintenance	Purchasing
Value of Machinery	RM30,000	15,000	15,000	-	-
Floor area (sq.metres)	20,000	8,000	9,000	1,000	2,000
Number of Employees	150	80	50	10	10
Machine hours	50,000	30,000	20,000	-	-
Power usage	100%	50%	35&	10%	5%

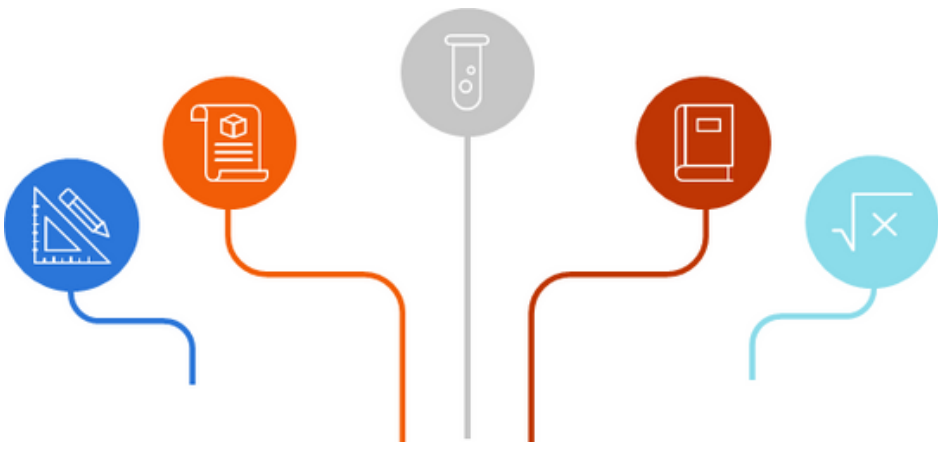
You are required to allocate and apportion the overhead costs on the following bases:
(a) Rent and rates, insurance on building – Floor areas
(b) Depreciation on machinery – Machine value
(c) Power usage

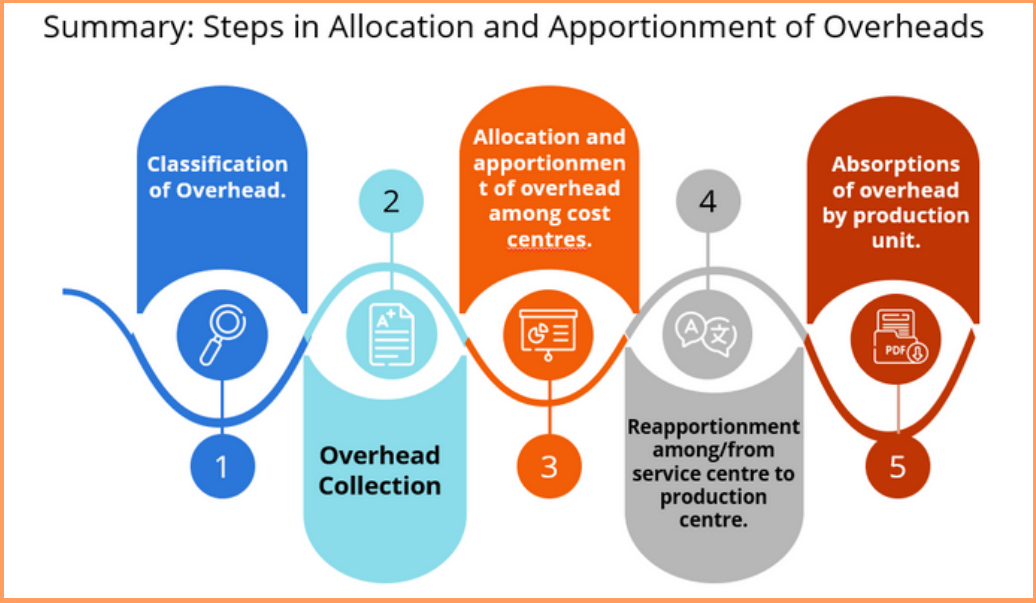


ANSWER

EXAMPLE 4

	Total	Production		Service	
		Grinding	Mixing	Maintenance	Purchasing
Overhead Allocated	22,000	7,000	8,000	5,000	2,000
Overhead to be apportioned:					
Rent and Rates – Floor areas	30,000	8000/20000 x 30000 = 12,000	9000/20000 x 30000 = 13,500	1000/20000 x 30000 = 1,500	2000/20000 x 30000 = 3,000
Power –power usage	12,000	50%x 12000 = 6,000	35%x 12000 = 4,200	10%x 12000 = 1,200	5%x 12000 = 600
Insurance for Building-Floor areas	2,000	8000/20000 x 2000 = 800	9000/20000 x 2000 = 900	1000/20000 x 2000 = 100	2000/20000 x 2000 = 200
Depreciation of machinery – machine value	6, 000	30000/50000 x 6000 = 3,600	20000/50000 x 6000 = 2,400		
TOTAL		29,400	29,000	7,800	5,800





Example 5:

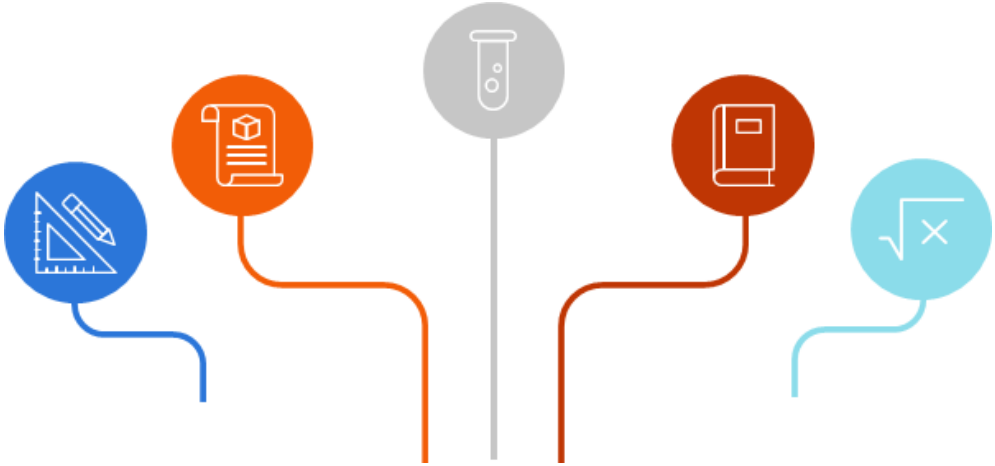
The following data cost are extracted from Synergy Manufacturing:

Production Department			Service Department	
Assembly	Installation	Painting	Store	Maintenance
RM 5000	RM 2 000	RM 3 000	RM 10 000	RM 5 000

The expenses of service department's charged out on a percentage basis as the following:

Department	Assembly	Installation	Painting	Store	Maintenance
Store	40%	30%	20%	-	10%
Maintenance	50%	10%	20%	20%	-

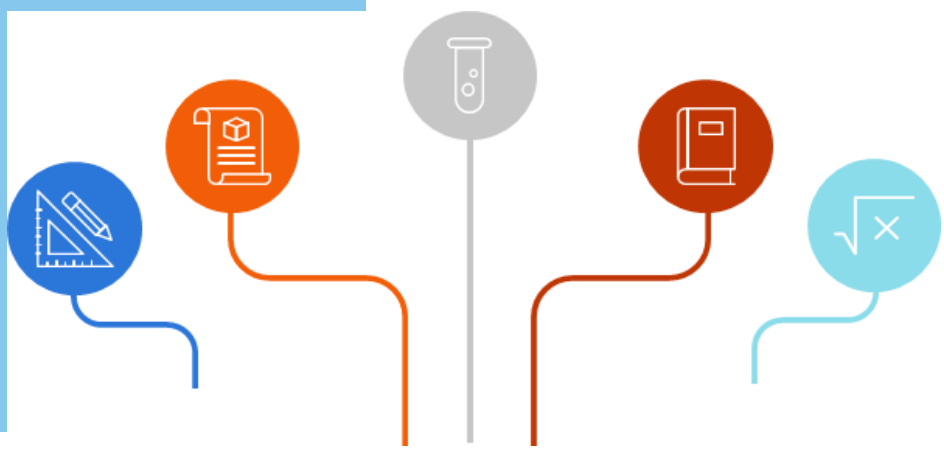
You are required to show the reapportionment of overhead using reciprocal method @ continuous method:



ANSWER

EXAMPLE 5

	Total	Production			Service	
		Assembly	Installation	Painting	Store	Maintenance
Cost Allocated	25,000	5,000	2,000	3,000	10,000	5,000
Apportionment: Store (40:30:20:0: 10)	10,000	40/100 X10,000 = 4,000	30/100 X10,000 = 3,000	20/100 X10,000 = 2,000	(10,000)	10/100 X10,000 = 1,000
Maintenance (50:10:20:20:0)	6,000	50/100 X 6,000 = 3,000	10/100 X 6,000 = 600	20/100 X 6,000 = 1,200	20/100 X 6,000 = 1,200	5000 + 1000 =(6000)
Reapportionment : Service Store (40:30:20:0: 10)	1200	40/100 X1,200 = 480	30/100 X 1,200 = 360	20/100 X 1,200 = 240	(1,200)	10/100 X 1,200 = 120
Maintenance (50:10:20:20:0)	120	50/100 X 120 =60	10/100 X 120= 12	20/100 X 120 = 24	20/100 X 120= 24	(120)
Reapportionment : Service Store (40:30:20:0: 10)	24	40/100 X 24= 9.60	30/100 X 24= 7.20	20/100 X 24 = 4.80	(24)	10/100 X 24 =2.40
Maintenance (50:10:20:0:0)	2.4	50/80 X 2.4 = 1.50	10/80 X 2.4 = 0.3	20/80 X 2.4= 0.6	-	(2.4)
TOTAL		12,551.11	5,979.50	6,469.94	0	0



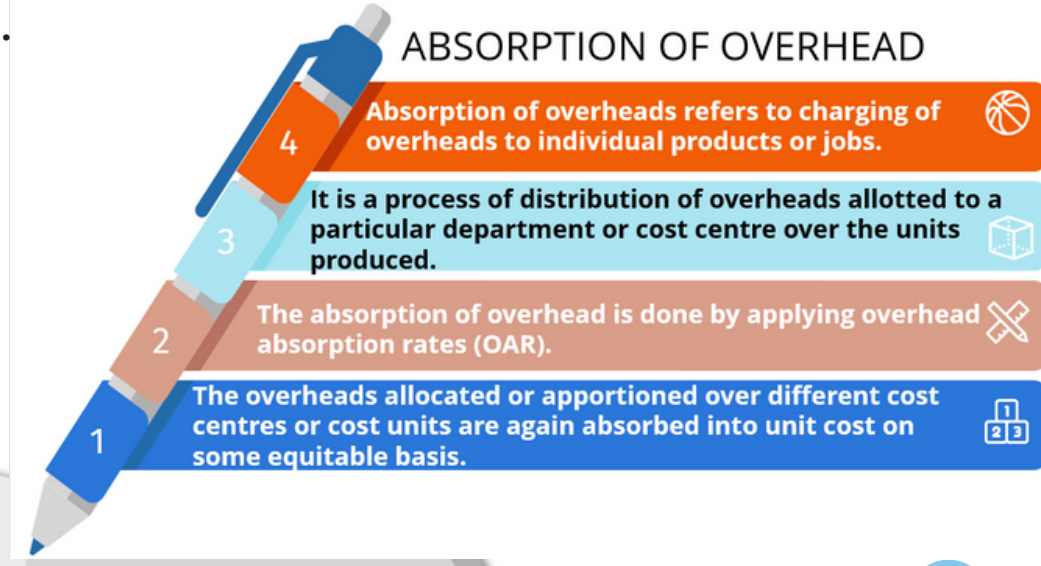
4.4

OVERHEAD ABSORPTION

CIMA DEFINES ABSORPTION OF OVERHEADS AS “THE PROCESS OF ABSORB, OVERHEAD COSTS ALLOCATED OR APPORTIONED OVER A PARTICULAR COST CENTRE OR PRODUCTION DEPARTMENT BY THE UNITS PRODUCED”.

ABSORPTION RATE AND METHOD

Production overheads are recovered by absorbing them into the cost of a product and this process is therefore called absorption costing. Single rate of overhead absorption (OAR) or called 'plant-wide' incorporates all the overheads chargeable and consumed by the production. The base rate or overheads rate for absorption may be historical or predetermined.



$$OAR = \frac{\text{Production Overhead}}{\text{Basis}}$$

Overhead Absorption Rate (OAR) formula.

ABSORPTION RATE BASIS

PRODUCTION OVERHEAD ABSORPTION RATE (OAR) METHOD /BASIS

1 **Unit Produced**

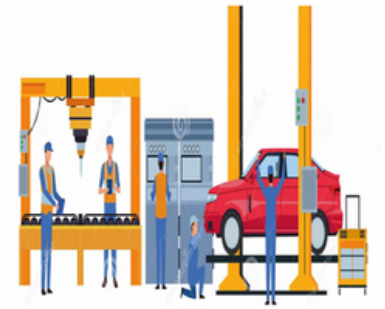
Dividing the overhead cost by number of units produced or expected to be produced.

2 **Time Basis**

Two main measures of time in a production department are labour hours and machine hours.

3 **Material Cost Basis**

Used when materials cost is significant for the products. It is not particularly a common absorption method.



4 **Labour Cost Basis**

Used when labour cost is significantly large and the material input is relatively small for the products. The rate of efficiency and productivity must be uniform and the wage rate should be stable

5 **Prime cost**

Used when both the materials and labour are equally important. The standard prime cost is the total of the standard materials cost, direct labour cost and any direct expenses cost. This method is rarely used in practice.

OAR = Production Overhead Basis

Overhead Absorption Rate (OAR) formula.

ABSORPTION RATE BASIS

Further Methods of Overheads Absorption

Blanket Overheads Absorption

- ✓ It does not require any allocation and apportionment of overhead to cost centres.
- ✓ Total production overheads are absorbed on a single absorption basis.
- ✓ Used only if the company produces a single product

Departmental Overheads Absorption

- ✓ Total production overheads for each department is determined using allocation and apportionment of overheads.
- ✓ For each department, overheads are absorbed into the products based on the most suitable or appropriate basis.

OAR = Production Overhead Basis

Overhead Absorption Rate (OAR) formula.

Example 6:

Top Disposable Glove Sdn Bhd estimates to produce 20,000 units of Medical Glove type AAA and the standard production overheads for the next month is estimated to be RM100,000. What is the overheads absorption rate based on the standard number of units to be produced?

Answers:

Overheads absorption rate (OAR) = $\frac{\text{RM100 000}}{\text{20,000 units}}$

= RM 5 per unit

Each unit of Medical Glove type AAA produced absorbed RM5 of overheads. In order to use this method, the product must be identical or similar.

Example 7:

Top Disposable Glove Sdn Bhd produce Medical Glove type AAA, with expected overheads cost of RM600,000 per annum.
The estimated of labour hours worked in the department is 300,000.

i. What is the overheads absorption rate per labour hour?

ii. If it takes 2 hours to produce 1 unit of Medical Glove type AAA, what will be the amount of overheads charged to Medical Glove type AAA ?

Answers:

i. Overheads absorption rate (OAR) = $\frac{\text{RM600 000}}{\text{300,000}}$

= RM2 per labour hour

ii. Production Overhead charged for each unit of Medical Glove type AAA

= 2 hours × RM2 per hour

= RM4 per unit

Example 8:

Proton Bhd produce X70 with expected overheads cost of RM500,000 per annum.

The estimated of machine hours used in the department is 200,000. What is the overheads absorption rate per machine hour?

Answers:

Overheads absorption rate (OAR) = $\frac{\text{RM500 000}}{\text{200,000}}$

= RM2.50 per machine hour

One step at a time

4.5

PRE DETERMINE OVERHEAD ABSORPTION RATE

PRE DETERMINE OVERHEAD ABSORPTION RATE

A predetermined overhead rate is an allocation rate that is used to apply the estimated cost of manufacturing overhead to cost objects for a specific reporting period.

$$\text{OAR} = \frac{\text{Budgeted Production Overhead}}{\text{Budgeted Activity Level}}$$

Activity level are base on basis same as apportionment basis. Example: Direct Labour Hours, Direct Machine Hours And Unit Of Output.

Usually computed at the beginning of each period by dividing the estimated manufacturing overhead cost by an allocation base (also known as activity base or activity driver).

The overhead applied to products or job orders would, therefore, be different from the actual overhead incurred by jobs or products.

Example 9:

Pfizeria Manufacturing has collected the following budgeted data:

Production overheads RM50,000
Direct Labour Hours 1,000 hours
Direct Labour Cost RM5,000
Machine Hours 10,000 hour
Direct Material Cost RM2,000
Production output 2,500 units

Calculate OAR using the following bases:

a) Direct Labour Hours
b) Direct Labour Cost
c) Machine Hours
d) Direct Material Cost
e) Production output

Answers:

OAR	Direct Labour Hours	Direct Labour Cost	Machine Hours	Direct Material Cost	Production output
OAR	50,000/1,000 = RM50 per DLH	50,000/5,000 = RM10 per DLC	50,000/10,000 = RM5 per MH	50,000/2,000 = RM25 per DMC	50,000/2,500 = RM50 per unit

4.6

UNDER OR OVER ABSORPTION

When predetermined overhead rates are applied, the overheads absorbed will be greater or lesser than the actual expenditure incurred on the account of overheads.

UNDER ABSORP

If the absorbed amount is lesser than the actual overheads incurred, it is call under absorption.

Overhead Absorb < Actual Overhead

OVER ABSORP

If the absorbed amount is greater than actual incurred, it is call over absorption.

Overhead Absorb > Actual Overhead

Such over or under-absorption may also be termed as overhead variance, the amount of over-absorption being represented by the credit balance on the variance account, and, conversely, the amount of under- absorption by a debit balance.

Formula for overheads absorption as the following:

Overheads absorbed = OAR × Actual Activity Level

Example 10

Mirror Sdn Bhd manufactures Product R. The following budgeted and actual data relate to production activity and overheads of the product:

	Budget	Actual
	RM	RM
Production overheads	300,000	250,200
Direct labour hours	60,000	83,000

The company uses an absorption costing system and production overheads are absorbed on a direct labour hour basis.

Calculate the total overheads absorbed in the productions. Show over or under absorbed overheads.

Answers:

Predetermined OAR	**Budgeted OH/ budgeted DLH** **=300 000 / 60 000** **= RM 5 per DLH**
Overhead Absorbed	OAR x Actual DLH = RM5 X 83 000 = RM 415,000
Actual Production Overhead	RM 250 000
Under or Over Absorb?	250 000 – 415, 000 = 165 000 (Over Absorb) Absorption amount is more than actual production overhead. (Over absorb)

Review Questions Chapter Four

QUESTION 1

The following data cost are extracted from True Beauty Manufacturing:
Production Department Service Department

Production Department			Service Department	
DD	DC	DE	T	U
RM 6000	RM 3000	RM 2000	RM 12000	RM 3000

The expenses of service departments charged out on a percentage basis as the following:

	DD	DC	DE	T	U
T	20%	40%	30%	-	10%
U	40%	20%	20%	20%	-

You are required to show the apportionment of overhead using
I. Direct method
II. Step down method
III. continuous /reciprocal basis

Review Questions Chapter Four

QUESTION 2

Sun Shine Manufacturing has three production departments (X, Y and Z) and two service department (M and N). Overhead costs incurred for the month of July are follow:

	RM
Machine Insurance	10,000
Rent Rates	9,000
Indirect Materials	3,000
Heating and Lighting	2,000
Telephone Expenses	5,000

All department are in the same premises. Other's information related to the factory are as follow:

	Departments				
	X	Y	Z	M	N
Floor area occupied (Square Metres)	2,000	3,000	1,000	500	700
Direct Labour Hours	1,200	1,500	1,800	-	-
Labour Rate per hour	RM6	RM3	RM5	-	-
Machine Value (RM'000)	20	10	30	-	-
Value of Materials Issued (RM'000)	120	200	50	-	-
Allocated Overhead Cost:					
Specific to each department	6,000	8,000	12,000	7,500	5,500
Service Department -M cost apportioned	60%	30%	10%	-	-
Service Department -N cost apportioned	30%	50%	20%	-	-

You are required to:

a. Prepare a statement showing the overhead cost apportionment for each department, showing the basis used.
b. Calculate suitable overhead absorption rates (OAR) based on direct labour hour.

Review Questions Chapter Four

QUESTION 3

Astro Technology Sdn Bhd has two production department, Machining and Finishing and two services department, Store and Account.
Overhead costs incurred for the month of March 2021 are follow:

		RM
Supervisor 's Salary		7,000
Depreciation Machine		20,000
Utilities		1,500
Insurance Building		3,000

All department are located in the same premises. The following data are available:

Departments	Machining	Finishing	Store	Account
Specific overhead cost allocated to each department	RM 45,000	RM 25000	RM 10,000	RM 7,000
Floor area occupied (Square Metres)	8,000	5,000	1,400	600
Direct Labour Hours	3,000	2,000	1,000	-
Machine Value (RM'000)	80	60	-	-

The overhead cost of service department allocated to others department as follow:

	Machining	Finishing	Store	Account
Store	50%	40%	-	10%
Account	60%	20%	20%	-

You are required to:

a) Prepare a statement showing the overhead cost apportionment for each department, showing the basis used.

b) Calculate overhead absorption rates (OAR) based on direct labour hour.

Review Questions Chapter Four

QUESTION 4

Doremi Ltd. operates 3 production departments which is K, L and I and 2 service department which is A and B.

Overhead cost for the year were as follows:

Indirect wages	K	RM 4,000	
	L	RM 6,000	
	I	RM7,000	
	A	RM 1,500	
	B	RM 1,200	
	Total		19,700
Repairs and Maintenance	K	RM 500	
	L	RM 900	
	I	RM 850	
	A	RM 420	
	B	RM 320	
	Total		2,990
Indirect Materials	K	RM 2,000	
	L	RM 5,000	
	I	RM 1,050	
	A	RM 760	
	B	RM 540	
	Total		9,350
Rent		RM 12,000	
Electricity		RM 3,000	
Depreciation – Plant		RM 26 000	
Insurance – Plant		RM 25,000	

Additional information as follow:

Department	Area Occupied (sq.ft.)	Value of Plant (RM)	Direct Labour Hours	Labour Cost (RM)	Machine Hours
K	6,000	60,000	40,000	90,000	44,000
L	5,000	30,000	50,000	78,000	36,000
I	3,000	40,000	30,000	65,000	21,000
A	500	-	-		-
B	1,500	-	-		-

Review Questions Chapter Four

The cost of service departments, A and B are allocated to other departments on percentage basis:

	K	L	I	A	B
A	20%	50%	30%	-	-
B	20%	60%	20%	-	-

Overhead absorption rates used from previous financial year were as follow:

K: 50% on departmental direct labour cost
L: RM2.00 per machine hour
I: RM0.70 per direct labour hour

You are required to:

a) Prepare an overhead analysis sheet showing the distribution of overhead cost to the departments.

b) Show over/under absorption of overhead during the year.

Review Questions Chapter Four

QUESTION 5 (FINAL EXAM JULY 2006)

Nilam Purnama produced silk in Kota Marudu, generate 3 departments to distribute their overhead namely Sutera Idaman, Sutera Harapan and Sutera Gemilang. The following are the allocated costs:

	Sutera Idaman	Sutera Harapan	Sutera Gemilang
Materials	RM40,000	RM30,000	RM25,000
Labour	RM120,000	RM60,000	RM75,000
Depreciation-Machine	RM10,000	RM8,000	RM15,000

Other cost to be apportioned to departments based on appropriate basis:

Rent RM120,000
Insurance of Machine RM 20,000
Canteen expenditures RM 32,000
Electricity and power RM 15,000

Additional Information:

	Sutera Idaman	Sutera Harapan	Sutera Gemilang
Floor space	1,500 sq. feet	2,200 sq. feet	2,800 sq. feet
Net Book Value of machine	RM30,000	RM28,000	RM35,000
Number of employees	30	20	25
Labour hours	106,000 hours	84,000 hours	72,000 hours
Rate per hour	RM3.50	RM3.50	RM3.00

Required:

a)Prepare Overhead Cost Statement (18 marks)
b)Calculate overhead absorption rate based on labour hour. (7 marks)

Review Questions Chapter Four

QUESTION 6 (FINAL EXAM JAN 2009)

Syarikat Edenlife Sdn Bhd has five cost centre-three production department and two service department. Budgeted manufacturing overhead for the company beginning 1 January 2003 is as follow:

Allocated Overhead:	Indirect Materials (RM'000)	Indirect Labour (RM'000)
(P1) Machine No.1	274	750
(P2) Machine No.2	326	900
(P3) Installation	170	380
(S1) Materials Service	38	230
(S2) Labour Service	22	130
TOTAL	830	2,390

Overhead to be apportioned:	(RM'000)
Insurance Building	60
Insurance Machine	180
Depreciation Machine	900
Rent and Rates	300
Power	120
Electricity	120
	1,680

It is decided that the overheads should be apportioned to cost centres by percentage as follows:

	Cost Centre				
	P1	P2	P3	S1	S2
Net book value of machine	35	45	15	5	-
Floor space (sq. feet)	25	30	20	15	10
Store Production value	40	50	10	-	-
Power Used	40	45	10	5	-
Number of employees	35	45	20	-	-
Budgeted production capacity:					
Machine Hour ('000)	600	800	-		
Labour Hour ('000)	-	-	450		

You are required to:

a) Prepare Overhead Analysis Statement to 5 cost centres.
b) Distribute the service cost centre cost among the production cost centres.
c) Calculate the overhead absorption rate for three production department.

Review Questions Chapter Four

QUESTION 7 (FINAL EXAM JULY 2010)

Mila and Milna has three production departments, Stamping, Machining and Finishing and one service departments which is responsible for maintenance.
The following actual data was recorded for month of July:

Overhead Expenses	Stamping (RM)	Machining (RM)	Finishing (RM)	Maintenance (RM)
Indirect Materials	2,700	2,300	2,470	2,100
Indirect Wages	3,400	2,500	3,250	3,100
Maintenance Wages	3,500	2,100	1,400	1,000
Depreciation	2,100	3,400	1,300	1,400
Rent and Rates	1,200	1,100	900	800
Supervision	3,500	2,800	4,000	2,200
Light and Heat	600	580	400	480
Actual Machine Hour	1,450 hours	2,080 hours	1,960 hours	-

At the end of each month, maintenance department overhead is apportioned to production departments on the basis of maintenance wages incurred in those departments.

All production cost centre overhead is absorbed on a machine hour basis.
The following budgeted data had been prepared for month of July:

	Stamping	Machining	Finishing
Budgeted Overhead	RM22,500	RM18,000	RM15,200
Budgeted Machine Hours	1,500 hours	2,000 hours	1,900 hours

You are required:

a) Calculate the budgeted overhead absorption rates for each production departments. (6m)

b) Prepare a statement to show the actual overhead incurred by each production department inclusive of the charge from the maintenance department (13m)

c) Calculate the amount of overhead over or under absorbed by each production department for the month of July (6m)

Review Questions Chapter Four

QUESTION 8

One for All Manufacturing has three production departments (R, S and T) and two service department (U and Z). Overhead costs incurred for the month of January 2020 are follow:

	RM
Machine Insurance	20,000
Rent Rates	10,000
Indirect Materials	5,000
Heating and Lighting	4,000
Telephone Expenses	1,000

All department are in the same premises. Other's information related to the factory are as follow:

	Departments				
	R	S	T	U	Z
Floor area occupied (Square Metres)	3,000	2,500	1,500	600	400
Labour Rate per hour	RM12	RM8	RM7	-	-
Machine Value (RM'000)	50	30	20	-	-
Value of Materials Issued (RM'000)	30	40	10	-	-
Allocated Overhead Cost:					
Indirect Labour	15,000	20,000	14,000	3,000	2,700
Service Department -U cost apportioned	60%	30%	10%	-	-
Service Department -Z cost apportioned	30%	50%	20%	-	-

You are required to:

a. Prepare a statement showing the overhead cost apportionment for each department, showing the basis used.
b. Calculate suitable overhead absorption rates (OAR) based on Machine value.

Review Questions Chapter Four

QUESTION 9

Toys World Sdn Bhd has two production department, Assembly and Installation and two services department, Store and Maintenance. Overhead costs incurred for the month of February 2021 are follow:

		RM
Supervisor 's Salary		7,000
Depreciation Machine		20,000
Utilities		1,500
Insurance Building		3,000

All department are located in the same premises. The following data are available:

Departments	Assembly	Installation	Store	Maintenance
Specific overhead cost allocated to each department	RM 6,000	RM 4000	RM 800	RM 500
Floor area occupied (Square Metres)	2,000	4,000	600	400
Direct Labour Hours	4,000	3,000	500	-
Machine Value (RM'000)	6	5	-	-

The overhead cost of service department allocated to others department as follow:

	Machining	Finishing	Store	Maintenance
Store	40%	20%	-	10%
Maintenance	20%	10%	5%	-

You are required to:

a. Prepare a statement showing the overhead cost apportionment for each department, showing the basis used.
b. Calculate overhead absorption rates (OAR) based on direct labour hour.

Review Questions Chapter Four

QUESTION 10

PJ Mask Manufacturing is a company produces glove for global supply. It has three cost centres. South 117 and North 207 are production cost centre while East 303 is service cost centre. All cost centre under the same building. The following are information regarding overhead cost for May 2020.

Overhead to be apportioned:

Utility	RM 15,000
Maintenance for Latex Glove Machine	RM 25,000
Rental of General Machine	RM 70,000
Supervisor Salaries	RM 12,000

Allocated overhead for each cost centre is as follow:

Allocated Overhead:	Indirect Materials (RM)	Indirect Labour (RM)
South 117	50 000	70 000
North 207	40 000	30 000
East 303	5 000	4 000

Additional Information:

	South 117	North 207	East 303
Number of employees	3,000	5,000	1,000
Value of machine (RM)	200,000	160,000	140,000
Floor space (square feet)	10,000	15,000	5,000
Machine Hour	30 000	70 000	-
Labour Hour	20,000	40,000	

Overhead cost of service department East 303 is absorbed to production cost centre by labour hour basis.

You are required to Prepare Overhead Analysis Statement.

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