# Management Accounting

**ACC20020**

# Management Accounting

- Small Group Lecturer – Rebecca Maughan
- rebecca.maughan@ucd.ie

# Course Themes

- **The Role, Purpose and Organizational Context of Management Accounting**

- Information for Planning and Control
  - Budget process
  - Standard costing and variance analysis

- Cost Accounting and Cost Management
  - Traditional approaches to costing
  - Modern approaches to costing

- Information for Decision Making

# Overview of Management Accounting

- This was covered in the plenary session and the slides are included on pages **4 – 9 inclusive**

- Read Pages **89 – 97 inclusive**

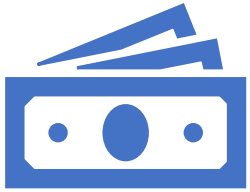
# Cost Information and Behaviour

# The Need for Cost Information

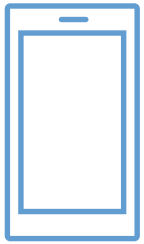
| | | |
|---|---|---|
| Preparation of financial plans (budgets) | Evaluation of performance | Pricing decisions |
| Customer focus decisions | Make or buy decisions | Valuation of inventories for financial reporting and taxation |

which customers should I focus on?

# Cost Object



**A cost object is anything for which a measurement of costs is desired**



**Examples:**

The cost of issuing an insurance policy

The cost of running a sales department

The cost of producing a mobile phone

The cost of repairing faulty products

# Cost Collection System

- A cost collection system normally accounts for costs in two broad stages:

  - Accumulates costs by classifying them into certain categories (e.g. labour, materials and overheads).

  - Assigns costs to cost objects.

# Different Costs for Different Purposes

Inventory valuation

Decision making and planning

Control

Different concepts for different purposes

# Inventory Valuation

- Product cost is comprised of:
  - direct materials = what directly goes into the product (boots: leather)
  - direct labour = pay somebody to make the product
  - manufacturing overhead (indirect cost) = can't be traced to one exact object/person
    - factory light and heat, insurance of factory buildings, supervisors' salaries, repairs, etc.

# Direct Costs and Indirect Costs

Direct costs can be specifically identified with a particular cost object (e.g. a product, a department, a service)

Indirect costs cannot be identified specifically with a particular cost object

# Traditional cost system

- Product costs:

| | | |
|---|---|---|
| Direct materials | | xxx |
| Direct labour | | *XXX* |
| Prime cost | = | xxx |
| Manufacturing overhead | | *XXX* |
| Total manufacturing cost | = | xxx |
| Non-manufacturing overheads | | *XXX* |
| Total cost | = | *XXX* |

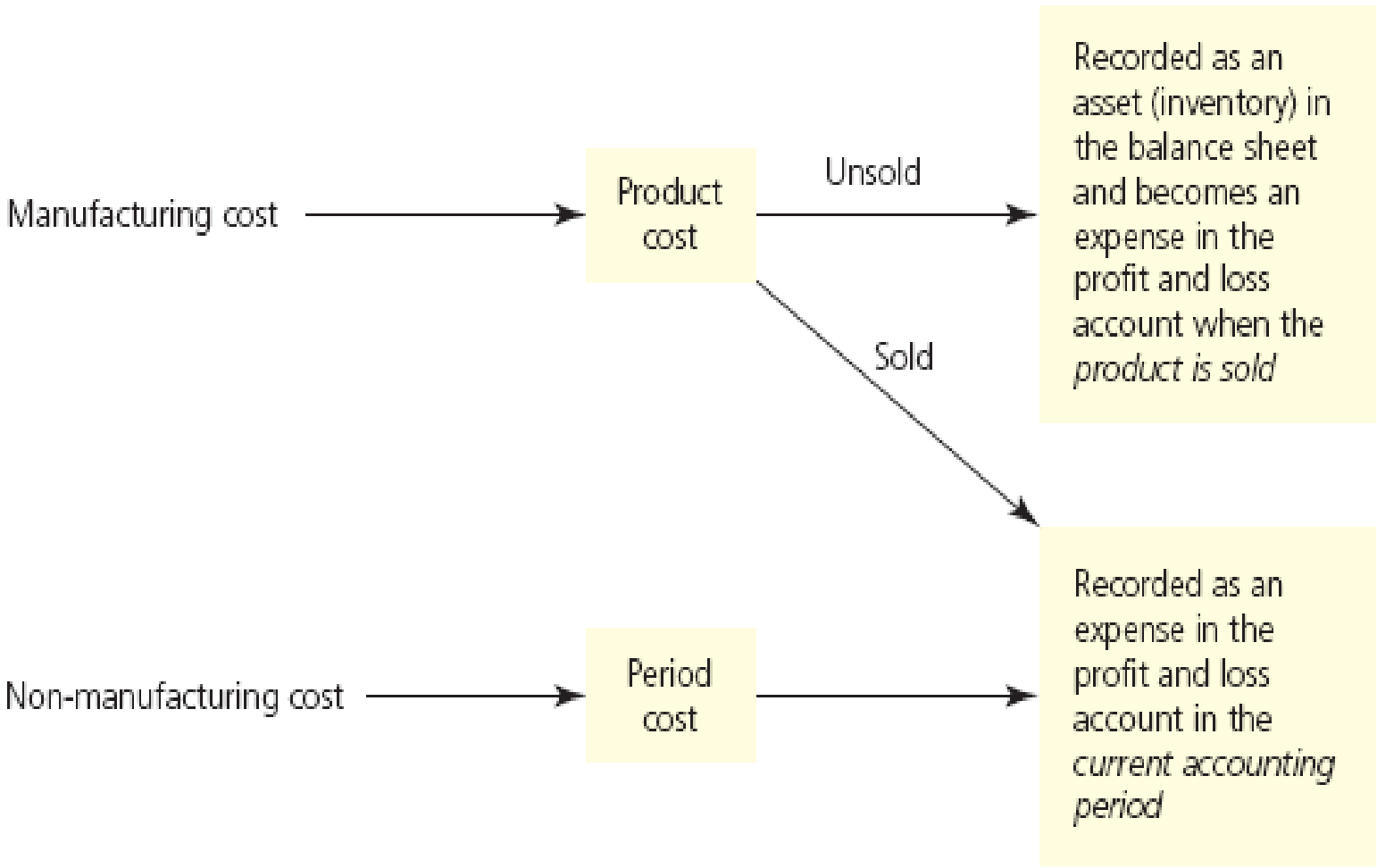
# Environmental Costs

- Common environmental costs for an organisation:
  - waste and effluent disposal
  - water consumption
  - energy
  - transport and travel
  - consumables and raw materials
  - environmental taxes

# Product Costs and Period Costs

Product cost: the cost necessary to complete a product (direct materials, direct labour and manufacturing overhead)

Period cost: all non-manufacturing expenditures (e.g. selling and distribution)


Manufacturing cost
Product cost
Unsold
Recorded as an asset (inventory) in the balance sheet and becomes an expense in the profit and loss account when the *product is sold*
Sold
Non-manufacturing cost
Period cost
Recorded as an expense in the profit and loss account in the *current accounting period*

# Example

- Product costs = €100,000
- Period costs = €80,000
- 50% of the output for the period is sold and there are no
- opening inventories.

| | | |
|---|---|---|
| Production cost (product costs) | | 100,000 |
| Less closing stock (50%) | | 50,000 |
| Cost of goods sold (50%) | | 50,000 |
| Period costs (100%) | 80,000 | |
| Total costs recorded as an expense for the period | | 130,000 |

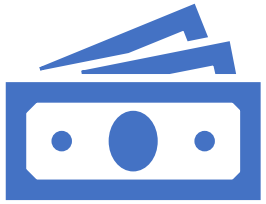
# Summary of Terminology

- A cost object - anything for which a measurement of costs is desired
  - Examples:
    - The cost of running a sales department
    - The cost of producing a mobile phone
    - The cost of repairing faulty products
- Direct costs can be specifically identified with a particular cost object (e.g. a product, a department, a service)
- Indirect costs cannot be identified specifically with a particular cost object

# Summary of Terminology

- Product cost: the cost necessary to complete a product (direct materials, direct labour and manufacturing overhead)
- Period cost: all non-manufacturing expenditures (e.g. selling and distribution)
- Environmental cost: costs connected with the actual or potential deterioration of natural assets due to economic activities (OECD)
  - Examples
    - waste and effluent disposal
    - water consumption
    - Energy
    - transport and travel
    - consumables and raw materials

# Cost Behaviour



**Cost behaviour: how costs change with activity**

**Knowledge of cost behaviour essential for**

planning (preparing budgets)

control (determining what costs should be at operating level achieved)

decision making (e.g. make or buy; pricing)

# Classification by Behaviour

**Variable costs:** vary in direct proportion with activity.

**Fixed costs:** remain constant over wide ranges of activity.

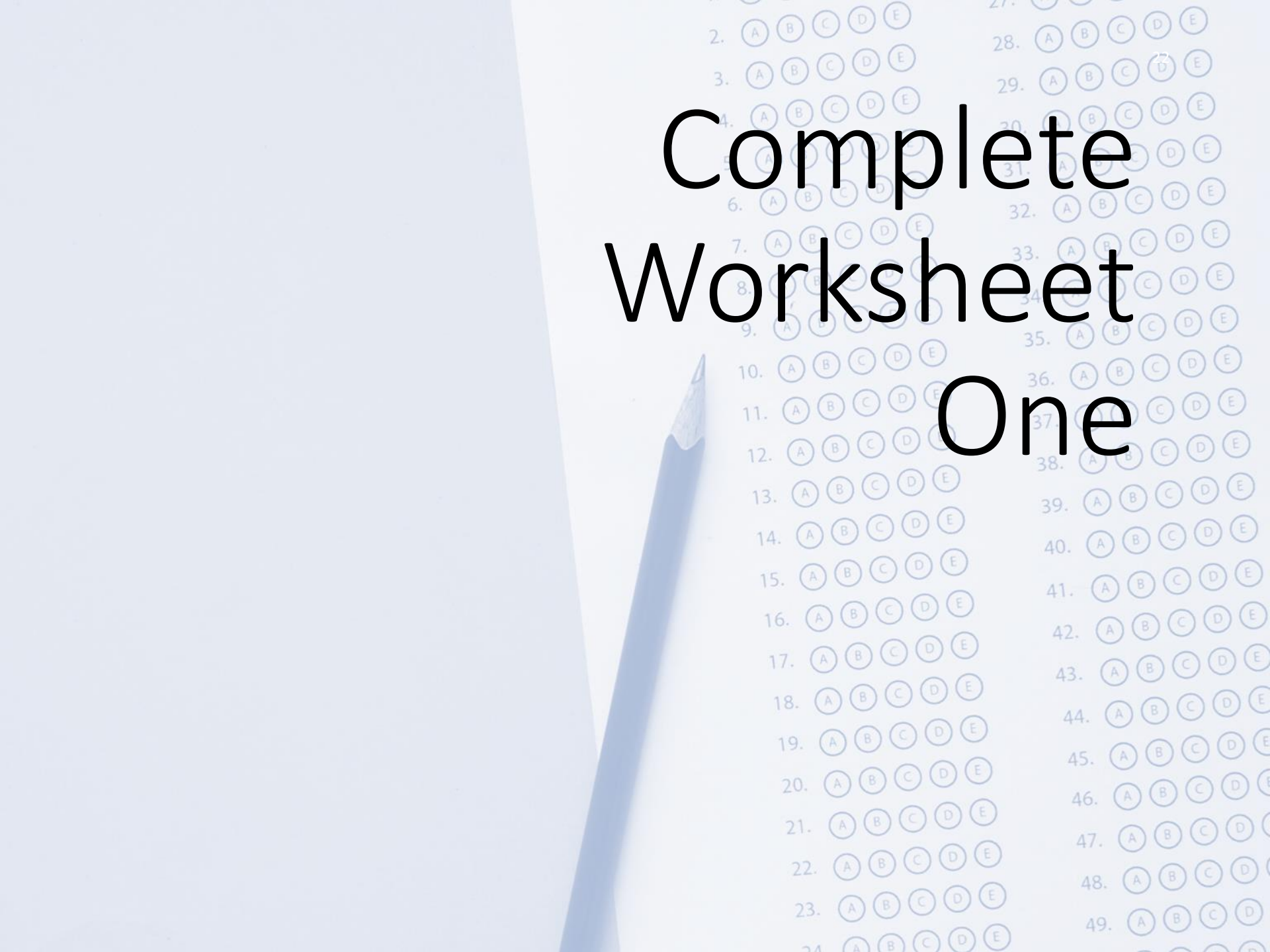
**Stepped or semi-fixed costs:** are fixed within specified activity levels, but they eventually increase or decrease by some constant amount at critical activity levels.

**Mixed or Semi-variable costs:** include both a fixed and a variable component (e.g. telephone charges).

# Classification by Behaviour

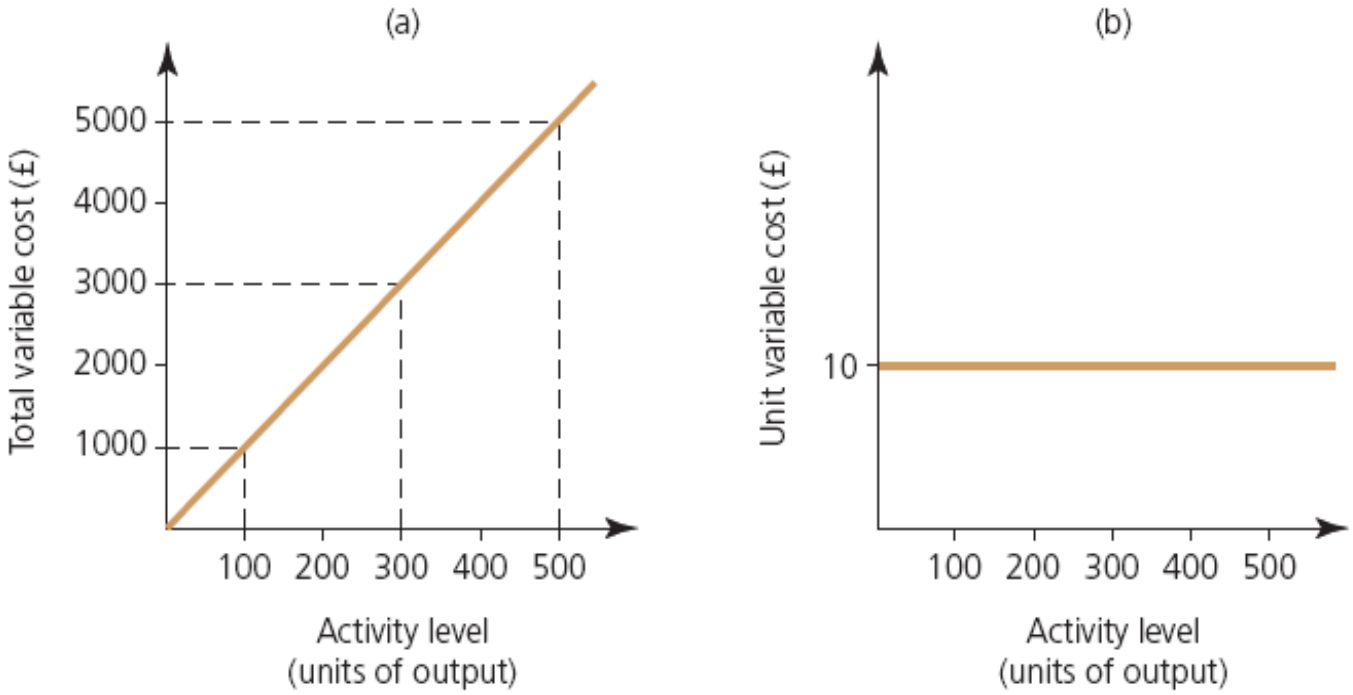
- Need to predict costs and revenues at different activity levels for many decisions. For example **contribution per unit = selling price - variable cost** used extensively in CVP and relevant costing.

- ***NB Time - the classification of costs depends on the time period involved. In the short term some costs are fixed, but in the long term all costs are variable.***

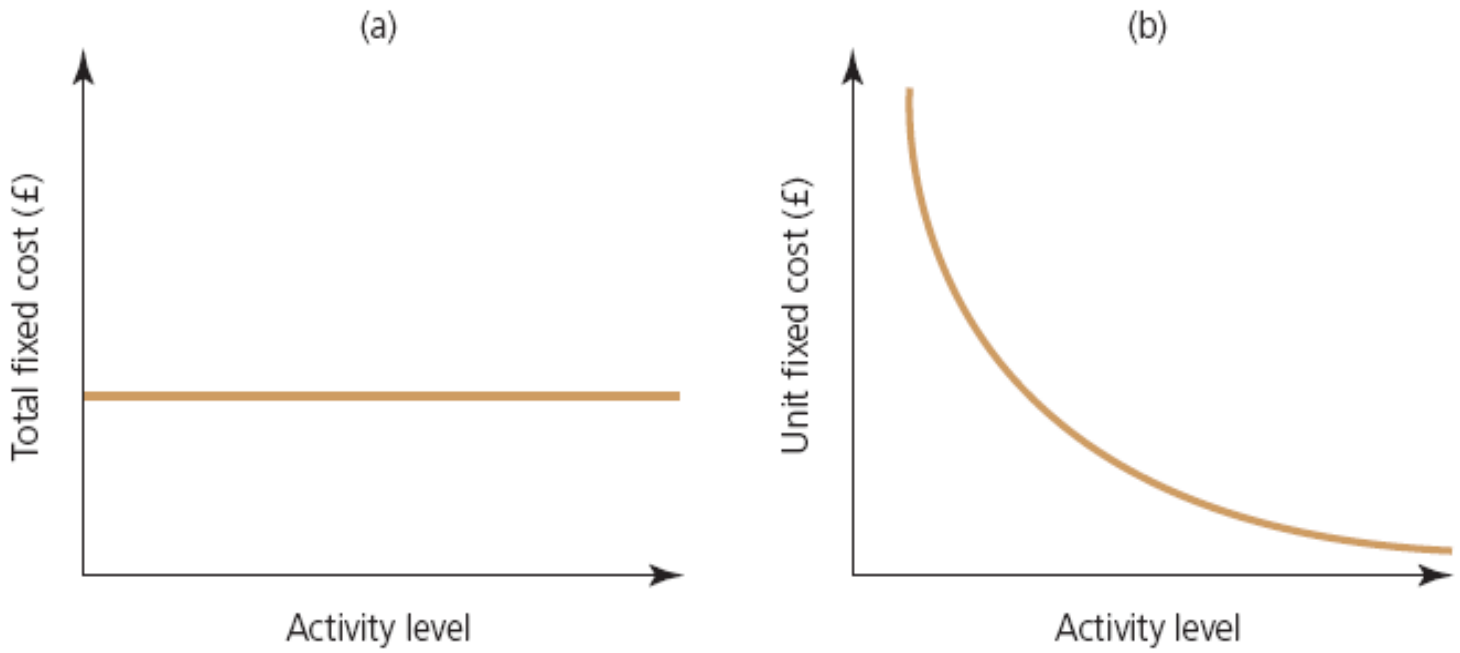

Complete
Worksheet
One

| | | Variable | Fixed | Mixed | Step |
|---|---|---|---|---|---|
| 1. | Total selling costs | | | X | |
| 2. | Supervisor's salary | | X | | |
| 3. | Raw materials used in production | X | | | |
| 4. | Power consumption in a restaurant | | | X | |
| 5. | Cost of goods sold in a bookstore | X | | | |
| 6. | Salaries of employees who process claims in an insurance company | | | | X |
| 7. | Pulpwood in a paper mill | X | | | |
| 8. | Salary of an executive assistant in the corporate office | | X | | |
| 9. | Total current manufacturing costs | | | X | |
| 10. | The cost of an vehicle rented on the basis of a daily charge plus €.30 per mile | | | X | |

fixed and variable part

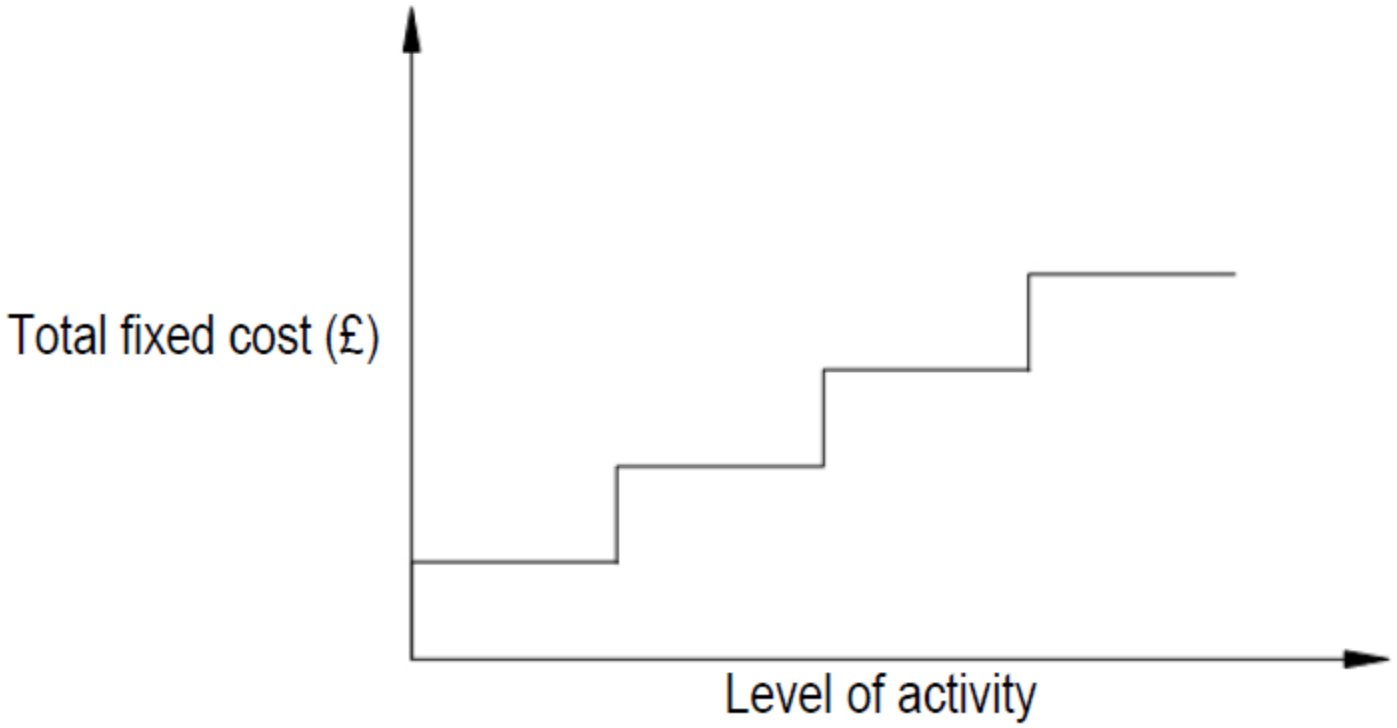



(a) = total variable costs to volume
(b) = per unit variable cost

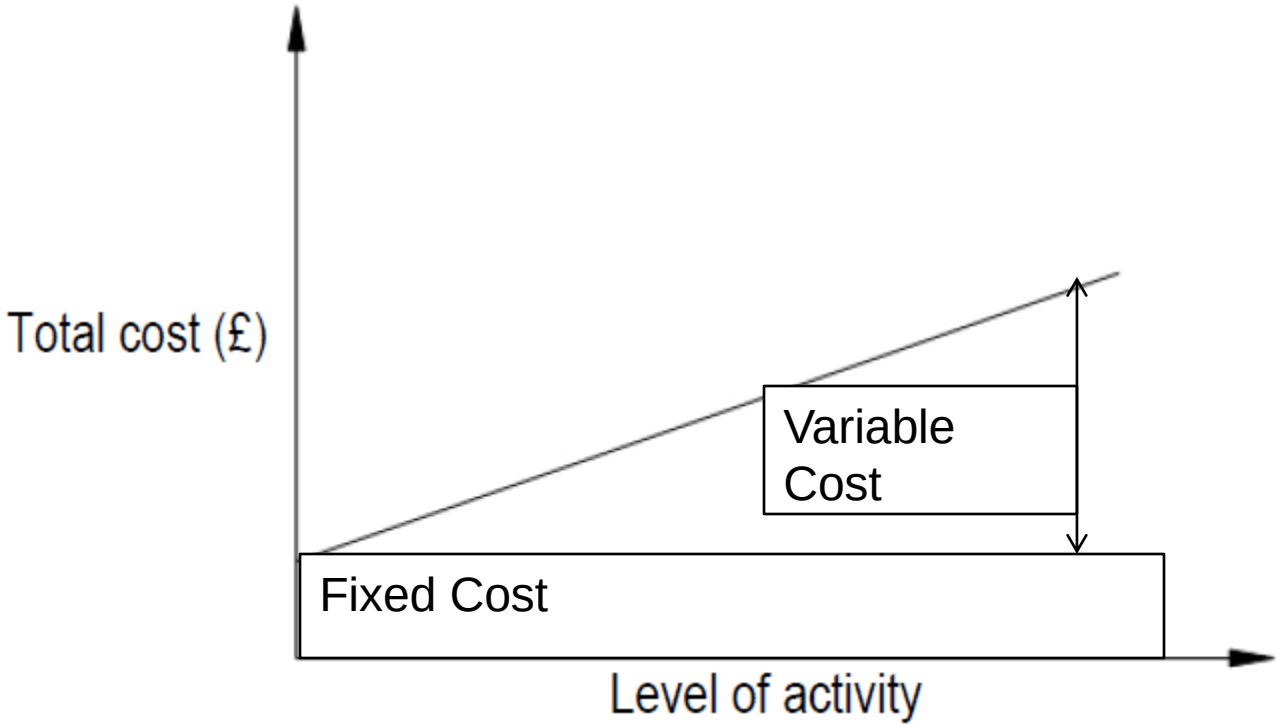



(a) = total fixed costs to volume
(b) = per unit fixed cost

Semi-fixed costs



## Semi-variable costs



- Complete Worksheet Two
- Prepare mind maps for:
  - cost information
  - cost behaviour

# Past exam paper

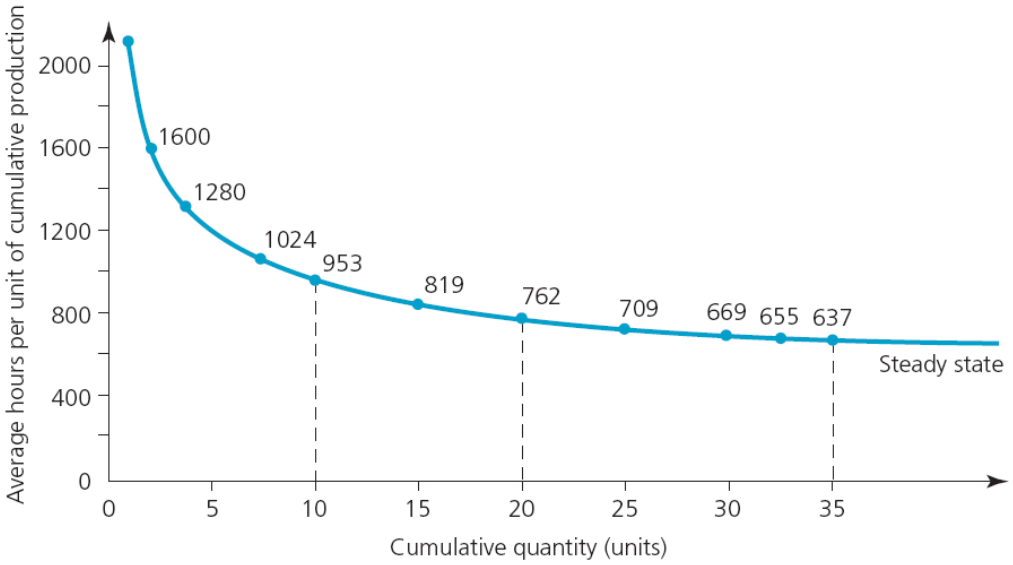
Page 297 Question 3(C)(i)

# Learning Curve

Familiarity with tasks improves performance and reduces the labour cost per unit

This reduction is generally predictable and can be modelled

# Learning Curve



# Page 169

- Question 1 : MCQ’s

1. Which of the following costs is a variable cost?

a) supervisors' salaries
b) research and development
c) materials used in production
d) rent

1. Which of the following costs is a variable cost?

a) supervisors' salaries
b) research and development
**c) materials used in production**
d) rent

2. Direct materials are an example of a

a) Fixed cost
b) Variable cost
c) Step cost
d) Mixed cost

2. Direct materials are an example of a

a) Fixed cost
**b) Variable cost**
c) Step cost
d) Mixed cost

3. Which of the following statements is TRUE about fixed and variable costs?

a) Both costs are constant when considered on a per-unit basis.
b) Both costs are constant when considered on a total basis
c) Fixed costs are constant in total and variable costs are constant per unit.
d) Variable costs are constant in total and fixed costs are constant per unit.

3. Which of the following statements is TRUE about fixed and variable costs?

a) Both costs are constant when considered on a per-unit basis.
b) Both costs are constant when considered on a total basis
**c) Fixed costs are constant in total and variable costs are constant per unit.**
d) Variable costs are constant in total and fixed costs are constant per unit.

4. The total direct material cost is €215,000 when 20,000 units are produced. What is the total direct material cost for 25,000 units produced?

a) €268,750
b) €208,000
c) €285,000
d) €120,500

4. The total direct material cost is €215,000 when 20,000 units are produced. What is the total direct material cost for 25,000 units produced?

215,000 / 20,000 = €10.75 per unit

25,000 units X €10.75 = €268,750

**a) €268,750**

b) €208,000

c) €285,000

d) €120,500

5. Blue Ltd. has the following total costs for 2,000 units:

| | Total Cost |
|---|---|
| Direct materials | € 3,000 |
| Direct labour | € 15,000 |
| Depreciation on building | € 45,000 |

What is the total amount of **direct costs** for 200 units?

a) € 9
b) €31.5
c) €1,800
d) €6,300

5. Blue Ltd. has the following total costs for 2,000 units:

| | Total Cost | Per unit cost |
|---|---|---|
| Direct materials | € 3,000 | €1.50 |
| Direct labour | € 15,000 | €7.50 |
| Depreciation on building | € 45,000 | Fixed cost |

What is the total amount of **direct costs** for 200 units?

a) € 9

b) €31.5

**c) €1,800** *(€1.5 + €7.5 = €9 X 200 units)*

d) €6,300

6. Boulder Ltd has leased a piece of equipment. The lease that specifies a payment of €15,000 per month plus €6 per machine hour used is an example of a

a) Fixed cost
b) Variable cost
c) Step cost
d) Mixed cost

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a) Fixed cost
b) Variable cost
c) Step cost
**d) Mixed cost**

7. Variable costs,

a) in total, remain constant within a relevant range.
b) on a per unit basis, are constant as activity increases or decreases.
c) on a per unit basis, decreases as activity decreases.
d) in total, decrease when activity increases.

7. Variable costs,

a) in total, remain constant within a relevant range.
b) **on a per unit basis, are constant as activity increases or decreases.**
c) on a per unit basis, decreases as activity decreases.
d) in total, decrease when activity increases.

8. Mixed costs,

a) are step costs.
b) in total, remain constant within a relevant range.
c) have a fixed and variable component.
d) on a per unit basis, are constant as activity increases or decreases..

8. Mixed costs,

a) are step costs.
b) in total, remain constant within a relevant range.
**c) have a fixed and variable component.**
d) on a per unit basis, are constant as activity increases or decreases..

- Question 2

Classify the following costs incurred by a step railing manufacturing company as direct materials (DM), direct labour (DL), factory overhead (FO), or period costs (PC):

| | COST | |
|---|---|---|
| 1. | Wages paid to production workers | |
| 2. | Utilities in the office | |
| 3. | Depreciation on machinery in plant | |
| 4. | Steel | |
| 5. | Accountant's salary | |
| 6. | Rent on factory building | |
| 7. | Rent on office equipment | |
| 8. | Maintenance workers' wages | |
| 9. | Utilities in the plant | |
| 10. | Maintenance on office equipment | |

# Classify the following costs incurred by a step railing manufacturing company as direct materials (DM), direct labour (DL), factory overhead (FO), or period costs (PC):

difference between FO and PC?

| | COST | CLASSIFICATION |
|---|---|---|
| 1. | Wages paid to production workers | **Direct Labour** |
| 2. | Utilities in the office if "office" and not "factory" it's PC | **Period cost** |
| 3. | Depreciation on machinery in plant | **Factory overhead** |
| 4. | Steel | **Direct material** |
| 5. | Accountant's salary | **Period cost** |
| 6. | Rent on factory building | **Factory overhead** |
| 7. | Rent on office equipment | **Period costs** |
| 8. | Maintenance workers' wages | **Factory overhead** |
| 9. | Utilities in the plant | **Factory overhead** |
| 10. | Maintenance on office equipment | **Period cost** |

# Methods of Estimating Cost Components

- Methods commonly used to split costs into their fixed and variable components:
  - Engineering
  - Inspection of Accounts
  - Graphical
  - High- Low
  - Least squares = regresseion analysis

# High-Low Method

***High-Low Method of Cost Estimation***

- This approach uses two data points, i.e. the highest and the lowest activity levels

- The objective is to separate the variable from the fixed costs

***Express the cost function in the form***:

Total Cost = Fixed Cost + (Variable cost per unit )(Units)

# Illustration of High-Low Method

| Month | Electricity Cost | Activity (production units) |
|---|---|---|
| Jan* | €5,100 | 75,000 |
| Feb | €5,300 | 78,000 |
| Mar | €5,600 | 80,000 |
| Apr* | €5,950 | 92,000 |

**Required:**

1. Express cost function in form: Y = A + BX

   (where Y = Total cost, A = Fixed cost, B = Unit variable cost and X = Level of activity)

2. Estimate costs for May if 100,000 units are produced

# Illustration of High-Low Method

| Month | Electricity Cost | Activity (production units) |
|---|---|---|
| **Jan*** | **€5,100** | **75,000** |
| Feb | €5,300 | 78,000 |
| Mar | €5,600 | 80,000 |
| **Apr*** | **€5,950** | **92,000** |
| **Difference** | **€850** | **17,000 units** |

**Variable cost per unit: €850 / 17,000 = € 0.05 per unit**

# Solution (using high point)

Total Cost = Fixed Cost + Variable Cost

€5,950 = Fixed Cost + (€0.05)
(92,000 units)

€5,950 = Fixed Cost + €4,600

€5,950 – €4,600 = Fixed Cost

€1,350 = Fixed Cost

∴ Y = €1,350 + €0.05X

**Estimated costs for May:**

€1,350 + (€0.05) (100,000 units) = €6,350

# Shortcomings of High-Low Method

- While the high-low method is quick and provides a rough estimate of costs, it has some shortcomings
- It only considers two data points (which may be outliers)
- It does not provide any statistical information on the accuracy of the cost information obtained

# Practice of High-Low Method

| Month | Units | Overheads |
|---|---|---|
| 1 | 1,520 | €36,375 |
| 2 | 1,250 | €38,000 |
| 3 | 1,750 | €41,750 |
| 4 | 1,600 | €42,360 |
| 5 | 2,350 | €55,080 |
| 6 | 2,100 | €48,100 |
| 7 | 3,000 | €59,000 |
| 8 | 2,750 | €56,800 |

# Practice of High-Low Method

| Month | Units | Overheads |
|---|---|---|
| 1 | 1,520 | €36,375 |
| **2** | **1,250** | **€38,000** |
| 3 | 1,750 | €41,750 |
| 4 | 1,600 | €42,360 |
| 5 | 2,350 | €55,080 |
| 6 | 2,100 | €48,100 |
| **7** | **3,000** | **€59,000** |
| 8 | 2,750 | €56,800 |

# Solution

| | Units | Overheads |
|---|---|---|
| * High | 3,000 | €59,000 |
| * Low (Jan) | 1,250 | €38,000 |
| Difference | 1,750 | €21,000 |

∴ VC per unit = €21,000 / 1,750 = € 12

# Solution (using low point)

Total Cost (Y) = Fixed Cost + Variable Cost

€38,000 = Fixed Cost + (€12) (1,250 units)

€38,000 = Fixed Cost + €15,000

€38,000 – €15,000 = Fixed Cost

€23,000 = Fixed Cost

∴ **Y = €23,000 + €12X**

- Do Question 3 – solution on Brightspace (end of week)
- Make sure you try it yourself first before looking at the solution!
- Use study advice from the plenary.

QUESTION 3.

- **Lakeview Medical Clinic** offers a number of specialised medical services, one of which is psychiatric care. Because of the reputation the clinic has developed, demand for these services is strong. As a result, Lakeview recently opened a 100-bed psychiatric hospital near the clinic. The new hospital building is leased on a long-term basis. All equipment within the hospital is owned by the clinic.
- Since the clinic had no experience with in-patient psychiatric services, it decided to operate the hospital for two months before determining how much to charge per patient day on an ongoing basis. As a temporary measure, the clinic adopted a patient day charge of €100.
- The hospital opened on January 1. During January, the hospital had 2,100 patient days of activity. During February, the activity was 2,250 patient days. Costs for these two levels of activity are as follows:

Fixed Variable or Mixed?

| | 2,100 Patient Days | 2,250 Patient Days | | |
|---|---|---|---|---|
| | € | € | | |
| Salaries (nurses) | 37,200 | 37,200 | f | |
| Aides/orderlies | 2,000 | 2,000 | f | |
| Laboratory | 30,250<br>14,405 | 32,125<br>14,278 | v | m |
| Pharmacy | 20,900<br>9,667 | 21,800<br>9,689 | v | m |
| Lease | 10,000 | 10,000 | f | |
| Laundry | 15,750<br>7,5 | 16,875<br>7,5 | v | |
| Administration | 13,000 | 13,000 | f | |
| Depreciation | 30,000 | 30,000 | f | |

um variable von mixed Kosten zu unterscheiden: für alle Perioden durch Anzahl der Bezugsgröße teilen (Kosten pro Patient)

**Required:**

a) Classify each cost as fixed, variable or mixed.

a) The hospital's administrator has estimated that the hospital will average 2,000 patient days per month. If the hospital is to be operated as a non-profit organisation, how much will it need to charge per patient per day? How much of this charge is variable? How much is fixed?

a) Suppose the hospital averages 2,500 patient days per month. How much would need to be charged per patient day for the hospital to cover its costs? Explain why the charge per patient day decreased as the activity increased.

# Cost information and Behaviour

- Slides  Pages **10 – 18**
- Reading Material:  Pages **9 – 104**
- Worksheets: Pages **71 – 75**
- Questions: **1 – 3**  *(starting page 169)*

# Week 1 material in past exam papers

**PAST PAPER: Semester 1 Examination 2015/16 Page 267 & 268**

- Item 1
- Item 2
- Item 4
- Item 6

**PAST PAPER: Semester 2 Examination 2015/16 Page 278 & 279**

- Item 1
- Item 2
- Item 3
- Item 6

**PAST PAPER: Semester 2 Examination 2017/18 Page 302**

- Item 1
- Item 2
- Item 3

**PAST PAPER: Semester 2 Examination 2018/19 Page 315**

- Item 1