

## Cost: Concepts and Classifications

The three important areas in cost accounting are cost ascertainment, cost analysis and cost control. For cost accounting to be useful in these areas, costs must be accumulated, classified and grouped in such a manner that (i) total costs and units costs can be determined; (ii) trends in costs behaviour can be observed; (iii) cost can be controlled; and (iv) useful analysis can be made based on past as well as future costs for planning, control and decision-making. These requirements call for an understanding of the concept of cost and of its appropriate classifications. The purpose of this chapter is to explain the concept of cost and different cost classifications.

### COST

Cost is the amount of expenditure, actual (incurred) or notional (attributable), relating to a specific thing or activity. The specific thing or activity may be a product, job, service, process or any other activity.

**Cost is the amount of resources given up in exchange for some goods or services.** The resources given up are generally in terms of money or, if not in terms of money, they are always expressed in monetary terms. The term 'cost' itself is without any significant meaning and, therefore, it is always advisable to use it with an adjective or phrase that will convey the meaning intended, such as prime, direct, indirect, fixed, variable, controllable, opportunity, imputed, sunk, differential, marginal, replacement and the like. Each such adjective or description implies a certain attribute or characteristic which is important in computing, measuring and analyzing the cost.

Basically, when a cost is incurred, it could be in the form of deferred cost (asset) or expired cost (expense). Deferred costs are unexpired costs, capitalised costs, which provide benefits in the future periods and known as assets and hence appear on the balance sheet. Examples of deferred or unexpired costs are plant, equipment, building, inventory, prepaid rent and insurance. When these deferred costs are used up, to the extent used, they become expenses and appear on the income statement and revenue. Expired costs are costs which have been used up totally in generating revenue. They are not capitalised but only shown as expenses on income statement.

### EXPENSES

Expenses are expired costs, incurred and totally used up in generation of revenue. Examples of expired costs are costs of goods sold expense, selling and administrative expenses. Expenses need not necessarily be in the form of cash outflow.

ily have to be paid in cash immediately, even a promise to pay could be made for the benefits obtained. The manufacturing costs are capitalised in the form of finished goods inventory and when a sale is made, they expire (becoming expenses). The cost of unsold inventory which was an asset earlier, now becomes expenses (costs of goods sold) as it has contributed to the generation of revenue.

Factory (or manufacturing) overhead is treated as cost (an asset) because this is included in the cost of finished goods inventory which is an asset unless sale is made. Selling and administrative expenses, when not included in the cost of finished goods inventory, are treated only as expenses and not cost (asset). Factory overheads are assets because they are supposed to add utility to the goods manufactured. For example, depreciation of a factory machine increases the utility of the goods manufactured which are therefore included in work-in-progress and finished goods inventory. But selling and distribution overheads do not add to the utility of goods manufactured and are treated merely as expenses and are deducted from revenues whenever incurred. Similarly, depreciation of a factory building is a cost, but depreciation of an office building is an expense.

## LOSS

Loss is lost cost. The term 'loss' is used to describe mainly two accounting events. In traditional financial accounting it is used to denote a situation where expenses exceed revenues for an accounting period, that is, the opposite of net income (earnings) for the accounting period. Secondly, a loss arises due to the cost of an asset being more than the sale proceeds when the asset is sold. This unfavourable event does not arise from a normal business activity but from non-operating transactions or events. This definition of loss is used to identify the opposite of gain. That is, if no benefit is received from the cost incurred or it becomes definite that no benefit will accrue, the cost becomes a lost cost, i.e. loss.

Loss is unrelated to revenue generation and is only offset against revenue of the period in which the loss occurred. Examples of loss are, loss on sale of fixed asset, loss of a stock due to fire.

## CLASSIFICATION OF COSTS

The achievement of the objectives of cost accounting requires that cost should be ascertained, classified and grouped. Cost classification may be defined as the process of grouping costs according to their common characteristics. There are many objectives of cost classifications depending on the requirements of management. However, the following objectives are considered very useful and significant:

- (i) Determining product costs for stock valuation and profit measurement
- (ii) Planning
- (iii) Decision Making
- (iv) Control

The different cost classifications are as follows:

1. Natural classifications of costs
  - (i) Direct material
  - (ii) Direct labour
  - (iii) Direct expenses
  - (iv) Factory overhead
  - (v) Selling and distribution and administrative overheads

2. Cost behaviour (In relation to changes in output, activity or volume)
- fixed cost
  - Variable cost
  - Mixed cost ( Semi-variable and Semi-fixed cost)
3. Degree of Traceability to the Product
- Direct cost
  - Indirect cost
4. Degree of Association with the Product
- Product cost
  - Period cost
5. Functional Classification of Costs
- Manufacturing cost
  - Selling and distribution cost
  - Administrative cost
6. Relationship with the Accounting Period
- Capital cost
  - Revenue cost
7. Costs for Decision Making and Planning
- Opportunity cost
  - Sunk cost
  - Relevant cost
  - Differential cost
  - Imputed cost
  - Out-of-pocket cost
  - Fixed, variable and mixed cost
  - Shutdown cost
8. Costs for Control
- Controllable and uncontrollable cost
  - Standard cost
  - Fixed, variable and mixed cost
9. Other Costs
- Joint cost
  - Common cost

## NATURAL CLASSIFICATION OF COSTS

The term "natural classification" refers to the basic physical characteristics of the cost. In a manufacturing concern, generally, the following costs are incurred:

**1. Direct material** Direct materials refers to the cost of materials which are conveniently and economically traceable to specific units of output. The term "direct materials" is denoted by certain other names also, such as process material, prime cost material, production material, stores material, construction materials. Some examples of direct materials are: raw cotton in textiles, crude oil to make diesel, steel to make automobile bodies. The following group of materials fall within the definition of direct materials:

- (a) All materials specially purchased for a particular job, order, process or product.
- (b) All materials (including primary materials and raw materials) acquired and subsequently requisitioned from the stores for production.
- (c) Components or parts purchased or produced and requisitioned from the storeroom.
- (d) Material passing from one process to another process.
- (e) Primary packing materials, e.g., wrappings, cardboard boxes, etc.

Items, such as import duties, dock charges, transport cost of materials, storing of materials, cost of purchasing and receiving materials are properly added to their invoiced price and thus, the materials are charged out at this increased cost.

Chapters 3 and 4 discuss in detail direct materials and materials cost.

**2. Direct labour** Direct labour is defined as the labour of those workers who are engaged in the production process. It is the labour expended directly upon the materials comprising the finished product. Other terms for the direct labour are: process labour, productive labour, operating labour. Examples are the labour of machine operators and assemblers. However, a worker may be performing direct labour for a certain number of hours but be an indirect worker for the balance of the day. For example, manufacturing concerns frequently have workers who may be working on an assembly line or operating a machine as direct workers for three or four hours but later in the day may help in repairing machinery or in doing other work as indirect workers.

Chapter 5 explains direct labour and accounting and control of direct labour cost in detail.

**3. Direct expenses (Chargeable expenses)** These include any expenditure other than direct material and direct labour directly incurred on a specific product or job. Such special necessary expenses can be identified with product or job and are charged directly to the product as part of the prime cost.

Examples of direct expenses are:

- (a) Cost of hiring special machinery or plant.
- (b) Cost of special moulds, designs and patterns.
- (c) Experimental costs and expenditure on model and pilot schemes.
- (d) Fees paid to architects, surveyors and other consultants.
- (e) Cost of transport and conveyance to the site of job or operations.
- (f) Inward carriage and freight charges on special materials.
- (g) Cost of patents and royalties.
- (h) Cost of defective work, e.g. where several trials are necessary before an appropriate one is obtained. The cost of such trials is taken as direct expense.
- (i) Licence fees.
- (j) Hire charges for plants and equipments for a specific product or job.
- (k) Components and parts processed for a special job.
- (l) Insurance charges on special materials chargeable to a job.

Other things remaining the same, the term 'direct expenses' (chargeable expenses), whenever used in costing, refers to a specific product or job. That is, whether some expenses are direct or not, is decided in terms of specific job or product as product or job is considered the cost unit. However, some expenses which cannot be directly identified with product or job (and hence are not direct expenses), can sometimes be identified with a department, function, territory, customer, division etc. For example, salary of branch office manager, depreciation of plant, rent and rates, heating and lighting, insurance expenses etc. are direct in relation to some department or activity but become indirect with regard to a product or job because these expenses are incurred for more than one product or job.

The total of the above three elements of costs (i) direct materials, (ii) direct labour and (iii) direct expenses, are prime cost. According to Official Terminology of Chartered Institute of Management Accountants (London), prime cost is the total cost of direct material and direct labour. Thus, direct expenses is not included in prime cost as per CIMA Terminology. The CIMA defines direct cost as the expenditure which can be economically identified with a specific saleable cost unit.

4. **Factory overhead** Factory overhead, also called manufacturing overhead or factory burden, may be defined as the cost of indirect materials, indirect labour and indirect expenses. The term "indirect materials" refers to materials that are needed for the completion of the product but whose consumption with regard to the product is either so small or so complex that it would not be appropriate to treat it as a direct materials item. They are production supplies and other materials that cannot conveniently or economically be charged to a specific unit of output. Examples of such items are lubricants, cotton waste, handtools, works stationery etc.

The term "indirect labour" is the labour cost of production-related activities that cannot be associated with or conveniently and economically traced to specific products via physical observation. Some examples of indirect labour are: foremen, shop clerks, general helpers, cleaners, material handlers, plant guards, employees engaged in maintenance work or other service work.

The term "indirect expenses" covers all indirect expenditure incurred by the manufacturing enterprise from the time production has started to its completion and its transfer to the finished goods store. Any expenses not classified as direct expenses are known as indirect expenses. The Institute of Cost and Management Accountants (UK) defines indirect expenses as the "expenses which cannot be allocated but which can be apportioned to or absorbed by cost centres or cost units." They are incurred for the benefit of more than one product, job or activity and must be apportioned by appropriate bases to the various functions. Expenses of this type include items such as heat, light, maintenance, factory managers's salary etc.

The total of (i) prime cost, and (ii) factory overheads is known as 'Factory cost'. Direct labour and factory overhead together are known as Conversion Costs because they are the costs of converting raw materials into finished products.

Chapter 6 explains in detail the nature and accounting of overhead costs.

5. **Selling, distribution and administrative overheads** Selling and distribution overheads usually begin when the factory costs end. Such expenses are generally incurred when the product is in saleable condition. It covers the cost of making sales and delivering/despatching products. These costs include advertising, salesmen salaries and commissions, packing, storage, transportation, and sales administrative costs.

Administrative overhead includes costs of planning and controlling the general policies and operations of a business enterprise. Usually, all costs which cannot be charged either to the production or sales division are considered as administrative costs. Typical of such items are fees of the board of directors, the chairman's salary, the rent for general offices and costs of the general accounting and other departments. Sometimes, some such expenses such as manager's salary are often included in factory overhead.

The sum of (i) Prime cost, (ii) Factory overhead and (iii) Selling and distribution and Administrative Overhead is the total cost, i.e., the cost "to make and sell." Chapter 7 discusses selling and distribution and administrative overhead costs. Figure 2.1 presents the natural classification of costs as discussed above.

$\text{Direct Material} + \text{Direct Labour} + \text{Direct Expenses} =$ $\text{Indirect Materials} + \text{Indirect Labour} + \text{Indirect Expenses} =$			(1) Prime Cost + Factory Overhead
Threads, lubricants, glue, other factory supplies.	Supervision, Inspection, superintendence, salary of factory clerks, experimental work, general helpers, cleaners, employees engaged in maintenance work.	Rent, insurance — fire and liability, taxes, depreciation, maintenance and repair, power, light, heat, misc., factory overhead, small tools, hire of machinery.	(2) Factory cost +  
Selling and Distribution Overhead + Administrative Overhead =			Selling and Distribution, and Administrative overhead.
Advertising, samples, salesmen's salaries travel, depreciation of sales equipment, rent of branches, telephone, telegraph, supplies, stationery and printing, freight and carriage out, sales promotion, sales accounting, misc. expenses.	office salaries, rent, executive salaries, depreciation of equipment, telephone and telegraph, travel, property taxes, auditing expenses, stationery and printing, postage, other administrative expenses.		(3) Total cost

Fig. 2.1 Natural classification of costs in a manufacturing concern

## COST BEHAVIOUR (IN RELATION TO CHANGES IN OUTPUT OR ACTIVITY OR VOLUME)

Costs can be classified into (i) fixed, (ii) variable and (iii) mixed costs, in terms of their variability or changes in cost behaviour in relation to change in output, or activity or volume. Activity may be indicated in any forms such as units of output, hours worked, sales, etc.

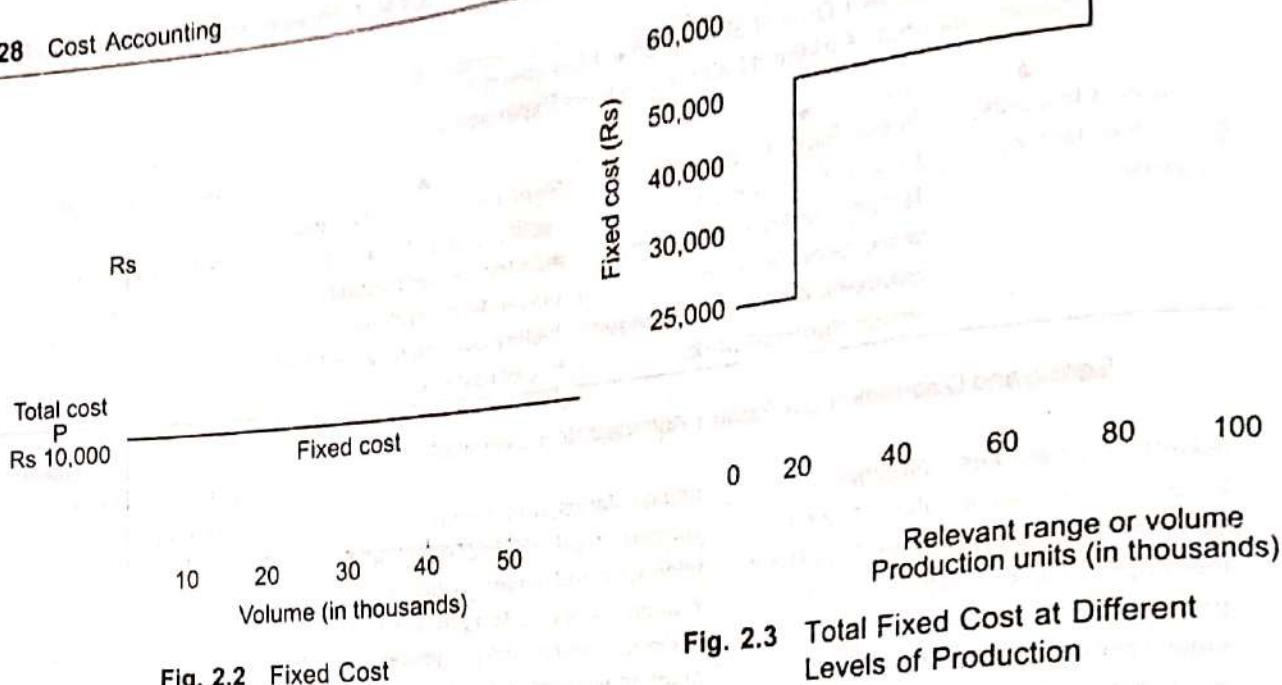
### Fixed Cost

Fixed cost is a cost which does not change in total for a given time period despite wide fluctuations in output or volume of activity. These costs are also known as standby costs, capacity costs or period costs. Examples of fixed costs are rent, property taxes, supervising salaries, depreciation on office facilities, advertising, insurance, etc. They accrue or are incurred with the passage of time and not with the production of the product or the job. This is the reason why fixed costs are expressed in terms of time, such as per day, per month or per year and not in terms of unit. It is totally illogical to say that a supervisor's salary is so much per unit. But it can be said that supervisor's salary is so much per month.

Any fixed cost can be represented by a constant (See Fig. 2.2).

However it should be improper to say that fixed costs never change in amount. The basic concept is that the term "fixed" refers to fixity (non-variability) related to specific volume (or relevant range); the term does not imply that there will be no changes in fixed cost. This characteristic of fixed cost has been shown in Fig. 2.3. According to Fig. 2.3, the following are the fixed costs at different levels of production:

1. Rs 50,000 fixed cost between 20,000 and 80,000 units of production.



2. Rs 60,000 fixed cost in excess of 80,000 units. This assumes that increase in production after a certain level (80,000 units) requires increase in fixed expenses which have been fixed earlier, e.g., additional supervision, increase in quality control costs.

3. Rs 25,000 fixed cost from zero units (shut down) to 20,000 units. This explains that if the level of activity comes to less than 20,000 units, some fixed costs may not be incurred. For example, if the plant is shut down or production is reduced, many of the fixed costs, such as costs on accounting functions, supplies, staff, will not be incurred.

However, if laying off of staff and personnel, etc. is not possible, then the fixed cost will remain at Rs 50,000.

Fixed costs can be classified in the following categories for the purpose of analysis:

1. *Committed costs* Such costs are primarily incurred to maintain the company's facilities and physical existence, and over which management has little or no discretion. Plant and equipment depreciation, taxes, insurance premium rate and rent charges are examples of committed costs.

2. *Managed costs* Managed costs are related to current operations which must continue to be paid to ensure the continued operating existence of the company, e.g. management and staff salaries.

3. *Discretionary costs* They are also known as programmed costs. Discretionary costs result from special policy decisions, management programmes, new researches, etc. Some examples of such costs are research and development costs, marketing programmes, new system development costs.

The difference between committed and discretionary costs lies in the fact that it is difficult to eliminate or avoid committed costs in times of low production or decline in business activity, whereas discretionary costs such as research and development could be eliminated or reduced to a desirable level.

4. *Step costs* A step cost is constant for a given amount of output and then increases in a fixed amount at a higher output level. For example, in a manufacturing company, one supervisor is required at a salary of Rs 10,000 p.m. for every 50 workers. So long as 50 workers or less than that are working, the supervision costs will be Rs 10,000 p.m. But as soon as the 51st worker is employed, the cost of supervision increases by Rs 10,000 p.m. and will be Rs 20,000. The cost of supervision remains fixed at

Rs 20,000 if not more than 100 workers are working. But it will go up if more than 100 workers have been employed. Figure 2.4 exhibits the behaviour pattern of step costs.

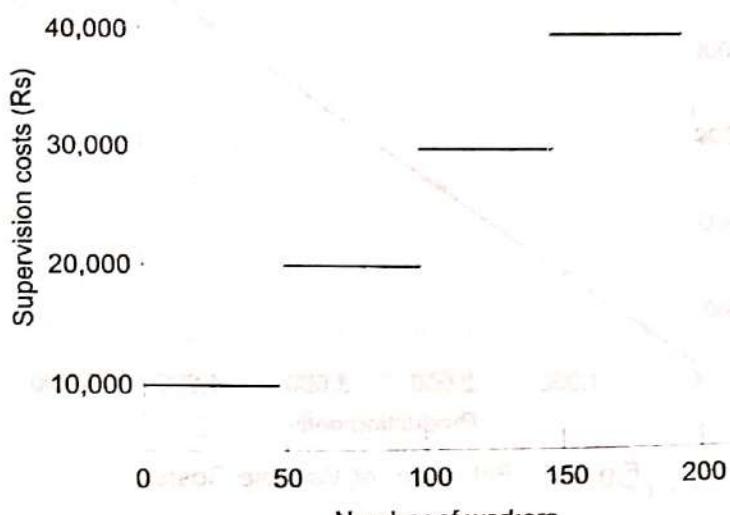


Fig. 2.4 Step Costs

## Variable Cost

Variable costs are those costs that vary directly and proportionately with the output. There is a constant ratio between the change in the cost and change in the level of output. Direct materials cost and direct labour cost are the costs which are generally variable costs. For example, if direct material cost is Rs 50 per unit, then for producing each additional unit, a direct material cost of Rs 50 per unit will be incurred. That is, the total direct material cost increases in direct proportion to increase in units manufactured. However, it should be noted that it is only the total variable costs that change as more units are produced; the per unit variable cost remains constant.

Variable overheads like factory supplies, indirect materials, sales commission, office supplies are some other examples of variable costs. If the factory is shut down, variable costs are eliminated. Variable cost is always expressed in terms of units or percentage of volume; it cannot be stated in terms of time. Variable cost is depicted in Fig. 2.5. Figure 2.5 shows graphically the behaviour pattern of direct material cost. For every increase in the units produced there is a proportionate increase in the cost. When production increases to 3,000 units from a level of 2,000 units, the cost of direct materials increases in direct proportion at the constant rate of Rs 50 per unit. The variable cost line is shown as linear rather than curvilinear. That is, on a graph paper a variable cost line appears as an unbroken straight line in place of a curve.

## Mixed Cost

Mixed costs are costs made up of fixed and variable elements. They are a combination of semi-variable costs and semi-fixed costs. Because of the variable component, they fluctuate with volume; because of the fixed component, they do not change in direct proportion to output. Semi-fixed costs are those costs which remain constant upto a certain level of output after which they become variable as shown in

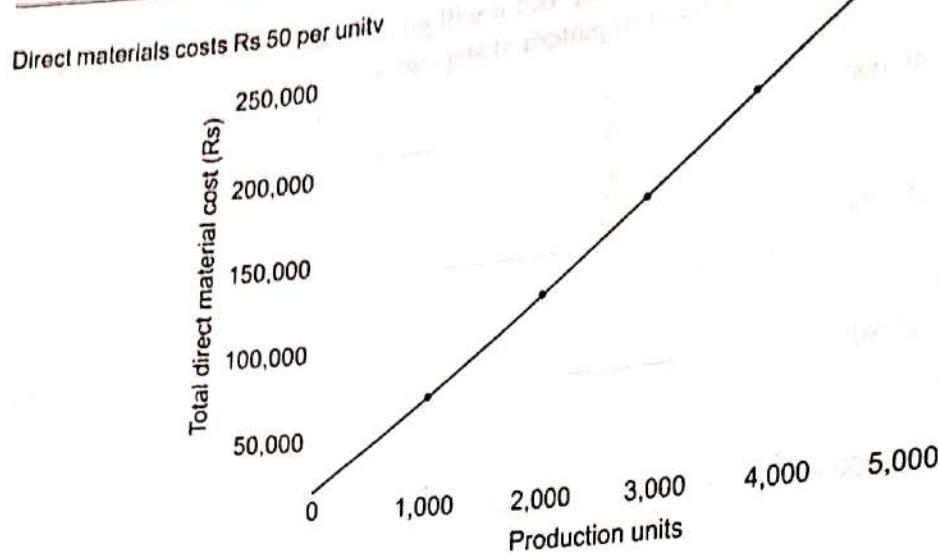


Fig. 2.5 Behaviour of Variable Costs

Fig. 2.6. Semi-variable cost is the cost which is basically variable but whose slope may change abruptly when a certain output level is reached as shown in Fig. 2.7.

An example of a mixed cost is the earnings of a worker who is paid a salary of Rs 1500 per week (Fixed) plus a bonus of Re 1 for each unit completed (variable). If he increases his weekly output from 1,000 units to 1,500 units, his earnings increase from Rs 2,500 to Rs 3,000.

#### Earnings

	Units produced
1,000	1,500
Rs 1,500	Rs 1,500
1000	1,500
Rs. 2,500	Rs 3,000

Fixed component  
Variable component

Total

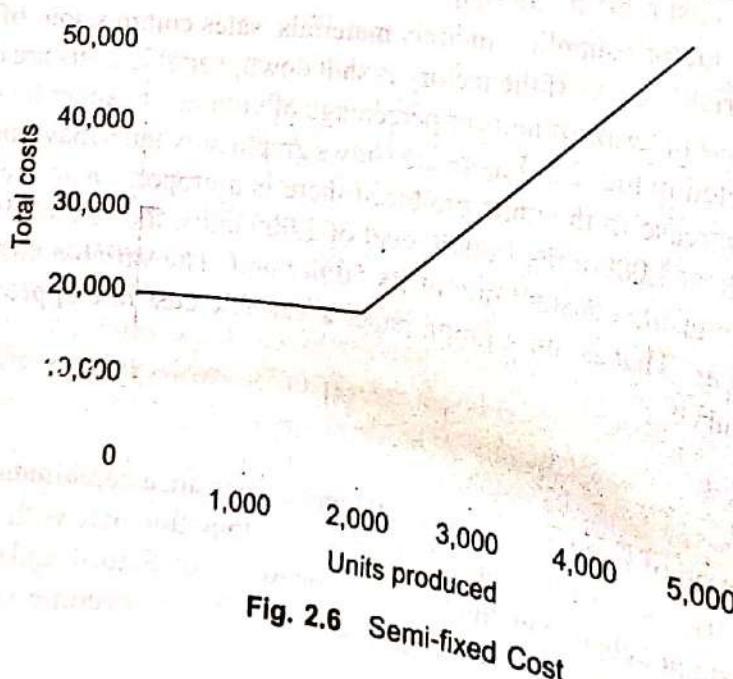


Fig. 2.6 Semi-fixed Cost

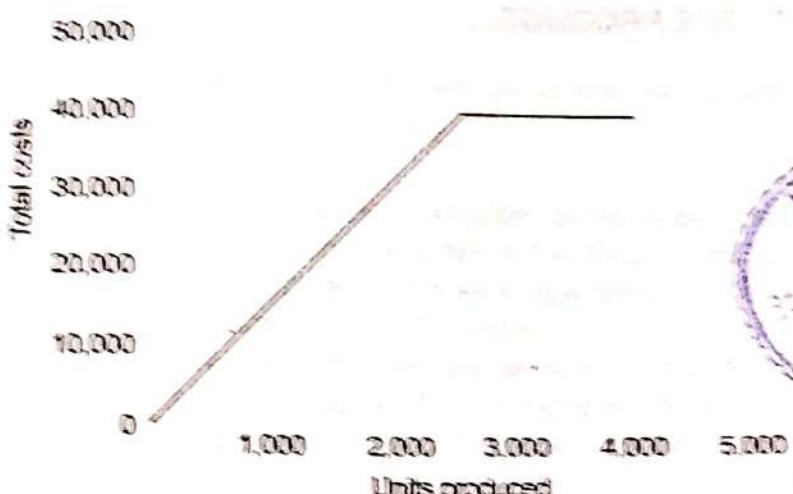


Fig. 2.7 Semi-variable Cost

An increase of 50% in output brings only a 20% increase in his earnings. Mathematically, mixed costs can be expressed as follows:

$$\text{Total mixed cost} = \text{Total fixed cost} + (\text{Units} \times \text{Variable cost per unit})$$

## DEGREE OF TRACEABILITY TO THE PRODUCT

Cost is divided into direct and indirect cost in terms of degree of traceability to the product.

### Direct Cost

Costs which are easily traceable or identifiable with a product are called direct costs. If output units are the objects of costing, then direct costs represent costs and resources that can be traced to or identified with the finished product.

Direct materials, direct labour and direct expenses are examples of direct costs.

### Indirect Cost

Indirect costs are those costs which cannot be identified with, or traced to a single product because they are incurred for several products. The examples of indirect costs are: indirect materials (lubricants and scrap materials), salary of factory supervisors (indirect labour), rent, rates and depreciation (indirect expenses). Indirect costs, often referred to as overheads, have to be apportioned to different products.

Costs also may be direct or indirect with respect to particular company segments or divisions. That is some cost which are indirect for a product, may be traced to a segment or department and thus, will be direct costs for that department. A segment may mean any one of a number of things, viz. department, division, specific activity, sales territory and the like.

Before dividing the cost into direct and indirect, it is necessary to know whether it is being associated with a product, sales area, department or some other activity. For example, if a salesman simultaneously handles several products, his salary is an indirect cost for each product, but a direct cost to his sales area or department.

**Solution:**Cost element

Direct materials

Direct labour

Direct expenses

Finance cost

Research and development expenses

Selling and distribution cost

Administration cost

Indirect production costs

**Numbers**

17

4

18

15

5

3, 9, 11, 16, 19

1, 8, 10, 13, 14

2, 6, 7, 12, 20

**COST STATEMENT OR COST SHEET**

Cost Statement is a statement which is prepared usually to present the detailed costs of total production during the period in question. It provides information relating to cost per unit at different stages of the total cost of production or at different stages of completion of the product. Sometimes standard cost data are also provided to facilitate comparison with the actual cost incurred. The preparation of the cost sheet requires understanding of the treatment of the following items:

**1. Stock of raw materials** The cost statement requires the determination of the value of raw materials consumed for the output produced. If the opening stock of raw materials, purchase of raw materials during the period and closing stock of raw materials are given, then the value of raw materials consumed is computed as follows:

Opening stock of raw materials

**Rs**

Add: Purchase of raw materials

Total

Less: Closing stock of raw materials

Value of raw materials consumed

**2. Stock of work-in-progress** Work-in-progress represents the accumulated costs on goods that have not yet been completed. As such these goods are not yet available for sale. The degree of completion of work-in-progress is usually expressed as a fraction or as a percentage, such as 2/5 complete for materials or 50% complete for labour.

Work-in-progress is valued on a prime cost or factory cost basis. In case it is to be valued on a factory cost basis, the following procedure would be followed:

Prime Cost

**Rs**

Add: Factory overhead

Add: Work-in-progress (beginning)

Total

Less: Work-in-progress (closing)

Factory Cost

**3. Stock of finished goods** Finished goods inventory covers the products on which all factory work has been completed. It carries the cost of completed production. Nothing more is to be done to finished goods at the factory and no further costs are added to finished goods. If opening and closing stock of finished goods are given, then they would be adjusted as under:

	Rs
Cost of production	—
Add: Finished goods (beginning)	—
Total	—
Less: Finished goods (closing)	—
Cost of goods sold	—

As stated earlier, cost sheet gives details about the cost of manufacturing a product or completing an activity. A cost sheet discloses:

- (1) Prime Cost
- (2) Factory Cost (also known as works cost)
- (3) Cost of Production
- (4) Total Cost (or cost of sales)

A cost sheet shows total cost and cost per unit. Cost per unit is obtained by dividing total cost by the number of units produced. A cost sheet will have separate columns for the total and the unit cost of each element of cost. Cost sheet can be prepared on weekly, monthly or other time period basis as desired by management. Specimen of a cost sheet is given below:

Specimen of Cost Sheet  
Cost Sheet for the Period \_\_\_\_\_  
Production \_\_\_\_\_ Units \_\_\_\_\_

	<i>Total cost (Rs)</i>	<i>Cost per unit (Rs)</i>
✓ Direct Materials:		
✓ Opening stock...		
✓ Purchases...		
✓ Carriage inwards...		
Less: Closing stock...		
Less: Scrap		
✓ Direct materials consumed		
✓ Direct wages		
✓ Direct expenses		
I. Prime Cost		
Add: Factory Overheads:		
Indirect materials		
Loose tools		
Indirect wages		
Rent and rates (factory)		
Lighting and heating (factory)		
Power and fuel		

	Total cost (Rs)	Cost per unit (Rs)
<b>D</b>		
Repairs and maintenance		
Cleaning		
Drawing office expenses		
Cost of research and experiments		
Depreciation of factory plant		
Works stationery		
Welfare service expenses		
Insurance—Fixed assets etc.		
—Stock and finished goods		
Works manager's salaries		
<b>II. Factory or Works Cost</b>		
<b>Add: Office and Administrative Overheads:</b>		
Rent and rates (office)		
Salaries (office)		
Lighting and heating		
Insurance of office building and equipments etc.		
Telephone and postages		
Printing and stationery		
Depreciation of furniture and office equipments		
and buildings.		
Legal expenses		
Audit fees		
Bank charges		
<b>III. Cost of Production</b>		
<b>Add: Selling and Distribution Overheads:</b>		
Showroom rent and rates		
Lighting and heating		
Salesmen's salaries		
Commissions		
Travelling expenses of salesmen		
Sales printing and stationery		
Advertising		
Bad debts		
Postage		
Depreciation and expenses of delivery van		
Debt collection expenses		
Carriage freight outwards		
Samples and other free gifts		
<b>IV. Cost of Sales</b>		
<b>Sales</b>		
<b>Net profit (or loss)</b>		

**Note** Items of expenses which are an appropriation of profit should not form a part of the costs of a product. Examples of such expenses are: (i) Income Tax; (ii) Dividends to shareholders; (iii) Commission (out of profit) to Managing Directors or Partners; (iv) Capital loss, i.e. loss arising out of sale of assets; (v) Interest on loan; (vi) Donations; (vii) Capital expenditure; (viii) Discount on shares and debentures; (ix) Underwriting commission; (x) Writing off goodwill.

**Example 2.**  
From the fol

Stock of  
Stock of  
Work-in  
Purcha  
Carriag  
Factor  
Other  
Stock  
Wage  
Work  
Facto  
Power  
Gen  
Sale  
Sto  
Wo

**Soluti**

**Example 2.2**

From the following particulars, prepare a cost sheet for the year ended 31.12.2002

Stock of finished good (1.1.2002)	Rs
Stock of raw materials (1.1.2002)	6,000
Work-in-progress (1.1.2002)	40,000
Purchase of raw materials	15,000
Carriage inwards	4,75,000
Factory rent, taxes	12,500
Other production expenses	7,250
Stock of goods (31.12.2002)	43,000
Wages	15,000
Work manager's salary	1,75,000
Factory employees salary	30,000
Power expenses	60,000
General expenses	9,500
Sales for the year	32,500
Stock of raw materials	8,60,000
Work-in-progress (31.12.2002)	50,000
	10,000

*Solution:*

**Cost Sheet for the Year Ending 31.12.2002**

	Rs	Rs
Stock of raw materials on 1.1.2002	40,000	
Add: Purchase during the year	4,75,000	
	5,15,000	
Less: Stock of materials on 31.12.2002		50,000
Cost of materials consumed		4,65,000
Wages		1,75,000
Carriage inwards		12,500
Prime Cost		6,52,500
Add: Factory overheads:		
Works manager's salary	30,000	
Factory employees salary	60,000	
Factory rent, taxes and insurance	7,250	
Power expenses	9,500	
Other production expenses	43,000	
	1,49,750	
Add: Works-in-progress (1.1.2002)		15,000

Less: Works-in-progress (31.12.2002)

Add: Factory Cost  
Office overheads:  
General expensesTotal Cost  
Add: Stock of finished goods (1.1.2002)Less: Stock of finished goods (31.12.2002)  
Cost of Sales  
Profit  
Total Sales

1,64,750
10,000
1,54,750
8,07,250
32,500
8,39,750
6,000
8,45,750
15,000
8,30,750
29,250
8,60,000

**Example 2.3**

A manufacturing company has shown Rs 32,380 as "Establishment Expenses" which include the following expenses:

	('000) Rs
1. Warehouse wages	3600
2. Office salaries	2260
3. Office lighting	140
4. Directors remuneration	2800
5. Rent, rates and insurance of warehouses	620
6. Warehouse lighting	540
7. Trade magazine	140
8. Bank charges	200
9. Bad debts	340
10. Agents commission	11500
11. Warehouse repair	1020
12. Travelling expenses	1520
13. Rent, rates and insurance of office	460
14. Printing and stationery	3000
15. Donation	300
16. Discount allowed	3940

From the above information, find out the total of (i) selling expenses (ii) distribution expenses (iii) administration expenses and (iv) expenses which will not be considered in determining total costs.

(CA inter)

olution:

(i) **Selling Expenses:**

Bad debts

('000) Rs	('000) Rs
340	

	Rs
Agents commission	11500
Travelling expense	1520
	<u>13360</u>
(ii) <i>Distribution Expenses:</i>	
Warehouse wages	3600
Rent, rates and insurance of warehouse	620
Warehouse lighting	540
Warehouse repair	1020
	<u>5780</u>
(iii) <i>Administrative Expenses:</i>	
Office salaries	2260
Office lighting	140
Director's remuneration	2800
Trade magazine	140
Bank charges	200
Rent, rates and insurance of office	460
Printing and stationery	3000
	<u>9000</u>
(iv) <i>Expenses Not to be Used in Estimating Costs:</i>	
Donation	300
Discount allowed	3940
	<u>4240</u>
	<u>32380</u>

**Note** Discount allowed has been assumed to be cash discount. Cash discount is a financial item and, therefore not considered in cost accounts.

#### Example 2.4

Vijay Industries manufactures a product X. On 1st January 2002, there were 5000 units of finished product in stock. Other stocks on 1st January 2002 were as follows:

Works-in-progress Rs 57,400

Raw materials Rs 1,16,200

The information available from cost records for the year ended 31st December 2002 was as follows:

	Rs
Direct materials	9,06,900
Direct labour	3,26,400
Freight on raw materials purchased	55,700
Indirect labour	1,21,600
Other factory overheads	3,17,300
Stock of raw materials on 31.12.2002	96,400
Work in progress on 31.12.2002	78,200
Sales (150000 units)	30,00,000
Indirect materials	2,13,900

There are 15000 units of finished stock in hand on 31st December 2002. You are required to prepare:

A statement of cost and profit assuming that opening stock of finished goods is to be valued at the same cost per unit as the finished stock at the end of the period.

Solution:

### Statement of Cost and Profit of Product X

Particulars	Amount (Rs)	Amount (Rs)
Opening Stock of Raw Materials	1,16,200	
Add: Direct materials	9,06,900	
Add: Freight on raw materials purchased	55,700	
	10,78,800	
Less: Closing stock of raw materials	96,400	
		9,82,400
<i>Value of Raw Materials Consumed</i>		3,26,400
Add: Direct wages		
		13,08,800
Prime Cost		
Add: Factory overheads:		
Indirect materials	2,13,900	
Indirect labour	1,21,600	
Other factory overheads	3,17,300	
	6,52,800	
Add: Opening work-in-progress	57,400	
		6,32,000
Less: Closing work-in-progress	7,10,200	
		19,40,800
<i>Works Cost of Goods Manufactured</i>		60,650
Add: Opening stock of finished goods 5000 units @ Rs 12.13	78,200	
		20,01,450
Less: Closing stock of finished goods 15000 units @ Rs 12.13	1,81,950	
		18,19,500
<i>Cost of Goods Sold</i>		1,80,500
Profit		
Sales		30,00,000

#### Working Notes:

Units produced during the year are not given and therefore have been computed as follows:

$$\text{Sales} = \text{Opening stock} + \text{Units produced} - \text{Closing stock}$$

$$150000 = 5000 + X - 15000$$

$$-X = 5000 - 15,000 - 1,50,000$$

$$X = 1,60,000 \text{ units}$$

$$= \frac{\text{Total cost}}{\text{Units produced}} = \frac{\text{Rs } 1940800}{160000} = \text{Rs } 12.13 \text{ per unit}$$

$$= 15000 \text{ units} \times \text{Rs } 12.13 = \text{Rs } 1,81,950$$

$$= 15000 \text{ units} \times \text{Rs } 12.13 = \text{Rs } 60650$$

Hence

Value of closing stock

Value of opening stock of 5000 units  $\times$  Rs 12.13 = Rs 60650

**Example 25**

The books of Adarsh Manufacturing Company present the following data for the month of April 2002:

Direct labour cost Rs 17,500 being 175% of works overheads  
 Cost of goods sold excluding administrative expenses Rs 56,000.  
 Inventory accounts showed the following opening and closing balances:

	April 1	April 30
Raw materials	Rs 8,000	Rs 10,600
Work-in-progress	10,500	14,500
Finished goods	17,500	19,000
Other data are:		
Selling expenses		Rs 3,500
General and administrative expenses		2,500
Sales for the month		75,000

You are required to:

- Compute the value of materials purchased
- Prepare a cost statement showing the various elements of cost and also the profit earned.

(CA Inter)

**Solution****(i) Computation of Value of Materials Purchased**

	Rs
Cost of goods sold	56,000
Add: Closing stock of finished goods	19,000
	<u>75,000</u>
Less: Opening stock of finished goods	17,600
	<u>57,400</u>
Cost of goods manufactured	14,500
Add: Closing stock of work-in-progress	71,900
	<u>10,500</u>
Less: Opening stock of work-in-progress	61,400
Works cost	10,000
Less: Factory overheads (100/175 of direct labour cost)	51,400
	<u>17,500</u>
Prime cost	33,900
Less: Direct labour	10,600
	<u>44,500</u>
Raw materials consumed	8,000
Add: Closing stock of raw materials	36,500
	<u>33,900</u>
Raw materials available	
Less: Opening stock of raw materials	
Value of materials purchased	

**(ii) Cost Statement**

Raw materials consumed (as calculated above)

Rs  
33,900

0 Cost Accounting		
Add: Direct labour cost		17,500
Prime cost		51,400
Add: Factory overheads		10,000
Works cost		61,400
Add: Opening work-in-progress		10,500
		71,900
Less: Closing work-in-progress		14,500
Cost of goods manufactured		57,400
Add: Opening stock of finished goods		17,600
		75,000
Less: Closing stock of finished goods		19,000
Cost of production of goods sold		56,000
Add: General and administrative expenses		2,500
		3,500
Add: Selling expenses		62,000
Cost of sales		13,000
Profit (balancing figure Rs 75,000 - Rs 62,000)		
Sales		75,000

**Example 2.6**

The following particulars relating to the year 2001 have been taken from the books of a chemical works manufacturing and selling a chemical mixture:

*Stock on January 1, 2001*

	kg	Rs
Stock on January 1, 2001		
Raw materials	2000	2,000
Finished mixture	500	1,750
Factory stores		
Purchases:		
Raw materials		
Factory stores	1,60,000	1,80,000
Sales:		
Finished mixture		
Factory scrap		24,250
Factory wages	1,53,050	9,18,000
Power		8,170
Depreciation of machinery		
Salaries:		
Factory		1,78,650
Office		30,400
Selling		18,000
Expenses:		
Direct		72,220
Office		37,220
Selling		41,500
		18,500
		18,200
		18,000

Stock on December 31, 2001

Raw materials	1200
Finished mixture	450
Factory stores	5,550

The stock of finished mixture at the end of 2001 is to be valued at the factory cost of the mixture for that year. The purchase of raw materials remained unchanged throughout 2001.

Prepare a statement giving the maximum possible information about cost and its break-up for the year 2001.

Solution:

#### Statement of Cost for the Year 2001

	Quantity (kg)	Amount (Rs)
<b>Raw materials consumed:</b>		
Opening stock	2,000	2,000
Add: Purchases	<u>1,60,000</u>	<u>1,80,000</u>
	<u>1,62,000</u>	<u>1,82,000</u>
<i>Less:</i> Closing stock of raw materials at current prices	1,200	1,350
	<u>1,60,800</u>	<u>1,80,650</u>
Cost of raw materials consumed	1,78,650	
Factory wages		18,500
Direct expenses		<u>1,60,800</u>
Prime Cost		3,77,800
Add: Factory overheads (Factory stores)	7,250	
Opening stock	<u>24,250</u>	
Add: Purchases	<u>31,500</u>	
	5,550	
<i>Less:</i> Closing stock	25,950	
Factory stores consumed	30,400	
Power	18,000	
Depreciation	<u>72,220</u>	
Salaries		5,24,370
	7,800	8,170
<i>Less:</i> Sale of scrap	<u>1,53,000</u>	<u>5,16,200</u>
Factory Cost	500	1,750
Add: Opening stock of finished mixture	<u>1,53,500</u>	<u>5,17,950</u>
	450	1,518
<i>Less:</i> Closing stock of finished mixture (valued at factory cost of current year production)	<u>1,53,050</u>	<u>5,16,432</u>
Add: Office overheads:	37,220	55,420
Salaries	<u>18,200</u>	
Expenses		5,71,852
<b>Cost of production of finished mixture sold</b>		

	Quantity (kg)	Amount (Rs)
Add: Selling and distribution overhead:		
Salaries	41,500	59,500
Expenses	18,000	6,31,352
Cost of goods sold or cost of sales:		
Profit	1,53,050 kg	2,86,648
Sales		9,18,000

**Working Notes:**

$$1. \text{ Value of closing stock of raw materials } \left( \frac{\text{Rs } 1,80,000}{\text{Rs } 1,60,000} \times 1,200 \text{ kg} \right) = \text{Rs } 1,350$$

2. Value of factory scrap given in the question is Rs 8170. Hence quantity of factory scrap will be:

(kg)

1,53,050

Sales

450

Add: Closing stock

1,53,500

Less: Opening stock

500

Produced during the year

1,53,000

Inputs introduced

1,60,800

Scrap

7,800

**Example 2.7**

The following figures are extracted from the trial balance of Gogetter Co. on 30th September, 2002:  
Inventories:

	Rs	Rs
Finished Stock	80,000	
Raw Materials	1,40,000	
Work-in-Process	2,00,000	
Office appliances	17,400	
Plant and machinery	4,60,500	
Buildings	2,00,000	
Sales		
Sales return and rebates		7,68,000
Materials purchases	14,000	
Freight incurred on materials	3,20,000	
Purchases returns	16,000	
Direct labour		
Indirect labour		4,800
Factory supervision		
Repairs and upkeep factory	1,60,000	
Heat, light and power	18,000	
Rates and taxes	10,000	
	14,000	
	65,000	
	6,300	

Miscell  
Sales co  
Sales tra  
Sales pr  
Distribut  
Office sa  
Interest  
Further

(i)

(ii)

(iii)

(iv)

**Solution**

Gr  
Les  
Les  
Ne  
Le

Miscellaneous factory expenses	
Sales commission	18,700
Sales travelling	33,600
Sales promotion	11,000
Distribution deptt. sales and expenses	22,500
Office salaries and expenses	18,000
Interest on borrowed funds	8,600
Further details are available as follows:	2,000

## (i) Closing Inventories:

Finished goods	1,15,000
Raw materials	1,80,000
Work-in-process	1,92,000

## (ii) Accrued Expenses on:

Direct labour	8,000
Indirect labour	1,200
Interest on borrowed funds	2,000

## (iii) Depreciation to be provided on:

Office appliance	5%
Plant and machinery	10%
Buildings	4%

## (iv) Distribution of the Following Costs:

Heat, light and power to factory, office and selling in the ratio 8:1:1.

Rates and taxes two-thirds to factory and one-third to office. Depreciation on buildings to factory, office and selling in the ratio 8:1:1.

With the help of the above information, you are required to prepare a condensed profit and loss statement of Gogetter Co. for the year ended 30th September, 2002 along with supporting schedules:

- (a) Cost of sales.
- (b) Selling and distribution expenses.
- (c) Administration expense.

(C A Inter)

**Solution**

**Gogetter Company**  
**Profit and Loss Statement**  
**For the Year Ended 30th September, 2002**

	Rs	Rs
Gross Sales	7,68,000	
Less: Returns	14,000	7,54,000
		<hr/>
Less: Cost of sales (Schedule 1)		7,14,020
Net Operating Profit		39,980
Less: Interest on borrowed funds		4,000
		<hr/>
Net Profit		35,980

## (i) Schedule 1: Cost of Sales

	Rs	Rs
Raw Material		1,40,000
Opening Balance	3,20,000	
Add: Material purchased	16,000	
Add: Freight on material	(4,800)	
Less: Purchased returns		
Cost of materials available	3,31,200	
Less: Closing stock	1,80,000	
Raw materials consumed	2,91,200	
Direct labour	1,68,000	
Prime Cost	4,59,200	
Factory Overheads:		
Indirect labour	19,200	
Factory supervision	10,000	
Repairs and factory upkeep	14,000	
Heat, light and power	52,000	
Rates and taxes	4,200	
Miscellaneous factory expenses	18,700	
Depreciation of plant	46,050	
Depreciation of buildings	6,400	1,70,550
Gross Works Cost	6,29,750	
Add: Opening work-in-process	2,00,000	
Less: Closing work-in-process	8,29,750	
Works Cost	1,92,000	
Add: Administration expenses (Schedule 3)	6,37,750	
Cost of Production	18,870	
Add: Opening stock of finished goods	6,56,620	
Less: Closing stock of finished goods	80,000	
Cost of Production of Goods Sold	7,36,620	
Add: Selling and distribution overheads (Schedule 2)	1,15,000	
Cost of sales	6,21,620	
	92,400	7,14,020

## (ii) Schedule 2: Selling and Distribution Overheads (Expenses)

Sales commission	33,600
Sales travelling	11,000
Sales promotion	22,500
Distribution deptt: Salaries and expenses	18,000
Heat, light and power	6,500
Depreciation of buildings	800
	92,400

(iii) Schedule 3  
 Office salaries  
 Depreciation  
 Depreciation  
 Heat, light  
 Rates and

Example 2  
 The following

Finished  
 Work-in  
 Raw m  
 Additi  
 Cost o  
 Total g  
 Factor  
 Direct  
 Requi

- (i) Det
- (ii) Det
- (iii) Det

Solution:

(i)

Add:

Less:

(ii)

Add:

Less:

Less:

Less:

## (iii) Schedule 3: Administrative Overheads (Expenses)

Office salaries and expenses	8,600
Depreciation of office appliances	870
Depreciation of buildings	800
Heat, light and power	6,500
Rates and taxes	2,100
	18,870

**Example 2.8**

The following inventory data relates to XYZ Ltd:

*Inventories*

	Beginning	Ending
Finished goods	Rs 1,10,000	95,000
Work-in-progress	Rs 70,000	80,000
Raw materials	Rs 90,000	95,000

*Additional information:*

Cost of goods available for sale	Rs 6,84,000
Total goods processed during the period	Rs 6,54,000
Factory overheads	Rs 1,67,000
Direct materials used	Rs 1,93,000

*Requirements:*

- Determine raw materials purchases.
- Determine the direct labour cost incurred.
- Determine the cost of goods sold

(B. Com. Hons. Delhi 1999)

*Solution:*

(i) Raw Materials purchases	Rs 1,93,000
Direct Materials used	95,000
Add: Closing Stock	2,88,000
	90,000
Less: Opening Stock	1,98,000
(ii) Direct Labour cost incurred	6,54,000
Goods processed during the period	80,000
Add: Closing Work-in-process	7,34,000
	70,000
Less: Opening Work-in-process	6,64,000
Cost of goods introduced during the period for processing	1,67,000
Less: Factory overheads	4,97,000
Prime Cost	1,93,000
Less: Direct Materials used	3,04,000
Direct Labour cost incurred	

(iii) Cost of goods sold

Cost of goods available for sale  
Add: Opening Stock of Finished Goods

Less: Closing Stock of Finished Goods  
Cost of goods sold

Rs.	6,84,000
1,10,000	7,94,000
95,000	6,99,000

**Example 2.9**

The following particulars relate to a company for a period of three months:

Raw materials 1.1.2002	55,000
Raw materials 31.3.2002	35,000
Factory wages	80,000
Materials purchased	60,000
Sales	1,54,000
Indirect expenses	10,000
Stock of finished goods (1.1.2002)	Nil
Stock of finished goods (31.3.2002)	30,000
No. of units produced during the period was	2,000

Prepare a statement of cost for the period and compute the price to be quoted for 500 units in order to realise the same % of profit as for the period under review, assuming no alteration in wages and cost of materials.

**Solution:**

#### Statement of Cost for the Period Ending 31.3.2002

Particulars	Output 2,000 Units	
	Rs	Amount
Opening stock of raw materials		Rs
Add: Purchases	55,000	
	<u>60,000</u>	
Less: Closing stock of raw material	1,15,000	
Raw material consumed	<u>35,000</u>	
Factory wages		
Prime cost		80,000
Indirect expenses		<u>80,000</u>
Cost of production		1,60,000
Less: Closing stock of finished goods		10,000
Cost of goods sold		<u>1,70,000</u>
Profit $\left( \frac{14,000 \times 100}{1,40,000} \right) = 10\% \text{ of cost}$		30,000
Sales		1,40,000
		14,000
		<u>1,54,000</u>

Add:

Add:

**Example**

X Ltd. man  
one brand,

- A -
- B -
- C -
- D -

You ar

loss made

- (a) Dir
- (b) Wo
- (c) To

Actu

Dire

Dire

Selli

Facto

assumed  
basis of  
tion.

**Solution:**

The rela  
1 Un  
order sh

**Tender Statement Showing Quotation for 500 Units**

*Details*

		Amount
	Materials consumed $\left( \frac{80,000 \times 500}{2,000} \right)$	20,000
	Wages $\left( \frac{80,000 \times 500}{2,000} \right)$	20,000
	Prime cost	<u>40,000</u>
Add:	Indirect expenses $\left( \frac{10,000 \times 500}{2,000} \right)$	2,500
	Cost of production	42,500
Add:	Profit (10% of cost of production)	4,250
	Price to be quoted	<u>46,750</u>

**Example 2.10**

X Ltd. manufactures four brands of toys — A, B, C and D. If the company limits the manufacture to just one brand, the monthly production will be—

- A — 50000 units
- B — 100000 units
- C — 150000 units
- D — 300000 units

You are given the following set of information from which you are requested to find out the profit or loss made on each brand showing clearly the following elements—

- (a) Direct Cost
- (b) Works Cost
- (c) Total Cost

	A	B	C	D
Actual production (units)	6750	18000	40500	94500
Direct wages (Rs)	15000	27500	37500	105000
Direct materials cost (Rs)	50000	92500	127500	380000
Selling price per unit (Rs)	20	15	10	8

Factory overhead expenditure for the month was Rs 162000. Selling and distribution cost should be assumed @20% of works cost. Factory overhead expenses should be allocated to each brand on the basis of units which could have been produced in a month when single brand production was in operation.

(ICWA Inter.)

**Solution:**

The relative ratios of each brand of products are as follows:

1 Unit of A = 2 units of B = 3 units of C = 6 units of D. Therefore, the overhead ratio in the inverse order should be 1 : 2 : 3 : 6. In case of D, the overhead expense rate will be

$$\frac{\text{Rs } 1,62,000}{6750 \times 6 + 18000 \times 3 + 40500 \times 2 + 94500}$$

$$= \text{Rs } \frac{162000}{270000}$$

$$= \text{Re } 0.60$$

The overhead expense rate for the various brands are :

- A -  $\text{Rs } 6 \times 0.60 = \text{Rs } 3.60$
- B -  $\text{Rs } 3 \times 0.60 = \text{Rs } 1.80$
- C -  $\text{Rs } 2 \times 0.60 = \text{Rs } 1.20$
- D -  $\text{Re } 1 \times 0.60 = \text{Re } 0.60$

This follows the logic that the rate should be highest in case of brand which will be produced in least number when single brand production is in operation.

**Statement of Profitability  
Brands**

	A Rs	B Rs	C Rs	D Rs	Total Rs
Direct materials	50000	92500	127500	380000	650000
Direct wages	15000	27500	37500	105000	185000
Prime cost	65000	120000	165000	485000	835000
Factory overhead	24300	32400	48600	56700	162000
Works cost	89300	152400	213600	541700	997000
Selling and distribution cost (20% of works cost)	17860	30480	42720	108340	199400
Total Cost	107160	182880	256320	650040	
Sales	135000	270000	405000	756000	1196400
Profit	27840	87120	148680	105960	1566000
					369600

### Example 2.11

On June 30, 1996, a flash flood damaged the warehouse and factory of ABC Corporation completely destroying the work-in-progress inventory. There was no damage to either the raw materials or finished goods inventories. A physical verification taken after the flood revealed the following valuations:

Raw Materials	Rs. 62,000
Work-in-progress	0
Finished Goods	

The inventory on Jan. 1, 1996, consisted of the following:

Raw Materials	Rs. 1,19,000
Work-in-progress	
Finished Goods	

Raw Materials	Rs. 30,000
Work-in-progress	Rs. 1,00,000
Finished Goods	Rs. 1,40,000

2,70,000

A review of the books and records disclosed that the gross profit margin historically approximated 25% of sales. The sales for the first six months of 1996 were Rs. 3,40,000. Raw Material purchases were Rs. 1,15,000. Direct Labour costs for this period were Rs. 80,000 and manufacturing overhead has historically been 50% of direct labour. Compute the cost of work-in-progress inventory lost at June 30, 1996 by preparing a statement of cost and profit.

(B. Com. Hons. Delhi 1998)

*Solution*

### Computation of Work-in-Progress Inventory Lost on June 30, 1996

Sales	Rs.	3,40,000
Less: Gross Profit @ 25%		85,000
		<u>2,55,000</u>
Cost of Goods sold		1,19,000
Add: Closing Stock of Finished Goods		3,74,000
Less: Opening Stock of Finished Goods		1,40,000
Cost of Finished Goods Produced (1)		2,34,000
Less: Raw Materials Consumed:		
Purchases	1,15,000	
Add: Opening Stock	<u>30,000</u>	
	1,45,000	
Less: Closing Stock	<u>62,000</u>	
	83,000	
Add: Wages	80,000	
Manufacturing Overhead	40,000	
Opening Stock of Work-in-progress	<u>1,00,000</u>	
		3,03,000
Closing stock of work-in-progress		69,000
<hr/>		
<i>This can be verified as follows:</i>		Rs.
Raw Materials Consumed		83,000
Direct Wages		80,000
Manufacturing Overhead		40,000
Work-in-progress		<u>1,00,000</u>
		3,03,000
Less: Closing stock of work-in-progress		69,000
Work Costs		2,34,000
Add: Opening stock of Finished Goods		1,40,000
		<u>3,74,000</u>
Less: Closing Stock of Finished goods		1,19,000
Cost of Goods sold		2,55,000
Add: Gross profit @ 25%		85,000
Sales		3,40,000