MGT 388 Finance and Law for Engineers

Management Accounting

Costing

Definition and Purpose of costing

CIMA 2005

"Gathering of cost information and its attachment to cost objects…"

DECISION MAKING

Appropriate costing of a product or service necessary to assess price and profit.

Tendering for a project needs accurate estimates of future relevant costs.

Short term decisions – if not operating at full capacity should you accept an order at a discounted price?

FINANCIAL ACCOUNTS

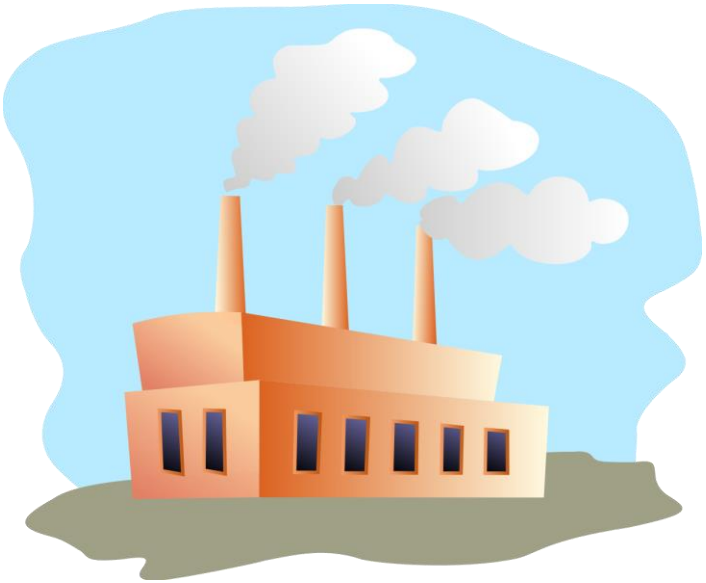
- Inventory valuation for annual reports.

Product Costing/ Absorption Costing

Absorption costing is the method use to obtain the full cost of a product or service.

This cost is then used for the valuation of inventory in the Annual Report and can be used as a basis for determining the price for the product.

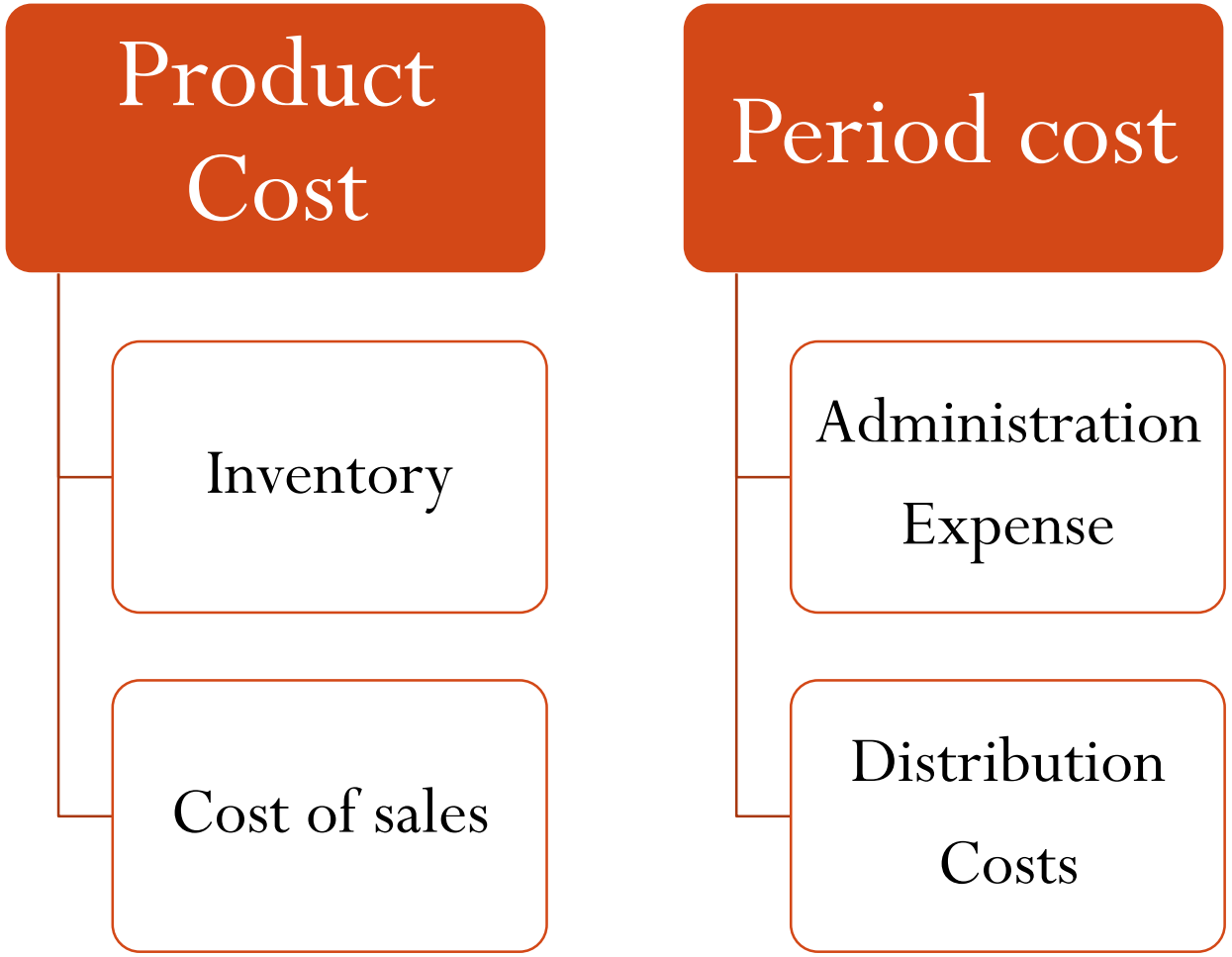
Product V Period Cost



Manufacturing costs are product costs

Office costs are period costs

Product V Period costs



Product Cost

The product cost is:

	£
Direct Materials	X
Direct Labour	X
Other Direct Expenses	X
Prime Cost	X
Indirect production costs/ overheads	X
Product cost	X

Direct costs are costs that can be related to a product or service or project in an economically feasible way

Indirect production costs are costs that relate to the product but *can't* be traced in an economically feasible way

Question

Volley plc manufactures football boots and incurs the following monthly costs:

	£
Leather to make the boot	5,000
Studs, laces etc used in the boot	1,000
Salary of accounting team	6,000
Salaries of staff working in the factory	8,000
Total cost	20,000

During one month 500 pairs of football boots are produced.

Calculate the product cost?

What is the product cost of a pair of football boots

A. £40

B. £28

C. £24

D. £12

Calculating the Product Cost
Absorption Costing

In arriving at a product cost , calculating the total direct cost is straightforward. However it is not always easy to calculate the amount of indirect costs to include.

Absorption costing provides a process to follow:

- Trace all direct and indirect costs to cost centres
- Allocate and apportion production overhead costs
- Absorb the costs into products

Example Sponge and Chocolate

A factory has 3 departments with each treated as a separate cost centre. These are:

Production Department 1 (Producing sponge celebration cakes)

Production Department 2 (Producing chocolate celebration cakes)

Service Department (maintaining equipment in both production departments)

The Prime cost for Sponge cakes is £35.

10,000 Sponge cakes are produced.

The Prime cost for Chocolate cakes is £42.

8,000 Chocolate cakes are produced.

Example Sponge and Chocolate

Production Overheads Are:	£
Indirect ingredients	28,000
Building costs	30,000
	58,000

Indirect ingredients while not attributed to particular cakes can be allocated to departments as follows:

Sponge cakes £18,000

Chocolate cakes £10,000

Example Sponge and Chocolate

Having been able to allocate indirect ingredients to cost centres, the building costs must now be apportioned to the 3 cost centres.

The management accountant will seek to apportion on the most realistic basis

	Department 1 Sponge	Department 2 Chocolate	Service Department Maintenance	Total
Area (sq mtres)	16,000	20,000	4,000	40,000
Value of plant £'000	500	750	0	1,250

Example Sponge and Chocolate

The most realistic way for building costs of to be apportioned would be area.

	Department 1 Sponge	Department 2 Chocolate	Service Department Maintenance	Total
Area (sq mtres)	16,000	20,000	4,000	40,000

The indirect building costs were £30,000

£30,000/40,000sq metres = £0.75 per square metre

Example Sponge and Chocolate

Building costs to Production Centre 1 (Sponge)

16,000 X £0.75 = £12,000

Building costs to Production Centre 2 (Chocolate)

20,000 X £0.75 = £15,000

Building costs to Maintenance Department

4,000 X £0.75 = £3,000

Total building costs £30,000

Example Sponge and Chocolate

The indirect production costs/ overheads have now been allocated and apportioned to cost centres as follows:

Overheads	Department 1 Sponge	Department 2 Chocolate	Maintenance	Total
Indirect ingredients	18,000	10,000		**28,000**
Building costs	12,000	15,000	3,000	**30,000**
Total	**30,000**	**25,000**	**3,000**	**58,000**

Example Sponge and Chocolate

Purpose : Attach all production costs to products.

Departments that do not make any products but service production centres have collected costs. These costs need to be re-apportioned to production centres on a reasonable basis.

The service centre in our example is a maintenance department and a reasonable apportionment basis would be value of plant.

Example Sponge and Chocolate

	Department 1 Sponge	Department 2 Chocolate	Service Department Maintenance	Total
Value of plant £'000	500	750	0	1,250

Maintenance has collected costs of £3,000 these are apportioned as follows:

£3,000/£1,250,000 = £0.0024 per £ of plant

Example Sponge and Chocolate

Production department 1 (Sponge)

500,000 X £0.0024 = £1,200

Production department 2 (Chocolate)

750,000 X £0.0024 = £1,800

£3,000

Example Sponge and Chocolate

The indirect production costs/ overheads have now been allocated and apportioned to Production cost centres as follows:

	Department 1 Sponge	Department 2 Chocolate
Indirect ingredients	18,000	10,000
Building costs	12,000	15,000
Total indirect costs	**30,000**	**25,000**
Maintenance department	1,200	1,800
Total	**31,200**	**26,800**

Example Sponge and Chocolate

All that remains to do is to absorb the overheads into the product cost.

The total overhead in Department 1 Sponge is £31,200 and 10,000 sponge cakes are produced.

Therefore each sponge cake has:

£31,200/10,000 = £3.12

Total Product Cost For Sponge:	£
Prime cost (all direct costs)	35.00
Indirect production overheads	3.12
Total product cost	38.12

Example Sponge and Chocolate

The total overhead in Department 2 Chocolate is £26,800 and 8,000 chocolate cakes are produced.

Therefore each chocolate cake has:

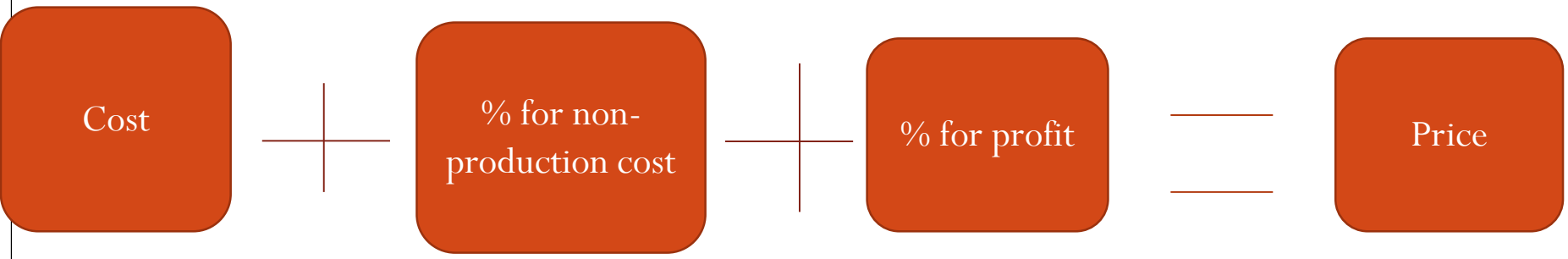
£26,800/8,000 = £3.35

Total Product Cost For Chocolate:	£
Prime cost (all direct costs)	42.00
Indirect production overheads	3.35
Total product cost	45.35

Example Sponge and Chocolate

In the annual report the inventory valuation for sponge cakes will be £38.12 and for chocolate cakes £45.35.

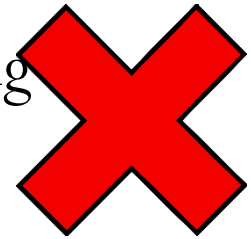
In terms of pricing the company will add an appropriate percentage on for non-production costs and a profit margin



Can Absorption Costing be used for pricing?

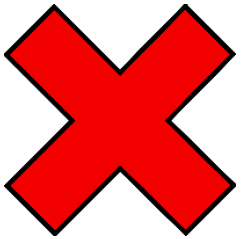
Business where large part of costs are direct costs?

Business where large part of the costs are manufacturing overheads?



Business with a competitive market?

Business with niche or premium product?

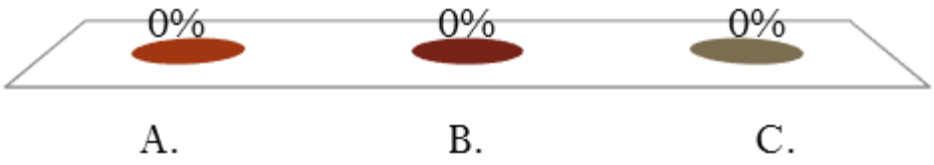


For which business would absorption costing be an inappropriate basis for setting a price.

A. Contract based business

B. Fashion

C. Manufacturing where the main costs are direct costs



One Product Passing Through Two Production Centres

In the previous example the overhead absorption rate was the number of units produces as each department made one product from beginning to end.

In many industries a product may go through more than one production centre. In this case the overhead absorption rate used may be machine hours or labour hours rather than units produced.

One Product Passing Through Two Production Centres

A company manufactures 1,000 tennis racquets. The tennis racquets pass through one department for the frame and one for the strings.

Frame department – direct costs £30 per racquet

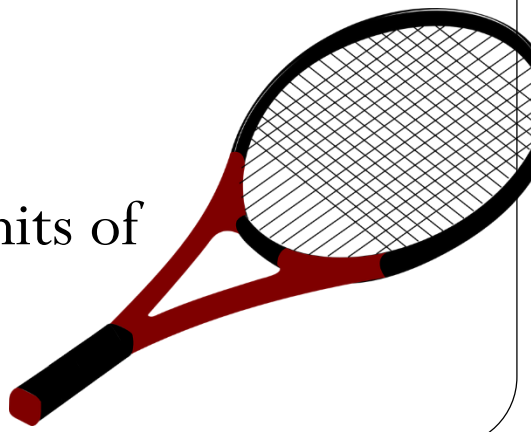
- production overheads £8,000

The frame department is highly mechanized using 2,000 machine hours. (As 1,000 tennis racquets are produced each racquet requires 2 hours of machine time)

String department - direct costs £12 per racquet

- production overheads £5,000

To be allocated according to units of production.



One Product Passing Through Two Production Centres

Production Cost Of Tennis Racquets

	£
Direct frame costs	30
Direct string costs	12
Prime cost	42
Indirect costs	
Frame overheads	
£8,000/2,000 machine hours 4 x 2hrs	8
String overheads £5,000/1,000 units produced	5
Total production cost	55