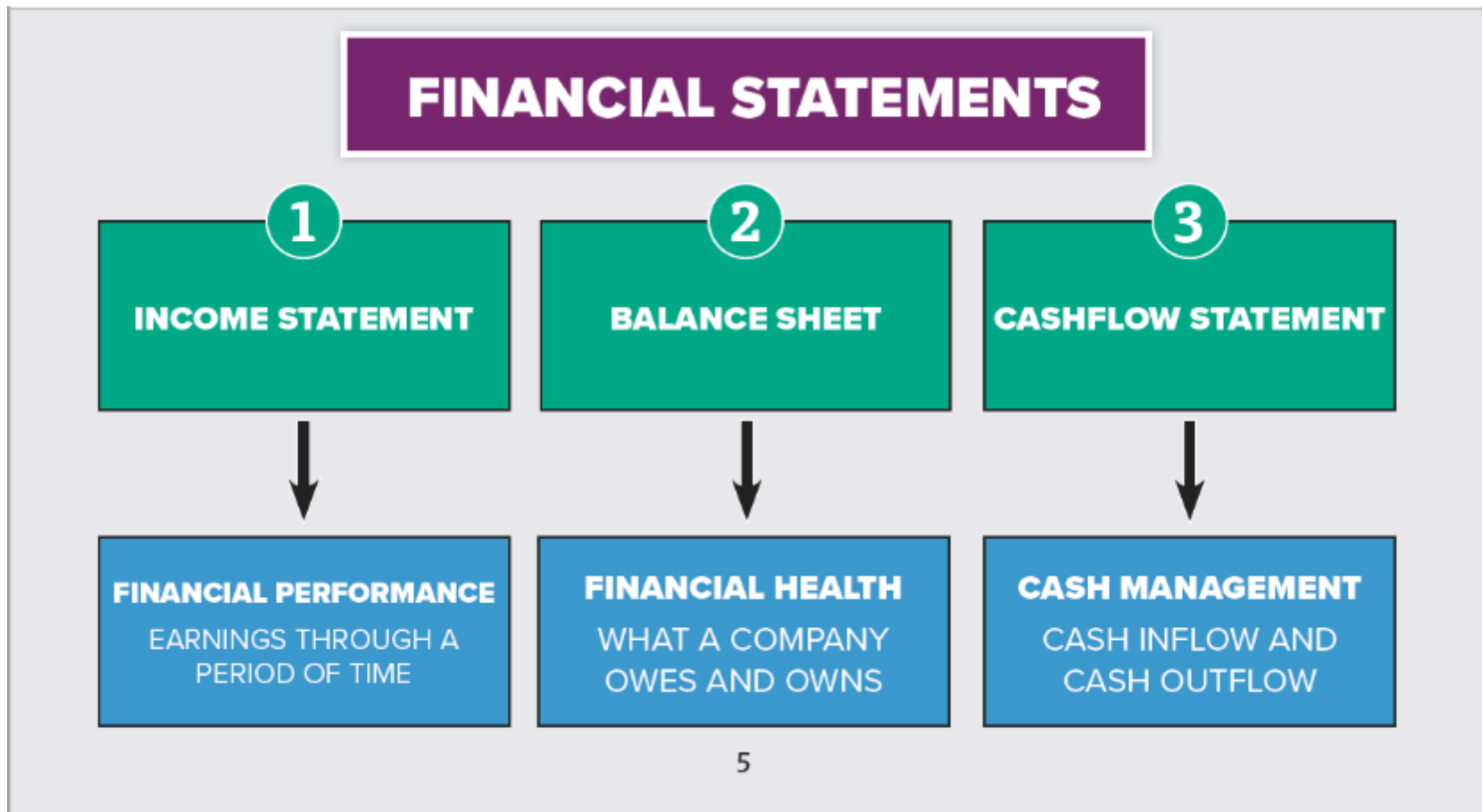


Finance Management & Planning

Costing Methodologies

Recap of Last Week

Financial statements measure the financial health of the organisation:



Definition :

Financial statements are key indicators of the health of your business at specific points in the company's accounting year and on an ongoing basis.

There are 3 main types of Financial statements

- Income Statement (Sometimes referred to as the Profit and Loss Statement)
- Balance Sheet
- Cash-flow

Purpose

- To accurately measure the profitability and financial conditions of a business

Downside

- The statements are collated at a specific point in time and are historical.

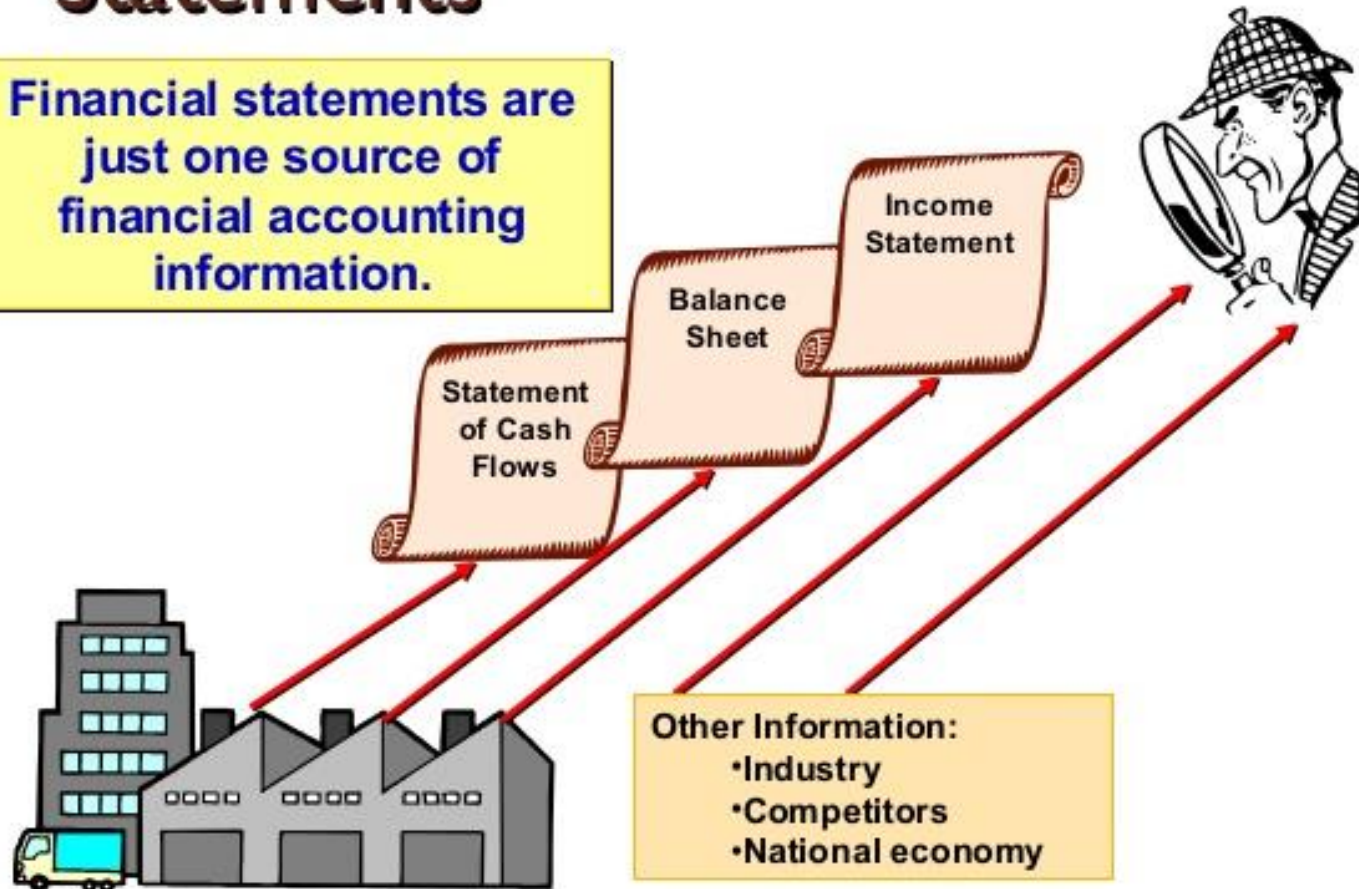
CONSOLIDATED STATEMENT OF COMPREHENSIVE INCOME FOR THE YEAR ENDED 31 DECEMBER 2020

		2020			2019 restated *		
	Notes	Adjusted £m	Adjusting items** £m	Total £m	Adjusted £m	Adjusting items** £m	Total £m
Revenue	3	611.8	–	611.8	980.5	–	980.5
Cost of sales		(500.7)	–	(500.7)	(642.7)	–	(642.7)
Gross profit		111.1	–	111.1	337.8	–	337.8
Selling and distribution expenses		(79.6)	–	(79.6)	(95.0)	–	(95.0)
Administrative and other operating expenses		(256.4)	(98.0)	(354.4)	(233.7)	(42.1)	(275.8)
Other expense	5	–	–	–	(19.0)	–	(19.0)
Operating loss	4	(224.9)	(98.0)	(322.9)	(9.9)	(42.1)	(52.0)
Finance income	8	33.1	6.9	40.0	16.3	–	16.3
Finance expense	9	(107.6)	(75.5)	(183.1)	(77.3)	(6.6)	(83.9)
Loss before tax		(299.4)	(166.6)	(466.0)	(70.9)	(48.7)	(119.6)
Income tax credit/(charge)	10	22.6	32.9	55.5	(6.8)	8.8	2.0
Loss for the year		(276.8)	(133.7)	(410.5)	(77.7)	(39.9)	(117.6)

Financial Reporting and Financial Statements



Financial statements are just one source of financial accounting information.



2-19

Exercise

Create an income statement for the following costs :-

For the Year	2018
Sales of Product A	75000
Sales of Product B	25000
Sales of Product C	50000
Sales of Product D	35000
Opening Stock	100000
Materials Purchases	75000
Closing Stock	75000
Direct Labour	35000
Direct Costs	10000
Sales Costs	10000
Admin Costs	2500
General Costs	5000
Interest Paid	0
Depreciation	3000

Materials Used is calculated as below

= Opening Stock + Purchases Less Closing Stock

	2018
Revenue	185000
Materials	100000
Direct Labour	35000
Direct Costs	10000
Cost of Goods Sold	145,000
Gross Profit	40,000
Sales Costs	10000
Admin Costs	2500
General Costs	5000
Depreciation	3000
Total Operating Expenses	20,500
Operating Profit	19,500
Interest Received	
Interest Paid	0
Net Income	19,500

Exercise

Create an income statement for the following costs :-

For the Year	2018	2019	2020
Sales of Product A	75000	100000	150000
Sales of Product B	25000	50000	50000
Sales of Product C	50000	50000	50000
Sales of Product D	35000	50000	50000
Opening Stock	100000	75000	75000
Materials Purchases	75000	100000	175000
Closing Stock	75000	75000	100000
Direct Labour	35000	75000	95000
Direct Costs	10000	20000	25000
Sales Costs	10000	10000	15000
Admin Costs	2500	5000	3500
General Costs	5000	5000	7500
Interest Paid	0	0	1000
Depreciation	3000	5000	5000

	2018	2019	2020
Revenue	185,000	250,000	300,000
Cost of Goods Sold	145,000	195,000	270,000
Gross Profit	40,000	55,000	30,000
Total Operating Expense	20,500	25,000	31,000
Operating Profit	19,500	30,000	-1,000
Interest Paid	0	0	1,000
Net Income	19,500	30,000	-2,000

The Financial Statements

Today's Objectives

- Review different product costing models

Costing Methodologies

- **What is a Product Costing ?**
 - Product cost refers to all those costs which are incurred by the company in order to create a product or deliver a service.
- **Why is it important to understand the cost of our products?**
 - Set a selling price for the product that achieves a margin.
 - Sets a value for inventory / Stock held.
 - Comparator between products and product mixes.
 - Tool to decide whether to make or buy in
 - You can review how cost increases will affect your margin
 - Planning information for forecasting
 - Cost control tool – Expected costs versus actual costs
 - Information to inform tenders for new services or product supply

Terminology

- **Variable Costs**

- Costs that are directly related to the output of product.

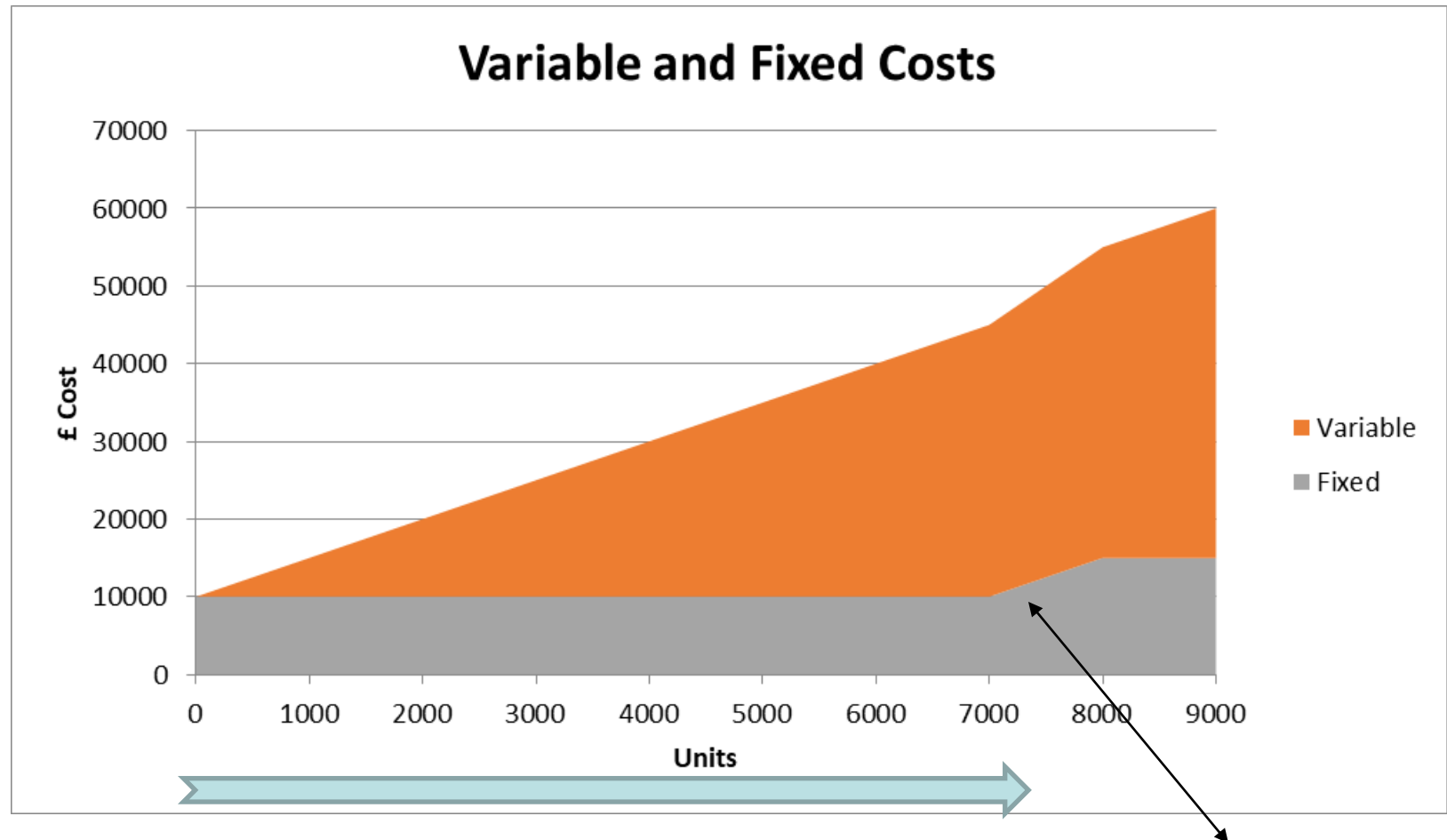
- **Fixed Cost**

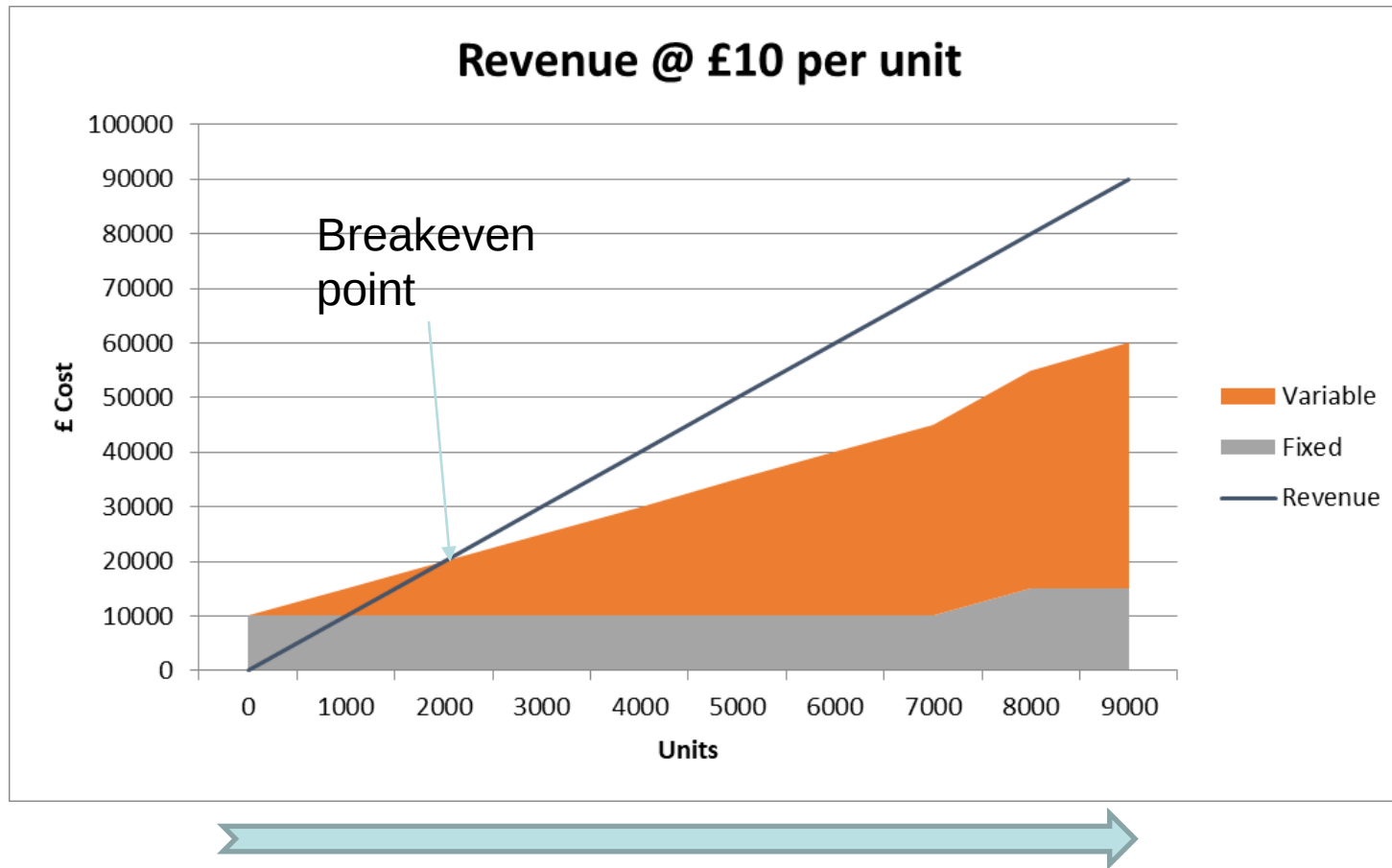
- Costs that are not affected by the level of output of product.
- Fixed costs will have step changes
 - Production site may need to be expanded
 - Capacity shows that another machine is required to cope with additional output demand.

- **Total Cost = Variable Costs + Fixed Costs**

- **Direct and Indirect Costs**

- Direct Costs are directly related to the production of the product.
- Indirect Costs – plant wide costs such as energy and fixed capital also known as factory overheads.





Video on Contribution Margin

- **Examples of Fixed and Variable Costs**

Fixed Costs	Variable Costs
Depreciation	Raw Materials
Admin Staff	Energy and Fuel
Sales Force	Production workers cost
Rent + Rates	
Leases	

Profit and loss statement example

Profit and loss of company XYZ

Total revenue	£100,000
Cost of goods sold	£20,000
Gross profit	£80,000

} Variable Costs

Operating expenses

Salaries	£10,000
Rent	£10,000
Utilities	£5,000
Depreciation	£5,000

} Fixed Costs

Total operating expenses	£30,000
Operating profit	£50,000
Interest expense	£10,000

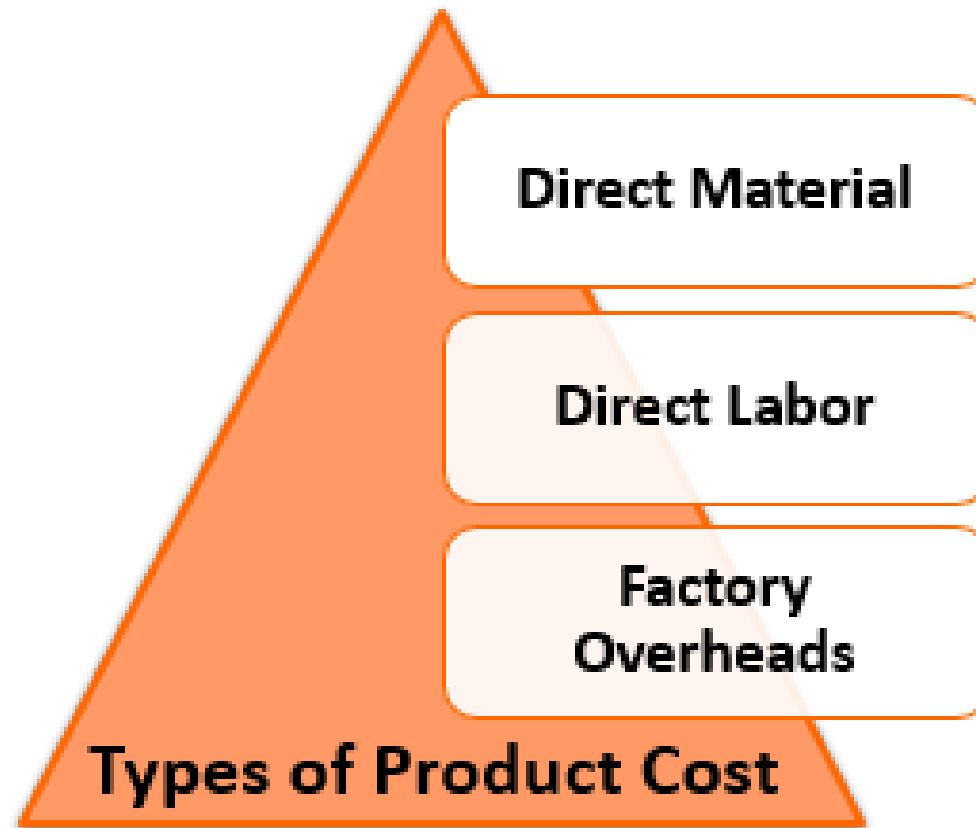
Income before taxes	£40,000
Taxes	£10,000

Net income **£30,000**

Group income statement

	Notes	52 weeks ended 26 February 2022			52 weeks ended 27 February 2021 ^(a)		
		Before adjusting items £m	Adjusting items ^(b) (Note 4) £m	Total £m	Before adjusting items £m	Adjusting items ^(b) (Note 4) £m	Total £m
Continuing operations							
Revenue	2	61,344	–	61,344	57,887	–	57,887
Cost of sales		(56,574)	(176)	(56,750)	(53,948)	221	(53,727)
Impairment reversal/(loss) on financial assets	2	39	–	39	(384)	–	(384)
Gross profit/(loss)		4,809	(176)	4,633	3,555	221	3,776
Administrative expenses		(1,984)	(89)	(2,073)	(1,767)	(462)	(2,229)
Operating profit/(loss)		2,825	(265)	2,560	1,788	(241)	1,547
Share of post-tax profits/(losses) of joint ventures and associates	14	15	–	15	26	–	26
Finance income	5	9	–	9	15	–	15
Finance costs	5	(652)	101	(551)	(695)	(257)	(952)
Profit/(loss) before tax		2,197	(164)	2,033	1,134	(498)	636
Taxation	6	(502)	(8)	(510)	(249)	145	(104)
Profit/(loss) for the year from continuing operations		1,695	(172)	1,523	885	(353)	532
Discontinued operations							
Profit/(loss) for the year from discontinued operations	7	(2)	(38)	(40)	309	5,117	5,426
Profit/(loss) for the year		1,693	(210)	1,483	1,194	4,764	5,958

Product costing



- **Product Costing**

Widget A

Product Costing

Direct Materials	59.00
Direct Labour	23.78
Factory Overheads	0.63
	83.41

Target SP	111.22
Margin	27.80
Target Gross Margin	25%

- **Product Costing**

Direct Materials – Usually show as a Bill of Materials (BOM)

Direct Materials

Part no	Description	Qty	Cost per Unit	Wastage %	Total
1	Part 1	5	2	2.50%	10.25
2	Part 2	10	3	2.50%	30.75
3	Part 3	2	4	2.50%	8.2
4	Part 4	1	1	2.50%	1.025
5	Part 5	3	2	2.50%	6.15
6	Part 6	5	0.5	5.00%	2.625

Total Cost of Direct Materials

59.00

- Product Costing

Direct Labour

Cost per hour Calcs

Operation no.	Operators	Hrs per Week	Utilisation	Working Hrs	Payroll Cost	Working Weeks	Ave Weekly Paroll	Cost per Hr
Operation 1	22	37.5	70%	577.5	407,000	45.40	8,965	15.52
Operation 2	10	37.5	70%	262.5	180000	45.40	3,965	15.10
Operation 3	5	37.5	80%	150	125000	45.40	2,753	18.36

Operation	Description	Hrs	Cost per HR	Total
1	Operation 1	0.75	15.52	11.64
2	Operation 2	0.50	15.10	7.55
3	Operation 3	0.25	18.36	4.59

Total Cost of Direct Labour

23.78

Costing Methodologies



- Product Costing

Factory Overheads

Indirect Labour

Cost per hour Calcs Weekly output 10000

Operation no.	Operators	Hrs per Week	Utilisation	Working Hrs	Payroll Cost	Working Weeks	Ave Weekly Paroll	Cost per Unit
Supervisors	2	37.5	90%	67.5	70,000	45.40	1,542	0.15
Quality Control	3	37.5	90%	101.25	60,000	45.40	1,322	0.13
End of Line Check	1	37.5	90%	33.75	20,000	45.40	441	0.04
							Cost per unit	0.33

Indirect Materials

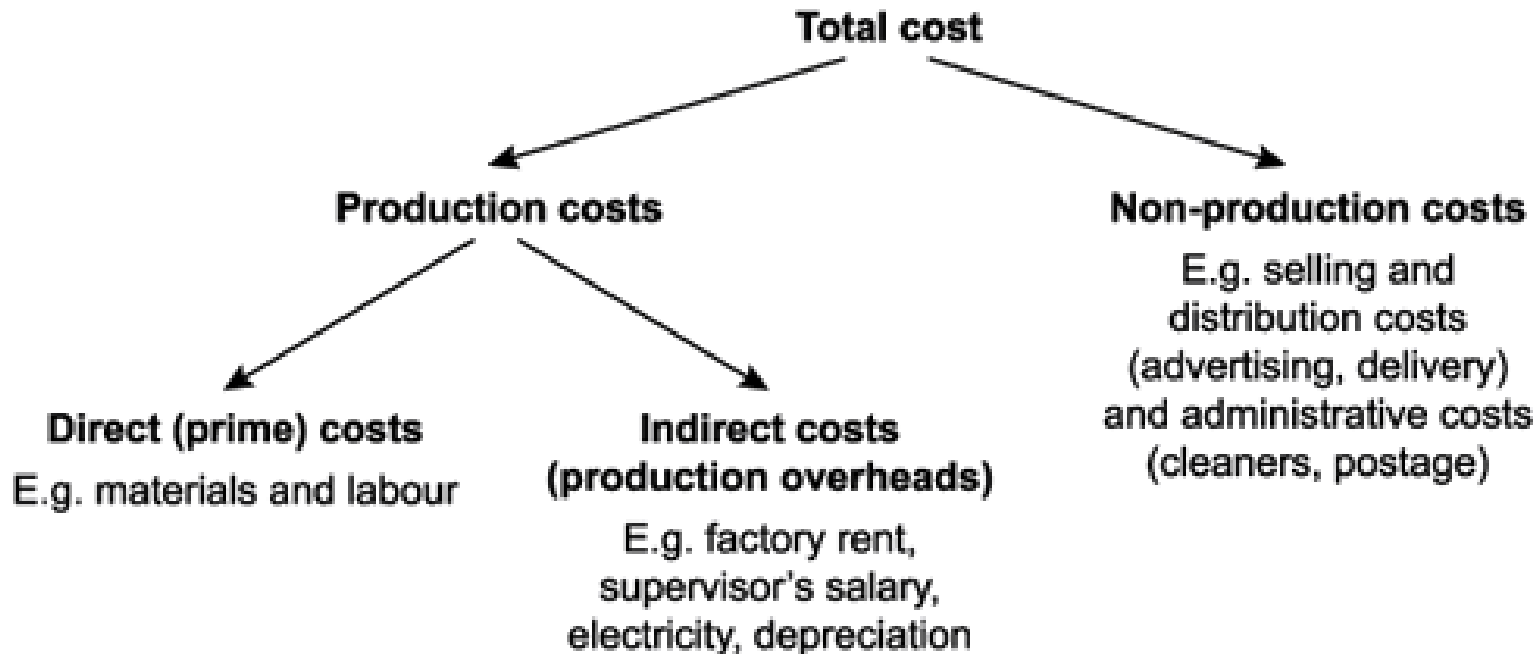
Consumables	0.15
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Factory Overheads

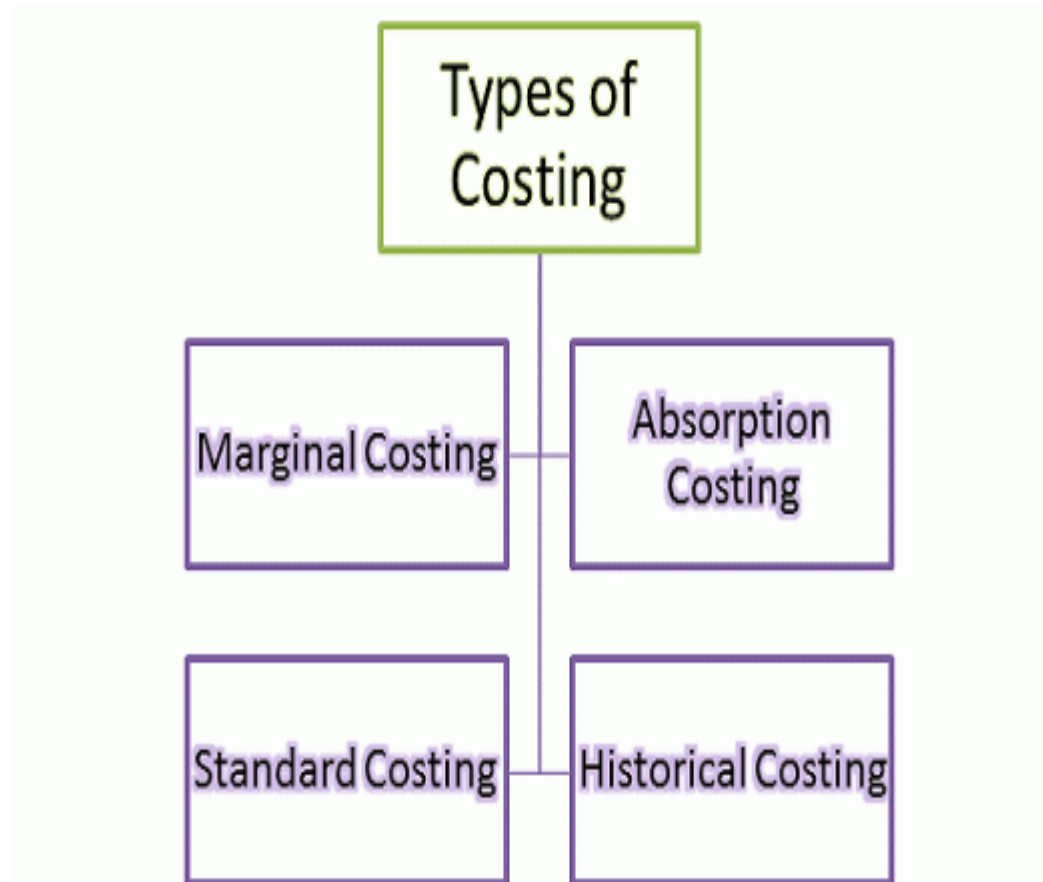
	Weekly Cost	Units Produced	
Energy	1000	10000	0.15

Total Factory Overheads	0.63
-------------------------	------

Traditional costs of a business



Estimated cost for production of 1,000 units	£
Direct Materials	14500.00
Direct Labour	8000.00
Variable Production overheads	2000.00
Fixed Production overheads	5000.00
Admin , Selling and Distribution costs	3250.00
Total cost	32750.00



Job Costing – costs accumulated by job , i.e. large-scale engineering jobs

Process Costing – for products processed on a continuous basis.

- **Historical Costing**

- Historical cost is the original cost of an asset, as recorded in an entity's accounting records.
- Advantages
 - Shows the original cost of the purchased asset.
 - Accepted as a financial standard.
- Disadvantages
 - Doesn't show the current fair value of the asset.
- Example
 - An office building is purchased 10 years ago at a historical cost of £50,000 , although the current valuation of the building is now £150,000. Assets of this type are now being valued at a fair value within the balance sheet with a revaluation adjustment from purchase price to the fair value price.

- **Marginal Costing**

- This costing method only looks to allocate the variable costs allocated to the product
 - Direct materials,
 - Direct expenses
 - Direct labour
 - Variable overheads to production. It does not include the fixed cost of production.

- **Pros**

- Quick Calculation for understanding margin levels.
- Quick Calculation for price changes or discount requests.
- Price Changes can be reviewed quickly to understand the impact in contribution.
- Short Term decision making

- **Cons**

- As it ignores the Fixed cost element we only know the contribution to overheads and not a profit/loss of the production site.
- Marginal Costing is not allowed for financial reporting purposes but mainly as a management tool.

- **Absorption Costing**
 - Marginal Costing plus fixed cost of Production.
 - Direct materials,
 - Direct expenses
 - Direct labour
 - Variable overheads to production.
 - Fixed cost of production.
- **Pros**
 - Can be used for financial reporting purposes.
 - Full breakdown of production costs so we can understand the full margin of production.
 - Stock Valuation
- **Cons**
 - Can take longer on short term decision making.

- **Marginal v Absorption methodology example**

Estimated cost for production of 1,000 units	£
Direct Materials	14500.00
Direct Labour	8000.00
Variable Production overheads	2000.00
Fixed Production overheads	5000.00
Admin , Selling and Distribution costs	3250.00
Total cost	32750.00

Selling Price at £35.00	35000.00	35.00
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Cost of production	Total	Per unit
Direct Material	14500.00	14.50
Direct Labour	8000.00	8.00
Prime Costs	22500.00	22.50
Variable Production overheads	2000.00	2.00
Marginal Cost of production	24500.00	24.50
Fixed Production overheads	5000.00	5.00
Absorption cost of production	29500.00	29.50
Gross Profit	5500.00	5.50
Gross Profit %	15.71%	15.71%

Exercise

Estimated cost for production of 1,000 units	£	
Direct Materials	20000.00	
Direct Labour	4000.00	
Variable Production overheads	2000.00	
Fixed Production overheads	5000.00	
Admin , Selling and Distribution costs	3250.00	
Total cost	34250.00	

Selling Price at £40.00		40.00
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Cost of production	Total	Per unit
Direct Material		
Direct Labour		
Prime Costs		
Variable Production overheads		
Marginal Cost of production		
Fixed Production overheads		
Absorption cost of production		
Gross Profit		
Gross Profit %		

Estimated cost for production of 1,000 units	£
Direct Materials	20000.00
Direct Labour	4000.00
Variable Production overheads	2000.00
Fixed Production overheads	5000.00
Admin , Selling and Distribution costs	3250.00
Total cost	34250.00

Selling Price at £40.00	40000.00	40.00
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Cost of production	Total	Per unit
Direct Material	20000.00	20.00
Direct Labour	4000.00	4.00
Prime Costs	24000.00	24.00
Variable Production overheads	2000.00	2.00
Marginal Cost of production	26000.00	26.00
Fixed Production overheads	5000.00	5.00
Absorption cost of production	31000.00	31.00
Gross Profit	9000.00	9.00
Gross Profit %	22.50%	22.50%

- **Standard Costing**

Purpose

- Set an attainable target for the business
- Performance management – actual costs versus standards
- Variance analysis – actual costs versus expected standard costs
- To Value inventory
- To simplify accounting so that there is only one cost i.e. the Standard

Pro's

- Variances highlight the performance level of the business
- Managers will respond to variance analysis if it truly shows the performance level of their area.
- More suited to mass production of the same items and repetitive assembly work
- Used for Budget and Forecasting.

Cons

- Managers not involved in setting the standards will have a list of excuses on performance levels
- Admin time in setting the standards
- Setting standards can lead to conflicts rather than collaboration
- Slack standard setting doesn't motivate the business to move forward.

- Marginal v Absorption v Standard costing methodology example**

Estimated cost for production of 1,000 units	£
Direct Materials	14500.00
Direct Labour	8000.00
Variable Production overheads	2000.00
Fixed Production overheads	5000.00
Admin , Selling and Distribution costs	3250.00
Total cost	32750.00

Selling Price at £35.00	35000.00	35.00	36.00	-1.00
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Cost of production	Total	Per unit	Std per unit	Variance
Direct Material	14500.00	14.50	15.00	0.50
Direct Labour	8000.00	8.00	7.00	-1.00
Prime Costs	22500.00	22.50	22.00	-0.50
Variable Production overheads	2000.00	2.00	3.00	1.00
Marginal Cost of production	24500.00	24.50	25.00	0.50
Fixed Production overheads	5000.00	5.00	5.00	0.00
Absorption cost of production	29500.00	29.50	30.00	0.50
Gross Profit	5500.00	5.50	6.00	-0.50
Gross Profit %	15.71%	15.71%	16.67%	

Std cost Example

Selling Price	40.00
Estimated cost per unit	
Direct Materials	21.00
Direct Labour	3.00
Variable Production overheads	2.00
Fixed Production overheads	4.50

Non Direct Overheads are estimated at £250k per month , how many units do they need to sell to breakeven each month ?

26,316 units

Exercise

Estimated cost for production of 1,000 units	£	Std
Direct Materials	20000.00	21.00
Direct Labour	4000.00	3.00
Variable Production overheads	2000.00	2.00
Fixed Production overheads	5000.00	5.00
Admin , Selling and Distribution costs	3250.00	
Total cost	34250.00	

Selling Price at £40.00		40.00	40.00	0.00
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Cost of production	Total	Per unit	Std per unit	Variance
Direct Material				
Direct Labour				
Prime Costs				
Variable Production overheads				
Marginal Cost of production				
Fixed Production overheads				
Absorption cost of production				
Gross Profit				
Gross Profit %				

Costing Methodologies

Estimated cost for production of 1,000 units	£	Std
Direct Materials	20000.00	21.00
Direct Labour	4000.00	3.00
Variable Production overheads	2000.00	2.00
Fixed Production overheads	5000.00	5.00
Admin , Selling and Distribution costs	3250.00	
Total cost	34250.00	

Selling Price at £40.00	40000.00	40.00	40.00	0.00
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Cost of production	Total	Per unit	Std per unit	Variance
Direct Material	20000.00	20.00	21.00	1.00
Direct Labour	4000.00	4.00	3.00	-1.00
Prime Costs	24000.00	24.00	24.00	0.00
Variable Production overheads	2000.00	2.00	2.00	0.00
Marginal Cost of production	26000.00	26.00	26.00	0.00
Fixed Production overheads	5000.00	5.00	5.00	0.00
Absorption cost of production	31000.00	31.00	31.00	0.00
Gross Profit	9000.00	9.00	9.00	0.00
Gross Profit %	22.50%	22.50%	22.50%	

- **ABC Costing allocates specific costs to activity**
 - Mainly indirect and overhead costs
 - Looks for Cost Drivers to allocate
- **Examples**
 - Rent and Rates could be allocated on production floor space
 - Depreciation could be allocated based on machine usage
 - Sales Force could be allocated based on product sales basis
 - Maintenance could be allocated on specific machine maintenance or machine usage
- **Pros**
 - Improvement of Business Processes
 - Accurate Costing Process
 - Easy to Understand
- **Cons**
 - Costly to implement (Time consuming)

Activity Based Costing (ABC)- comparison with traditional costing

Point	Traditional Costing	ABC
Key concepts	Cost Center, basis of allocation	Activity, cost driver
Basis of OH allocation	Machine Hour, Labor Hour etc	Based on actual consumption of resource measured through different cost drivers
Accuracy in costs	Less accurate product costing	More accurate product costing
Simplicity	Relatively simple to use	Relatively difficult to use
Suitability	Lesser number of products; OH cost relatively less	More number of products; OH cost relatively high

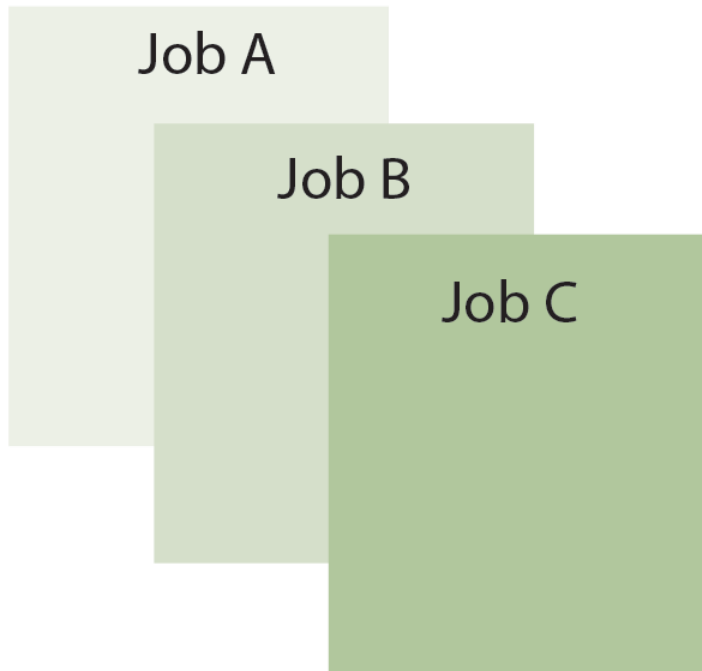
Costing Methodologies

Job Costing – costs accumulated by job , i.e. large-scale engineering jobs

Process Costing – for products processed on a continuous basis.

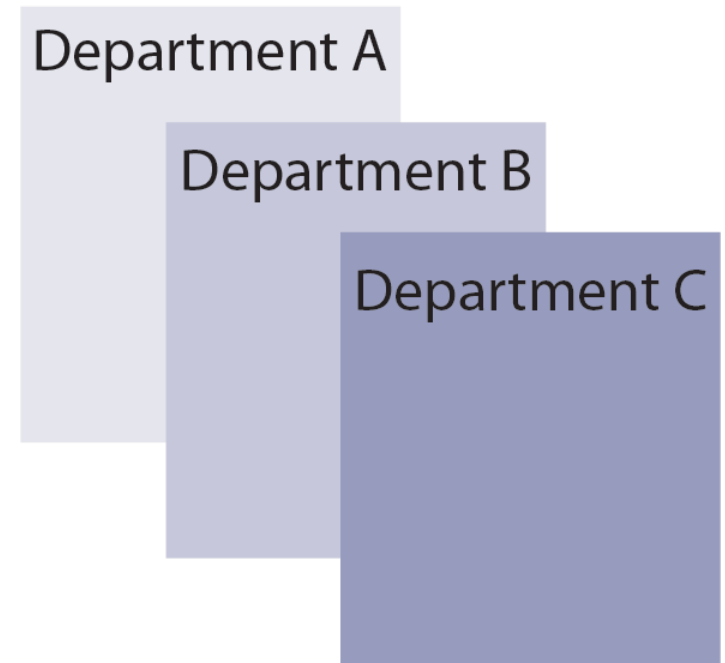
Job Costing Environment

Costs are accumulated
by job on Job Cost Sheets



Process Costing Environment

Costs are accumulated by department
on Cost of Production Reports



- Articles to read from todays lecture

<https://www.wallstreetmojo.com/product-cost/>

<https://www.dummies.com/business/accounting/are-costs-really-that-important/>

<https://www.aatcomment.org.uk/learning/study-tips/advanced-diploma-in-accounting/study-tips-whats-the-difference-between-marginal-and-absorption-costing/>

<https://www.edupristine.com/blog/costing-methods>

<https://www.investopedia.com/terms/a/abc.asp#:~:text=Activity-based%20costing%20%28ABC%29%20is%20a%20costing%20method%20that,method%20of%20costing%20recognizes%20the%20relationship%20between%20>

- Next week
- Balance sheet