Management Accounting
Complete Study Guide

Concepts explained simply, illustrated with real-world examples, and every calculation problem solved step by step.

This guide covers the eight lessons of your Management Accounting module: Introduction & Cost Terms, Material Costing, Labour Costing, Overhead & Absorption Costing, Standard Costing & Variance Analysis, Pricing, and Cost-Volume-Profit (CVP) Analysis.

How to use this guide: each concept is explained in plain language, followed by a ■ **real-world example** to make it click, a ■ **formula box** you can revise from quickly, and — wherever the original slides set a calculation problem — a ✎ **fully worked solution**, done step by step so you can follow the logic and reproduce it in an exam.

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CHAPTER 1

Introduction to Management Accounting

What management accounting is, how it differs from financial accounting, and the core cost vocabulary you'll use in every later chapter.

1.1 What is Management Accounting?

Management accounting is the process of collecting, analysing and presenting financial information **for people inside the organisation** — managers — so they can plan, make decisions, and control operations. CIMA (Chartered Institute of Management Accountants) defines it formally as the identification, measurement, accumulation, analysis, preparation, interpretation and communication of information used by management to plan, evaluate and control within an entity.

REAL-WORLD EXAMPLE — The restaurant owner

Think of a restaurant owner deciding whether to add a new dish to the menu. She needs to know the cost of ingredients, labour time to prepare it, and how many portions she'd need to sell to cover the chef's extra hours. None of that appears in her annual tax return (financial accounting) — it's information she generates for herself, this week, to make a decision. That is management accounting in action.

1.2 Financial Accounting vs. Management Accounting

The two disciplines use the same raw data (transactions, costs, revenues) but package it very differently, because they serve different audiences.

Aspect	Financial Accounting	Management Accounting
Purpose	Stewardship — reporting to shareholders	Improve efficiency & effectiveness of operations
Time horizon	The past (what already happened)	Past, present and future (forecasts & plans)
Audience	External: shareholders, tax authorities, banks	Internal: directors and managers
Output	Annual/summary statements (P&L, balance sheet, cash flow)	Detailed monthly reports by product, department, ad-hoc analysis
Rules	Must follow accounting standards & company law	No prescribed format — whatever helps the manager decide

■ REAL-WORLD EXAMPLE — Same company, two reports

A supermarket chain's financial accounts show one company-wide profit figure for the year, audited and filed with the tax office. Its management accounts, by contrast, might show weekly profit by individual branch, by product category (dairy vs. bakery), and even by shelf — because a store manager needs to decide *this week* whether to discount the yoghurt that's about to expire.

1.3 Cost Accounting

Cost accounting is the engine room underneath management accounting: a systematic set of procedures for recording and reporting the cost of manufacturing goods or performing services, then comparing those costs with standards. In short — management accounting decides *what to do with* cost information; cost accounting is how that cost information is *generated* in the first place.

1.4 What Management Accountants Actually Do

- Explain how production and non-production costs are reported in the financial statements
- Compute the cost of manufacturing a product or providing a service
- Analyse how costs behave as activity levels rise and fall
- Study cost-volume-profit relationships (covered in Chapter 7)
- Assist with profit planning and budgeting
- Compare actual results against plans and standard costs to control spending
- Gather and present relevant data to support management decisions

1.5 Core Cost Terms (learn these — they recur in every chapter)

Cost Unit

A unit of product, service or time to which cost can be attached and measured.

■ REAL-WORLD EXAMPLE — Cost unit examples

A car manufacturer's cost unit is *one car*. A hospital's cost unit might be a *patient-day*. An accounting firm's cost unit could be a *chargeable hour*. Whatever the "thing" is that you attach a cost to, that's the cost unit.

Cost Centre

A location, person, or piece of equipment (or group of these) for which costs are collected and used for cost control. CIMA describes it as a responsibility centre where a manager is accountable for the costs under their control.

■ REAL-WORLD EXAMPLE — Cost centre example

In a bakery, the "Mixing Department", the "Oven Department" and the "Delivery Fleet" could each be a separate cost centre. The Oven Department manager is accountable for gas and electricity used to bake, even though he has no control over flour prices set by Purchasing.

Relevant Cost vs. Irrelevant Cost

A **relevant cost** is a future cash cost that will change depending on the decision made — it should influence your choice. An **irrelevant cost** is one that stays the same no matter which option you pick, or has already been incurred — it should be ignored when deciding.

> ■ **REAL-WORLD EXAMPLE — Relevant vs. irrelevant**
>
> A factory is deciding whether to keep making a part in-house or buy it from a supplier. The cost of raw material and direct labour for that part is **relevant** — it disappears if they buy instead. But the factory rent, which is paid regardless of the decision, is **irrelevant** to this particular choice.

Opportunity Cost

The value of the best alternative given up when you choose one option over another. It never appears in the accounting records, but it's central to decision-making.

> ■ **REAL-WORLD EXAMPLE — Opportunity cost**
>
> A student spends a Saturday studying for an exam instead of working a part-time shift that would have paid Rs. 3,000. The Rs. 3,000 forgone is the opportunity cost of studying — the studying itself didn't cost cash, but it cost the wages given up.

Standard Cost

A carefully predetermined "target" cost for producing one unit under efficient operating conditions — used for planning and later compared with the actual cost (this becomes the whole subject of Chapter 5).

Sunk Cost

A cost that has already been incurred and cannot be recovered by any future decision — it is always irrelevant to decision-making.

> ■ **REAL-WORLD EXAMPLE — Sunk cost**
>
> A company spent Rs. 500,000 researching a new product that turns out to be unfeasible. That Rs. 500,000 is gone regardless of whether they continue or stop the project — so it should play no part in deciding whether to continue. (This is also the accounting reason why "throwing good money after bad" is a decision-making trap — the cash already spent is irrelevant, only the future cash matters.)

1.6 Classification of Costs

Costs can be sliced three different ways, and you'll use all three depending on the question being asked.

(a) By Function — how easily can it be traced?

- **Direct cost** — can be traced exactly to one product/job (e.g. the fabric used in one dress)
- **Indirect cost** — shared across many products, cannot be traced to one (e.g. factory rent)
- **Production overheads** — indirect costs incurred inside the factory
- **Non-production overheads** — administrative, selling & distribution, and finance costs

(b) By Element

- **Material cost** — cost of raw materials and components (Chapter 2)
- **Labour cost** — cost of the workforce (Chapter 3)
- **Other (expense) cost** — everything else, e.g. rent, electricity, depreciation

(c) By Behaviour — how does it react to activity changes?

- **Variable cost** — total cost changes in proportion to activity (e.g. raw materials: double the units made, double the material cost)
- **Fixed cost** — total cost stays the same regardless of activity level, within a relevant range (e.g. factory rent is the same whether you make 100 or 10,000 units)
- **Semi-variable (mixed) cost** — has both a fixed and a variable element (e.g. a phone bill with a fixed monthly line rental plus a per-minute call charge)

> ■ **REAL-WORLD EXAMPLE — Cost behaviour in a taxi business**
>
> A taxi driver's costs behave in all three ways at once: the annual insurance premium is **fixed** — it doesn't matter how many trips he does. Fuel is **variable** — more trips, more fuel. His mobile phone plan is **semi-variable** — a fixed monthly fee plus extra charges if he goes over his data allowance for the ride-hailing app.

1.7 Quick Self-Check (from the original slide quiz)

#	Question	Answer
1	A cost easily traceable to a cost object is called a:	Direct cost
2	A cost not easily/conveniently traceable to a cost object is called:	Indirect cost
3	A cost that changes in total with the level of activity is:	Variable cost
4	A cost that does not change in total with activity is:	Fixed cost
5	The benefit given up when one alternative is chosen over another:	Opportunity cost
6	A cost already incurred that cannot be changed by any decision:	Sunk cost

CHAPTER 2

Material Costing

Buying, storing and valuing raw materials — with every calculation from the original slides solved in full.

2.1 The Three Jobs of Material Costing

- **Managing the purchase function** — deciding what, how much, and from whom to buy
- **Storing materials** — keeping stock safe, available, and at the right level
- **Valuing material issues** — deciding what cost to charge to production when material leaves the store (FIFO, LIFO, or weighted average)

2.2 Managing the Purchase Function

Organisations choose between **centralised buying** (one purchasing department buys for everyone) and **decentralised buying** (each branch/department buys for itself).

	Centralised buying	Decentralised buying
Advantages	Consistent buying policy; better control; expert buying staff; less excess stock held across the business	Lower transport cost; shortages/rejects settled quickly; can exploit local/seasonal low prices
Disadvantages	Less flexible procedures; high initial set-up cost; higher transport cost to move goods to each site	Higher total stock-holding cost (everyone keeps their own buffer)

■ **REAL-WORLD EXAMPLE — Centralised vs. decentralised buying**

A national supermarket chain centralises the purchase of packaged groceries (better bulk discounts, one contract with Nestlé) but lets each branch manager buy fresh bread locally each morning — because a central warehouse in another city can't react fast enough to local demand for fresh produce.

The Purchase Process (in order)

1. Receiving a **Purchase Requisition (PR)** — an internal request stating what's needed
2. Determining the volume of materials to order
3. Exploring suppliers and selecting the best source (quotations/tenders)
4. Issuing a Purchase Order and following up delivery
5. Receiving and inspecting materials (a **Goods Received Note, GRN**, is raised — this becomes the source document for the stores ledger)
6. Checking the supplier's invoice and passing it for payment

2.3 What Makes Up the Cost of Material?

■ Cost of Material Purchased

```
Material Cost = Invoice Price + Freight + Excise Duty + Non-returnable
Containers
(less any Trade Discount and Cash Discount earned)
```

✎ Worked Problem 1 — Costing a bulk order

Given: Quotation from Mr Naleen: 2,000 units @ Rs. 5.00; 4,000 units @ Rs. 4.75; 6,000 units @ Rs. 4.00 each. Trade discount 25%. Cash discount 5% (if paid within 10 days). Freight Rs. 2,000 per order. Containers Rs. 10 each, one container per 100 units. Find the material cost of 6,000 units.

Step 1 — Pick the correct price bracket. Ordering 6,000 units in one order qualifies for the 6,000-unit rate: Rs. 4.00 each.
Gross cost = 6,000 × 4.00 = Rs. 24,000

Step 2 — Deduct trade discount (25%). 24,000 × (1 – 0.25) = Rs. 18,000

Step 3 — Deduct cash discount (5%), assuming settlement within 10 days. 18,000 × (1 – 0.05) = Rs. 17,100

Step 4 — Add freight (one order): + Rs. 2,000 → Rs. 19,100

Step 5 — Add containers. 6,000 units ÷ 100 = 60 containers × Rs. 10 = Rs. 600 → Rs. 19,700

✓ ANSWER: Material cost for 6,000 units = Rs. 19,700 (Rs. 3.28 per unit).

✎ Worked Problem 2 — Same materials, but ordered in three small batches

Given: Same supplier's price list, discounts and container charge as above, but the buyer instead places **three separate orders of 2,000 units each** (paid in cash) to reach 6,000 units in total.

Step 1 — Pick the correct price bracket. Because each order is only for 2,000 units, it qualifies for the 2,000-unit rate, not the 6,000-unit rate: Rs. 8.00 each (this deck uses a different supplier's price list — 2,000 units @ Rs. 8.00, 4,000 @ Rs. 7.75, 6,000 @ Rs. 6.00).
Gross cost = 6,000 × 8.00 = Rs. 48,000

Step 2 — Deduct trade discount (25%). 48,000 × 0.75 = Rs. 36,000

Step 3 — Deduct cash discount (5%, paid in cash). 36,000 × 0.95 = Rs. 34,200

Step 4 — Add freight for THREE orders (Rs. 2,000 × 3): + Rs. 6,000 → Rs. 40,200

Step 5 — Add containers (60 × Rs. 10): + Rs. 600 → Rs. 40,800

✓ ANSWER: Material cost for 6,000 units = Rs. 40,800 (Rs. 6.80 per unit) — noticeably more expensive per unit than ordering in one large batch, because the buyer lost the bulk-price break and paid freight three times over.

■ REAL-WORLD EXAMPLE — Why order size matters

This pair of problems mirrors a real purchasing decision: a small bakery buying flour in one large monthly delivery pays less per kilogram than one that orders weekly in small batches — the bulk discount and shared delivery cost usually outweigh the extra warehouse space the large order needs.

2.4 Storing Materials — Stock Control Levels

The storekeeper cannot let stock run out (production stops) or pile up (cash gets tied up, goods deteriorate). Four benchmark levels guide replenishment decisions.

■ Stock Control Formulas

```
Re-order Level (ROL) = Maximum usage per period x Maximum lead time
(or: Minimum stock + Average usage x Average lead time)
Maximum Stock Level = ROL + Re-order Quantity - (Minimum usage x Minimum
lead time)
Minimum Stock Level = ROL - (Average usage x Average lead time)
Average Stock Level = Minimum Stock Level + 1/2 x Re-order Quantity (EOQ)
```

■ REAL-WORLD EXAMPLE — Reading the levels like a fuel gauge

Think of Re-order Level as the point on a car's fuel gauge where the warning light comes on — you still have enough fuel (stock) to reach the next petrol station (delivery), even in the worst case where the trip takes longer than usual (maximum lead time). Minimum stock level is the safety reserve you never want to dip below; Maximum stock level is the point past which you're just wasting money on storage.

✎ **Worked Problem 3 — Calculating stock control levels**

Given: Re-order quantity 36,000 units. Delivery time 2–4 months. Maximum consumption 9,000 units/month. Normal consumption 6,000 units/month.

Assumption used below (standard exam convention when a "minimum" figure isn't separately stated): normal consumption doubles as the minimum/average consumption figure, and lead time ranges from 2 (minimum) to 4 (maximum) months.

Re-order Level = Max consumption × Max lead time = 9,000 × 4 = **36,000 units**

Maximum Stock Level = ROL + ROQ – (Min consumption × Min lead time) = 36,000 + 36,000 – (6,000 × 2) = 72,000 – 12,000 = **60,000 units**

Minimum Stock Level = ROL – (Average consumption × Average lead time). Average consumption = (9,000+6,000)/2 = 7,500 -- but since the slide gives "normal" consumption directly as 6,000, most textbooks use that as the average: Minimum Stock Level = 36,000 – (6,000 × 3) = 36,000 – 18,000 = **18,000 units** (average lead time = (2+4)/2 = 3 months)

Average Stock Level = Minimum Stock Level + ½ × ROQ = 18,000 + (½ × 36,000) = 18,000 + 18,000 = **36,000 units**

✓ **ANSWER: ROL = 36,000 units | Max stock = 60,000 units | Min stock = 18,000 units | Average stock = 36,000 units.**

Economic Order Quantity (EOQ)

EOQ answers "how much should I order each time?" — the order size that minimises the combined cost of (a) placing orders and (b) holding stock. Order too little, too often, and ordering costs pile up; order too much, too rarely, and holding/storage costs pile up. EOQ is the sweet spot.

■ **EOQ Formula**

```
EOQ = SQRT( (2 x D x Co) / Ch )
D = Annual demand (units)
Co = Cost of placing one order
Ch = Cost of holding (carrying) one unit for a year
```

✎ **Worked Problem 4 — EOQ**

Given: Annual demand D = 3,000 units. Cost per order Co = Rs. 30. Carrying cost Ch = Rs. 2 per unit per year.

EOQ = √(2 × 3,000 × 30 ÷ 2) = √(180,000 ÷ 2) = √90,000 = 300

✓ **ANSWER: EOQ = 300 units per order.**

2.5 Valuing Material Issues: FIFO, LIFO and Weighted Average

When identical units were bought at different prices over time, which price do you charge to production when some are issued? Three conventions answer this question differently.

- **FIFO (First-In, First-Out)** — assumes the oldest stock is used first. During rising prices, this keeps cost of goods sold (COGS) low and reported profit higher, because old (cheap) costs are expensed while new (expensive) costs sit in closing inventory.
- **LIFO (Last-In, First-Out)** — assumes the newest stock is used first. During rising prices, COGS is higher and profit lower, because recent (expensive) costs are expensed immediately. *Not permitted under IFRS.*
- **WAC (Weighted Average Cost)** — recalculates a single average cost after every purchase and uses that average for all issues, smoothing out price swings.

■ REAL-WORLD EXAMPLE — FIFO at the fruit stall

A greengrocer selling apples naturally practises FIFO — he puts new stock behind the old stock on the shelf so the oldest apples get sold (and rot the least). A fuel storage tank, by contrast, behaves more like WAC — new diesel poured in mixes completely with what's already there, so there's no way to say which litre came from which delivery; you can only use an average cost.

✎ Worked Problem 5 — FIFO / LIFO / WAC Inventory Ledger (January 2020)

Transactions: 1 Jan: opening balance 200 units @ Rs. 500. 10 Jan: purchase 300 units @ Rs. 600. 15 Jan: issue 250 units. 20 Jan: purchase 100 units @ Rs. 650. 24 Jan: issue 175 units.

(a) FIFO

15 Jan issue (250 units): take all 200 units from the opening balance (@500) first, then 50 units from the 10 Jan batch (@600):
200 × 500 = 100,000, plus 50 × 600 = 30,000 → issue cost = Rs. 130,000. Remaining: 250 units @600 (300–50).

20 Jan purchase adds 100 units @650 → balance now 250@600 + 100@650 = 350 units.

24 Jan issue (175 units): FIFO takes from the oldest remaining batch, 250 units @600, first:
175 × 600 = Rs. 105,000. Remaining: 75 units@600 + 100 units@650 = 175 units.

Total COGS (FIFO) = 130,000 + 105,000 = **Rs. 235,000**. **Closing stock** = 75@600 + 100@650 = 45,000 + 65,000 = **Rs. 110,000** (175 units).

(b) LIFO

15 Jan issue (250 units): take the newest batch first — 300 units @600 exceeds what's needed, so take all 250 from it:
250 × 600 = Rs. 150,000. Remaining: 200 units@500 (opening) + 50 units@600 (300–250).

20 Jan purchase adds 100 units@650 → balance 200@500 + 50@600 + 100@650 = 350 units.

24 Jan issue (175 units): LIFO takes the newest layer first — 100@650 (all of it) = 65,000; still need 75 more, take all 50@600 = 30,000; still need 25 more, take from 200@500 = 12,500.
Issue cost = 65,000 + 30,000 + 12,500 = Rs. 107,500.

Total COGS (LIFO) = 150,000 + 107,500 = **Rs. 257,500**. **Closing stock** = 175 units remaining from the opening batch @500 = **Rs. 87,500**.

(c) Weighted Average Cost (recalculated after each purchase)

After 10 Jan purchase: total value = 100,000+180,000 = 280,000 over 500 units → average = Rs. 560/unit.

15 Jan issue: 250 × 560 = Rs. 140,000. Remaining 250 units @560 = Rs. 140,000.

After 20 Jan purchase: 140,000 + 65,000 (100@650) = 205,000 over 350 units → average = Rs. 585.71/unit.

24 Jan issue: 175 × 585.71 = Rs. 102,500 (rounded). Remaining 175 units = Rs. 102,500.

Total COGS (WAC) = 140,000 + 102,500 = **Rs. 242,500**. **Closing stock** = **Rs. 102,500**.

✓ ANSWER: FIFO COGS Rs. 235,000 (closing Rs. 110,000) | LIFO COGS Rs. 257,500 (closing Rs. 87,500) | WAC COGS Rs. 242,500 (closing Rs. 102,500). Notice FIFO gives the lowest COGS/highest profit here because prices were rising all month, and LIFO gives the highest COGS/lowest profit — exactly the pattern the comparison table predicts.

✎ **Worked Problem 6 — Second FIFO / LIFO / WAC Ledger (April)**

Transactions: 1 Apr: balance 250 units @Rs. 50. 12 Apr: purchase 300 units @Rs. 60. 16 Apr: issue 500 units. 22 Apr: purchase 100 units @Rs. 80. 30 Apr: issue 100 units.

(a) FIFO

16 Apr issue (500 units): 250@50 (all opening) + 250@60 (out of 300) = 12,500 + 15,000 = Rs. 27,500. Remaining: 50 units@60.

After 22 Apr purchase: 50@60 + 100@80 = 150 units.

30 Apr issue (100 units): 50@60 (all) + 50@80 = 3,000 + 4,000 = Rs. 7,000. Remaining: 50 units@80 = Rs. 4,000.

Total COGS (FIFO) = 27,500 + 7,000 = **Rs. 34,500**. Closing stock = **Rs. 4,000**.

(b) LIFO

16 Apr issue (500 units): 300@60 (all, newest) + 200@50 (from opening) = 18,000 + 10,000 = Rs. 28,000. Remaining: 50 units@50 (250–200).

After 22 Apr purchase: 50@50 + 100@80 = 150 units.

30 Apr issue (100 units): 100@80 (all, newest) = Rs. 8,000. Remaining: 50 units@50 = Rs. 2,500.

Total COGS (LIFO) = 28,000 + 8,000 = **Rs. 36,000**. Closing stock = **Rs. 2,500**.

(c) Weighted Average Cost

After 12 Apr purchase: (12,500+18,000)/550 = Rs. 55.45/unit.

16 Apr issue: 500 × 55.45 = Rs. 27,727. Remaining 50 units = Rs. 2,773.

After 22 Apr purchase: (2,773+8,000)/150 = Rs. 71.82/unit.

30 Apr issue: 100 × 71.82 = Rs. 7,182. Remaining 50 units = Rs. 3,591.

Total COGS (WAC) = 27,727 + 7,182 = **Rs. 34,909**. Closing stock = **Rs. 3,591** (figures rounded to the nearest rupee).

✓ **ANSWER: FIFO COGS Rs. 34,500 | LIFO COGS Rs. 36,000 | WAC COGS Rs. 34,909 — same pattern: rising prices make LIFO the most conservative (highest cost, lowest profit) and FIFO the least conservative.**

FIFO vs. LIFO vs. WAC — Summary

Feature	FIFO	LIFO	WAC
Stock flow assumed	Oldest sold first	Newest sold first	Average of all units
Profit in rising prices	Higher (low COGS)	Lower (high COGS)	Stable, in between
IFRS compliant?	Yes	No	Yes
Best suited to	Perishables, fast turnover	Tax-deferral (mainly US)	Interchangeable, hard-to-track bulk goods (e.g. liquids, grain)

CHAPTER 3

Labour Costing

Tracking time, paying people, and building a full salary sheet from scratch.

3.1 Direct vs. Indirect Labour

- **Direct labour** — wages of workers who physically make the product (e.g. a tailor sewing a shirt); can be traced to a specific cost unit.
- **Indirect labour** — wages of staff who support production but don't work on the product directly (e.g. factory supervisor, cleaner, security guard); treated as an overhead.

■ REAL-WORLD EXAMPLE — Direct vs indirect on a construction site

A bricklayer's wage is a direct labour cost of the house being built. The site security guard's wage is an indirect labour cost — he protects the whole site, not one house, so his cost is shared across every project on site.

3.2 Recording Time

Before you can pay or cost labour accurately, you need to know how much time was spent, and on what. Methods range from manual (attendance registers, disc/token methods) to mechanical (clock cards, dial time recorders).

- **Daily / Weekly Time Sheets** — record hours worked each day/week, often by job
- **Job Tickets / Job Cards** — track exactly how long one operator spends on one specific job, which is what lets you charge direct labour to the correct product

3.3 Methods of Remuneration

Method	How it works	Advantage	Disadvantage
Time rate	Paid a fixed rate per hour/day worked, regardless of output	Simple to understand; suits precision work where quality > speed	No incentive to improve efficiency; efficient workers aren't rewarded extra
Piece rate	Paid per unit produced, regardless of hours	Directly rewards output and efficiency	Can encourage rushing and lower quality
Premium bonus	A base rate plus a bonus for output above a target	Balances quality and productivity incentives	More complex to administer

■ REAL-WORLD EXAMPLE — Time rate vs. piece rate

A surgeon is paid a time rate (salary) because rushing surgery to "produce more units" would be dangerous — quality matters far more than speed. A garment factory worker sewing simple seams is often paid a piece rate, because faster, accurate stitching directly benefits the factory with no quality trade-off.

3.4 Building a Salary Sheet

A salary sheet typically has three layers: **gross pay** (basic salary + allowances + overtime), **statutory deductions** (in Sri Lanka, primarily the Employees' Provident Fund, EPF, and Employees' Trust Fund, ETF), and any **personal deductions** (e.g. loan instalments).

■ Sri Lankan Payroll Basics

```
EPF (Employees' Provident Fund): Employee contributes 8%, Employer
contributes 12%
(both calculated on regular pay, i.e. basic + fixed allowances)
ETF (Employees' Trust Fund): Employer contributes 3% (no employee
contribution)
Net Pay = Gross Earnings - Employee's EPF - Other personal deductions (e.g.
loan instalments)
```

✎ Worked Problem — Preparing a Salary Sheet (Araliya Enterprises, Jan 2020)

Given (per employee): Basic salary — Saman Rs. 50,000, Mohamed Rs. 55,000, Anura Rs. 60,000, Rajan Rs. 60,000. Cost-of-living allowance Rs. 7,500 (each). Other fixed allowance Rs. 2,000 (each). Marriage allowance Rs. 5,000 for Mohamed, Anura and Rajan only. Anura repays a staff loan at Rs. 10,000/month. Overtime: Saman Rs. 5,000, Rajan Rs. 7,000. EPF 8% (employee) / 12% (employer). ETF 3% (employer).

Assumption: EPF and ETF are calculated on "regular earnings" (basic + fixed allowances + marriage allowance where applicable), and NOT on overtime — this is the normal Sri Lankan payroll convention and the one used below.

Step 1 — Compute each employee's EPF-qualifying pay:
Saman: 50,000+7,500+2,000 = 59,500 | Mohamed: 55,000+7,500+2,000+5,000 = 69,500 | Anura: 60,000+7,500+2,000+5,000 = 74,500 | Rajan: 60,000+7,500+2,000+5,000 = 74,500

Step 2 — Add overtime to get Gross Earnings:
Saman: 59,500+5,000 = 64,500 | Mohamed: 69,500+0 = 69,500 | Anura: 74,500+0 = 74,500 | Rajan: 74,500+7,000 = 81,500

Step 3 — Employee EPF (8% of EPF-qualifying pay):
Saman: 4,760 | Mohamed: 5,560 | Anura: 5,960 | Rajan: 5,960

Step 4 — Net Pay = Gross Earnings – Employee EPF – Loan instalment:
Saman: 64,500–4,760 = 59,740 | Mohamed: 69,500–5,560 = 63,940 | Anura: 74,500–5,960–10,000 = 58,540 | Rajan: 81,500–5,960 = 75,540

Step 5 — Employer's cost (for information): Employer EPF 12% and ETF 3% of EPF-qualifying pay are additional costs to the business, on top of gross pay — e.g. for Saman: EPF 7,140 + ETF 1,785 = Rs. 8,925 extra employer cost.

✓ ANSWER: Net pay — Saman Rs. 59,740; Mohamed Rs. 63,940; Anura Rs. 58,540; Rajan Rs. 75,540. Total gross earnings for the month = Rs. 290,000.

■ REAL-WORLD EXAMPLE — Why EPF/ETF matter to costing, not just payroll

For the business, EPF (12%) and ETF (3%) employer contributions are a real labour cost — 15% on top of gross pay — even though the employee never sees that money. A factory costing a worker's hourly rate for job-costing purposes must include this on-cost, or every quotation based on labour hours will under-price the job.

CHAPTER 4

Overhead Costing & Absorption Costing

Sharing shared costs fairly: the three-stage journey from a big pile of indirect costs to a cost-per-unit.

4.1 What Is Overhead?

Overhead is the total of indirect materials, indirect labour and indirect expenses — costs that cannot be traced directly to one unit of product, but which must still somehow be shared out and included in the cost of each unit.

> ■ **REAL-WORLD EXAMPLE — Overhead in a hair salon**
>
> A hairdresser's direct cost is the shampoo used on one client's hair. But rent for the salon, the receptionist's wage, and electricity for the lights are all overheads — necessary to run the business, but not traceable to any single haircut. Somehow, a slice of that overhead has to be loaded onto the price of every haircut, or the salon will not cover its costs.

4.2 The Three-Stage Journey: Allocation, Apportionment, Absorption

Overheads reach a cost unit (a finished product) through three sequential stages.

1. **Allocation** — charging a whole item of cost directly and entirely to ONE cost centre, because it clearly belongs there (e.g. the salary of the machining department's supervisor goes 100% to the Machining cost centre).
2. **Apportionment** — sharing a cost that benefits SEVERAL cost centres between them on a fair basis, because it can't be allocated wholly to one (e.g. factory rent is shared between departments by floor area occupied).
3. **Absorption** — once each production department's total overhead is known, it is spread ("absorbed") over the units actually passing through that department, giving a cost-per-unit.

> ■ **REAL-WORLD EXAMPLE — The three stages in one factory**
>
> A furniture factory allocates the varnishing machine's electricity meter reading 100% to the Finishing department (allocation — clearly identifiable). It apportions the factory's single rent bill between Cutting, Assembly and Finishing based on the floor space each department occupies (apportionment — shared, split on a fair basis). Finally, it absorbs Finishing department's total overhead into each chair made, based on the machine hours each chair uses (absorption — spread over the units).

Typical Bases of Apportionment

Cost item	Common apportionment basis
Rent, rates, lighting, heating, building insurance/depreciation, repairs	Floor area occupied
Insurance & depreciation of plant/machinery	Capital value of the asset
Welfare, canteen, supervision, medical expenses, payroll	Number of employees
Repairs & maintenance of plant/machinery	Machine hours
Store-keeping expenses	Value or weight of materials handled
Transport service expenses	Truck mileage / tonnage / number of packages

4.3 Re-apportioning Service Department Costs

A factory has two kinds of cost centre: **production departments** (which actually make the product, e.g. Machining, Assembly) and **service departments** (which support production but don't make anything themselves, e.g. Stores, Maintenance, Canteen). Service department costs must ultimately be pushed back ("re-apportioned") into the production departments, because only production departments' overhead gets absorbed into the product.

- **Direct method** — service costs are apportioned straight to production departments only, ignoring any service given between service departments themselves
- **Step-down method** — used when one service department serves other service departments but isn't served back (one-way flow); costs "step down" in sequence
- **Reciprocal / Repeated distribution / Simultaneous equation methods** — used when service departments serve EACH OTHER (two-way flow), so the apportionment has to be solved simultaneously (like solving two equations with two unknowns)

■ REAL-WORLD EXAMPLE — Direct method vs. reciprocal method

In a hospital, the Laundry department (a service centre) cleans linen for both the Wards (production) and the Kitchen (another service centre) — but the Kitchen never does anything for the Laundry. That's a one-way relationship, suited to the step-down method. But if the Laundry also uses hot water heated by the Boiler Room, and the Boiler Room's linen is in turn cleaned by the Laundry, that's a two-way relationship — needing the reciprocal (simultaneous equation) method to apportion accurately.

✎ **Worked Example — Direct Method of Re-apportionment**

Given: Overhead already allocated/apportioned to each cost centre: Product Dept A Rs. 10,030, Product Dept B Rs. 8,970, Stores Dept Rs. 10,000, Maintenance Dept Rs. 8,000. Value of material requisitions: Dept A Rs. 30,000, Dept B Rs. 50,000. Maintenance hours needed: Dept A 8,000 hrs, Dept B 1,000 hrs. Re-apportion Stores and Maintenance to A and B using the direct method.

Step 1 — Re-apportion Stores (Rs. 10,000) using the material requisition ratio 30,000 : 50,000 (i.e. 3 : 5, total 8):
Dept A share = 10,000 × 30,000/80,000 = Rs. 3,750
Dept B share = 10,000 × 50,000/80,000 = Rs. 6,250

Step 2 — Re-apportion Maintenance (Rs. 8,000) using the maintenance-hours ratio 8,000 : 1,000 (i.e. 8 : 1, total 9):
Dept A share = 8,000 × 8,000/9,000 = Rs. 7,111.11
Dept B share = 8,000 × 1,000/9,000 = Rs. 888.89

Step 3 — Add everything into each production department's total:
Dept A total = 10,030 + 3,750 + 7,111.11 = Rs. 20,891.11
Dept B total = 8,970 + 6,250 + 888.89 = Rs. 16,108.89

Check: 20,891.11 + 16,108.89 = Rs. 37,000, which equals the sum of ALL four original overheads (10,030+8,970+10,000+8,000 = 37,000) — confirming nothing was lost or double-counted.

✓ **ANSWER: Dept A total overhead = Rs. 20,891.11 | Dept B total overhead = Rs. 16,108.89.**

4.4 Overhead Absorption — Getting to a Cost per Unit

Once a production department's total overhead is known, an **Overhead Absorption Rate (OAR)** is used to charge a fair share of it onto each unit, job, or hour of work passing through that department.

■ **Predetermined vs. Actual OAR**

```
Predetermined OAR = Budgeted overhead for the period / Budgeted level of activity
Actual OAR = Actual overhead for the period / Actual level of activity
```

In practice, businesses almost always use the **predetermined** rate, calculated in advance from a budget — because the **actual** rate can only be known at the end of the period (too late for pricing decisions, invoicing jobs as they finish, or month-end reporting).

■ **REAL-WORLD EXAMPLE — Why not just wait and use actual figures?**

A printing company quoting a customer for a job today cannot wait until December to find out what its actual electricity bill turned out to be for the year. It uses a predetermined rate — based on this year's budgeted overhead and budgeted machine hours — set in January, so every job quoted throughout the year uses a consistent, known rate.

Six Methods of Calculating an OAR

■ Overhead Absorption Rate Methods

```
1. Production unit method = Overhead / Number of units of output
2. % on direct labour cost = (Overhead / Direct labour cost) x 100
3. % on direct material cost = (Overhead / Direct material cost) x 100
4. % on prime cost = (Overhead / Prime cost) x 100
5. Direct labour hour rate = Overhead / Direct labour hours
6. Machine hour rate = Overhead / Machine hours
```

The labour hour rate and machine hour rate are generally preferred in modern costing because they best reflect what actually drives most factory overhead — time, not simply the value of material or labour used. A **blanket (single) rate** applies one rate across the whole factory; most businesses instead use a separate rate per department, since departments differ in how overhead-intensive they are.

✎ Illustration — Choosing and Applying an OAR

Given: A production department budgets Rs. 500,000 overhead for the year and budgets 25,000 machine hours. A particular job uses 8 machine hours.

Step 1 — Calculate the OAR (machine hour rate):
OAR = 500,000 / 25,000 = Rs. 20 per machine hour

Step 2 — Absorb overhead into the job:
Overhead charged to the job = 8 hours × Rs. 20 = Rs. 160

✓ ANSWER: Every job is charged Rs. 20 of overhead for each machine hour it uses; this job carries Rs. 160 of overhead.

4.5 Under- and Over-Absorbed Overhead

Because the predetermined rate is based on a *budget*, actual results almost never match exactly — leading to under-absorption (too little overhead charged out) or over-absorption (too much charged out). This happens when: (a) actual overhead differs from budgeted overhead, (b) actual activity differs from budgeted activity, or (c) both.

■ REAL-WORLD EXAMPLE — Under-absorption in a slow month

A factory budgets Rs. 20 overhead per machine hour, expecting 25,000 hours (Rs. 500,000 total overhead). If a recession cuts actual output to only 20,000 machine hours, only 20,000 × 20 = Rs. 400,000 of overhead gets absorbed into products — but the factory still incurred close to the full Rs. 500,000 of actual overhead (rent, supervisors' salaries, etc. don't fall just because fewer hours were worked). The Rs. 100,000 shortfall is **under-absorbed overhead**, and it is written off directly to the profit and loss account.

CHAPTER 5

Standard Costing & Variance Analysis

Setting a target cost, comparing it with what actually happened, and diagnosing exactly where the difference came from — with all five slide questions solved.

5.1 What Is Standard Costing?

A **standard cost** is a carefully predetermined, "should-cost" figure for a unit of product — set in advance under efficient operating conditions. **Standard costing** is the control technique of comparing those standards with what actually happened, in order to calculate **variances** — the differences — and use them to drive improved performance.

1. Set the standards (what things SHOULD cost)
2. Ascertain actual results (what things DID cost)
3. Compare standard vs. actual to calculate variances
4. Investigate significant variances and take corrective action

■ REAL-WORLD EXAMPLE — Standard costing like a road-trip budget

Before a long drive, you might estimate: "this trip should use 40 litres of fuel at Rs. 350/litre." That's your standard. If you actually use 45 litres at Rs. 340/litre, the standard costing approach doesn't just say "I'm over budget" — it splits the difference into a *price* effect (fuel was cheaper than planned) and a *quantity/usage* effect (you used more litres than planned, perhaps due to traffic or a heavier load) — telling you exactly where to focus.

- **Ideal standards** — assume perfect operating conditions, no wastage, no downtime
- **Attainable standards** — challenging but realistically achievable with efficient working
- **Current standards** — based on current operating conditions
- **Basic standards** — kept unchanged over long periods, mainly to show a consistent trend

5.2 Direct Material Variances

■ Material Variances

```
Material Price Variance = Actual Quantity x (Actual Price - Standard Price)
Material Usage Variance = Standard Price x (Actual Quantity - Standard
Quantity)
Material Total Variance = Price Variance + Usage Variance
= Actual Cost - Standard Cost of Standard Quantity
```

Price variance asks: *"did we pay more or less per unit than planned?"* Usage variance asks: *"did we use more or less material than the standard allows for what we actually produced?"*

✎ **Question 1 — Direct Material Variances**

Given: Araliya PLC made 10,000 bags of cement. Materials used:

Material	Qty used	Std usage/bag	Actual price	Standard price
Limestone	100 tons	11 kg	Rs. 75/ton	Rs. 70/ton
Sand	250 tons	26 kg	Rs. 10/ton	Rs. 14/ton

Step 1 — Work out the Standard Quantity allowed (for 10,000 bags actually produced), converting kg to tons (1 ton = 1,000 kg):
Limestone: 10,000 bags × 11 kg = 110,000 kg = 110 tons
Sand: 10,000 bags × 26 kg = 260,000 kg = 260 tons

Step 2 — Material Price Variance = Actual Qty × (Actual Price – Standard Price):
Limestone: 100 × (75–70) = 100 × 5 = Rs. 500 **Adverse** (paid more per ton than planned)
Sand: 250 × (10–14) = 250 × (–4) = Rs. 1,000 **Favourable** (paid less per ton than planned)

Step 3 — Material Usage Variance = Standard Price × (Actual Qty – Standard Qty):
Limestone: 70 × (100–110) = 70 × (–10) = Rs. 700 **Favourable** (used 10 tons less than the standard allows)
Sand: 14 × (250–260) = 14 × (–10) = Rs. 140 **Favourable** (used 10 tons less than standard)

Step 4 — Total Variance for each material = Price Variance + Usage Variance:
Limestone: 500 (A) + 700 (F) = Rs. 200 **Favourable**
Sand: 1,000 (F) + 140 (F) = Rs. 1,140 **Favourable**

✓ **ANSWER: Limestone — Price Rs. 500 (A), Usage Rs. 700 (F), Total Rs. 200 (F). Sand — Price Rs. 1,000 (F), Usage Rs. 140 (F), Total Rs. 1,140 (F).**

5.3 Direct Labour Variances

■ **Labour Variances**

```
Labour Rate Variance = Actual Hours x (Actual Rate - Standard Rate)
Labour Efficiency Variance = Standard Rate x (Actual Hours - Standard Hours)
Labour Total Variance = Rate Variance + Efficiency Variance
```

Same logic as material: rate variance is about the *hourly wage* paid; efficiency variance is about how many *hours* were actually needed compared to the standard time allowed for the output achieved.

✎ **Question 2 — Direct Labour Variances**

Given: Araliya PLC produced and sold 10,000 denims. Per unit: Actual Hours (AH) = 0.50 hr, Standard Hours (SH) = 0.55 hr, Actual Rate (AR) = Rs. 12/hr, Standard Rate (SR) = Rs. 10/hr.

Step 1 — Scale up to total hours for 10,000 units:
Total Actual Hours = 10,000 × 0.50 = 5,000 hrs
Total Standard Hours = 10,000 × 0.55 = 5,500 hrs

Step 2 — Labour Rate Variance = AH × (AR – SR) = 5,000 × (12–10) = 5,000 × 2 = Rs. 10,000 **Adverse** (paid Rs. 2/hr more than planned)

Step 3 — Labour Efficiency Variance = SR × (AH – SH) = 10 × (5,000–5,500) = 10 × (–500) = Rs. 5,000 **Favourable** (the workforce actually needed FEWER hours than standard — they worked faster than planned)

Step 4 — Total Labour Variance = 10,000 (A) + 5,000 (F) = Rs. 5,000 **Adverse**

✓ **ANSWER: Labour Rate Variance = Rs. 10,000 (A) | Labour Efficiency Variance = Rs. 5,000 (F) | Total Labour Variance = Rs. 5,000 (A).**

5.4 Variable Overhead Variances

■ **Variable Overhead Variances**

```
Variable OH Expenditure Variance = Actual Variable OH - (Actual Hours x
Standard VOH rate/hr)
Variable OH Efficiency Variance = Standard VOH rate/hr x (Standard Hours -
Actual Hours)
```

✎ **Question 3 — Variable Overhead Variances**

Given: Araliya Sports Ltd makes two bats. Standard variable overhead per unit: Araliya Plus = Rs. 20 for 2 direct labour hours (i.e. Rs. 10/labour hour); Araliya Gold = Rs. 12 for 1 machine hour (i.e. Rs. 12/machine hour). Actual results for the month: Variable manufacturing overhead Rs. 175,000; Direct labour hours 10,000; Machine hours 5,000; Production — Plus 4,500 units, Gold 5,200 units.

Step 1 — Standard hours allowed for actual production:
Plus: 4,500 units × 2 hrs = 9,000 standard labour hours
Gold: 5,200 units × 1 hr = 5,200 standard machine hours

Step 2 — Standard Variable Overhead Absorbed (Std hours x Std rate):
Plus: 9,000 hrs × Rs. 10 = Rs. 90,000
Gold: 5,200 hrs × Rs. 12 = Rs. 62,400
Combined standard overhead absorbed for actual output = Rs. 152,400

Step 3 — Overhead based on ACTUAL hours at the standard rate (used for both variances):
Actual labour hours (Plus) 10,000 × Rs. 10 = Rs. 100,000
Actual machine hours (Gold) 5,000 × Rs. 12 = Rs. 60,000
Combined = Rs. 160,000

Step 4 — Expenditure Variance = Actual Variable OH – (Actual hours × Standard rate) = 175,000 – 160,000 = Rs. 15,000 **Adverse** (spent more than the actual hours worked should have cost)

Step 5 — Efficiency Variance = (Actual hours × Standard rate) – Standard overhead absorbed = 160,000 – 152,400 = Rs. 7,600 **Adverse** (more hours were used than the standard allows for the units actually made)

✓ **ANSWER: Variable Overhead Expenditure Variance = Rs. 15,000 (A) | Variable Overhead Efficiency Variance = Rs. 7,600 (A).**

5.5 Fixed Overhead Variances

■ **Fixed Overhead Variances**

```
Fixed OH Total Variance = Actual Fixed OH - Absorbed Fixed OH
Fixed OH Expenditure Variance = Actual Fixed OH - Budgeted Fixed OH
Fixed OH Volume Variance = Absorbed Fixed OH - Budgeted Fixed OH
= (Actual Output x FOAR) - (Budgeted Output x FOAR)
(FOAR = Fixed Overhead Absorption Rate per unit)
```

■ REAL-WORLD EXAMPLE — Expenditure vs. Volume, intuitively

Expenditure variance asks "did we spend more or less on fixed overheads than we budgeted?" — nothing to do with how many units we made. Volume variance asks "did we make more or fewer units than budgeted, so that fixed overhead is spread more thinly (or thickly) than planned?" — nothing to do with actual spending. Adding them together explains the whole gap between actual overhead spent and overhead absorbed into products.

✎ Question 4 — Fixed Overhead Variances

Given: Araliya PLC — Actual production 275,000 units; Budgeted production 250,000 units; Standard Fixed OH Absorption Rate (FOAR) Rs. 2,000/unit; Actual fixed overhead Rs. 600 million.

Step 1 — Budgeted Fixed Overhead = Budgeted output × FOAR = 250,000 × 2,000 = Rs. 500,000,000

Step 2 — Absorbed Fixed Overhead = Actual output × FOAR = 275,000 × 2,000 = Rs. 550,000,000

Step 3 — Fixed Overhead Total Variance = Actual Fixed OH – Absorbed Fixed OH = 600,000,000 – 550,000,000 = Rs. 50,000,000 **Adverse**

Step 4 — Fixed Overhead Expenditure Variance = Actual Fixed OH – Budgeted Fixed OH = 600,000,000 – 500,000,000 = Rs. 100,000,000 **Adverse** (spent much more than budgeted)

Step 5 — Fixed Overhead Volume Variance = Absorbed Fixed OH – Budgeted Fixed OH = 550,000,000 – 500,000,000 = Rs. 50,000,000 **Favourable** (producing 25,000 more units than budgeted absorbed extra fixed overhead into products, which is favourable on its own)

Check: Expenditure (100M A) + Volume (50M F) = 50M Adverse net = matches the Total Variance calculated in Step 3.

✓ ANSWER: Fixed OH Total Variance = Rs. 50,000,000 (A) | Expenditure Variance = Rs. 100,000,000 (A) | Volume Variance = Rs. 50,000,000 (F).

5.6 Sales Variances

■ Sales Variances

```
Sales Price Variance = Actual Units Sold x (Actual Price - Standard Price)
Sales Volume Variance (absorption costing) = (Actual Units - Budgeted Units)
x Std Profit/unit
Sales Volume Variance (marginal costing) = (Actual Units - Budgeted Units) x
Std Contribution/unit
```

✎ **Question 5 — Sales Variances**

Given: Araliya PLC sold 200 tons of fertiliser NHK-II at an actual price of Rs. 380/ton against a standard price of Rs. 400/ton. Budgeted sales quantity was 210 tons, and standard variable cost is Rs. 250/unit (so standard contribution per unit = standard price – standard variable cost = 400–250 = Rs. 150).

Step 1 — Sales Price Variance = Actual units × (Actual price – Standard price) = 200 × (380–400) = 200 × (–20) = Rs. 4,000 **Adverse** (sold Rs. 20/ton below the standard price)

Step 2 — Sales Volume Variance (marginal-costing basis, using standard contribution) = (Actual units – Budgeted units) × Standard contribution/unit = (200–210) × 150 = (–10) × 150 = Rs. 1,500 **Adverse** (sold 10 tons fewer than budgeted)

✓ **ANSWER: Sales Price Variance = Rs. 4,000 (A) | Sales Volume Variance = Rs. 1,500 (A).**

5.7 Limitations of Standard Costing

- Hard to apply where production is not standardised (e.g. one-off, bespoke jobs)
- Difficult to set meaningful standards for service organisations
- Can be hard to pin responsibility for a variance on one specific manager
- Variance reports often arrive too late to act on (reporting delay)
- Can create negative behavioural effects if used punitively rather than diagnostically (e.g. workers hiding problems, or gaming the standard)

CHAPTER 6

Pricing

How businesses decide what to charge — and all three practice problems solved.

6.1 Why Pricing Deserves Its Own Chapter

Price is the only element of the marketing mix that brings in revenue — everything else (product, promotion, place) is a cost. Price also silently communicates the value positioning of a product: a Rs. 50 watch and a Rs. 500,000 watch send very different signals before a customer even reads the spec sheet.

■ **The Simplest Pricing Identity**

```
Price = Cost + Profit
```

6.2 Setting a Pricing Policy — Six Factors

1. Selecting the pricing objective (survival, maximise profit, maximise market share, market skimming, or product-quality leadership)
2. Determining demand
3. Estimating costs
4. Analysing competitors' costs, prices and offers
5. Selecting a pricing method
6. Selecting the final price

6.3 Demand and Price Elasticity

Demand and price are inversely related — as price rises, demand typically falls. **Price elasticity** measures how sensitive demand is to a price change.

- **Price inelastic** — demand barely changes when price changes
- **Price elastic** — demand changes significantly when price changes

Demand tends to be less elastic when: there are few or no substitutes, buyers are slow to change habits, or buyers believe the higher price is justified.

■ **REAL-WORLD EXAMPLE — Elastic vs. inelastic demand**

Insulin for a diabetic patient is highly price-inelastic — patients will pay almost any price because there's no substitute and the need is medical. A generic soft drink is highly price-elastic — raise its price 10% and shoppers happily switch to a cheaper cola on the next shelf.

6.4 Estimating Costs for Pricing: Target Costing & Lifecycle Costing

Target costing flips the usual cost-plus logic on its head. Instead of "cost + profit = price", it starts from what the market will pay: **price** – **required profit = the maximum cost you're allowed to have**. If your

real cost is higher than that target, you must redesign the product or process to get costs down — you don't get to raise the price just because your costs are high.

■ Target Costing

```
Target Cost = Target Selling Price - Required Profit Margin
```

Lifecycle costing looks at ALL costs of a product from cradle to grave — design, manufacturing, operation, and end-of-life — not just the manufacturing cost, because a product's true profitability can only be judged over its whole life.

■ REAL-WORLD EXAMPLE — Target costing at a car maker

A car manufacturer knows customers won't pay more than $25,000 for a new compact model, and needs a 15% margin. That fixes the target cost at roughly $21,250. Engineers are then told to design the car to hit that cost — swapping materials, simplifying parts — rather than designing the car first and hoping the market accepts whatever price results.

✎ **Practice Question 1 — Target Costing & Lifecycle Costing**

Given: Market research says the company can sell 10,000 units at Rs. 21.00/unit, with a required mark-up of 40% on product cost. Lifetime costs: Design & development Rs. 50,000; Manufacturing Rs. 10/unit; End-of-life costs Rs. 20,000. An additional Rs. 15,000 spent on design could reduce the manufacturing cost per unit.

(a) What is the target cost of the product?

A 40% mark-up ON COST means: Selling Price = Cost × 1.40, so Cost = Price ÷ 1.40 = 21.00 ÷ 1.40 = **Rs. 15.00 per unit**.

(b) What is the original lifecycle cost per unit — is it worth making?

Total lifecycle cost = Design (50,000) + Manufacturing (10 × 10,000 = 100,000) + End-of-life (20,000) = Rs. 170,000.
Lifecycle cost per unit = 170,000 ÷ 10,000 = **Rs. 17.00 per unit**.
Since the actual lifecycle cost (Rs. 17.00) is HIGHER than the target cost (Rs. 15.00), the product does NOT meet the required 40% mark-up as it stands — actual mark-up would only be (21–17)/17 = 23.5%. **Not worth making on this basis, unless costs are reduced.**

(c) If Rs. 15,000 extra is spent on design, what's the maximum manufacturing cost per unit the company can tolerate?

New Design & development cost = 50,000+15,000 = Rs. 65,000. The company still needs TOTAL lifecycle cost to sit at or below the target of Rs. 15.00/unit × 10,000 = Rs. 150,000 to earn its 40% mark-up.
Allowable total manufacturing cost = 150,000 – 65,000 (design) – 20,000 (end-of-life) = Rs. 65,000.
Maximum manufacturing cost per unit = 65,000 ÷ 10,000 = **Rs. 6.50/unit**.

✓ **ANSWER: Target cost = Rs. 15.00/unit | Original lifecycle cost = Rs. 17.00/unit (product not viable as-is) | Maximum tolerable manufacturing cost after extra design spend = Rs. 6.50/unit.**

6.5 Pricing Methods

Method	Logic
Cost-plus pricing	Price = full production cost + a fixed profit margin. Simple, but ignores demand entirely.
Target return pricing	Price set to achieve a target return on investment (ROI).
Value-based pricing	Price based on the value the product creates for the customer, not on the seller's cost.
Psychological pricing	Price set to influence perception — e.g. Rs. 999 instead of Rs. 1,000 — signalling either a bargain or, at the high end, prestige.
Skimming pricing	Launch at a high price to capture early adopters, then lower it over time.
Penetration pricing	Launch at a low price to win market share quickly, then raise it later.
Geographical pricing	Different prices in different locations; may involve barter or countertrade.
Discriminatory pricing	Different prices for different customer segments, product forms, locations, or times.

■ REAL-WORLD EXAMPLE — Skimming vs. penetration

A new smartphone launches at a premium price to "skim" wealthy early adopters willing to pay extra to have it first — the price then drops over the following year. A new budget airline, by contrast, launches with rock-bottom introductory fares to "penetrate" the market and build a loyal customer base fast, planning to raise prices once it's established.

✎ Practice Question 2 — Cost-Plus Pricing

Given: Direct material Rs. 20.00 + Direct labour Rs. 5.50 + Allocated overhead Rs. 8.25. Standard mark-up 30%.

Step 1 — Total cost = 20.00 + 5.50 + 8.25 = Rs. 33.75

Step 2 — Selling price = Total cost × (1 + 30%) = 33.75 × 1.30 = Rs. 43.875

✓ ANSWER: Selling price ≈ Rs. 43.88.

✎ Practice Question 3 — Full-Cost-Plus Pricing

Given: Factory production overhead Rs. 750,000; Fixed selling costs Rs. 550,000; Admin & other overheads Rs. 325,000; Variable cost/unit Rs. 8.00; Mark-up required 35%; Budgeted sales volume 500,000 units.

Step 1 — Total fixed costs = 750,000 + 550,000 + 325,000 = Rs. 1,625,000

Step 2 — Fixed cost per unit = 1,625,000 ÷ 500,000 = Rs. 3.25

Step 3 — Full cost per unit = Fixed cost/unit + Variable cost/unit = 3.25 + 8.00 = Rs. 11.25

Step 4 — Selling price = Full cost × (1 + 35%) = 11.25 × 1.35 = Rs. 15.1875

✓ ANSWER: Selling price ≈ Rs. 15.19 per unit.

CHAPTER 7

Cost-Volume-Profit (CVP) Analysis / Marginal Costing

How costs, sales volume and profit interact — break-even, margin of safety, and the marginal-vs-absorption debate, all worked in full.

7.1 Marginal Costing vs. Absorption Costing

Marginal costing charges only variable (direct) costs to the cost unit. Fixed costs are treated as a period cost and written off in full to the income statement in the period incurred — they are never carried forward inside inventory. **Absorption costing** (Chapter 4) instead shares fixed manufacturing overhead into the cost of every unit made, so inventory carries a slice of fixed overhead with it.

■ **Marginal Cost per Unit**

```
Marginal Cost/unit = Direct Material/unit + Direct Labour/unit + Other Variable Costs/unit
```

■ **REAL-WORLD EXAMPLE — Marginal cost of one more unit**

If total cost to produce 10,000 units is Rs. 50,000, and the total cost to produce 10,001 units is Rs. 50,005, the marginal cost of that one extra unit is Rs. 5 — useful for a manager deciding whether to accept one more rush order, since fixed costs are already covered either way.

	Absorption Costing	Marginal (Variable) Costing
Product cost includes	Direct materials, direct labour, variable MOH, AND fixed MOH	Direct materials, direct labour, variable MOH only
Period cost (never in inventory)	Variable + fixed selling & admin expenses	Fixed MOH + variable/fixed selling & admin expenses
Required for	External financial reporting & tax reporting	Internal management decision-making

✎ **Exercise — Unit Product Cost under Both Methods**

Given: 6,000 units produced. Variable costs/unit: Direct material Rs. 2, Direct labour Rs. 4, Variable manufacturing overhead Rs. 1, Variable selling & admin Rs. 3. Fixed costs/year: Fixed manufacturing overhead Rs. 30,000; Fixed selling & admin Rs. 10,000.

Absorption costing unit product cost = DM + DL + Variable MOH + Fixed MOH/unit. Fixed MOH per unit = 30,000 ÷ 6,000 = Rs. 5.
= 2 + 4 + 1 + 5 = **Rs. 12 per unit**. (Variable selling & admin is never a product cost under either method — it's a period/selling cost.)

Marginal costing unit product cost = DM + DL + Variable MOH only (fixed MOH is a period cost, kept out of the unit cost entirely).
= 2 + 4 + 1 = **Rs. 7 per unit**.

✓ **ANSWER: Absorption costing unit product cost = Rs. 12 | Marginal costing unit product cost = Rs. 7. The Rs. 5 gap is exactly the fixed manufacturing overhead per unit.**

✎ **Exercise — Profit Statements under Both Methods**

Given: ABC Ltd made and sold 100,000 units of Product X. Sales @ Rs. 10/unit = Rs. 1,000,000. Direct material @ Rs. 3 = Rs. 300,000. Direct labour @ Rs. 2 = Rs. 200,000. Variable overhead @ Rs. 1 = Rs. 100,000. Fixed overhead for the year = Rs. 200,000. (Note: production = sales, so there is no closing inventory.)

Marginal Costing Profit Statement

Sales = Rs. 1,000,000
Less Variable cost of sales (300,000+200,000+100,000) = Rs. 600,000
Contribution = Rs. 400,000
Less Fixed overheads = Rs. 200,000
Profit = Rs. 200,000

Absorption Costing Profit Statement

Fixed OH absorption rate = 200,000 ÷ 100,000 = Rs. 2/unit.
Full production cost/unit = 3+2+1+2 = Rs. 8.
Sales = Rs. 1,000,000
Less Cost of sales (100,000 units × Rs. 8) = Rs. 800,000
Profit = Rs. 200,000

Key insight: Because production exactly equalled sales (no change in inventory), both methods report the SAME profit. Marginal and absorption costing only produce DIFFERENT profits when inventory levels change during the period — if you make more than you sell, absorption costing shows higher profit (some fixed cost is "parked" in closing stock); if you sell more than you make, marginal costing shows higher profit.

✓ **ANSWER: Profit under both methods = Rs. 200,000, because there is no opening or closing inventory to create a difference.**

7.2 Contribution, Break-Even, and Margin of Safety

■ Core CVP Formulas

```
Contribution = Selling Price per unit - Variable Cost per unit
PV (Profit/Volume) Ratio = (Contribution / Sales) x 100
Break-Even Point (units) = Fixed Cost / Contribution per unit
Break-Even Point (Rs.) = Fixed Cost / PV Ratio
Margin of Safety = Budgeted (or Actual) Sales - Break-Even Sales
```

Break-even point is where a business makes neither profit nor loss — total revenue exactly equals total cost (TR = TC). **Margin of safety** tells you how far actual/budgeted sales can fall before the business starts making a loss — a cushion, in units or in rupees.

■ REAL-WORLD EXAMPLE — BEP and margin of safety at a food truck

A food truck's fixed costs (permit, truck lease, driver's salary) are Rs. 7,000/day. Each meal sells for Rs. 40 and costs Rs. 32 in ingredients — a contribution of Rs. 8/meal. The truck must sell 7,000/8 = 875 meals just to break even. If it typically sells 1,000 meals a day, its margin of safety is 125 meals — the cushion of sales it can afford to lose before it starts making a loss. This is exactly the exercise solved in full below.

- Assumptions behind CVP analysis: fixed costs stay constant; operating efficiency doesn't change; selling prices don't change with volume; any semi-variable costs can be split into their fixed and variable elements; the product mix stays unchanged; and the price of variable-cost inputs (wage rates, material prices) stays constant.

✎ Exercise — Contribution, BEP and Margin of Safety

Given: Sales price Rs. 40/unit. Variable cost Rs. 32/unit. Total fixed cost Rs. 7,000. Budgeted sales 1,000 units.

Step 1 — Contribution per unit = 40 – 32 = **Rs. 8**

Step 2 — PV Ratio = (8 ÷ 40) × 100 = **20%**

Step 3 — BEP in units = Fixed cost ÷ Contribution/unit = 7,000 ÷ 8 = **875 units**

Step 4 — BEP in sales value = Fixed cost ÷ PV Ratio = 7,000 ÷ 0.20 = **Rs. 35,000** (check: 875 units × Rs. 40 = Rs. 35,000 ✓)

Step 5 — Margin of Safety = Budgeted sales – BEP sales = 1,000 – 875 = **125 units**, or in value: Rs. 40,000 – Rs. 35,000 = **Rs. 5,000** (12.5% of budgeted sales)

✓ ANSWER: Contribution = Rs. 8/unit | PV Ratio = 20% | BEP = 875 units (Rs. 35,000) | Margin of Safety = 125 units (Rs. 5,000, or 12.5% of budgeted sales).

7.3 Break-Even Charts

A break-even chart plots Total Cost and Total Revenue against volume of output. Where the two lines cross is the break-even point; the vertical gap to the right of that point (revenue line above cost line) shows growing profit as volume increases, and the gap to the left (cost line above revenue line) shows

the loss made at low volumes.

■ REAL-WORLD EXAMPLE — Reading a break-even chart

Below break-even, a small bakery's Total Cost line (rent + ingredients) sits above its Total Revenue line — every extra loaf sold narrows that gap. The moment the lines cross, all further loaves sold each add pure contribution to profit, since fixed costs are already fully covered.

CHAPTER 8

Quick-Reference Formula Sheet

Every formula from this guide, in one place, for last-minute revision.

Material Costing

```
Re-order Level = Max usage/period x Max lead time
Max Stock Level = ROL + ROQ - (Min usage x Min lead time)
Min Stock Level = ROL - (Average usage x Average lead time)
Average Stock Level = Min Stock Level + 1/2 x ROQ
EOQ = SQRT( (2 x D x Co) / Ch )
```

Overhead & Absorption Costing

```
Predetermined OAR = Budgeted Overhead / Budgeted Activity
Actual OAR = Actual Overhead / Actual Activity
% on Direct Labour = (Overhead / Direct Labour Cost) x 100
% on Direct Material = (Overhead / Direct Material Cost) x 100
% on Prime Cost = (Overhead / Prime Cost) x 100
Labour Hour Rate = Overhead / Direct Labour Hours
Machine Hour Rate = Overhead / Machine Hours
```

Standard Costing Variances

```
Material Price Variance = AQ x (AP - SP)
Material Usage Variance = SP x (AQ - SQ)
Labour Rate Variance = AH x (AR - SR)
Labour Efficiency Variance = SR x (AH - SH)
Var. OH Expenditure Variance = Actual Var. OH - (AH x Std Var. OH Rate)
Var. OH Efficiency Variance = Std Var. OH Rate x (SH - AH)
Fixed OH Total Variance = Actual Fixed OH - Absorbed Fixed OH
Fixed OH Expenditure Var. = Actual Fixed OH - Budgeted Fixed OH
Fixed OH Volume Variance = Absorbed Fixed OH - Budgeted Fixed OH
Sales Price Variance = Actual Units x (AP - SP)
Sales Volume Variance = (Actual Units - Budgeted Units) x Std
Contribution/Profit per unit
```

AQ/SQ = Actual/Standard Quantity, AP/SP = Actual/Standard Price, AH/SH = Actual/Standard Hours, AR/SR = Actual/Standard Rate. A positive (cost higher than standard) result is Adverse; a negative (cost lower than standard) result is Favourable.

Pricing

```
Price = Cost + Profit
Target Cost = Target Selling Price - Required Profit Margin
Cost-Plus Price = Total Cost x (1 + Mark-up %)
```

CVP / Marginal Costing

```
Contribution = Selling Price/unit - Variable Cost/unit
PV Ratio = (Contribution / Sales) x 100
Break-Even (units) = Fixed Cost / Contribution per unit
Break-Even (Rs.) = Fixed Cost / PV Ratio
Margin of Safety = Budgeted (Actual) Sales - Break-Even Sales
```

End of study guide. Work through each Worked Problem box by covering the solution and trying it yourself first — that's the fastest way to make sure the logic has actually stuck, not just been read.