

Costs and cost behaviour AS

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What you need to know

By the end of this topic you should be able to:

1. **Account for material and labour costs:** work out what materials cost and what employees earn, using time rates, overtime, piece rates, bonuses and guaranteed minimum pay, and find a labour cost per unit.
2. **Identify and calculate fixed, variable, semi-variable and stepped costs:** say how each behaves as output changes, in total and per unit, and split a total cost into its fixed and variable parts.
3. **Identify and calculate direct and indirect costs:** tell costs you can trace to one unit of product from costs you can't, for materials, labour and expenses.
4. **Value closing inventory with FIFO and AVCO**, both **perpetual** (worked out after every receipt and issue) and **periodic** (worked out once, at the end of the period).
5. **Explain just in time (JIT)** management of inventory: its principle, its benefits and its drawbacks.
6. **Use all of this to make decisions:** judge information about costs, pay and inventory, and give advice with reasons.

Understand it

Why businesses study their costs

A business sets prices, plans output and decides whether to take extra work. To do any of that it needs to know what a unit **really** costs and how costs will change if it makes more or fewer. Costs can be grouped in two different ways, and you need both:

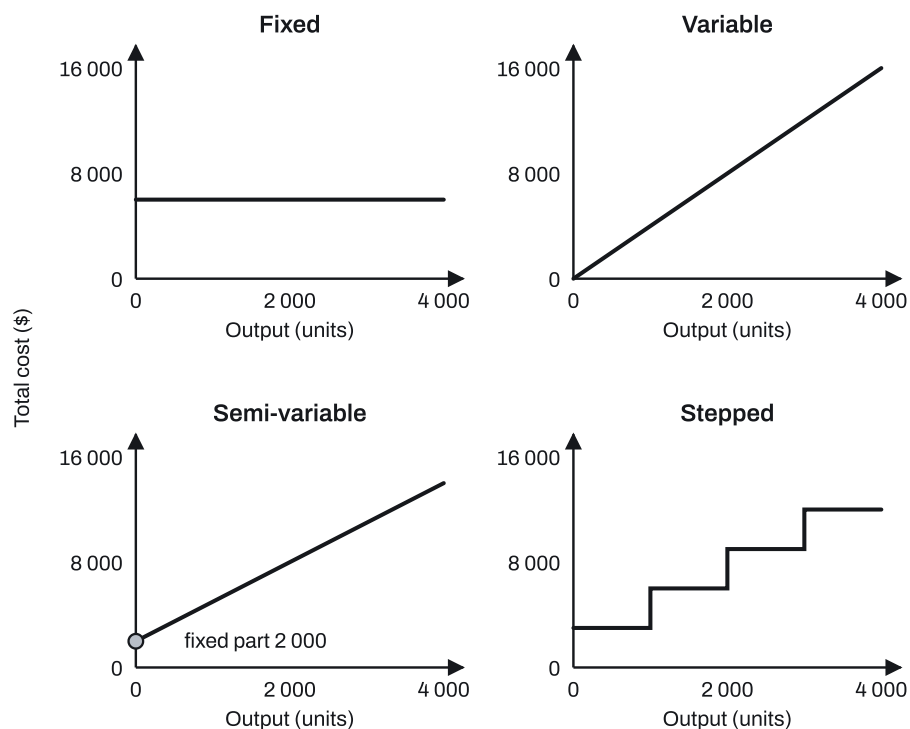
- **by behaviour:** what happens to the cost when **output** changes (fixed, variable, semi-variable, stepped);
- **by traceability:** whether the cost can be **traced to a single unit** of product (direct or indirect).

The two groupings are separate questions. Direct materials are direct **and** variable; factory rent is indirect **and** fixed; a supervisor's salary is indirect and often stepped.

Cost behaviour

Take a small factory whose output can be anywhere from 0 to 4 000 units a month.

- **Fixed cost:** stays the same **in total** whatever the output, within a normal range of activity (the **relevant range**). Rent of \$6 000 a month is paid whether the factory makes 1 000 units or 4 000.
- **Variable cost:** rises **in total** in direct proportion to output. Materials at \$4 a unit cost \$4 000 for 1 000 units and \$12 000 for 3 000.
- **Semi-variable cost:** has a fixed part **and** a variable part. Power might be a standing charge of \$2 000 a month plus \$3 a unit: 2 500 units cost $2\,000 + 3 \times 2\,500 = 9\,500$. A basic wage plus a bonus per unit is semi-variable too.
- **Stepped cost:** fixed over a range of output, then jumps to a new level when that range is passed. If one supervisor (\$3 000 a month) can oversee up to 1 000 units, then 2 500 units need 3 supervisors, costing \$9 000.



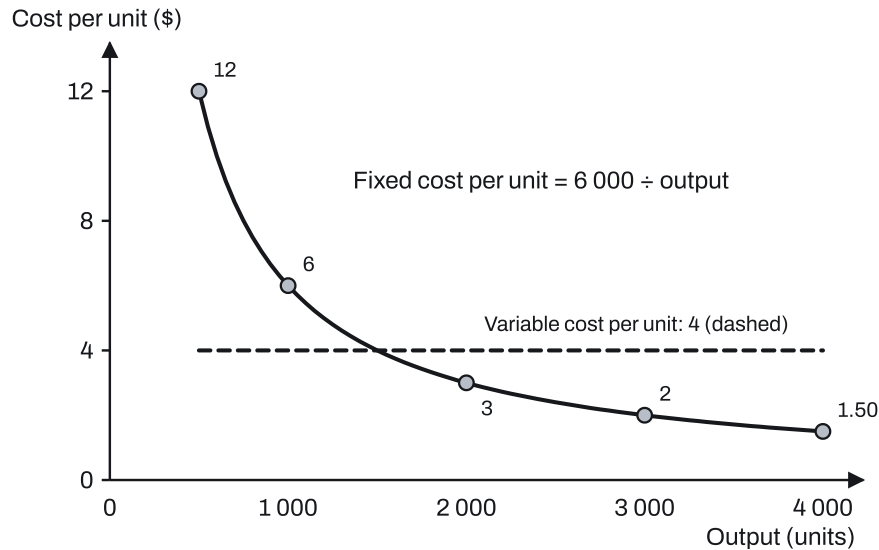
"Fixed" never means "fixed for ever". Given enough time, or a big enough change in output, every cost can change: a larger factory means more rent. That is why the definition says "within a relevant range".

Totals and per unit behave the opposite way

This is the idea most questions test. Using the factory's rent (\$6 000) and materials (\$4 a unit):

Output (units)	1 000	2 000	3 000
Total fixed cost (\$)	6 000	6 000	6 000
Fixed cost per unit (\$)	6	3	2
Total variable cost (\$)	4 000	8 000	12 000
Variable cost per unit (\$)	4	4	4

- **Fixed costs:** the **total** stays the same; the cost **per unit falls** as output rises (the same \$6 000 is shared over more units) and **rises** as output falls.
- **Variable costs:** the **total** rises and falls with output; the cost **per unit stays the same**.



So if actual output differs from the forecast, **total fixed cost** and **variable cost per unit** are still as forecast; **fixed cost per unit** and **total variable cost** are not.

Splitting a cost with the high-low method

Often you are given only the **total** cost at two levels of output. Fixed costs are the same at both levels, so the whole **difference** in total cost comes from the variable cost:

$$\text{variable cost per unit} = \frac{\text{difference in total cost}}{\text{difference in output}}$$

For 2 000 units costing \$23 000 and 5 000 units costing \$44 000: variable cost = $\frac{44\,000 - 23\,000}{5\,000 - 2\,000} = 7$ a unit. Fixed cost = $23\,000 - 7 \times 2\,000 = 9\,000$. Now any output can be costed: 4 000 units cost $9\,000 + 7 \times 4\,000 = 37\,000$. Fixed cost per unit is $9\,000 \div 2\,000 = 4.50$ at the low level and $9\,000 \div 5\,000 = 1.80$ at the high level.

Direct and indirect costs

A **direct cost** can be identified with, and charged to, a specific **cost unit** (one unit of product, one job or one batch). An **indirect cost** cannot be traced to a unit, or not economically: it is shared by many units. Indirect costs of the factory are called **production overheads**.

	Direct	Indirect (overheads)
Materials	Raw materials and components that go into the product; carriage inwards on them	Cleaning materials, lubricants for machines
Labour	Wages of workers who make or assemble the product (including piece rates)	Supervisors, factory manager, maintenance and cleaning staff, stores staff

	Direct	Indirect (overheads)
Expenses	Royalties per unit, hire of a machine for one job	Factory rent, depreciation of machinery, power for lighting, insurance

Prime cost is the total of direct costs (direct materials + direct labour + direct expenses). Adding production overheads gives the **production cost**. How overheads are shared between units is the next topic, traditional costing methods.

Labour costs

Employees are paid in these ways, often combined:

- **Time rate:** hours worked $\times$ hourly rate. At \$12 an hour, a 38-hour week pays \$456.
- **Overtime:** hours beyond the basic week are paid at a higher rate. "Time and a half" means the basic rate plus a 50% **premium**. Working 44 hours at \$12 with overtime at time and a half: $38 \times 12 + 6 \times 18 = 564$. The same answer comes from all 44 hours at the basic rate (528) plus the premium on 6 hours ($6 \times 6 = 36$).
- **Piece rate:** pay per unit made. At \$0.90 a unit, 480 units earn \$432.
- **Bonus for time saved:** each unit has a target (allowed) time. Time saved = time allowed for the actual output – time worked, and the bonus is a stated percentage of the hourly rate for each hour saved. With a target of 20 minutes a unit, 150 units are allowed $150 \times \frac{20}{60} = 50$ hours. Working 44 hours saves 6 hours; at 40% of \$12 the bonus is $6 \times 4.80 = 28.80$, so total pay is $564 + 28.80 = 592.80$.
- **Bonus per unit over a target:** for example \$0.60 for each unit above 300.
- **Group bonus:** paid to a team and shared, usually equally. A team of 5 paid \$6 for each unit above 300 that makes 340 units shares $40 \times 6 = 240$, so \$48 each.
- **Guaranteed minimum:** the employee gets the **higher** of what they earned and the guarantee. Someone who worked 30 hours at \$12 earned \$360; with a guaranteed \$400 a week, they are paid \$400.

Labour cost per unit = hourly rate $\div$ units made per hour. A worker paid \$12 an hour who makes 16 units an hour costs \$0.75 a unit; a more skilled worker paid \$14 an hour who makes 20 units an hour costs \$0.70 a unit. Paying more per hour can make each unit **cheaper**.

Valuing inventory: FIFO and AVCO

When prices change, identical units in the store have cost different amounts, so the business needs a rule for which cost goes with each **issue** (to production or sale) and which stays in **closing inventory**.

- **FIFO (first in, first out)** assumes the **oldest** units are issued first. Issues are priced at the oldest costs; closing inventory is valued at the **most recent** costs.
- **AVCO (weighted average cost)** prices every unit at the average cost of the units held.
 - **Perpetual AVCO** recalculates the average **after each receipt**: average = total value held $\div$ units held. Issues are priced at the current average and leave the average unchanged.

- **Periodic** AVCO works out one average for the whole period: (value of opening inventory + all receipts) $\div$ (units of opening inventory + all receipts). Closing inventory = units left $\times$ that average. The dates of issues don't matter.

Take opening inventory of 100 units at \$5, receipts of 300 at \$7 and later 200 at \$8, and issues of 200 and then 250 units. That is 600 units costing \$4 200 in all, with 150 left.

	Cost of issues (\$)	Closing inventory (\$)
FIFO: issues $100 \times 5 + 100 \times 7$, then $200 \times 7 + 50 \times 8$; 150 left at \$8	3 000	1 200
AVCO perpetual: 400 units at \$6.50, issue 200; then 400 units at \$7.25, issue 250; 150 left at \$7.25	3 112.50	1 087.50
AVCO periodic: $4\,200 \div 600 = 7$; 150 left at \$7	3 150	1 050

Every method gives cost of issues + closing inventory = \$4 200. When prices are **rising**, FIFO leaves the newest (dearest) units in inventory, so FIFO gives the **highest closing inventory**, the **lowest cost of sales** and so the **highest gross profit**. When prices fall, the reverse happens.

Just in time (JIT)

The principle of **JIT** is that materials and components are delivered **just as production needs them** (and goods are made only when customers need them), so the business holds little or no inventory.

Benefits: less money tied up in inventory, so better cash flow; less storage space and lower warehouse costs; less waste from damage, theft or goods going out of date; more efficient production; a retailer can switch quickly to improved products because it isn't holding old stock.

Drawbacks: it depends on reliable suppliers, so a late delivery can stop production (a **stock-out**) and lose sales; many small deliveries raise delivery, ordering and inspection costs; smaller orders may lose bulk (trade) discounts; there is no buffer if demand suddenly rises. JIT does **not** lower the purchase price of materials.

Key facts and formulas

There is no formula list in the 9706 exam, so learn all of these.

Formula	Status
Total cost = fixed cost + variable cost per unit $\times$ output	Learn it
Fixed cost per unit = total fixed cost $\div$ output	Learn it
High-low: variable cost per unit = (difference in total cost) $\div$ (difference in output)	Learn it

Formula	Status
Fixed cost = total cost at one level – variable cost per unit × output at that level	Learn it
Semi-variable cost = fixed part + rate × activity	Learn it
Stepped cost = number of steps (always rounded up) × cost per step	Learn it
Prime cost = direct materials + direct labour + direct expenses	Learn it
Gross pay = basic hours × rate + overtime hours × overtime rate + bonus (or the guarantee, if higher)	Learn it
Time saved = time allowed for actual output – time worked; bonus = time saved × bonus % × hourly rate	Learn it
Labour cost per unit = hourly rate ÷ units per hour	Learn it
AVCO average = total value held ÷ units held (perpetual: after each receipt; periodic: once, for the whole period)	Learn it
Cost of issues = opening inventory + purchases – closing inventory	Learn it

Key facts to learn:

- Total fixed cost and variable cost per unit **don't change** with output (within the relevant range); fixed cost per unit and total variable cost **do**.
- In rising prices FIFO gives higher closing inventory and higher profit than AVCO.
- JIT: materials are delivered just as production needs them, so the business keeps no store of them.

How to do it

We have tagged 81 questions on this topic from 2021–2025 (78 different; three were repeated across paper variants): 69 multiple-choice questions on Paper 1 and 12 parts of the 30-mark costing question (Question 4) on Paper 2. 8 of them mix two types, so the counts add up to 89.

Question type	Questions
Calculate an employee's pay or a labour cost per unit	20
Say how fixed and variable costs behave, in total and per unit	13
Value inventory, issues or gross profit with FIFO or AVCO	11
Classify a cost as fixed, variable, semi-variable or stepped	9

Question type	Questions
Split a cost into fixed and variable parts (high-low)	8
Just in time (JIT): principle, benefits, drawbacks, advice	8
Define cost terms in words	7
Identify direct and indirect costs	5
Calculate a stepped or semi-variable cost at a given output	5
Compare FIFO and AVCO	3

1. Calculate an employee's pay or a labour cost per unit (20 questions)

- Basic pay:** basic hours $\times$ basic rate.
- Overtime:** hours above the basic week $\times$ overtime rate. Read the wording: "time and a quarter" or "basic plus 25%" means the **whole** overtime hour is paid at $1.25 \times$ basic; "a premium of 50%" is the **extra** on top of the basic rate. Either way, total pay is the same if you are consistent.
- Bonus:** work out exactly what the question says.
 - Time saved: time allowed = units made $\times$ target time per unit (convert minutes to hours); time saved = time allowed – hours worked; bonus = hours saved $\times$ stated % $\times$ hourly rate.
 - Per unit over a target: (units made – target) $\times$ rate. Tiered bonuses apply each rate to its own band: \$1.20 for units over 100 **plus** \$0.80 more for units over 120.
 - Group bonus: work out the team's bonus, then divide by the number of workers.
- Deductions**, such as a charge for rejected units, come off at the end.
- Guarantee:** compare the total with the guaranteed minimum and pay the higher.

Variations you will meet:

- Working backwards:** total pay is given and you find the hours. Take off the bonus and the basic pay; the rest $\div$ the overtime rate gives the overtime hours.
- Total labour cost** of a whole workforce, or of a special order: multiply one worker's pay by the number of workers, and include the overtime premium caused by the order.
- Direct labour only:** piece-rate pay for making the products is direct; a supervisor's pay is not.
- Paper 2, labour cost per unit** for two pay rates (for example trainees and experienced staff): each rate $\div$ units per hour, then the saving per unit (1 mark each).
- Paper 2, budgeted hourly rate** = total direct labour budget $\div$ budgeted labour hours; and overtime at time and a half inside a marginal costing forecast.

2. Say how fixed and variable costs behave (13 questions)

Test every statement against the table in "Understand it":

- Unchanged when output changes:** total fixed cost (within the relevant range) and variable cost per unit.

- **Changing:** fixed cost per unit (falls as output rises, rises as output falls) and total variable cost (moves with output).

Check the word "total" or "per unit" in each statement before deciding. For definitions: fixed means "the same **total** within a relevant range", not "the same for any output"; a stepped cost is fixed over a range, then rises; a semi-variable cost has a fixed and a variable part. If a new fixed cost appears (renting a workshop to double output), total fixed cost and fixed cost per unit change, but variable cost per unit doesn't.

3. Value inventory, issues or gross profit with FIFO or AVCO (11 questions)

1. **List every receipt and issue in date order**, starting with opening inventory.
2. **FIFO:** take each issue from the oldest batch first, splitting batches where needed. Closing inventory is what is left of the newest batches.
3. **AVCO perpetual:** after each receipt, new average = total value ÷ total units. Price each issue at the average at that moment. Keep a running table (date, units, value, average); don't round the average until the end.
4. **AVCO periodic:** one average for the period, from opening inventory and **all** receipts; closing inventory = units left × average.
5. **Gross profit** = sales revenue — cost of the units sold (the issues).

Variations you will meet:

- **Cost of issues** directly: opening value + purchases – closing value. With FIFO, closing units are valued at the latest prices.
- **Average direct cost per unit:** FIFO materials used ÷ units made, plus labour per unit. Fixed overheads are not a direct cost.
- **Distractors:** an issue may be shown with a price ("issued 250 units at \$7.00"). Ignore it and use your own AVCO or FIFO cost.
- **Paper 2:** complete an AVCO table date by date, one mark for each correct line of value.

4. Classify a cost as fixed, variable, semi-variable or stepped (9 questions)

Ask what happens to the **total** as output rises:

- no change at all → **fixed**;
- rises in proportion from zero → **variable**;
- starts above zero and then rises steadily (a fixed charge plus a rate per unit, or a basic wage plus a bonus) → **semi-variable**;
- stays flat, then jumps as a new supervisor, machine or extra charge is added → **stepped**.

When you get the cost **per unit** at two outputs, multiply back to totals: \$3 a unit at 6 000 units and \$2 at 9 000 are both \$18 000 in total, so the cost is fixed. When two costs are described (machinists and their supervisors), classify each: machinists are variable, supervisors stepped.

5. Split a cost into fixed and variable parts, high-low (8 questions)

1. Variable cost per unit = difference in total cost ÷ difference in output.
2. Fixed cost = total cost at either level – variable cost per unit × that output.
3. Answer the question: total cost at a new output, or fixed cost per unit at each level.

Variations you will meet:

- **A known step between the two levels:** if fixed costs rise by a stated amount at the higher of the two given levels (for example an extra supervisor), take that amount out of the difference **before** dividing. Then fixed cost at the higher level is the lower level's plus the step.
- **A step only above both given levels:** if the step starts only above both given levels, work out the variable and fixed cost from the two levels as normal, then add the step when costing the new output. For example, with an extra \$600 above 10 000 hours and costs given at 8 000 and 10 000 hours, the \$600 is added only when costing 12 000 hours.
- **Capacity costs:** if each machine rented for \$12 000 can make 60 000 units, 100 000 units need 2 machines, adding \$24 000 of fixed cost.

6. Just in time (JIT) (8 questions)

- **Multiple choice:** pick the real benefits (less capital tied up, less storage, less waste, more efficiency, quick switching to improved products). Reject "lower purchase price", "more trade discount" and "protection from shortages": JIT tends to do the opposite.
- **"Explain the principle" (2 marks):** materials are delivered just as production needs them (1), so the business keeps no store of them (1).
- **"Advise whether to switch to JIT" (about 7 marks):** give up to three developed points for (cash flow, storage, waste) and up to three against (reliance on suppliers, stock-outs stopping production, more delivery and inspection costs, loss of bulk discounts), including financial and non-financial points if asked. Then give a decision with a reason.

7. Define cost terms in words (7 questions)

One mark each on Paper 2. Learn one precise sentence for each:

- **Fixed cost:** stays the same in total within a relevant range of output.
- **Variable cost:** changes in total in direct proportion to output.
- **Semi-variable cost:** partly fixed and partly variable.
- **Stepped cost:** fixed up to a certain level of activity, then rises to a new fixed level when that level is passed (2 marks when both halves are there).
- **Direct cost:** can be identified with a specific unit of production.
- **Indirect cost (and indirect labour):** cannot be economically identified with a specific unit of production. For "explain one difference", give both sides with "whereas".

8. Identify direct and indirect costs (5 questions)

Ask of each cost: "can I trace it to one unit of product?" Raw materials, carriage inwards on them and wages of production or assembly workers are **direct**. Supervisors, managers, maintenance, cleaning, rent and depreciation are **indirect**. A list of **production overheads** contains only indirect factory costs, so any row with raw materials or assembly wages is wrong.

9. Calculate a stepped or semi-variable cost at a given output (5 questions)

1. **People needed**: $\text{output} \div \text{output per person}$, **rounded up** to a whole person.
2. **Supervisors needed**: $\text{people} \div \text{people per supervisor}$, **rounded up** again.
3. $\text{Cost} = \text{number} \times \text{pay each}$.

For example, operators who each make 120 units a week, and one supervisor (\$600 a week) for every 8 operators: 4 000 units need $4\,000 \div 120 = 33.3$, so 34 operators, and $34 \div 8 = 4.25$, so 5 supervisors, costing \$3 000.

- **Spare capacity**: how many more units before an extra supervisor is needed = (maximum people the current supervisors can oversee $\times$ output each) – current output.
- **Semi-variable**: $\text{fixed part} + \text{rate} \times \text{activity}$. A maintenance contract of \$2 500 a month plus \$4 per machine hour costs $2\,500 + 4 \times 1\,800 = 9\,700$ for 1 800 hours.
- **Average cost per unit**: add every cost (set-up, materials, whole operators) and divide by output.

10. Compare FIFO and AVCO (3 questions)

- FIFO issues at the **oldest** prices; AVCO issues at the **average** price.
- In **rising** prices FIFO gives **lower cost of sales, higher profit and higher closing inventory** than AVCO.
- For "state how closing inventory is valued": FIFO assumes goods are used in the order received, so closing inventory is at the latest prices; AVCO recalculates the average cost after each purchase.

Worked examples

The bold codes show where marks are earned, as in Cambridge mark schemes. The number is how many marks.

- **M1** method mark: for a correct method, even if the numbers slip.
 - **A1** accuracy mark: for a correct answer; it needs the M mark before it.
 - **B1** mark for a correct result on its own, with no method needed.
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Example 1

Daniel is paid \$15 an hour for a basic 40-hour week. Overtime is paid at time and a half. He also gets a bonus of 30% of his hourly rate for each hour saved; the target time is 24 minutes per unit. He is guaranteed \$600 a week.

Last week Daniel worked 46 hours and made 130 units.

(a) Calculate Daniel's gross pay for the week. [4]

(b) Calculate the labour cost per unit, to two decimal places. [1]

(a) Basic pay = $40 \times 15 = 600$ (B1).

Overtime = $6 \times 22.50 = 135$ (B1).

Time allowed = $130 \times \frac{24}{60} = 52$ hours, so time saved = $52 - 46 = 6$ hours. Bonus = $6 \times 30\% \times 15 = 27$ (M1).

Gross pay = $600 + 135 + 27 = 762$ (A1). This is more than the \$600 guarantee, so the guarantee doesn't apply.

(b) $762 \div 130 = 5.86$ (B1 own figure).

Example 2

A business provides this information about its total costs for two months.

Output (units)	Total costs (\$)
6 000	81 000
9 000	111 000

Above 8 000 units an extra supervisor is needed, which adds \$3 000 a month to fixed costs. The variable cost per unit is the same at both levels.

(a) Calculate the variable cost per unit. [2]

(b) Calculate the total fixed costs at each level of output. [2]

(c) Calculate the total cost of producing 10 000 units, and the fixed cost per unit at 6 000 units and at 10 000 units. [3]

(a) Difference in costs caused by output = $111\,000 - 81\,000 - 3\,000 = 27\,000$ (M1 for removing the step).
Variable cost = $27\,000 \div 3\,000 = 9$ a unit (A1).

Dividing \$30 000 by 3 000 units, and forgetting the step, would give \$10: a wrong answer.

(b) At 6 000 units: $81\,000 - 9 \times 6\,000 = 27\,000$ (B1 own figure). At 9 000 units: $111\,000 - 9 \times 9\,000 = 30\,000$ (B1), which is \$27 000 plus the extra supervisor.

(c) 10 000 units is above 8 000, so fixed costs are \$30 000. Total cost = $30\,000 + 9 \times 10\,000 = 120\,000$ (**M1 A1**).

Fixed cost per unit: $27\,000 \div 6\,000 = 4.50$ and $30\,000 \div 10\,000 = 3.00$ (**B1**).

Example 3

A stores department uses perpetual AVCO. The details for component Z in May were:

Date		Units	Cost per unit (\$)
1 May	Opening inventory	40	10.00
4 May	Received	60	12.00
9 May	Issued	70	
15 May	Received	50	13.60
22 May	Issued	60	

(a) Prepare a table to show the value of inventory after each transaction, and the value of closing inventory, using AVCO. [5]

(b) Calculate the value of closing inventory using FIFO. [2]

(c) All 130 units issued were sold for \$25 each. Calculate the gross profit under each method and explain why they differ. [3]

(a)

Date	Units	Value (\$)	Average (\$)
1 May	40	400	10.00
4 May	100	$400 + 720 = 1\,120$	11.20
9 May	30	$1\,120 - 70 \times 11.20 = 1\,120 - 784 = 336$	11.20
15 May	80	$336 + 680 = 1\,016$	12.70
22 May	20	$1\,016 - 60 \times 12.70 = 1\,016 - 762 = 254$	12.70

One mark (**B1**) for each line from 4 May, own figures carried forward. Closing inventory \$254.

(b) Issue on 9 May: $40 \times 10 + 30 \times 12 = 760$, leaving 30 at \$12. Issue on 22 May: $30 \times 12 + 30 \times 13.60 = 768$, leaving 20 at \$13.60 (**M1**). Closing inventory = $20 \times 13.60 = 272$ (**A1**).

(c) Sales = $130 \times 25 = 3\,250$. Cost of issues: FIFO $760 + 768 = 1\,528$; AVCO $784 + 762 = 1\,546$.

Gross profit: FIFO $3\,250 - 1\,528 = 1\,722$; AVCO $3\,250 - 1\,546 = 1\,704$ (**B1 B1**).

Prices were rising, so FIFO charged the older, cheaper units to cost of sales and left the dearest in inventory; FIFO profit is higher by \$18, the same as the difference in closing inventory ($272 - 254$) (**B1**).

Example 4

Mira runs a factory. It pays trainees \$10.40 an hour, and each trainee makes 13 units an hour. Experienced staff are paid \$12.60 an hour and make 18 units an hour.

(a) Define "indirect labour". [1]

(b) Calculate the labour cost saved on an order of 9 000 units made by experienced staff instead of trainees. [3]

Mira holds large amounts of raw materials. She is considering a just in time (JIT) system.

(c) Advise Mira whether or not she should introduce JIT. Justify your answer by discussing both advantages and disadvantages. [7]

(a) Pay for staff such as supervisors or cleaners, which can't be traced to particular units of the product (**B1**).

(b) Trainees: $10.40 \div 13 = 0.80$ a unit (**B1**). Experienced: $12.60 \div 18 = 0.70$ a unit (**B1**). Saving = $0.10 \times 9\,000 = 900$ (**B1** own figure).

(c) For JIT (up to 3 marks):

- Less of Mira's money would be tied up in raw materials (1), improving cash flow and freeing money for other uses (1).
- She would need less storage space, cutting warehouse costs (1).
- Materials would have less time to be damaged or go out of date, reducing waste (1).

Against JIT (up to 3 marks):

- Production depends on suppliers delivering on time (1); one late delivery could stop the factory, and orders could be lost (1).
- More frequent, smaller deliveries raise delivery and ordering costs (1) and may lose bulk discounts (1).

Decision (1): for example, "Mira should introduce JIT only if she can find reliable suppliers close to the factory, because the savings in storage and cash flow are lost if production stops." Either decision earns the mark if it follows from the points made.

Common mistakes

- **Mixing up totals and per-unit figures.** Many candidates believe variable cost per unit changes with output, or that fixed costs are the same "for any output". Fixed costs are fixed in **total**, and only **within a relevant range**; per unit they fall as output rises.
- **Vague definitions.** Examiners reported answers on stepped costs that did not mention the level of activity. Say "fixed up to a certain level of activity, then rises to a new level".

- **Overtime worked out wrongly.** This is the most common error in the Paper 2 costing questions that include overtime. Decide whether the question gives the whole overtime rate or only the premium, and don't pay the premium twice.
- **Leaving out a deduction or a bonus.** In pay questions the wrong options are usually the right answer with one item missing, such as the deduction for rejected units or the guarantee.
- **Forgetting the step in high-low.** If fixed costs rise between the two given levels, remove the step before dividing, or the variable cost per unit is overstated. If the step starts only above both given levels, don't remove it: split the costs as normal and add the step only when costing the higher output.
- **Rounding people down.** 7 700 units at 100 each needs 77 operators, and 77 operators need 8 supervisors, not 7.7.
- **Unfamiliar with perpetual AVCO.** Examiners found very few correct AVCO tables. Recalculate the average after **each receipt**, and price issues at the average at that date.
- **Using a price printed next to an issue.** Under AVCO or FIFO the issue price comes from your own calculation, not from the question's table.
- **Putting direct costs in production overheads.** Raw materials and production workers' wages are direct costs; overheads are only the indirect ones.
- **Thinking JIT lowers purchase prices.** Smaller, more frequent orders usually cost more per unit.

How to get the marks

- **Show workings for every figure.** On Paper 2 most marks are for one figure each, and "own figure" (OF) marks follow through from a wrong number, but only if the examiner can see how you got it.
- **"Define"** (1 mark): one precise sentence using the key words: "in total", "within a relevant range", "specific unit of production", "cannot be economically traced".
- **"Explain one difference"** (2 marks): describe both sides, joined by "whereas".
- **"Calculate, to two decimal places"**: round only the final answer, and give money with a \$ sign.
- **Inventory tables**: fill in every line asked for; each line is usually a mark, so a single slip early on costs only that line if later lines follow correctly.
- **"Advise ... justify"** (5–7 marks): give developed points on **both** sides (for and against, or financial and non-financial when the question says so), then a clear decision with a reason. The decision mark needs a supporting comment.
- **Multiple choice**: work the answer out before looking at the options. The wrong options are the results of the usual slips (a missed bonus, rounding down, the wrong batch in FIFO).

Quick check

1. Classify each cost as fixed, variable, semi-variable or stepped: (a) factory rent; (b) raw materials; (c) a telephone line rental plus a charge per call; (d) one team leader for every 12 workers.
2. A business has total fixed costs of \$40 000 and a variable cost of \$6 a unit. Output falls from 10 000 to 8 000 units. What happens to the fixed cost per unit, the variable cost per unit and the total variable cost?

3. Total costs are \$19 500 for 3 000 units and \$35 500 for 7 000 units. Find the fixed cost and the total cost of 5 000 units.
4. An employee is paid \$14 an hour for a basic 37-hour week, with overtime at time and a half and a bonus of \$0.60 for each unit above 300. She worked 41 hours and made 360 units. Calculate her gross pay.
5. A business had no opening inventory. It bought 200 units at \$3 and then 300 units at \$4, and issued 350 units. Value the closing inventory using FIFO and using periodic AVCO.
6. Each operator makes 150 units a week and is paid \$420. One supervisor, paid \$700, is needed for every 6 operators. Find the weekly labour cost of making 2 600 units.

Answers

1. (a) Fixed. (b) Variable. (c) Semi-variable. (d) Stepped.
2. Fixed cost per unit rises from $40\,000 \div 10\,000 = 4$ to $40\,000 \div 8\,000 = 5$. Variable cost per unit stays \$6. Total variable cost falls from \$60 000 to \$48 000.
3. Variable cost = $\frac{35\,500 - 19\,500}{7\,000 - 3\,000} = 4$ a unit. Fixed cost = $19\,500 - 4 \times 3\,000 = 7\,500$. For 5 000 units: $7\,500 + 4 \times 5\,000 = 27\,500$.
4. Basic $37 \times 14 = 518$; overtime $4 \times 21 = 84$; bonus $60 \times 0.60 = 36$. Gross pay = $518 + 84 + 36 = 638$.
5. 150 units are left. FIFO: all from the latest batch, $150 \times 4 = 600$. Periodic AVCO: average = $\frac{600 + 1\,200}{500} = 3.60$, so $150 \times 3.60 = 540$.
6. Operators: $2\,600 \div 150 = 17.3$, so 18. Supervisors: $18 \div 6 = 3$. Cost = $18 \times 420 + 3 \times 700 = 7\,560 + 2\,100 = 9\,660$.

Past questions to try

- 9706/12/M/J/24 Q23: gross pay with overtime, a bonus and a guaranteed wage.
- 9706/11/O/N/24 Q24: perpetual AVCO, with a misleading issue price in the question.
- 9706/12/M/J/23 Q23: high-low with an extra fixed cost above a level of activity.
- 9706/23/M/J/24 Q4: part (f), advising whether to switch to JIT.