

Cambridge AS & A Level · Accounting 9706 · Notes

Activity based costing (ABC) A2

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Read first: [Traditional costing methods](#)

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What you need to know

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

1. **Explain what activity based costing (ABC) is and how it is applied:** overheads are grouped by the activities that cause them, and each product is charged for the activities it actually uses.
2. **Say what a cost driver is:** the activity or factor that makes the cost of an activity go up or down.
3. **Choose a suitable cost driver** for each pool of overheads (set-ups, inspections, orders, machine running and so on).
4. **Allocate and apportion overheads with ABC:** work out a rate per unit of each cost driver and charge each product for the drivers it uses.
5. **Calculate the total cost and the selling price of one unit** using ABC, usually with a percentage mark-up on cost.
6. **Show how the method of absorbing overheads changes cost and profit**, comparing ABC with the single absorption rate of traditional absorption costing, and explain why the figures differ.
7. **Give the uses and limitations of ABC**, including the conditions a business needs before ABC is worth adopting.
8. **Use ABC figures to make business decisions and recommendations:** changing prices, cutting an activity, adding a product, making instead of buying, and whether to adopt ABC at all, backed by the calculated figures.

The traditional side of every comparison (one overhead absorption rate, usually per direct labour hour, and cost-plus pricing) is taught in the AS note on traditional costing methods, under "Read first". Contribution, marginal costing and limiting factors are not part of ABC.

Understand it

Why a single absorption rate can mislead

In traditional absorption costing, the production overheads are added up and divided by one measure of activity, usually budgeted direct labour hours. Every product then picks up overhead in proportion to the labour hours it takes.

That is fine when overheads really do follow labour hours. But many overheads have nothing to do with labour time:

- **machine set-ups** happen once per batch, however many units the batch holds;
- **quality inspections** happen a fixed number of times, often more for a complicated product;
- **processing purchase orders** depends on how many orders are placed, not how long workers spend on each unit;
- **machine running costs** (power, maintenance) follow machine hours.

A product made in small batches, with many set-ups and inspections but few labour hours, uses far more of these activities than its labour hours suggest. A single labour-hour rate **undercharges** it, and a high-volume product made in long runs is **overcharged**. The first product then looks cheaper to make than it is, and it may be priced too low.

How ABC works

ABC replaces the single rate with one rate for each activity:

1. **Split the overheads into cost pools**, one for each main activity (set-ups, inspections, order processing, machine running).
2. **Identify the cost driver** for each pool: the thing that causes that cost. For set-ups it is the number of set-ups; for inspections, the number of inspections (or inspection hours); for purchasing, the number of purchase orders; for machine running, machine hours.
3. **Calculate a rate for each pool**: cost pool ÷ total number of cost drivers.
4. **Charge each product** with rate × the number of drivers it uses. Add the pools to get each product's total overhead, then divide by the number of units.

Step 3 and 4 together are the same as sharing the pool in proportion to use:

$$\text{product's share} = \text{pool cost} \times \frac{\text{product's drivers}}{\text{total drivers}}.$$

Mark schemes accept either way of writing it.

A worked comparison

A company makes two products. Alpha is made in long runs (4 000 units a year); Beta is made in small batches (1 000 units). Both need \$15 an hour of direct labour.

	Alpha	Beta
Units	4 000	1 000
Direct materials per unit (\$)	12	30
Direct labour hours per unit	2	3
Machine hours per unit	2.5	1

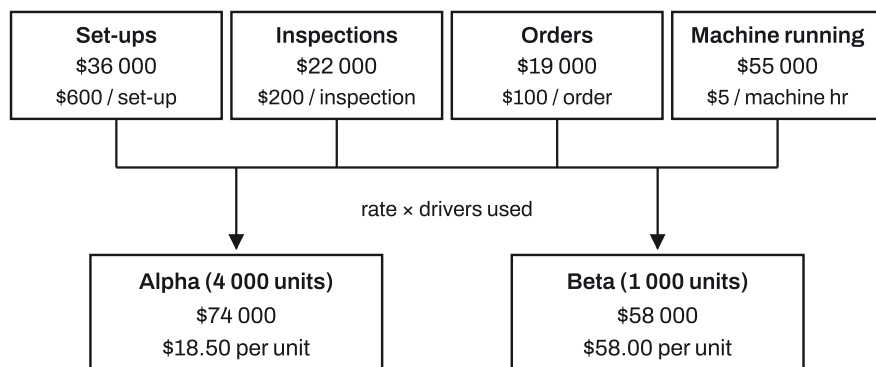
Production overheads are \$132 000. **Traditionally**, they are absorbed on direct labour hours: $4\,000 \times 2 + 1\,000 \times 3 = 11\,000$ hours, so the rate is $132\,000 \div 11\,000 = 12$, that is \$12 per labour hour. Alpha gets $2 \times 12 = 24$ and Beta $3 \times 12 = 36$ dollars per unit.

With ABC, the overheads are split into four pools:

Cost pool	Cost (\$)	Cost driver	Alpha	Beta	Rate
Machine set-ups	36 000	Set-ups	20	40	\$600 per set-up
Quality inspections	22 000	Inspections	30	80	\$200 per inspection
Order processing	19 000	Purchase orders	60	130	\$100 per order
Machine running	55 000	Machine hours	10 000	1 000	\$5 per machine hour

Alpha is charged $20 \times 600 + 30 \times 200 + 60 \times 100 + 10\,000 \times 5 = 74\,000$ dollars, which is $74\,000 \div 4\,000 = 18.50$ per unit. Beta is charged $40 \times 600 + 80 \times 200 + 130 \times 100 + 1\,000 \times 5 = 58\,000$ dollars, which is $58\,000 \div 1\,000 = 58.00$ per unit.

Cost pools and cost driver rates



Traditional: one rate for everything

$\$132\,000 \div 11\,000$ labour hours = \$12 per labour hour

Alpha: \$24.00 per unit

Beta: \$36.00 per unit

Overhead per unit (\$)	Alpha	Beta
Traditional (\$12 per labour hour)	24.00	36.00
ABC	18.50	58.00

Both methods share out the **same \$132 000** ($4\,000 \times 24 + 1\,000 \times 36 = 74\,000 + 58\,000$). ABC only moves overhead between products: Beta, with its many set-ups, inspections and orders, takes \$22 more per unit, and Alpha \$5.50 less. With a 25% mark-up, Beta's price would rise from \$138.75 to \$166.25 and Alpha's fall from \$82.50 to \$75.63 (Alpha's cost is $12 + 30 + 18.50 = 60.50$, and $60.50 \times 1.25 = 75.625$).

The effect on cost, price and profit

- **Total cost does not change.** Whichever method or cost driver is used, the same overheads are shared out. The business's total profit (with all output sold) is the same; only each product's share changes.
- **Each product's cost, price and profit do change.** A product that uses a lot of an activity for its volume gets a higher cost under ABC.
- **With a percentage mark-up,** a higher cost means a higher selling price, so changing the method changes prices. If the price is fixed (set by the market or a competitor), a higher cost means a lower mark-up and lower profit on that product instead.
- **Rates are shared.** When one product's use of an activity changes, the rate per driver changes too, so the other product's cost moves even though it did nothing different. For example, if a pool's cost stays the same but one product uses fewer drivers, the rate rises and the other product pays more.

When ABC is worth using

ABC suits a business that:

- makes **several products** which use activities in very different amounts (one product alone gets all the overheads whatever the method);
- has **large overheads** that can be divided into cost pools;
- can **identify the activities and cost drivers** and measure how much each product uses;
- works in a **competitive market** where accurate costs matter for pricing;
- has the **accounting expertise** and systems to set it up and run it.

Uses (advantages):

- more accurate, realistic product costs, because overheads follow the activities that cause them;
- better pricing: shows which products were overpriced and which underpriced;
- managers see what causes costs, so they can control them (fewer set-ups, fewer orders) and find inefficient activities;
- shows which products are really unprofitable.

Limitations (disadvantages):

- time-consuming and expensive to collect and analyse the driver data; specialists and staff training may be needed, and the cost may exceed the benefit;
- only worth it for a multi-product business;
- some costs have no clear driver (rent, administration, general management), so they are still shared on an arbitrary basis such as units or floor area;
- choosing drivers involves judgement; a pool may have more than one cause;
- it is still full costing: it gives no split between fixed and variable costs, so on its own it does not answer make-or-buy or scarce-resource (limiting factor) decisions, which need contribution;
- a cost-plus price from ABC still ignores what competitors charge and what customers will pay.

Key facts and formulas

There is no formula list in 9706 exams, so every formula here must be learnt.

Formula	Status
Cost driver rate = $\frac{\text{cost pool}}{\text{total number of cost drivers}}$	Learn it
Product's share of a pool = rate $\times$ product's drivers = pool $\times \frac{\text{product's drivers}}{\text{total drivers}}$	Learn it
ABC overhead per unit = $\frac{\text{sum of the product's shares of every pool}}{\text{units produced}}$	Learn it
Traditional OAR = $\frac{\text{budgeted overheads}}{\text{budgeted direct labour (or machine) hours}}$	Learn it
Total unit cost = direct materials + direct labour + overhead per unit	Learn it
Selling price with a mark-up of $m\%$ = cost $\times \left(1 + \frac{m}{100}\right)$	Learn it
Mark-up $\%$ = $\frac{\text{selling price} - \text{cost}}{\text{cost}} \times 100$	Learn it
Change in price from a cost change (same mark-up) = change in cost $\times \left(1 + \frac{m}{100}\right)$	Learn it
Total overheads charged are the same under every method or driver	Learn it

How to do it

In the Paper 3 and Paper 4 questions tagged for this topic (17 questions, 2021–2025; 15 different, as two appeared on two papers), the types came up this often. Every one is a 25-mark structured question, and 16 of the 17 mix several types, so the counts add up to far more than 17.

Question type	Questions
Calculate unit cost and selling price using ABC	12
Advise on a business decision using ABC figures	10
Calculate cost, price or profit with traditional absorption costing (for comparison)	9
Advise whether to adopt ABC	8
Recalculate after a change in activities, costs, volume or driver	7
Define or explain ABC or a cost driver	6
State uses, limitations, conditions or steps for ABC	6
Prepare a profit statement per product using ABC	5
Evaluate the choice of cost driver or basis of apportionment	5
Explain the difference between ABC and traditional results	3

1. Calculate unit cost and selling price using ABC (12 questions)

1. **For each cost pool, share it between the products** by driver use: $\text{pool} \times \frac{\text{product's drivers}}{\text{total drivers}}$, or $\text{rate} \times \text{drivers}$.
Write each pool as one row with both products; each row usually earns a mark.
2. **Add the pools** to get each product's total overhead, then divide by the units produced.
3. **Add direct materials and direct labour** per unit. Show the **total cost per unit** as its own line: examiners regularly take a mark off for leaving it out.
4. **Apply the mark-up** to cost, then add to get the selling price. Round to two decimal places at the end if asked.

For example, a pool of \$48 000 for set-ups, with 16 set-ups for P and 48 for Q, gives $48\,000 \div 64 = 750$ per set-up: P $16 \times 750 = 12\,000$, Q $48 \times 750 = 36\,000$.

Variants you will meet:

- **Per unit or in total.** You can work with totals and divide by units at the end, or convert every row to a per-unit figure. Both layouts earn full marks. Working in totals and rounding only the final answer avoids rounding errors.
- **Driver per unit.** Sometimes the driver is given per unit (for example 2.5 machine hours per unit); multiply by the units to get the product's total drivers.
- **An overhead with no activity driver**, such as rent or "other overheads", is still shared on the basis the question gives: per unit, floor area or a stated percentage. Apply that basis and carry on.
- **Several products**, including a new one: the same steps with three columns; the total drivers now include the new product's.
- **Cost only, no price:** stop at the total cost per unit.
- **The mark-up may be 100%** (price = twice cost) or given as a fraction of cost; read it carefully and never treat a mark-up as a margin.

2. Advise on a business decision using ABC figures (10 questions)

These are 5–7 mark "advise ... justify your answer" parts, after a calculation. Typical scenarios: cut the number of inspections, buy materials in bigger batches for a discount, use cheaper labour, make a component instead of buying it, add a product, double output, rent a camera system to reduce returns, match a competitor's price, or move labour from one product to another.

1. **Use your figures:** quote the change in cost, price or profit you calculated ("the price of A falls by \$62.04").
2. **Give points both ways**, each tied to the scenario. Good sources of points:
 - the **knock-on effect** on the other product, since shared pool rates change;
 - **quality** and **reputation** (fewer inspections, less skilled labour, making components yourself);
 - **staff:** redundancies, morale, training, whether extra workers can be found;
 - **capacity:** space, machines, finance for new equipment;
 - **inventory:** bigger orders mean more storage, cash tied up and a risk of goods going out of date;

- **the market:** what competitors charge, whether a lower price will raise demand, whether extra output will sell;
 - **whether costs really change:** fixed salaries or rent do not fall just because an activity is used less.
3. **End with a decision** that matches your points and a reason. Usually up to 6 marks come from points and 1 from the supported decision.

If part of the advice is a calculation (for example extra profit from moving labour hours to the product with a higher profit per unit, less one-off costs), do it first: profit per unit $\times$ extra units, less profit lost on the other product, less the one-off costs.

Pricing to match a competitor (instead of cost-plus): for, it keeps the product competitive and shows what customers will pay; against, the price may not cover the ABC cost or give the target mark-up, it changes whenever the competitor changes, and the business becomes passive in pricing.

Making a component instead of buying it: for, lower cost (show the saving: materials saved less extra labour and overheads), no dependence on one supplier, control over quality, use of spare capacity; against, new machinery, space and trained staff may be needed, and extra drivers (inspections, orders) change the other product's share of overheads.

3. Calculate cost, price or profit with traditional absorption costing (9 questions)

This is always the comparison step before ABC.

1. **One overhead absorption rate:** total production overheads $\div$ total budgeted direct labour hours (the hours per unit $\times$ units, added for all products).
2. **Overhead per unit** = rate $\times$ labour hours per unit.
3. Add direct costs, apply the mark-up, and set out the rows exactly as in type 1. Some questions ask for a profit statement per product instead: revenue less direct costs less absorbed overheads.

For example, overheads of \$180 000 over $6\,000 \times 1.5 + 1\,500 \times 2 = 12\,000$ labour hours give \$15 per labour hour.

4. Advise whether to adopt ABC (8 questions)

1. **Quote both sets of figures** from the earlier parts: each product's unit cost or price under both methods. Some mark schemes give marks for working out unit prices from the profit statements.
2. **For:** costs are more realistic because they follow the activities used; pricing improves; say which product was **overpriced** (less competitive) and which **underpriced** (losing profit) under the old method, with the prices.
3. **Against:** time and cost of collecting driver data, specialists and training, whether the benefit exceeds the cost; costs such as administration are still split arbitrarily; a fixed mark-up still ignores the market.
4. **Decision** with a comment.

Examiners note that weak answers list general advantages and disadvantages without referring to the figures the question tells you to use. If the question states the directors' objectives, answer each one: ABC helps with pricing, but it does not help make-or-buy or scarce-resource decisions, because those need variable cost and contribution.

5. Recalculate after a change (7 questions)

1. **Find the new pool totals and driver counts:** a new product adds drivers; an extra inspector doubles a pool; fewer orders cut a pool by a stated amount; a new driver (machine hours instead of carrying values) changes the proportions.
2. **Work out the new rate** for each changed pool: $\text{new pool} \div \text{new total drivers}$.
3. **Recharge both products** (the unchanged one too, since its rate has moved).
4. **Give the answer asked for:** the new unit cost, the new price, the change in price, or the revised profit.

There are two accepted layouts:

- **Change method:** change in cost per unit (saving on materials, change in each pool's charge), then $\text{change in price} = \text{change in cost} \times (1 + \text{mark-up})$.
- **Full recalculation:** a complete new cost sheet, then new price less old price.

For example, with a mark-up of 50%, a saving of \$41.36 per unit cuts the price by $41.36 \times 1.5 = 62.04$ dollars.

Watch for "the number of orders falls by 50%" (halve that product's drivers) and "this increases the total cost of inspections by \$3 080" (add it to the pool, and add the extra drivers to the total). A revised profit statement starts from the new revenue as well: fewer returns mean more net revenue but less scrap income.

6. Define or explain ABC or a cost driver (6 questions)

1–3 marks, answered in one or two precise sentences:

- **Cost driver:** the activity or factor that causes the cost of an activity to be incurred, so changes in it change the cost.
- **Why cost drivers are used:** they link cause and effect, so overheads are charged to products according to the activities they cause.
- **ABC:** a costing method that groups overheads into **cost pools** by activity and charges them to products using the **cost driver** for each pool, based on how much of each activity a product uses. For 3 marks, mention all three ideas: activities, cost pools, cost drivers.
- **Why ABC is thought better than absorption costing:** more accurate or realistic, because overheads are charged by the activities each product uses rather than one arbitrary measure.

Examiners report that many candidates know the term but are unclear what a cost pool and a cost driver are. Learn both.

7. State uses, limitations, conditions or steps (6 questions)

Short points, 1 mark each, from "When ABC is worth using" in Understand it:

- **Steps** (4 marks): split overheads into cost pools; identify the cost driver for each; calculate the cost per driver ($\text{pool} \div \text{total drivers}$); charge products by their use of each driver.
- **Conditions** (3 marks): several products; overheads that can be divided into pools; identifiable activities and drivers; a competitive market needing accurate costs; accounting expertise.
- **Advantages and disadvantages** (2 of each): take them from the two lists; don't give the same idea twice in different words.
- **Why directors chose ABC** over traditional costing: more accurate information, shows how overheads are caused, shows where costs can be saved, shows whether a product should continue.

8. Prepare a profit statement per product using ABC (5 questions)

1. **Revenue** for each product ($\text{units sold} \times \text{price}$). Add scrap income if the question gives it; deduct returns.
2. **Less direct materials and direct labour.**
3. **Less each ABC pool** as its own row, shared by drivers.
4. **Less any other overhead** on the basis stated (administration and distribution per unit sold, or by sales value).
5. **Profit or loss** for each product, with losses in brackets.

Don't add the production overheads a second time: if the question's original statement had a single overhead line, the ABC rows **replace** it. Examiners report this double-counting as a common error.

A harder variant asks for the profit if ABC-based prices had been charged for a period, with some units left unsold: revenue from units sold at the new prices, less the cost of production, plus closing inventory valued at the ABC **production** cost per unit, less selling and administration costs.

9. Evaluate the choice of cost driver or basis (5 questions)

- **Changing the driver does not change the total cost**, only moves cost between products. It changes each product's price and profit only when prices are a percentage mark-up on cost; with a fixed amount of mark-up, only the cost split changes.
- **Per unit basis**: quick and easy, but unlikely to be realistic, because products use the resource differently. For rent, floor area is usually better.
- **Suggest a driver that matches the cause**: for surveillance of workers, the number of workers or labour hours rather than the number of inspections; for administration and distribution, the number of orders shipped or staff working on each product.
- **A fixed percentage mark-up** is simple but ignores competitors' prices; if costs fall, the profit per unit falls too.

To show the effect of a new driver: calculate the pool's share under both drivers, find the change for each product (equal and opposite in total), then the change in price.

10. Explain the difference between ABC and traditional results (3 questions)

1. **Point to the overheads:** the product that uses more of the activities (set-ups, inspections, orders) for its volume is charged more overhead under ABC, so its cost and price rise; the other falls. Quote both overhead figures.
2. **Say why the price moves:** prices are a mark-up on cost, not set by the market.
3. **If the price is held fixed,** calculate the new mark-up: $\frac{\text{price} - \text{ABC cost}}{\text{ABC cost}} \times 100$, and compare it with the old one. It falls because the ABC cost per unit is higher.

Give the reasons for **this** business (its products' use of each activity), not a general advantage of ABC: examiners mark down general answers.

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.
-

Example 1

J Limited makes two products, P and Q. Budgeted figures for next year:

	P	Q
Production (units)	6 000	1 500
Direct materials per unit (\$)	8	20
Direct labour per unit	1.5 hours at \$12	2 hours at \$12

Production overheads are \$180 000. They are absorbed on direct labour hours, and selling prices are set at cost plus 40%.

(a) Calculate, to two decimal places, the unit selling price of each product using the existing method. **[5]**

An analysis of the overheads shows:

Activity	Cost (\$)	Cost driver	P	Q
Machine set-ups	48 000	Number of set-ups	16	48
Purchasing	30 000	Purchase orders	60	60

Activity	Cost (\$)	Cost driver	P	Q
Machine running	102 000	Machine hours	15 000	2 000

(b) Calculate, to two decimal places, the unit selling price of each product using ABC. [7]

(c) The directors keep Q's selling price at the figure in (a). Calculate the percentage mark-up Q would then earn on its ABC cost, and the change from 40%. [2]

(d) Explain why the mark-up on Q changes. [2]

(e) Advise the directors whether or not they should adopt ABC. Justify your answer. [6]

(a) Labour hours = $6\,000 \times 1.5 + 1\,500 \times 2 = 9\,000 + 3\,000 = 12\,000$. OAR = $180\,000 \div 12\,000 = 15$, that is \$15 per labour hour (**B1**).

per unit (\$)	P	Q
Direct materials	8.00	20.00
Direct labour	18.00	24.00
Overheads (15×1.5 ; 15×2)	22.50	30.00
Total cost	48.50	74.00
Mark-up 40%	19.40	29.60
Selling price	67.90	103.60

B1 direct costs row, **B1** overheads row, **B1** total cost (own figure), **B1** both selling prices (own figure).

(b) Rates: \$750 per set-up ($48\,000 \div 64$), \$250 per order ($30\,000 \div 120$), \$6 per machine hour ($102\,000 \div 17\,000$).

Overheads (\$)	P	Q
Machine set-ups	12 000	36 000
Purchasing	15 000	15 000
Machine running	90 000	12 000
Total	117 000	63 000
Per unit ($\div 6\,000$; $\div 1\,500$)	19.50	42.00

B1 for each pool row (3 marks). Check: $117\,000 + 63\,000 = 180\,000$, the same total as before.

per unit (\$)	P	Q
Direct materials and labour	26.00	44.00
Overheads	19.50	42.00
Total cost	45.50	86.00

per unit (\$)	P	Q
Mark-up 40%	18.20	34.40
Selling price	63.70	120.40

B1 overheads per unit, **B1** total cost, **B1** mark-up, **B1** selling prices (all own figure).

(c) Mark-up = $\frac{103.60 - 86.00}{86.00} \times 100 = 20.47\%$ (**M1**), a fall of $40 - 20.47 = 19.53$ percentage points (**A1** own figure).

(d) Q is made in small batches, so it uses 48 of the 64 set-ups (75%) although it is only a fifth of the output (**1**). ABC charges it \$42.00 of overhead per unit instead of \$30.00, so its cost rises to \$86.00 while its price stays at \$103.60, leaving a smaller mark-up (**1**).

(e) For: ABC charges each product for the set-ups, orders and machine time it uses, so the costs are more realistic (**1**). Under the existing method Q was underpriced: its price should be \$120.40, not \$103.60, so the company has been losing profit on every unit of Q (**1**). P was overpriced at \$67.90 against \$63.70, which may have lost sales to competitors (**1**). Against: collecting data on set-ups, orders and machine hours each year takes time and money, and staff may need training (**1**). Raising Q's price by \$16.80 may cut its sales if competitors charge less, since a cost-plus price ignores the market (**1**). Decision: adopt ABC, because the gap between the two costs for Q is large and it shows Q is underpriced, but check competitors' prices before changing Q's price (**1**).

Example 2

Use the data in Example 1 and ABC. The directors plan to make Q in larger batches. This would halve Q's set-ups to 24 a year. P's set-ups would not change. Because some set-up staff costs are fixed, the machine set-up cost pool would fall only to \$39 000. The mark-up stays at 40%.

(a) Calculate the change in the selling price of one unit of each product. [**5**]

(b) Advise the directors whether or not they should make Q in larger batches. Justify your answer. [**6**]

(a) New rate = $39\,000 \div (16 + 24) = 975$, that is \$975 per set-up (**B1**).

Set-up cost	P	Q
New (16×975 ; 24×975)	15 600	23 400
Old	12 000	36 000
Change in total (\$)	+3 600	–12 600
Change per unit ($\div 6\,000$; $\div 1\,500$)	+0.60	–8.40
Change in price ($\times 1.4$)	+0.84	–11.76

B1 new set-up costs, **M1** change per unit, **A1** P's price rises by \$0.84 to \$64.54, **A1** Q's price falls by \$11.76 to \$108.64 (own figure).

The rate rises from \$750 to \$975 because a partly fixed pool is spread over fewer set-ups, so P pays more although nothing about P has changed.

(b) For: total overheads fall by \$9 000 a year (1), and Q's price falls by \$11.76 to \$108.64, much closer to its old price, so it should stay competitive (1). Against: P's price rises by \$0.84 through no change of its own, which could lose P some sales (1). Larger batches mean more finished Q in storage, with storage costs, cash tied up and a risk of the goods going out of date if demand changes (1). The company will be slower to meet small or urgent orders for Q (1). Decision: make Q in larger batches, because the saving is large and P's increase is small, as long as there is room to store the extra inventory (1).

Example 3

T Limited makes two products. Its budget for the year is:

	Standard	Deluxe
Units made and sold	10 000	2 000
Selling price per unit (\$)	28	60
Direct materials (\$)	90 000	40 000
Direct labour (\$)	100 000	30 000

Overheads are:

Activity	Cost (\$)	Cost driver	Standard	Deluxe
Machine set-ups	24 000	Set-ups	10	30
Quality inspections	16 000	Inspection hours	120	200
Despatch	12 000	Deliveries	150	90
Administration	36 000	Apportioned on units sold		

(a) Prepare a statement showing the budgeted profit or loss of each product using ABC. [8]

(b) Calculate the profit of each product if administration is apportioned on sales value instead. Start from your answer to (a). [4]

(c) Comment on the effect of the choice of basis for administration on the profit of the business. [2]

(a) Rates: \$600 per set-up ($24\,000 \div 40$), \$50 per inspection hour ($16\,000 \div 320$), \$50 per delivery ($12\,000 \div 240$), \$3 per unit sold ($36\,000 \div 12\,000$).

(\$)	Standard	Deluxe
Revenue	280 000	120 000
Direct materials	(90 000)	(40 000)
Direct labour	(100 000)	(30 000)

(\$)	Standard	Deluxe
Machine set-ups	(6 000)	(18 000)
Quality inspections	(6 000)	(10 000)
Despatch	(7 500)	(4 500)
Administration	(30 000)	(6 000)
Profit	40 500	11 500

B1 revenue, **B1** direct costs, **B1** for each of the four overhead rows, **B1 B1** each profit (own figure). Total profit = 52 000.

(b) Total sales value = 280 000 + 120 000 = 400 000. Administration: Standard $36\,000 \times \frac{280\,000}{400\,000} = 25\,200$, Deluxe $36\,000 \times \frac{120\,000}{400\,000} = 10\,800$ (**B1 B1**).

(\$)	Standard	Deluxe
Profit from (a)	40 500	11 500
Add back administration	30 000	6 000
Less administration on sales value	(25 200)	(10 800)
Revised profit	45 300	6 700

B1 B1 revised profits (own figure).

(c) The total profit is \$52 000 under both bases (45 300 + 6 700), because the same \$36 000 is only shared differently (1). The choice changes how profitable each product looks: Deluxe's profit falls from \$11 500 to \$6 700, which could lead to a wrong decision about Deluxe if the basis does not reflect what causes the administration cost (1).

Common mistakes

- **Leaving out the total cost per unit.** Many candidates go straight from overheads to the selling price. When the question asks for the cost as well, show it as its own line; examiners take a mark off every time.
- **Counting production overheads twice.** In a revised ABC statement, the activity pools replace the old overhead line; don't bring the old total back in as well.
- **Dividing by the wrong number of units.** After a change in output (production doubles, a new product is added), divide by the **new** number of units.
- **Forgetting the knock-on effect.** When one product's drivers or a shared pool change, recharge the other product too.
- **Confusing mark-up with margin.** A mark-up is a percentage of **cost**; a margin is a percentage of **selling price**. With a 40% mark-up, price = cost $\times 1.4$.
- **Not rounding as instructed.** "To two decimal places" means \$120.40, not \$120.4 or \$120. Examiners take a mark off for unrounded answers.

- **Mis-sharing a pool.** Use this product's drivers over the **total** drivers of all products, not over the other product's drivers.
- **General answers to "explain the difference".** Say which product uses more of which activity in this question, and quote the overhead figures.
- **Advice without the figures.** "ABC is more accurate but costly" earns little. Quote the prices under both methods, name the overpriced and underpriced products, and give a decision.
- **Ignoring the directors' stated objectives.** If they list what they want ABC for, answer each one; ABC does not help with make-or-buy or scarce resources.

How to get the marks

- **Lay out a statement** with the products in columns and one row per item (direct materials, direct labour, each cost pool, total cost, mark-up, selling price). Most marks are one per correct row, "both products" needed for the mark.
- **Show workings for every pool**, for example $48\,000 \times \frac{16}{64} = 12\,000$. Later marks are "own figure": a wrong earlier number used correctly still scores, but only if the examiner can follow it.
- **"Calculate the change in selling price"**: either the change in cost times $(1 + \text{mark-up})$, or new price less old price. Say whether it is an increase or a decrease.
- **"State"**: short points, one per mark. **"Explain"**: a point and why (cause and effect). **"Define"** or **"what is meant by"**: a precise meaning using the key terms (activities, cost pools, cost drivers).
- **"Discuss"** (2 marks each): one point for, one against, for example "per unit is simple, but not realistic; floor area would be better for rent".
- **"Advise ... justify your answer"** (5–7 marks): points on both sides, tied to the business and your figures, usually up to 6 marks; then 1 mark for a clear decision supported by a comment. Either decision can score full marks if it follows from your points.
- **"Support your answer with reference to (a) and (c)"**: the marks depend on quoting those figures.
- **"Suggest"**: a sensible idea for this business, such as a cost driver that matches what causes the cost.

Quick check

1. State what is meant by a cost driver, and suggest a suitable cost driver for (i) the purchasing department and (ii) machine maintenance.
2. A quality inspection pool costs \$45 000. Product X has 40 inspections and product Y has 110. X makes 2 000 units. Calculate the inspection cost per unit of X.
3. Under ABC a product's total cost is \$84.00 per unit. Calculate its selling price with a mark-up of 35%.
4. A business switches the cost driver for depreciation from the carrying value of the machines each product uses to machine hours. State the effect on (i) the total profit of the business and (ii) each product's selling price when prices are a percentage mark-up on cost.

5. A set-up pool of \$30 000 is shared between A (20 set-ups) and B (30 set-ups). B's set-ups fall to 20, but the pool stays at \$30 000 because its costs are fixed. A makes 1 500 units. Calculate the change in A's set-up cost per unit.

Answers

1. A cost driver is the activity or factor that causes a cost to be incurred, so that more of it means more cost.
(i) The number of purchase orders. (ii) Machine hours (or the number of machine services).
2. $\text{Rate} = 45\,000 \div 150 = 300$, that is \$300 per inspection. X is charged $40 \times 300 = 12\,000$, which is $12\,000 \div 2\,000 = 6.00$, that is \$6.00 per unit.
3. $84.00 \times 1.35 = 113.40$, that is \$113.40.
4. (i) No effect: the same depreciation is charged in total, only shared differently. (ii) Prices change: the product using more machine hours relative to its share of carrying value gets a higher cost and so a higher price; the other's price falls.
5. Before: $30\,000 \times \frac{20}{50} = 12\,000$. After: $30\,000 \times \frac{20}{40} = 15\,000$. A's set-up cost rises by \$3 000, which is $3\,000 \div 1\,500 = 2.00$, an increase of \$2.00 per unit, although A itself changed nothing.

Past questions to try

- **9706/33/M/J/22 Q5:** traditional and ABC selling prices, defining ABC, and advice using both.
- **9706/31/O/N/21 Q6:** ABC production cost and price, then profit with closing inventory at ABC cost.
- **9706/42/F/M/23 Q2:** an ABC profit statement with scrap and returns, then a change and the choice of cost driver.
- **9706/32/O/N/21 Q5:** whether ABC meets three objectives, then a revised profit statement per product.