

Standard costing A2

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Read first: [Costs and cost behaviour](#), [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 a standard costing system is:** the business sets a planned cost (and selling price) for one unit of its product in advance, then compares what really happened with those standards.
2. **Give the advantages and disadvantages** of running a standard costing system.
3. **Explain how standard costing helps a business perform better:** setting targets, controlling costs, spotting problems early and judging managers.
4. **Calculate the variances:**
 - direct material **price** and **usage**;
 - direct labour **rate** and **efficiency**;
 - fixed overhead **expenditure** and **volume**;
 - the two parts of the fixed overhead volume variance, **capacity** and **efficiency**;
 - sales **price** and **volume**.
5. **Suggest likely causes** of favourable and adverse variances, and explain how one variance can cause or explain another (the **interrelationship** of variances).
6. **Make business decisions and recommendations** from the variance figures, such as changing a supplier or a material, and support them with calculations.
7. **Weigh up non-financial factors**, such as quality, staff morale, reputation and the environment, alongside the numbers.

Budgets in general (the cash budget, the master budget, the fixed and flexible budget as planning tools) are covered in the topic on budgeting and budgetary control. This note uses the flexible budget only as the starting point for variances. Overhead absorption rates are taught in the AS note on traditional costing methods, under "Read first".

Understand it

What a standard is

A **standard cost** is what one unit of a product **should** cost under normal, efficient working. It is built up from a **standard cost card**, one line for each element:

- direct materials: standard **quantity** per unit $\times$ standard **price** per kilo;
- direct labour: standard **hours** per unit $\times$ standard **rate** per hour;
- fixed overhead: standard hours per unit $\times$ the **overhead absorption rate (OAR)**, which is budgeted fixed overhead $\div$ budgeted labour hours.

Add a standard selling price and you get a **standard profit per unit**. Standards are usually set to be **attainable**: hard but possible with good working. An **ideal** standard (no waste, no idle time, no breakdowns) is almost never met, so it produces adverse variances every month and tends to demotivate staff.

A **standard costing system** sets these standards, records what actually happens, and explains every difference with a **variance**. A variance is **favourable (F)** when it makes profit higher than the standard and **adverse (A)** when it makes profit lower.

A running example

K Limited makes one product. Its standard cost card is:

Per unit	Standard	\$
Selling price		60
Direct materials	2.5 kilos at \$4.80	12
Direct labour	2 hours at \$9	18
Fixed overhead	2 hours at \$5	10
Standard profit		20

The budget was to make and sell 5 000 units. Budgeted fixed overhead is \$50 000 over $5\,000 \times 2 = 10\,000$ labour hours, so the OAR is $50\,000 \div 10\,000 = 5$, that is \$5 per labour hour. The **fixed budget** profit is $5\,000 \times 20 = 100\,000$ dollars.

What actually happened: 5 400 units were made and sold at \$58 each (\$313 200). Materials were 14 000 kilos costing \$70 000 (\$5.00 a kilo). Labour was 10 500 hours costing \$99 750 (\$9.50 an hour). Fixed overhead was \$52 000. Actual profit = $313\,200 - 70\,000 - 99\,750 - 52\,000 = 91\,450$ dollars.

Compare like with like: the flexible budget

Comparing actual costs for 5 400 units with budgeted costs for 5 000 units is unfair: of course more units cost more. So first **flex** the budget to the actual output: every line at its standard per unit, times 5 400.

Flexible budget for 5 400 units	\$
Sales ($5\,400 \times 60$)	324 000
Direct materials ($5\,400 \times 12$)	(64 800)
Direct labour ($5\,400 \times 18$)	(97 200)
Fixed overhead absorbed ($5\,400 \times 10$)	(54 000)
Flexible budget profit	108 000

The flexible budget profit is the same as the **standard profit** for the actual output: $5\,400 \times 20 = 108\,000$. In 9706 mark schemes the fixed overhead in a flexible budget is normally **absorbed** at the standard rate per unit like this, so the flexible budget shows what 5 400 units should have cost under the standards.

The difference between the fixed budget and the flexible budget is caused only by selling more units. That is the **sales volume variance**: $(5\,400 - 5\,000) \times 20 = 8\,000$ F, valued at the **standard profit** per unit.

Everything else, the gap from \$108 000 down to \$91 450, is explained by the other variances.

Materials: paying more, or using more

Actual materials cost \$70 000, but 5 400 units should have cost \$64 800: a **total** direct material variance of \$5 200 A. Two things could cause it.

- **Price variance**: did we pay more per kilo? $(4.80 - 5.00) \times 14\,000 = -2\,800$, that is \$2 800 A. Use the **actual** kilos, because the price difference applies to every kilo bought.
- **Usage variance**: did we use more kilos? 5 400 units should use $5\,400 \times 2.5 = 13\,500$ kilos but used 14 000. $(13\,500 - 14\,000) \times 4.80 = -2\,400$, that is \$2 400 A. Value the extra kilos at the **standard** price, so the price effect isn't counted twice.

Check: $2\,800 + 2\,400 = 5\,200$ A, the total.

Labour: paying more, or taking longer

Labour should have cost \$97 200 but cost \$99 750: \$2 550 A in total.

- **Rate variance**: $(9.00 - 9.50) \times 10\,500 = -5\,250$, that is \$5 250 A (actual hours at the rate difference).
- **Efficiency variance**: 5 400 units should take $5\,400 \times 2 = 10\,800$ hours; they took 10 500. $(10\,800 - 10\,500) \times 9 = 2\,700$, that is \$2 700 F (hours saved at the standard rate).

Check: $5\,250 - 2\,700 = 2\,550$ A. The workers were paid more per hour but worked faster: the two sub-variances go in opposite directions, and the total hides both stories. That is why examiners want the total split.

Fixed overhead: spending more, or making more

Fixed overhead doesn't change with output, so there is no "price" or "usage". Two different questions are asked instead.

- **Expenditure variance:** did we spend more than the budget? $50\,000 - 52\,000 = -2\,000$, that is \$2 000 A.
- **Volume variance:** fixed overhead is charged to units at \$10 each. Making 5 400 units instead of 5 000 absorbed $5\,400 \times 10 = 54\,000$ dollars, \$4 000 more than the \$50 000 budget. The overhead is **over-absorbed**, so the volume variance is \$4 000 F. More output spreads the same fixed cost over more units, which is good for profit.

The volume variance splits into two, both in labour hours at the OAR:

- **Capacity variance:** did the workforce work more or fewer hours than budgeted? $(10\,500 - 10\,000) \times 5 = 2\,500$, that is \$2 500 F. More hours worked than budgeted means more capacity was used.
- **Efficiency variance:** did those hours produce as much as they should? $(10\,800 - 10\,500) \times 5 = 1\,500$, that is \$1 500 F. Output worth 10 800 standard hours came from 10 500 actual hours. It always has the same direction as the labour efficiency variance.

Check: $2\,500 + 1\,500 = 4\,000$ F. The expenditure and volume variances together make the **total** fixed overhead variance: absorbed less actual, $54\,000 - 52\,000 = 2\,000$ F.

Sales: price and volume

- **Sales price variance:** $(58 - 60) \times 5\,400 = -10\,800$, that is \$10 800 A. The units were sold for \$2 less than standard.
- **Sales volume variance:** \$8 000 F, found above.

A price cut often causes a favourable volume variance, as here: cheaper goods sell more.

Putting it together: the variance tree

Fixed budget profit \$100 000 → actual profit \$91 450

F = favourable (raises profit, shaded), A = adverse (lowers profit)

Profit variance	\$8 550	A
— Sales volume	\$8 000	F
— Sales price	\$10 800	A
— Direct materials	\$5 200	A
— Price	\$2 800	A
— Usage	\$2 400	A
— Direct labour	\$2 550	A
— Rate	\$5 250	A
— Efficiency	\$2 700	F
— Fixed overhead	\$2 000	F
— Expenditure	\$2 000	A
— Volume	\$4 000	F
— Capacity	\$2 500	F
— Efficiency	\$1 500	F

A **reconciliation statement** puts these in a table that starts with the flexible budget profit and ends at the actual profit:

	Favourable (\$)	Adverse (\$)	\$
Flexible budget profit			108 000
Sales price		10 800	
Material price		2 800	
Material usage		2 400	
Labour rate		5 250	
Labour efficiency	2 700		
Fixed overhead expenditure		2 000	
Fixed overhead volume	4 000		
Total	6 700	23 250	(16 550)
Actual profit			91 450

If the statement starts from the **fixed** budget profit (\$100 000), add the sales volume variance (\$8 000 F) as the first line; everything else is the same.

Why variances are linked

Variances rarely have separate causes. One decision often shows up in several places:

- **Cheaper, lower-quality material:** material price F, but more waste (usage A), and workers take longer handling it (labour efficiency A, and so fixed overhead efficiency A).
- **Better-quality material:** price A, but usage F and labour efficiency F.
- **More skilled or better-trained workers:** labour rate A, efficiency F, and often usage F (less waste).
- **Inexperienced or demotivated workers, or a pay cut:** rate F, efficiency A, usage A.
- **A lower selling price:** sales price A, sales volume F; a higher price, the reverse.
- **Higher output than budgeted:** fixed overhead volume F; lower output, volume A.
- **Outside causes:** inflation, a new wage agreement or a rise in world prices causes rate or price variances that managers cannot control.

A good explanation names the variance and its direction, gives a cause that fits **this** business, and links it to the other variances where it can.

Why businesses use standard costing

Advantages: a **benchmark** for spotting problems early (managers look only at large variances: **management by exception**); **cost control**, since each variance shows where money was lost and who is responsible; easier **planning**, **pricing** and **inventory valuation**, because the cost of a unit is known in

advance; and **motivation**, when standards are attainable and linked to bonuses.

Disadvantages: standards cost **time and money** to set and must be **reviewed**, or they go out of date; **unrealistic** standards give meaningless variances and demotivate staff; many causes (inflation, exchange rates, the market) are **outside managers' control**; variances show **what** went wrong, not **why**; and a focus on cost can push aside quality, so staff may cut corners to avoid adverse variances.

Non-financial factors

Decisions from variances are never only about the numbers. Consider **quality** and so **reputation**; **staff** morale, skills and training; **supplier** reliability and delivery; whether **customers** will accept a changed product or price; the **environment** (recyclable materials, waste); and **risk** from exchange rates and import delays.

Key facts and formulas

There is no formula list in 9706 exams, so every formula here must be learnt. In each one a **positive** answer is **favourable** and a **negative** answer is **adverse**.

Formula	Status
Material price = (standard price – actual price) × actual quantity	Learn it
Material usage = (standard quantity for actual output – actual quantity) × standard price	Learn it
Material total = standard cost of actual output – actual cost = price + usage	Learn it
Labour rate = (standard rate – actual rate) × actual hours	Learn it
Labour efficiency = (standard hours for actual output – actual hours) × standard rate	Learn it
Labour total = standard cost of actual output – actual cost = rate + efficiency	Learn it
$\text{OAR} = \frac{\text{budgeted fixed overhead}}{\text{budgeted labour hours}}; \text{fixed overhead per unit} = \text{OAR} \times \text{standard hours per unit}$	Learn it
Fixed overhead expenditure = budgeted fixed overhead – actual fixed overhead	Learn it
Fixed overhead volume = absorbed – budgeted = (actual units – budgeted units) × standard fixed overhead per unit	Learn it
Capacity = (actual hours – budgeted hours) × OAR	Learn it

Formula	Status
Fixed overhead efficiency = (standard hours for actual output – actual hours) × OAR	Learn it
Capacity + efficiency = volume; expenditure + volume = total = absorbed – actual	Learn it
Sales price = (actual price – standard price) × actual units sold	Learn it
Sales volume = (actual units – budgeted units) × standard profit per unit	Learn it
Flexible budget profit = actual units × standard profit per unit = fixed budget profit + sales volume variance	Learn it
Actual profit = flexible budget profit + favourable variances – adverse variances	Learn it

How to do it

In the Paper 3 and Paper 4 questions tagged for this topic (16 questions, 2021–2025; 14 different, as two appeared on two papers), the types came up this often. Every one is a 25-mark case question that mixes several types, so the counts add up to far more than 16.

Question type	Questions
Calculate labour rate and labour efficiency variances	11
Calculate material price and material usage variances	10
Calculate fixed overhead variances	10
Prepare a flexible budget or standard cost statement	10
Explain the purpose or benefits of standard costing, variance analysis or flexible budgets	10
Advise on a decision using variance data	10
Calculate sales price and sales volume variances	9
Explain the likely causes of variances and how they link	9
Calculate total material and total labour variances	7
Reconcile budgeted profit or cost with actual	6
Explain the fixed overhead volume variance and its sub-variances	3
Work backwards from variances to actual figures	2

1. Calculate labour rate and labour efficiency variances (11 questions)

1. **Get the four figures:** standard rate (SR), actual rate (AR), actual hours (AH) and standard hours for the actual output ($SH = \text{actual units} \times \text{standard hours per unit}$).
2. **Rate** = $(SR - AR) \times AH$. **Efficiency** = $(SH - AH) \times SR$.
3. **Write F or A** next to each: usually 1 mark for the amount and 1 for the direction. Check that they add up to the total labour variance.

Variants you will meet:

- **Standards hidden in the budget:** budgeted labour cost $\div$ budgeted units gives the standard cost per unit; divide by the hours per unit for the rate. A budget of \$48 750 for 2 500 units at 1.5 hours each gives \$19.50 per unit and \$13 per hour.
- **Actual rate or hours not given:** actual rate = actual cost $\div$ actual hours (\$41 580 for 3 080 hours is \$13.50), or skip it: rate variance = $SR \times AH - \text{actual cost}$.
- **A total labour variance given, to be explained:** split it into rate and efficiency first (type 8).

2. Calculate material price and material usage variances (10 questions)

1. **Standard quantity for the actual output** = actual units $\times$ standard kilos per unit.
2. **Actual kilos and actual price:** often one is given and the other is actual cost $\div$ the given one.
3. **Price** = $(SP - AP) \times \text{actual kilos}$. **Usage** = $(\text{standard kilos} - \text{actual kilos}) \times SP$. F or A for each; check they add up to the total.

Variants you will meet:

- **Kilos per unit given** ("2.4 kilos per unit"): actual kilos = actual units $\times$ 2.4.
- **A change of material:** the standard is still the old material, so the new one's price difference and extra usage show up as variances.
- **Total and one sub-variance given:** the other is total – given, with signs. A total of \$540 A and usage of \$1 900 A leave a price variance of \$1 360 F, so the business did control the price it paid.

3. Calculate fixed overhead variances (10 questions)

1. **OAR from the budget**, never from actual figures: budgeted fixed overhead $\div$ budgeted labour hours.
2. **Expenditure** = budgeted – actual. **Volume** = absorbed – budgeted, where absorbed = actual units $\times$ standard fixed overhead per unit. **Total** = absorbed – actual.

For example, \$57 000 over 10 000 hours (4 000 units at 2.5 hours) gives an OAR of \$5.70. Making 3 700 units absorbs $3\,700 \times 2.5 \times 5.70 = 52\,725$, so volume = $52\,725 - 57\,000 = 4\,275$ A. Spending \$55 900 gives expenditure \$1 100 F.

If only the overhead per unit is given (\$14 per unit at 2 hours), the OAR is \$7 per hour; the volume variance in units ($(\text{actual} - \text{budgeted units}) \times 14$) or in hours gives the same answer. Sub-variances: type 11.

4. Prepare a flexible budget or standard cost statement (10 questions)

1. **Standard per unit** for each line: budgeted sales, materials, labour and fixed overhead $\div$ budgeted units.
2. **Multiply each by the actual units**, fixed overhead included (absorbed at the standard rate per unit).
3. **Profit** = sales — costs. Usually one mark per line and one for the profit (own figure).

Variants you will meet:

- **A fixed budget**: the same lines at the budgeted units; sometimes fixed and flexible side by side.
- **Total standard cost of production**: the cost lines and their total only.
- **Built backwards** from actual figures and total variances: flexible cost = actual + an adverse variance or — a favourable one; flexible sales = actual sales — a favourable sales price variance. Actual labour \$88 400 with a total variance of \$2 600 F means flexible labour of \$91 000.

Examiners report that many candidates copy the budgeted fixed overhead into the flexible budget instead of flexing it.

5. Explain the purpose or benefits of standard costing, variance analysis or flexible budgets (10 questions)

"State" needs one point per mark; "explain" needs the point and its development ("so that ...").

- **Variance analysis**: calculating the differences between standard (or budgeted) and actual results, and investigating why they happened.
- **Its benefits**: control (compare with the target, then act to put things right); judging managers and deciding bonuses; finding strengths and weaknesses; better planning as standards are revised.
- **Reasons for standard costs**: quoting prices, setting budgets, valuing inventory, estimating material and labour needs, motivating staff.
- **Why a flexible budget**: it is based on the actual output, so the comparison is like for like and the variances mean something.
- **"Is variance analysis useful here?"**: it shows the effect of a change on each cost and where to act; but standards may be unrealistic after the change, and some causes are outside the business's control.

Examiners report that weak answers repeat the definition when asked for benefits.

6. Advise on a decision using variance data (10 questions)

5–7 marks: up to 3 points each side, 1 for a decision supported by a comment, and sometimes 1–2 for calculations the question asks for.

1. **Calculate first** and quote it: material cost per unit from each supplier (kilos per unit after waste $\times$ price), compared with the standard and actual; the effect on profit of a new material (units $\times$ kilos per unit $\times$ price change); a price rise (5% on \$8.20 is $8.20 \times 1.05 = 8.61$).
2. **Points both ways**, tied to the case. **Then decide**, with a reason.

Good points for the scenarios seen:

- **Changing supplier:** quality and waste, reliability, delivery time; import duty, freight and exchange rates overseas; minimum order sizes (storage, cash tied up).
- **Changing material:** cost against quality, customers' view, brand image, the environment; whether adverse usage and efficiency will improve as staff get used to it.
- **Stopping standard costing:** standards go out of date, cost time, demotivate if unrealistic, and blame managers for what they can't control; against that, the benchmark, corrective action, cost awareness and pricing. Updating the standards is often the better answer.
- **Same standards for a factory abroad:** simple and comparable, but wages, rent and transport differ.
- **Extending variances to fixed overheads:** shows over- or under-absorption and overspending, but takes time.

Examiners report lost marks for skipping requested calculations and for ignoring the downside of the chosen option.

7. Calculate sales price and sales volume variances (9 questions)

1. **Standard price and standard profit per unit:** budgeted sales and budgeted profit, each $\div$ budgeted units.
2. **Sales price** = (actual price – standard price) $\times$ actual units.
3. **Sales volume** = (actual units – budgeted units) $\times$ standard **profit** per unit.

For example, 3 000 budgeted units with sales of \$240 000 and profit of \$36 000 give \$80 and \$12. Selling 2 800 units for \$229 600: price = $229\,600 - 2\,800 \times 80 = 5\,600$ F; volume = $(2\,800 - 3\,000) \times 12 = 2\,400$ A.

"As a measure of change in profit" means standard profit, as here; if the question wants the effect on revenue, use the standard selling price, and under marginal costing the standard contribution. Examiners report that very few candidates value the volume variance correctly.

8. Explain the likely causes of variances and how they link (9 questions)

1. **Split the total into its sub-variances** and state each with its direction. Examiners report that candidates who split the variance scored full marks and those who didn't scored poorly.
2. **Give a cause for each that fits the case:** a new material, a pay rise, new staff, a price cut.
3. **Link them:** "the cheaper material was poorer, so more was wasted (usage A) and workers took longer (efficiency A)".

Variants: comparing two months (improved or worsened, and why, such as staff gaining experience); causes of a sales volume variance (a price rise, weak advertising, a competitor); "has the business controlled the price it pays?" (find the price variance, then yes for F, no for A). Examiners reject causes that could apply to any business or that contradict the case.

9. Calculate total material and total labour variances (7 questions)

Total = actual units $\times$ standard cost per unit – actual cost; F if actual is lower. Compare with the **actual** output: with 2 800 units and a standard material cost of \$17 per unit, the comparison is with $2\,800 \times 17 = 47\,600$, not with the budget for 3 000 units.

10. Reconcile budgeted profit or cost with actual (6 questions)

1. **Start with the profit the question names:** flexible budget (standard) profit, or the fixed budget profit plus the sales volume variance.
2. **One line per variance asked for**, in the favourable or adverse column, with a working for each.
3. **Total each column**, show the net figure, and finish with the **actual profit**. Check it against actual revenue less actual costs.

Marks: usually 1 for the start, 2 per variance (amount and column), 1 for the actual profit.

Variants: a printed table worth 14–15 marks; one "total fixed overhead variance" line (absorbed – actual); **standard cost to actual cost**, where favourable variances are subtracted and adverse ones added, with no sales variances. Examiners report candidates ignoring instructions such as "two direct material, two direct labour and two fixed overhead variances".

11. Explain the fixed overhead volume variance and its sub-variances (3 questions)

- **Volume:** overhead is absorbed per unit, so when output differs from budget the amount absorbed differs from the amount budgeted. More output: over-absorbed (F); less: under-absorbed (A).
- **Capacity:** actual hours against **budgeted** hours. More hours worked uses more capacity (F); fewer (A) could be strikes, breakdowns or a lack of orders.
- **Efficiency:** **standard hours for the actual output** against actual hours. Taking longer than standard is A.

For example, budgeted hours 20 000, actual 21 000, standard for the actual output 19 500, OAR \$3: capacity = $(21\,000 - 20\,000) \times 3 = 3\,000$ F; efficiency = $(19\,500 - 21\,000) \times 3 = 4\,500$ A; volume \$1 500 A.

"State how to calculate the capacity variance" (2 marks): the difference between budgeted and actual hours (1), times the standard absorption rate per hour (1).

12. Work backwards from variances to actual figures (2 questions)

Turn each formula round. Actual kilos = standard kilos $\pm$ usage variance $\div$ standard price (add if adverse). Actual price = standard price $\mp$ price variance $\div$ actual kilos (subtract if favourable). Hours, rate and selling price work the same way. For the price that would have earned the standard result, divide the shortfall by the units and add it to the actual price.

For example, 6 000 units at a standard 2.5 kilos and \$8: a usage variance of \$4 000 A means $4\,000 \div 8 = 500$ extra kilos, so actual kilos = $15\,000 + 500 = 15\,500$.

Worked examples

Example 1

M Limited's standard cost card shows, per unit: direct materials 4.5 kilos at \$6.80 per kilo, and direct labour 1.5 hours at \$14 per hour. In June it made 4 000 units. It used 18 700 kilos of material costing \$123 420, and paid \$84 100 for 5 800 labour hours.

(a) Calculate the direct material total variance and its two sub-variances. [5]

(b) Calculate the direct labour rate and efficiency variances. [4]

(c) Explain one likely cause of each of the four sub-variances, linking them where possible. [4]

(a) Standard cost of the actual output = $4\,000 \times 4.5 \times 6.80 = 122\,400$. Total = $122\,400 - 123\,420 = 1\,020$ A (1).

Actual price = $123\,420 \div 18\,700 = 6.60$ dollars a kilo.

- Price = $(6.80 - 6.60) \times 18\,700 = 3\,740$ F (1 amount, 1 direction).
- Usage: standard kilos = $4\,000 \times 4.5 = 18\,000$. $(18\,000 - 18\,700) \times 6.80 = -4\,760$, that is \$4 760 A (1 amount, 1 direction).

Check: $3\,740 - 4\,760 = -1\,020$, the total.

(b) Actual rate = $84\,100 \div 5\,800 = 14.50$ dollars an hour. Standard hours = $4\,000 \times 1.5 = 6\,000$.

- Rate = $(14.00 - 14.50) \times 5\,800 = -2\,900$, that is \$2 900 A (1, 1).
- Efficiency = $(6\,000 - 5\,800) \times 14 = 2\,800$ F (1, 1).

(c) Material price F: a cheaper supplier or a bulk discount; the price fell to \$6.60 (1). Material usage A: the cheaper material may be of lower quality, so more is wasted (1). Labour rate A: a pay rise, or more skilled workers on a higher rate (1). Labour efficiency F: skilled workers finish faster, saving 200 hours, even though they were working with the poorer material (1).

Example 2

P Limited makes one product. Its standard cost card per unit is: selling price \$45.75; direct materials 2 kilos at \$5.50; direct labour 1.5 hours at \$11.50; fixed overhead 1.5 hours at \$3. The budget for May was to make and sell 6 000 units, with fixed overhead of \$27 000.

Actual results for May:

	\$
Sales (5 600 units)	257 600
Direct materials (11 600 kilos)	62 640

	\$
Direct labour (8 700 hours)	98 310
Fixed overhead	26 400

- (a) Calculate the budgeted profit for May, and the flexible budget profit. **[3]**
- (b) Calculate the sales volume variance (as a measure of change in profit). **[2]**
- (c) Prepare a statement reconciling the flexible budget profit with the actual profit. **[16]**
- (d) Calculate the fixed overhead capacity and efficiency variances and explain why the fixed overhead volume variance is adverse. **[4]**

(a) Standard profit per unit = $45.75 - 11 - 17.25 - 4.50 = 13$. Budgeted profit = $6\,000 \times 13 = 78\,000$ (**1**).
Flexible budget profit = $5\,600 \times 13 = 72\,800$ (**1** method, **1** answer).

(b) $(5\,600 - 6\,000) \times 13 = -5\,200$, that is \$5 200 A (**1**, **1**). Check: $78\,000 - 5\,200 = 72\,800$.

(c) Workings: actual price = $257\,600 \div 5\,600 = 46$; material price $62\,640 \div 11\,600 = 5.40$; labour rate $98\,310 \div 8\,700 = 11.30$; standard kilos $5\,600 \times 2 = 11\,200$; standard hours $5\,600 \times 1.5 = 8\,400$; absorbed overhead $5\,600 \times 4.50 = 25\,200$.

	Favourable (\$)	Adverse (\$)	\$
Flexible budget profit			72 800
Sales price $(46 - 45.75) \times 5\,600$	1 400		
Material price $(5.50 - 5.40) \times 11\,600$	1 160		
Material usage $(11\,200 - 11\,600) \times 5.50$		2 200	
Labour rate $(11.50 - 11.30) \times 8\,700$	1 740		
Labour efficiency $(8\,400 - 8\,700) \times 11.50$		3 450	
Fixed overhead expenditure $27\,000 - 26\,400$	600		
Fixed overhead volume $25\,200 - 27\,000$		1 800	
Total	4 900	7 450	(2 550)
Actual profit			70 250

1 starting profit, **1** amount and **1** column for each of the seven variances, **1** for the actual profit (own figure).
Check: $257\,600 - 62\,640 - 98\,310 - 26\,400 = 70\,250$.

(d) Budgeted hours = $6\,000 \times 1.5 = 9\,000$; OAR = $27\,000 \div 9\,000 = 3$. Capacity = $(8\,700 - 9\,000) \times 3 = 900$ A (**1**). Efficiency = $(8\,400 - 8\,700) \times 3 = 900$ A (**1**). Together \$1 800 A, the volume variance.

The volume variance is adverse because only 5 600 units were made instead of 6 000, so less overhead was absorbed than budgeted (**1**). Part of this is because 300 fewer hours were worked than budgeted (capacity), and part because the hours worked produced less than standard: 8 700 hours made output worth only 8 400

standard hours (efficiency) (1).

Example 3

R Limited's standard for its product is 5 kilos of material at \$7.40 per kilo and 2 labour hours at \$13 per hour. In March it made 3 000 units. The variances were: material price \$3 080 favourable, material usage \$2 960 adverse, labour efficiency \$1 950 adverse.

- (a) Calculate the actual quantity of material used and the actual price paid per kilo. [4]
- (b) Calculate the actual labour hours per unit. [2]
- (c) The directors are considering two new suppliers for the material:

	Supplier X	Supplier Y
Kilos per unit, after waste	5.5	4.7
Price per kilo	\$6.60	\$7.70

Advise the directors which supplier, if either, they should use. Justify your answer and support it with relevant calculations. [7]

(a) Extra kilos = $2\,960 \div 7.40 = 400$ (1). Actual kilos = $3\,000 \times 5 + 400 = 15\,400$ (1). Price saving per kilo = $3\,080 \div 15\,400 = 0.20$ (1). Actual price = $7.40 - 0.20 = 7.20$ dollars a kilo (1).

(b) Extra hours = $1\,950 \div 13 = 150$, so actual hours = $6\,000 + 150 = 6\,150$ (1) and $6\,150 \div 3\,000 = 2.05$ hours per unit (1).

(c) Calculations: material cost per unit now = $15\,400 \times 7.20 \div 3\,000 = 36.96$ (1); the standard is $5 \times 7.40 = 37.00$. Supplier X: $5.5 \times 6.60 = 36.30$; supplier Y: $4.7 \times 7.70 = 36.19$ (1). For 3 000 units, material would cost $3\,000 \times 36.30 = 108\,900$ from X and $3\,000 \times 36.19 = 108\,570$ from Y, against \$110 880 this month: Y saves \$2 310 and X \$1 980.

Points (1 each, up to 4): X has the lowest price per kilo but the most waste, so more material must be stored and handled, and workers may take even longer, worsening the adverse efficiency variance. Y has the lowest cost per unit, and its low waste suggests better quality, which could help efficiency and the product. But Y's price per kilo is highest, so the saving disappears if waste is higher than promised, and a new supplier's reliability is unknown.

Decision: use Y, for the lowest cost per unit and better material, after a trial order to check quality and delivery (1).

Common mistakes

- **Using budgeted output instead of actual output.** Standard quantities, standard hours and flexed costs are always for the **actual** units.

- **Valuing at the wrong price.** Price and rate variances use **actual** quantities; usage and efficiency variances use **standard** prices. Mixing them counts one effect twice.
- **The sales volume variance at selling price.** When the question says "as a measure of change in profit", multiply by standard **profit** per unit. Examiners report that very few candidates get this right.
- **Working out the OAR from actual figures.** It always comes from the **budget**: budgeted overhead ÷ budgeted hours. Examiners report this as the main error in the fixed overhead volume variance.
- **Getting the direction wrong or leaving it out.** Half the marks for each variance are for F or A (or the right column). Ask: did this make profit higher (F) or lower (A)?
- **Not finishing the reconciliation.** Examiners report candidates calculating the variances but never setting out the statement, or not reaching the actual profit, which can be checked from the actual results.
- **Generic causes.** "Inflation" or "poor workers" without reference to the case earns little. Tie each cause to the business: the new material, the pay cut, the new staff.
- **Advice without the calculations the question asks for**, which examiners report caps the marks available.

How to get the marks

- **Show a working line for every variance**, such as $(12.00 - 12.30) \times 8\,700$. Later marks are "own figure", so a wrong earlier number used correctly still scores if the examiner can follow it.
- **Every variance needs F or A**, or the correct column in a reconciliation. The amount alone earns only half the marks.
- **Reconciliations**: start with the profit named in the question, include every variance asked for (and no others), total both columns, and show the actual profit.
- **"Calculate"**: give the figure with its direction; use two decimal places for prices and rates when they aren't whole.
- **"State"**: one short point per mark. **"Explain"**: the point and why, in this business. **"Define"** or **"what is meant by"**: a precise meaning using the key words (standard, actual, difference, investigate).
- **"Explain the likely causes ... with reference to its sub-variances"**: calculate the sub-variances first; each is worth a mark before the cause.
- **"Discuss"**: both sides. **"Assess"** or **"evaluate"**: both sides and a judgement.
- **"Advise ... justify your answer"** (5–7 marks): points on both sides tied to the case and your figures, then a clear decision with a reason. Either decision scores full marks if it follows from your points. **"Support it with relevant calculations"** means the calculations carry marks; don't skip them.

Quick check

1. The standard for a product is 2 kilos at \$3 per kilo. 1 000 units were made using 2 150 kilos, which cost \$6 235. Calculate the material price and usage variances.

2. Budgeted fixed overhead is \$37 800 for 4 500 units at 2 labour hours each. Actual output was 4 300 units, using 8 800 hours, and fixed overhead was \$38 300. Calculate the fixed overhead expenditure, volume, capacity and efficiency variances.
3. The budget was to sell 2 500 units at a standard price of \$50, with a standard profit of \$12 per unit. 2 600 units were sold for \$127 400. Calculate the sales price and sales volume variances.
4. The labour rate variance is \$1 040 favourable. The standard rate is \$16.00 per hour and the actual rate was \$15.60. Calculate the actual hours worked, and suggest how the rate variance could be linked to the labour efficiency variance.
5. State two disadvantages of a standard costing system.

Answers

1. Actual price = $6\,235 \div 2\,150 = 2.90$. Price = $(3.00 - 2.90) \times 2\,150 = 215$ F. Usage = $(2\,000 - 2\,150) \times 3 = -450$, that is \$450 A. (Total \$235 A = $2\,000 \times 3 - 6\,235$.)
2. OAR = $37\,800 \div 9\,000 = 4.20$. Expenditure = $37\,800 - 38\,300 = 500$ A. Absorbed = $4\,300 \times 8.40 = 36\,120$, so volume = $36\,120 - 37\,800 = 1\,680$ A. Capacity = $(8\,800 - 9\,000) \times 4.20 = 840$ A. Efficiency = $(8\,600 - 8\,800) \times 4.20 = 840$ A, and $840 + 840 = 1\,680$.
3. Actual price = $127\,400 \div 2\,600 = 49$. Sales price = $(49 - 50) \times 2\,600 = 2\,600$ A. Sales volume = $(2\,600 - 2\,500) \times 12 = 1\,200$ F.
4. $1\,040 \div (16.00 - 15.60) = 1\,040 \div 0.40 = 2\,600$ hours. Paying less than standard may mean less skilled or less motivated workers, who take longer, so the labour efficiency variance is likely to be adverse.
5. Any two: standards take time and money to set and must be kept up to date; unrealistic or out-of-date standards give meaningless variances and demotivate staff; managers may be blamed for causes outside their control, such as inflation; variances show what went wrong but not why, so they still need investigating.

Past questions to try

- **9706/43/M/J/24 Q2**: working backwards from variances to actual price, kilos and hours.
- **9706/42/F/M/24 Q2**: fixed and flexible budgets, material and labour variances, and the capacity and efficiency sub-variances.
- **9706/31/O/N/22 Q6**: a standard cost of production reconciled with actual cost, with six variances.
- **9706/33/O/N/22 Q5**: comparing variances between two months and explaining the changes.