Variance analysis guide

SMA EXAM REFERENCE PACK | MODULE 3 | PRINT AND KEEP WITH YOUR NOTES

How to use this guide. A variance is the gap between what actually happened and what the budget planned. Learn the letters, use one test for F or U, then let the map send you to the right card. Each card ends with a worked line from the same small example, so you can see the numbers go in.

The example used in this guide

Maple Lane Jams (imagined) plans to make and sell 2,000 jars of jam a month. Budgeted variable cost is $4.90 a jar ($2.40 fruit + $1.80 labour + $0.70 overhead), so the budgeted contribution margin is $8.60 - $4.90 = $3.70 a jar.

	Budget (static)	Actual
Jars made and sold	2,000	2,300
Selling price per jar	$8.60	$8.20
Fruit	0.4 kg a jar at $6.00 per kg	970 kg at $5.80 per kg
Labour	0.05 hours (3 minutes) a jar at $36 an hour	104 hours at $38 an hour
Variable overhead	$14 per labour hour	$1,700 in total
Fixed overhead	$3,200 a month ($1.60 a jar on budgeted output)	$3,410

The letters in every formula

Letter	Plain meaning	Maple Lane
AQ	Actual quantity: units actually sold, or input actually used	2,300 jars sold; 970 kg of fruit used
AP	Actual price: the selling price actually charged, or the price actually paid per unit of input	$8.20 a jar; $5.80 per kg
BQ	Budgeted quantity: units the static budget planned to sell	2,000 jars
BP	Budgeted price: the budgeted selling price, or the budgeted (standard) price per unit of input	$8.60 a jar; $6.00 per kg
BQ allowed	Input the budget allows for the output actually made: budgeted input per unit x actual units made	0.4 kg x 2,300 = 920 kg
Bcm	Budgeted contribution margin per unit: budgeted price - budgeted variable cost per unit	$8.60 - $4.90 = $3.70

F or U? One test for every variance

Item	Actual higher than budget	Actual lower than budget
Money in: selling price, units sold	F - more profit	U - less profit
Money out: price paid, input used, overhead spent	U - less profit	F - more profit

Ask one question: did this difference leave profit higher (F) or lower (U) than the budget? Write F or U beside every dollar amount. A bare plus or minus sign is easy to misread under exam pressure.

Find the variance you need

Which figure moved away from the budget?

The selling price per unit	**Selling price variance**	Card 1
The number of units sold	**Sales volume variance**	Card 2
The price paid per kg, per hour or per driver hour	**Price variance** rate (labour), spending (overhead)	Card 3
The quantity of input used for the output made	**Efficiency variance** also called usage (materials)	Card 4
Both the price paid and the quantity used	**Price and efficiency** together = flexible budget variance	Cards 3 + 4
The total fixed overhead bill	**Fixed overhead spending variance**	Card 5
The number of units produced (fixed overhead)	**Production volume variance**	Card 6

Sales variances

Card 1: Selling price variance

SALES

What it measures: the profit effect of charging a different price per unit on the units actually sold.

(AP - BP) x AQ sold

F OR U	Charged more than the budgeted price = F. Charged less, for example after discounting = U.
MAPLE LANE	($8.20 - $8.60) x 2,300 jars = **$920 U**

Card 2: Sales volume variance

SALES

What it measures: the profit effect of selling more or fewer units than the static budget planned.

(AQ sold - BQ sold) x Bcm

F OR U	Sold more units than planned = F. Sold fewer = U.
WATCH OUT	Value the extra or missing units at the budgeted contribution margin, not the selling price: each extra unit also brings extra variable cost.
MAPLE LANE	(2,300 - 2,000) x $3.70 = **$1,110 F**

Variable cost variances: materials, labour and overhead

Card 3: Price variance

COST

What it measures: the cost effect of paying a different price for each unit of input: per kg, per labour hour or per driver hour.

(AQ x AP) - (AQ x BP) = (AP - BP) x AQ

ALSO CALLED	Labour: rate variance. Variable overhead: spending variance. The formula is the same for all three costs.
F OR U	Paid above the budgeted price = U. Paid below it = F.
MAPLE LANE	Fruit: (970 kg x $5.80) - (970 kg x $6.00) = $5,626 - $5,820 = **$194 F**

Card 4: Efficiency variance

COST

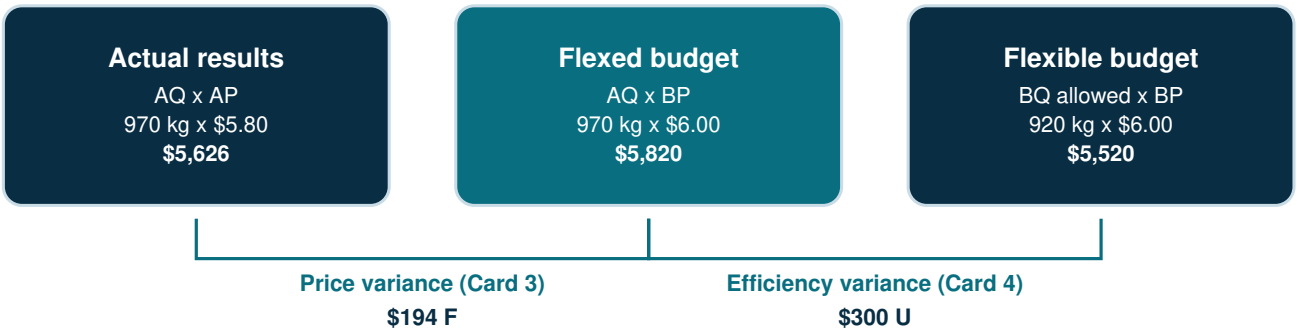
What it measures: the cost effect of using more or less input than the standard allows for the output actually made.

FIRST FIND BQ ALLOWED. Budgeted input per unit x actual units produced. Fruit: 0.4 kg x 2,300 jars = 920 kg. Base it on units actually produced, not the units in the original budget.

(AQ x BP) - (BQ allowed x BP) = (AQ - BQ allowed) x BP

ALSO CALLED	Materials: usage variance.
F OR U	Used more than allowed = U. Used less = F.
MAPLE LANE	Fruit: (970 kg x $6.00) - (920 kg x $6.00) = $5,820 - $5,520 = **$300 U**

Price and quantity together: three columns



Flexible budget variance = $5,626 - $5,520 = $106 U

Quick check. The price and efficiency variances must add up to the flexible budget variance (actual cost - flexible budget cost). Fruit: $194 F + $300 U = $106 U. If they don't agree, recheck the middle column.

Same method for all three variable costs

Only the meaning of the letters changes. Some textbooks write AH, SR and SH (actual hours, standard rate, standard hours allowed); they mean AQ, BP and BQ allowed.

Cost	AQ	AP and BP	BQ allowed
Direct materials	kg actually used	actual and budgeted price per kg	budgeted kg per unit x actual units made
Direct labour	hours actually worked	actual and budgeted wage rate per hour	budgeted hours per unit x actual units made
Variable overhead	actual quantity of the cost driver, such as labour hours	actual and budgeted overhead rate per driver unit	budgeted driver quantity per unit x actual units made

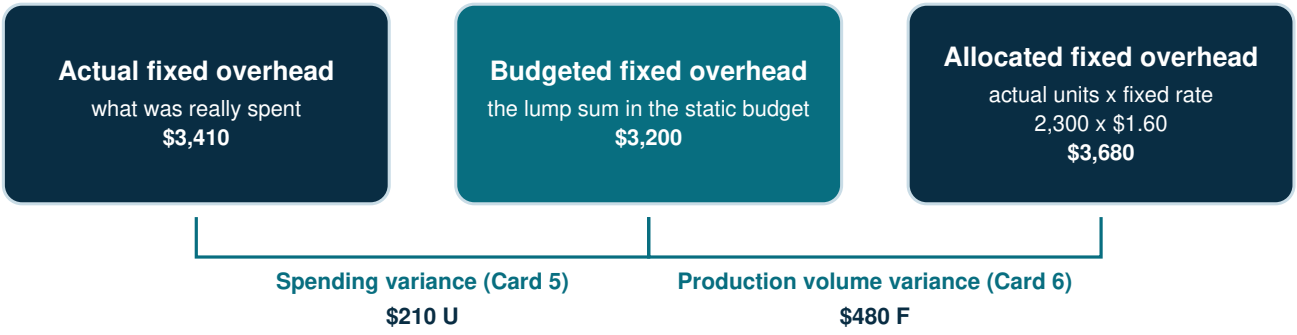
Maple Lane's variable cost variances

Labour hours allowed = 0.05 hours x 2,300 jars = 115 hours. Variable overhead follows labour hours, so it uses the same 104 actual and 115 allowed hours.

Cost	Price variance	Efficiency variance	Flexible budget variance
Fruit	$5,626 - $5,820 = $194 F	$5,820 - $5,520 = $300 U	$106 U
Labour	(104 x $38) - (104 x $36) = $208 U	(104 - 115 hours) x $36 = $396 F	$188 F
Variable overhead	$1,700 - (104 x $14) = $244 U	(104 - 115 hours) x $14 = $154 F	$90 U

Fixed overhead variances

Fixed overhead stays the same whatever the output (within the relevant range), so there is no efficiency variance. Two variances replace it. The fixed rate is budgeted fixed overhead divided by budgeted output: $3,200 / 2,000 jars = $1.60 a jar.



Card 5: Fixed overhead spending variance

FIXED OVERHEAD

What it measures: the gap between the fixed overhead actually incurred (rent, salaries, insurance) and the budgeted lump sum.

Actual fixed overhead - budgeted fixed overhead

F OR U	Spent above the budget = U. Spent below it = F.
MAPLE LANE	$3,410 - $3,200 = **$210 U**

Card 6: Production volume variance

CAPACITY

What it measures: how much budgeted fixed overhead was under- or over-allocated because output differed from the budgeted level.

Budgeted fixed overhead - allocated fixed overhead

ALLOCATED	Actual units produced x fixed rate per unit. If the rate is per hour, use the hours allowed for the actual output.
F OR U	Output below the budgeted level = U: overhead under-allocated, spare capacity. Output above it = F: over-allocated.
MAPLE LANE	$3,200 - (2,300 x $1.60) = **$480 F**

Why it might have happened: linked pairs

Pattern	What it can mean
Material price F, material usage U	Maple Lane paid 20 cents less per kg but used 50 kg more than allowed. Cheaper fruit is often poorer fruit, so more of it is thrown away.
Labour rate U, labour efficiency F	Maple Lane paid $38 an hour instead of $36 and saved 11 hours. Experienced, better-paid staff often work faster.
Selling price U, sales volume F	Maple Lane charged 40 cents less and sold 300 more jars. A lower price usually lifts demand.
Labour efficiency and overhead efficiency together	Both are measured in labour hours here, so the 11 hours saved show up in both.
Production volume U	Output fell short of the budgeted level: weaker demand, breakdowns or supply problems. Spare capacity to fill or remove.

Remember: a variance shows where to look, not who to blame. It may also mean the budget itself was unrealistic. Read linked pairs together before judging a manager.

From budgeted profit to actual profit

Start from the profit the static budget planned, then add each variance in turn. After the sales volume variance you have reached the flexible budget profit ($5,310).

Step	Variance	Running profit
Static budget operating profit		$4,200
Sales volume variance	$1,110 F	$5,310
Selling price variance	$920 U	$4,390
Fruit price variance	$194 F	$4,584
Fruit usage variance	$300 U	$4,284
Labour rate variance	$208 U	$4,076
Labour efficiency variance	$396 F	$4,472
Variable overhead spending variance	$244 U	$4,228
Variable overhead efficiency variance	$154 F	$4,382
Fixed overhead spending variance	$210 U	$4,172
Actual operating profit	**$28 U net**	**$4,172**

Check: $18,860 sales - $5,626 fruit - $3,952 labour - $1,700 variable overhead - $3,410 fixed overhead = $4,172. The production volume variance ($480 F) is not in this bridge, because fixed overhead is a lump sum in both budgets here. It is a signal about capacity, not a change in profit.