7. STANDARD COSTING AND VARIANCE ANALYSIS

- Variances
- Material mix and yield variances
- Labour mix and yield variances

VARIANCES

VARIANCE: Difference between planned, budgeted, or standard cost and the actual cost incurred.

VARIANCE ANALYSIS: Evaluation of performance by means of variances, whose timely reporting should maximize the opportunity for managerial action.

When actual results are better than expected =
FAVOURABLE VARIANCE (F)

When actual results are worse than expected=
ADVERSE VARIANCE (A) or UNFAVOURABLE (U)

VARIANCES

Variances divided into three main groups:

1. **Variable costs variance**
   - Direct material
   - Direct labour
   - Variable production overhead

2. **Fixed production overhead variances**

3. **Sales variances**

VARIANCES –MATERIAL

PRICE VARIANCE – BASED ON ACTUAL PURCHASES

What should they have cost?	XXX
What did they cost?	(XXX)
Price variance	**XXX**

USAGE VARIANCE – BASED ON ACTUAL PRODUCTION

How much should have been used?	XXX
How much was used	(XXX)
Difference in kg	**XXX**

TOTAL VARIANCE = PRICE VARIANCE + USAGE VARIANCE

VARIANCES –VARIABLE OVERHEAD

EXPENDITURE– BASED ON ACTUAL HRS WORKED

What should they have cost?	XXX
What did they cost?	(XXX)
Price variance	**XXX**

EFFICIENCY VARIANCE – BASED ACTUAL PRODUCTION

How longs should it have taken?	XXX
How long did it take?	(XXX)
Difference in std rate per hour	**XXX**

TOTAL VARIANCE = EXPENDITURE VARIANCE + EFFICIENCY VARIANCE

VARIANCES –LABOUR

RATE VARIANCE – BASED ON ACTUAL HRS PAID

What should they have cost?	XXX
What did they cost?	(XXX)
Rate variance	**XXX**

EFFICIENCY VARIANCE – BASED ON ACTIVE HRS ONLY

How long should it have taken?	XXX
How long dit it take (active hours)	(XXX)
Difference in hours	**XXX**

TOTAL VARIANCE = RATE VARIANCE + EFFICIENCY VAR.

VARIANCES –SALES

SELLING PRICE VARIANCE – BASED ACTUAL UNITS SOLD

What should they sell for?	XXX
What did they sell for?	(XXX)
Selling price variance	**XXX**

SALES VOLUME VARIANCE – BASED ACTUAL UNITS SOLD

Budgeted sales volume?	XXX
Actual sales volume	(XXX)
Difference in units	**XXX**

VARIANCES –FIXED COST

FIXED OVERHEAD EXPENDITURE VARIANCE

Budgeted fixed overhead expenditure	XXX
Actual fixed overhead expenditure	(XXX)
Fixed overhead expenditure variance	**XXX**

FIXED OVERHEAD VOLUME VARIANCE

Actual production at std rate	XXX
Budgeted production at std rate	(XXX)
Fixed overhead volume variance	**XXX**

FIXED OVERHEAD TOTAL VARIANCE = FIXED O/H EXPENDITURE VARIANCE + FIXED O/H VOLUME VARIANCE

VARIANCES –EXAMPLE

Standard cost of product A:	**$**
Materials (5 kgs x $10 per kg)	50
Labour (4 hrs x $5 p/hr)	20
Variable o/heads (4 hrs x $2 p/hr)	8
Fixed o/heads (4 hrs x $6 p/hr)	24
	102

Budget results	**$**
Production	1,200 units
Sales	1,000 units
Selling price	$150 p/unit

VARIANCES –EXAMPLE

Actual results		**$**
Production		1,000 units
Sales		900 units
Selling price		$140 p/unit
Materials	4,850 kgs	$46,075
Labour	4,200 hours	$21,210
Variable overheads	$9,450	
Fixed overheads	$ 25,000	

VARIANCES –EXAMPLE

APPROACH:

Variances

1. Material price variance
2. Material usage variance
3. Labour rate variance
4. Labour efficiency variance
5. Variable overhead expenditure variance
6. Variable overhead efficiency variance
7. Selling price variance
8. Sale volume profit variance ($)
9. Fixed overhead expenditure variance
10. Fixed overhead volume variance

VARIANCES –MATERIAL

1,000 units should have cost (x $50)	$	50,000	
But did cost	$	46,075	
Direct material total variance	**$**	**3,925**	**(F)**
4,850 kgs should cost (x $10)	$	48,500	
But did cost	$	46,075	
Direct material price variance	**$**	**2,425**	**(F)**
1,000 units should have used (x 5kgs)		5,000 kgs	
But did use		4,850 kgs	
Variance in kg		150 kgs	**(F)**
x standard cost per kg		x $10	
Direct material usage variance	**$**	**1,500**	**(F)**

VARIANCES –LABOUR

1,000 units should have cost (x $20)	$ 20,000	
But did cost	$ 21,210	
Direct labour total variance	**$ 1,210**	**(A)**
4,200 hrs should cost (x $5)	$ 21,000	
But did cost	$ 21,210	
Direct labour rate variance	**$ 210**	**(A)**
1,000 units should have used	4,000 hrs	
But did use	4,200 hrs	
Variance in hrs	200 hrs	**(A)**
x standard rate per hour	x $5	
Direct labour efficiency variance	**$ 1,000**	**(A)**

VARIANCES –VARIABLE OVERHEAD

1,000 units should have cost (x $8)	$ 8,000	
But did cost	$ 9,450	
Variable overhead total variance	**$ 1,450**	**(A)**
4,200 hrs should cost (x $2)	$ 8,400	
But did cost	$ 9,450	
Variable o/hd expenditure variance	**$ 1,050**	**(A)**
Labour efficiency variance in hrs	200	
x standard rate per hour	x $2	
Variable o/hd efficiency variance	**$ 400**	**(A)**

VARIANCES – SALES VARIANCES

Revenue from 900 units sold have been (x $150)	$ 135,000	
But was (x $140)	$ 126,000	
Selling price variance	**$ 9,000**	**(A)**
Budgeted sales volume	1,000	
Actual sales volume	900	
Variance in units	100	**(A)**
x std profit margin per unit ($150-$102)	x $48	
Sales volume variance	**$ 4,800**	**(A)**

VARIANCES – FIXED OVERHEAD

Budgeted o/hd (1,200 x $24)	$	28,800	
Actual overhead	$	25,000	
Expenditure variance	**$**	**3,800**	**(F)**
Actual prod at std rate (1,000 x $24)	$	24,000	
Bud prod at std rate (1,200 x $24)	$	28,800	
Volume variance	**$**	**4,800**	**(A)**
Overhead incurred	$	25,000	
Overhead absorbed (1,000 x $24)	$	24,000	
Under-absorbed overhead/Tot variance	**$**	**1,000**	**(A)**

VARIANCES – FIXED OVERHEAD

FAVOURABLE =

MORE OVERHEAD ABSORBED THAN BUDGETED

(OVER ABSORBED)

ADVERSE =

LESS OVERHEAD ABSORBED THAN BUDGETED

(UNDER ABSORBED)

MATERIAL MIX AND YIELD VARIANCES

When product requires two or more raw materials in its make-up, it is often possible to sub-analyse the materials usage variance into materials mix and materials yield variances.

MATERIAL MIX AND YIELD VARIANCES

MATERIAL YIELD VARIANCE:

A measure of the effect on costs of inputs yielding more or less than expected.

Calculated as the difference between expected output and the actual output, valued at the standard cost per unit of output.

CALCULATING YIELD VARIANCE:

1. Find, for one unit of output, the standard total materials usage in kgs/litres etc. and the cost of this standard usage.
2. Determine the standard output form the actual total quantity input.

MATERIAL MIX AND YIELD VARIANCES

MATERIALS MIX VARIANCE:

A measure of whether the actual mix is cheaper or more expensive than the standard.

Calculated as the difference between the actual total quantity used in the standard mix and the actual quantity used in the actual mix, valued using one of two methods:

1. Standard input price of each material

2. The difference between the standard weighted average price and the individual standard input prices **(Only required to be able to calculate total mix variances. Methods the same, using the first method – slightly quicker!)**

MATERIAL MIX AND YIELD VARIANCES

CALCULATING THE MIX VARIANCE:

1. Calculate the standard mix of the actual material used

2. Find (in kgs/litres etc. for each input) the differences between what should have been used (step 1) and what was actually used.

3. Value the variances using one of the two methods.

MATERIAL MIX AND YIELD VARIANCES – EXAMPLE 1

A business makes a product that requires two ingredients. The standard mix of ingredients for one unit of the product is as follows:

Ingredient A	5kg at $4 per kg	$20
Ingredient B	5kg at $8 per kg	$ 40
		$ 60

Last period, 500 units were produced using the following ingredients:

Ingredient A	3,000 kg
Ingredient B	4,500 kg

MATERIAL MIX AND YIELD VARIANCES – EXAMPLE 1

Calculate the following variances and comment on their meaning:

1. Material mix variance, using individual input price valuation basis

2. Material mix variance, using the average valuation basis

3. Material yield variance

MATERIAL MIX AND YIELD VARIANCES – EXAMPLE 1

Materials mix variance using individual input price valuation basis:

	Std mix (kg)	Actual mix (kg)	Diff (kg)		x Std price ($)	Variance ($)	
Ingredient A	3,750	3,000	750	(F)	$ 4	$ 3,000	(F)
Ingredient B	3,750	4,500	750	(A)	$ 8	$ 6,000	(A)
	7,500	**7,500**	**-**			**$ 3,000**	(A)

The adverse total mix variance shows an increase in std cost caused by using proportionally more of the more expensive ingredient B.

MATERIAL MIX AND YIELD VARIANCES – EXAMPLE 1

Materials yield variance

7,500 kg input should have yielded (/10kg)	750 units
But did yield	500 units
Yield variance in units	250 units(A)
x standard cost per unit of output	x $60
Yield variance	**$ 15,000(A)**

The adverse yield variance is due to more materials being used then expected to produce 500 units. The revised mix was less productive.

LABOUR MIX AND YIELD VARIANCES

LABOUR MIX VARIANCE:

- Also known as **team composition variance**

- A measure of whether the actual mix of labour grades is cheaper or more expensive than the standard mix

- Calculated in exactly the same way as the materials mix variance.

LABOUR MIX AND YIELD VARIANCES

LABOUR YIELD VARIANCE

- Also known as **team productivity variance**

- Shows how productively people are working

- Calculated in exactly the same way as the materials yield variance.

LABOUR MIX AND YIELD VARIANCES – EXAMPLE 1

A product is produced by a team of labour made up of two different grades. The standard labour cost of one unit of product is as follows:

Labour grade X	4hrs at $20 per hour	$80
Labour grade Y	6hrs at $15 per hour	$90
		$170

Last period, 90 units of the product were produced and the labour cost incurred was as follows:

Labour grade X	340 hrs at $20 per hour	$6,800
Labour grade Y	520 hrs at $15 per hour	$7,800
		$ 14,600

LABOUR MIX AND YIELD VARIANCES – EXAMPLE 1

Calculate the following variances:

1. Labour efficiency variance
2. Labour mix variance
3. Labour yield variance

LABOUR MIX AND YIELD VARIANCES – EXAMPLE 1

Labour efficiency variance:

	Grade X	**Grade Y**	**Total**
90 units should take	360 hrs	540 hrs	
But did take	340 hrs	520 hrs	
Difference	20hrs (F)	20 hrs (F)	
x std rate per hour	$20	$15	
Efficiency variance	$400 (F)	$300 (F)	$700(F)

LABOUR MIX AND YIELD VARIANCES – EXAMPLE 1

Labour mix variance:

	Std mix (hrs)	Actual mix (hrs)	Diff (hrs)		x Std price ($)	Variance ($)	
Grade X (x 4/10)	344	340	4	(F)	$ 20	$ 80	(F)
Grade Y (x 6/10)	516	520	4	(A)	$ 15	$ 60	(A)
	860	**860**	**-**			**$ 20**	**(F)**

Labour yield variance:

860 hrs of should yield (/ 10 hrs)	86 units
But did yield	90 units
Yield variance in units	4 units(F)
x standard cost per unit of output	x $170
Yield variance	$680(F)

CHECK: Mix variance + Yield variance = efficiency variance

$20 (F) + $680 (F) = $700 (F)

8. STANDARD COSTING: FURTHER ASPECTS

- Variance interpretations
- Operating statement
  - Absorption costing
  - Marginal costing

VARIANCE INTERPRETATION

VARIANCE	FAVOURABLE (F)	ADVERSE (A)
Material price	Low quality/Cheap material Unforeseen discounts received Greater care in purchasing	Price increase (inflation, seasonal variations, rush orders) Careless purchasing
Material usage	High quality material More effective use of material Too little material has been used	Defective material Excessive waste Theft Stricker quality control
Labour rate	Use of workers with lower rate of pay than standard	Unexpected overtime working (premium rate) Productivity bonuses Rate increase
Selling price	High selling price	Price reduction

VARIANCE INTERPRETATION

VARIANCE	FAVOURABLE (F)	ADVERSE (A)
Idle time	Could occur if there is budgeted idle time	Machine breakdown Illness or injury to worker Non-availability of material
Labour efficiency	Output produced more quickly than expected due to worker motivation Better quality equipment/materials	Lost time/down time/Rest periods in excess of standard allowed Poor labour productivity due to lack of training Sub-standard materials Shorter batch runs
Overhead expenditure	Either the price component (e.g. salaries) or usage component (number of staff) can vary	

MUST RELATE SUGGESTED CAUSES OF VARIANCE TO THE SPECIFIC INFORMATION GIVEN IN THE QUESTION SCENARIO

VARIANCE INVESTIGATION FACTORS

MATERIALITY: Small variations in single period unlikely to be significant.

CONTROLLABILITY: Nothing can be done internally (i.e. world increase raw material)
Change of plan NOT investigate!

VARIANCE TREND: Trend indicates process in control/not
Take more than 1 period to determine

COST: Cost of investigation vs. benefit

INTERRELATIONSHIP OF VARIANCES: One variance inter-related with another. If variances interrelated, one adverse the other favourable.

INTERRELATED VARIANCES

- Material price and usage variances
- Material price and labour efficiency variances
- Labour rate and efficiency variances
- Labour rate and material usage variances
- Sales price and volume variances
- Materials mix and yield variances

OPERATING STATEMENTS

Report for management, normally prepared on a regular basis showing actual costs and revenues, usually comparing actual with budget and showing variances.

OPERATING STATEMENTS – MARGINAL COSTING

OPERATING STATEMENT (UNDER MARGINAL COSTING)				**$ ' 000**
Budgeted contribution				XXX
Sales volume contribution variance				XXX
Sales price variance				XXX
				XXX
		Favour (F)	**Adverse (A)**	
Cost variances				
Materials	Price	XXX		
	Usage	XXX		
Labour	Rate		XXX	
	Idle time		XXX	
	Efficiency	XXX		
Variable o/h	Expenditure	XXX		
	Efficiency		XXX	**XXX**
Actual contribution				**XXX**
Fixed overheads	Budgeted expenditure		XXX	
	Expenditure variance		XXX	
	Actual expenditure		XXX	(XXX)
Actual profit				**XXX**

OPERATING STATEMENTS – ABSORPTION COSTING

OPERATING STATEMENT (UNDER ABSORPTION COSTING)				**$ ' 000**
Budgeted profit				XXX
Sales volume profit variance				XXX
Sales price variance				XXX
				XXX
		Favour (F)	**Adverse (A)**	
Cost variances				
Materials	Price	XXX		
	Usage	XXX		
Labour	Rate		XXX	
	Idle time		XXX	
	Efficiency	XXX		
Variable o/h	Expenditure	XXX		
	Efficiency			
Fixed overheads	Expenditure	XXX		
	Volume		XXX	**XXX**
Actual profit				**XXX**

OPERATING STATEMENTS – EXAMPLE 1 [CIMA BBP Textbook Ch8 p238]

Sydney manufactures one product, and the entire product is sold as soon as it is produced. There are no opening or closing inventory and work in progress is negligible. The company operates a **standard absorption costing system** and analysis of variance is made every month. The standard cost card for the product, boomerang is as follows:

OPERATING STATEMENTS – EXAMPLE 1

STANDARD COST CARD – BOOMERANG		$
Direct material:	0.5kg at $4/kg	2.00
Direct wages:	2 hrs at $2 p/hr	4.00
Variable overhead:	2 hrs at $0.30 p/hr	0.60
Fixed overhead:	2 hrs at $3.70 p/hr	7.40
STANDARD COST		**14.00**
Standard profit		6.00
STANDARD SELLING PRICE		**20.00**

Selling and admin expenses are not included in the standard cost, and are deducted from profit as a period change.

OPERATING STATEMENTS – EXAMPLE 1

Budgeted output for the month of June 2011 was 5,100 units.

Actual results for June 2011 were as follows:

Production: 4,850 units sold for $95,600
Material consumed in production amounted to 2,300 kgs at total cost of $9,800.
Labour hours paid amounted to 8,500 hrs at a cost $16,800
Actual operating hours amounted to 8,000 hrs
Variable overheads amounted to $2,600
Fixed overheads amounted to $42,300
Selling and admin expenses amounted to $18,000

OPERATING STATEMENTS – EXAMPLE 1

REQUIRED:

Calculate all variances and prepare an operating statement for the month ended 30 June 2011.

OPERATING STATEMENTS – EXAMPLE 1

APPROACH:

Variances

1. Material price variance
2. Material usage variance
3. Labour rate variance
4. Labour efficiency variance
5. Idle time variance
6. Variable overhead expenditure variance
7. Variable overhead efficiency variance
8. Fixed overhead expenditure variance
9. Fixed overhead volume variance
10. Selling price variance
11. Sale volume profit variance ($)

OPERATING STATEMENTS – EXAMPLE 1

1.Material price variance

2,300 kgs should cost (x $4)	$	9,200	
But did cost	$	9,800	
Material price variance	**$**	**600**	(A)

2.Material usage variance

4,850 boomerangs should use (x 0.5kg)		2,425	
But did use		2,300	
Material usage variance in kg		125	(F)
x standard cost per kg		x $4	
Material usage in variance ($)	**$**	**500**	(F)

OPERATING STATEMENTS – EXAMPLE 1

3.Labour rate variance

8,500 hrs of labour cost (x $2)	$ 17,000	
But did cost	$ 16,800	
Labour rate variance	**$ 200**	(F)

4. Labour efficiency variance

4,850 boomerangs should take (x 2hrs)	9,700	
But did take (active hours)	8,000	
Labour efficiency variance (hrs)	1,700	(F)
x standard cost per hr	x $2	
Labour efficiency variance ($)	**$ 3,400**	(F)

OPERATING STATEMENTS – EXAMPLE 1

5.Idle time variance

(8,500 hrs - 8,000 hrs) x $2	**$**	**1,000**	(A)

6.Variable overhead expenditure variance

8,000 hrs incurring variable o/hd should cost (x $0.30)	$	2,400	
But did cost	$	2,600	
Variable overhead expenditure variance	**$**	**200**	(A)

7.Variable overhead efficiency variance

Same as Labour efficiency variance

1,700 hrs (F) x $0.30	**$**	**510**	(F)

OPERATING STATEMENTS – EXAMPLE 1

8. Fixed overhead expenditure variance

Budgeted fixed o/hd (5,100 units x 2hrs x $3.70)	$ 37,740	
Actual fixed overhead	$ 42,300	
Fixed overhead expenditure variance	**$ 4,560**	(A)

9. Fixed overhead volume variance

Actual production at std rate (4,850 x $7.40)	$ 35,890	
Budgeted production at std rate (5,100 x $7.40)	$ 37,740	
Fixed overhead volume variance	**$ 1,850**	(A)

10. Selling price variance

Revenue from 4,850 boomerangs (x $20)	$ 97,000	
But was	$ 95,600	
Selling price variance	**$ 1,400**	(A)

OPERATING STATEMENTS – EXAMPLE 1

11. Sale volume profit variance ($)

Budgeted sales volume	5,100 units	
Actual sales volume	4,850 units	
Sale volume profit variance (units)	250 units	(A)
x standard profit per unit	x $6	
Sale volume profit variance ($)	**$ 1,500**	(A)

OPERATING STATEMENTS – EXAMPLE 1

SYDNEY - OPERATING STATEMENT JUNE 2011			$	
Budgeted profit before sales and administration	(5,100 x $6)		$ 30,600	
Sales volume profit variance			$ 1,500	(A)
Budgeted profit from actual sales			**$ 29,100**	
Selling price variance			$ 1,400	(A)
Actual sales minus the standard cost of sales			**$ 27,700**	
Cost variance	**(F)**	**(A)**		
Material price		$ 600		
Material usage	$ 500			
Labour rate	$ 200			
Labour efficiency	$ 3,400			
Labour idle time		$ 1,000		
Variable overhead expenditure		$ 200		
Variable overhead efficiency	$ 510			
Fixed overhead expenditure		$ 4,560		
Fixed overhead volume		$ 1,850		
	$ 4,610	**$ 8,210**	**$ 3,600**	**(A)**
Actual profit before sales and admin cost			$ 24,100	
Sales and administration cost			$ 18,000	
Actual profit, June 2011			**$ 6,100**	

OPERATING STATEMENTS – EXAMPLE 1

CHECK

Sales		$ 95,600
Material	$ 9,800	
Labour	$ 16,800	
Variable overhead	$ 2,600	
Fixed overhead	$ 42,300	
Sales and administration	$ 18,000	$ 89,500
Actual profit		**$ 6,100**

OPERATING STATEMENTS – EXAMPLE 1 (MARGINAL COSTING)

Two differences in way variances calculated:

1. Fixed cost not absorbed into product costs- no fixed cost variance to explain over/under absorption overheads. **NO fixed overhead volume variance.**
2. **Sales volume variance in units** will be valued at standard contribution margin: **(sales prices per unit – variable cost of sales per unit)**. It will be called the **sales volume contribution variance**

   Sales volume contribution variance: Measure of the effect on contribution of not achieving the budgeted volume of sales

OPERATING STATEMENTS – EXAMPLE 1 (MARGINAL COSTING)

SYDNEY - OPERATING STATEMENT JUNE 2011				$	
Budgeted contribution	(5,100 x [$20-$2-$4-$0.6])		$	68,340	
Sales volume contribution variance	(250 units x $13.40)		$	3,350	**(A)**
Budgeted contribution from actual sales			**$**	**64,990**	
Selling price variance			$	1,400	**(A)**
Actual sales minus the standard cost of sales			**$**	**63,590**	
Cost variance	**(F)**	**(A)**			
Material price		$ 600			
Material usage	$ 500				
Labour rate	$ 200				
Labour efficiency	$ 3,400				
Labour idle time		$ 1,000			
Variable overhead expenditure		$ 200			
Variable overhead efficiency	$ 510				
	$ 4,610	**$ 1,800**	**$**	**2,810**	**(F)**
Actual contribution			$	66,400	
Budgeted fixed production overhead	(5,100 x $7.40)	$ 37,740			
Expenditure variance		$ 4,560			**(A)**
			$	42,300	
Sales and administration cost			$	18,000	
Actual profit, June 2011			**$**	**6,100**	

RECAP 1: VARIANCES & OPERATING STATEMENT

UNISA REVISION PACK 2014:

QUESTION 1 (46 marks; 55 minutes)

Important note: It is unlikely that you will get such a long question in the exam focusing on only one topic, but the question is on an examinable standard and tests very important principles.

Feet Treat (Pty) Ltd. has an online shop. The online shop sells bath mats of two different sizes: small (standard price R200 per mat) and regular (standard price R250 per mat).

Each mat consists of a non-slip rubber base and an upper part of soft fabric.

The company values inventory based on the standard absorption costing method. No finished goods or raw materials inventory is kept, as the online shop uses a JIT system for purchases and production.

Standard variable costs per mat are as follows:

	Small mat	Regular mat
Rubber (R24 per m^2)	R36,00	R48,00
Soft fabric (R15 per m^2)	R27,00	R37,50
Direct labour (Small mat: 15 productive minutes; regular mat: 24 productive minutes)	R20,00	R32,00
Variable manufacturing overheads (allocated based on output units)	R19,00	R24,50

RECAP 1: VARIANCES & OPERATING STATEMENT

UNISA REVISION PACK 2014:

Fixed manufacturing overheads (budgeted at R896 100 for the month) are allocated to products based on productive direct labour hours – the total normal capacity of the 55 factory workers is to work 8 700 productive hours per month.

Assume that there were no non-manufacturing costs involved.

The actual sales for July consisted of 5 000 small mats at R180 each and 20 000 regular mats at R260 each. The small mats used 9 000 m^2 of rubber and 10 000 m^2 of soft fabric, whereas the regular mats used 44 000 m^2 of rubber and 52 000 m^2 of soft fabric.

The standard is to allow 10% idle time, but actual idle time amounted to only 360 of the total of 9 000 hours actually clocked. The small mats used 1 296 of the productive hours actually worked. Labourers were paid R84 per clock hour.

Actual variable manufacturing overheads amounted to R17,50 per small mat and R25 per large mat. Actual fixed manufacturing overheads were R915 840.

RECAP 1: VARIANCES & OPERATING STATEMENT

UNISA REVISION PACK 2014:

The management accountant has compiled the following incomplete and insufficient reconciliation of budgeted and actual profit (the numbers, however, are correct where provided):

(F = Favourable; A = Adverse)

	R
Budgeted profit (based on 24 000 total budgeted sales units in the mix of small mats to regular mats 1:3)	1 635 900
Add/less: Unknown variance(s)	?
Standard profit	1 697 250
Add/less:	?
Material purchase price variance	80 000 (F)
Rubber	106 000 (A)
Soft fabric	186 000 (F)
Other material variances	?
Labour variances	?
Variable manufacturing overhead efficiency variance	0
Other (unknown) variances	?
Actual profit	1 718 660

OPERATING STATEMENTS – EXAMPLE 1 (MARGINAL COSTING)

UNISA REVISION PACK 2014:

REQUIRED

a. Calculate the actual price per m^2 of rubber and per m^2 of soft fabric. (4)
b. Redo the reconciliation of budgeted and actual profit showing all the individual variances that are applicable in as much detail as possible to the extent that information is provided in the question, as well as whether each of them is favourable or adverse. You do not have to split the fixed overhead variances between products. (42)

OPERATING STATEMENTS – EXAMPLE 1 (MARGINAL COSTING)

UNISA REVISION PACK 2014:

QUESTION 1

a. Material purchase price variance = (SP – AP) x AQ purchased

Rubber:

(24 – AP) x (9 000 + 44 000) = -106 000
24 – AP = -106 000 / 53 000
24 – AP = -2
AP = R26 per m^2√√

Soft fabric:

(15 – AP) x (10 000 + 52 000) = 186 000
15 – AP = 186 000 / 62 000
15 – AP = 3
AP = R12 per m^2√√

Note: In this question, materials are bought on a JIT basis and there will therefore be no difference between material quantities purchased and used.

b.

	R
Budgeted profit	1 635 900,00
Add/less: Sales margin volume variance (based on standard profit)	61 350,00(F)
Mix ①	6 812,50(A)
Quantity ④	68 162,50(F)
Standard profit	1 697 250,00
Add/less:	21 410,00
Sales margin price variance	100 000,00(F)
Small mat (180 – 200) x 5 000	100 000,00(A)
Regular mat (260 – 250) x 20 000	200 000,00(F)
Material purchase price variance	80 000,00 (F)
Rubber	106 000,00 (A)
Soft fabric	186 000,00 (F)
Material mix variance	15 273,00(A)
Small mat	3 276,00(A)
Regular mat	11 997,00(A)
Material yield variance	161 727,00(A)
Small mat	47 724,00(A)
Regular mat	114 003,00(A)
Labour rate variance	108 000,00(A)
Small mat	16 200,00(A)
Regular mat	91 800,00(A)
Idle time variance	43 200,00(F)
Small mat	6 480,00(A)
Regular mat	36 720,00(F)
Labour efficiency variance	48 800,00(F)
Small mat	3 680,00(A)
Regular mat	52 480,00(F)
Variable manufacturing overhead expenditure variance	2 500,00(A)
Small mat	7 500,00(F)
Regular mat	10 000,00(A)
Variable manufacturing overhead efficiency variance	0
Fixed overhead expenditure variance	19 740,00(A)
Fixed overhead capacity variance	6 180,00(A)
Fixed overhead efficiency variance	62 830,00(F)
Actual profit	1 718 660,00

RECAP 1: VARIANCES & OPERATING STATEMENT

9. DIVISIONAL FINANCIAL PERFORMANCE MEASURES

- Divisionalization
- Controllability principle
- Return on Investment (ROI)
- Residual Income (RI)

INTRODUCTION

Functional organisational structure:

Groups within the structure are based on similar job functions. Each functional area services each product/service provided by the organisation. **(i.e. Finance/IT/Marketing department; Brands: Hair care; Baby care etc.)**

Divisional organisational structure:

"A decentralized organizational structure in which a firm is split into separate divisions"

Divisions represent unique products, services, customers or geographical locations. Each division has its own functional structure **(i.e. Gauteng region)**

DIVISIONALIZATION

Advantages:

- Improve decision-making (quality & speed)
- Greater freedom for managers = motivation + achieve self-fulfilment

Disadvantages:

- Danger that divisions may compete with each other (lack of harmony in achieving overall organizational goals)

Prerequisites for successful divisionalization:

- Divisions be as independent as possible
- Division should contribute to the success of the company and to each other.

CONTROLLABILITY PRINCIPLE

"Principle that is appropriate to charge to an area of responsibility only those costs that are significantly influenced by the managers of that responsibility centre"

How do you split between controllable and uncontrollable?

- Accountable for performance areas you want them to pay attention to (Merchant & Van der Stede)

GUIDELINE FOR APPLYING THE CONTROLLABILITY PRICINCIPLE

1. If a manager ***can control the quantity and price paid*** for a service then the manager is responsible for the expenditure
2. If the manager ***can control the quantity of the service but not the price paid*** for the service then only the amount of difference between actual and budgeted expenditure
3. If manager ***cannot control either the quantity or the price paid*** for service then the expenditure is uncontrollable and should not be identified with the manager

~ American Accounting Association in the United States (1957)

RELATIVE FINANCIAL MEASURES OF DIVISIONAL PERFORMANCE

- **Return on Investment (ROI) =**

$$\frac{\textit{Average Controllable profit}}{\textit{Average Controllable investments}}$$

- **Residual Income (RI) =**

Controllable profit – Cost of Capital of controllable investments

RECAP 1: DIVISIONALIZATION

UNISA REVISION PACK 2014:

QUESTION 3 (13 marks; 16 minutes)

Summary financial statements are given below for one division of a large divisionalised company.

Summary divisional financial statements for the year ended 31 December 2014

	Balance sheet *R '000*		*Income statement* *R '000*
Non-current assets	1 500	Revenue	4 000
Current assets	600	Operating costs	3 600
Total assets	2 100	Operating profit	400
		Interest paid	70
Divisional equity	1 000	Profit before tax	330
Long-term borrowings	700		
Current liabilities	400		
Total equity and liabilities	2 100		

The cost of capital for the division is estimated at 12% each year.
Annual rate of interest on the long term loans is 10%.
Each division may use their own discretion on how they borrow money.

RECAP 1: DIVISIONALIZATION

UNISA REVISION PACK 2014:

REQUIRED

a. Calculate the divisional Return on Investment (ROI) for the year ended 31 December 2014. (2)
b. Calculate the divisional Residual Income (RI) for the year ended 31 December 2014. (2)
c. State which method of performance evaluation (i.e. ROI or RI) would be more useful when comparing divisional performance and why (2)
d. Evaluate whether the following statements are true/false:
i. If head office expenses are allocated to the divisions based on gross income, they should be excluded from the controllable profit calculation. (1)
ii. Employment equity statistics of the respective divisions should be ignored when assessing the performance of the divisions (1)
iii. Divisional profit contribution is the controllable profit, less any non- controllable expenses that are attributable to a division, and which would be avoidable if the division was closed. (1)
e. Explain the difference between managerial and economical performance and state whether it includes controllable and/or non-controllable items. (4)

[CIMA Adapted]

RECAP 1: DIVSIONALIZATION

UNISA REVISION PACK 2014:

a. Return on investment (ROI)

ROI = controllable 'operating' profit / controllable investment
= R400 000 / R1 700 000
= 23,53% √√

b. Residual income (RI)

RI = Controllable profit less cost of capital of controllable investment
= R400 000 – (R1 700 000 x 12%)
= R400 000 – R204 000
= R196 000 √√

c. Return on investment would be the better measure√ when comparing divisions as it is a relative measure√ (i.e. based on percentage returns) (Drury 2012:749)

or

To overcome some of the dysfunctional consequences of ROI, the residual income approach can be used…√
…Residual income suffers from the disadvantages of being an absolute measure, which means that it is difficult to compare the performance of a division with that of other divisions…√ (Drury 2012:491)

RECAP 1: DIVISIONALIZATION

UNISA REVISION PACK 2014:

d.i. **True** - The divisions cannot control these costs; therefore it should be excluded. √

d.ii. **False** - Non-financial performance measures (which might influence the long-term sustainability of the business) should also be considered. √

d.iii. **True** – Refer to key terms and concepts on page 500 of Drury 8th Edition. √ or page 488 of Drury 8th Edition.

e. The term **managerial performance** is used to refer to assessing the performance of the manager (person) at the profit centre and investment centre level in the organisation. √

The performance measure should only include controllable items. √

The term **economic performance** is used to refer to the performance of the division in comparison to other divisions in the organisation and those of competitors. √

It might include non-controllable and allocated costs. √

(TL501 2014:145) also see Drury 8th Edition page 488, 489 and 498.

10. ADVANCED DECISION-MAKING SCENARIOS

- Relevant costs
- Guidelines – relevance
- Limiting factor analysis

RELEVANT COSTS

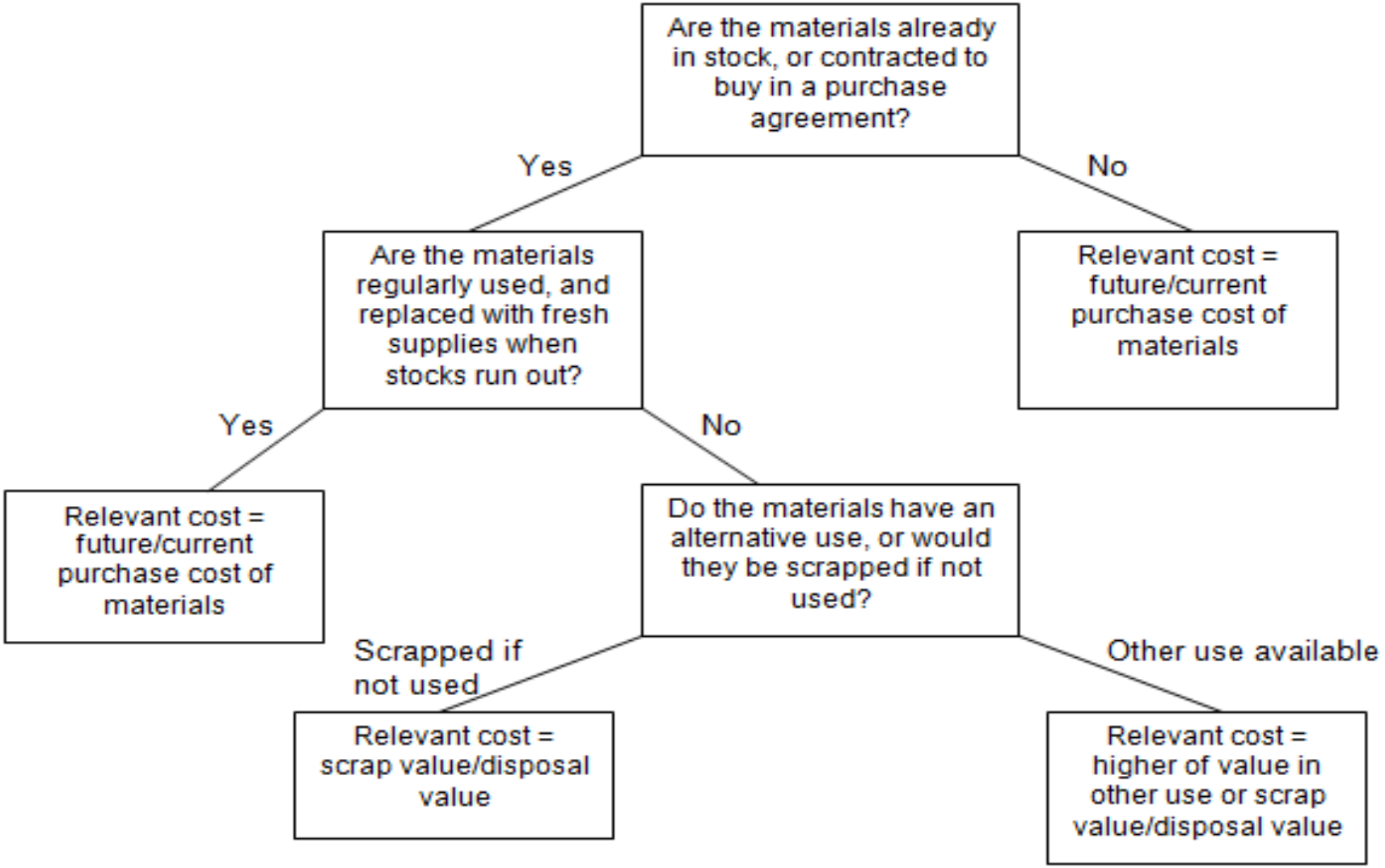
- ***Relevant cost or benefit*** - is a **future cash flow** arising or changing as a **direct consequence of the decision under review**.
- Costs and benefits that are ***independent*** of a decision are not relevant and need not be considered when making the decision. Only **differential or incremental cash flows** should be taken into account.
- Cash flows that will be the **same for all alternatives** are irrelevant.
- **Sunk costs** are cash flows that have **already been incurred** and are ***irrelevant*** for decision-making.
- The total relevant cost of production is usually the variable cost per unit multiplied by the additional units produced plus (or minus) any change in the total expenditure on fixed costs.
- ***Committed costs*** cannot be relevant to a decision that a manager is making now to improve or maximise profits.
- **Fixed Costs** are irrelevant costs (Except for such costs as incremental and divisible fixed costs)
- **Total Variable Costs:** Variable costs are often considered as relevant costs. Committed variable costs are nevertheless irrelevant to decision making.

GUIDELINES - RELEVANCE

Material

Purchased in the past	• Sunk cost
Ordered or received, not yet paid	• Sunk cost (already committed to pay), unless able to return the goods to the supplier
No other use at present	• No value (0)
Could be sold directly	• Net realisable value
May be used on another job	• Lost contribution (opportunity cost)
Frequently used	• Replacement cost
Used as a substitute	• Cost saved by not having to purchase other material
Must otherwise be disposed of	• Opportunity saving

GUIDELINES - RELEVANCE



GUIDELINES - RELEVANCE

Labour

Salaried labourers:

- Already working at business = No cost
- Work overtime = Overtime cost

Additional labourers / wage workers:

- Employ additional labourers = Basic pay
- New labourers work overtime = Basic pay plus overtime
- Specialised labour (scarce) = Opportunity cost of projects sacrificed

The relevant cost of using machines:

- Once a machine has been bought its cost is a **sunk** cost.
- **Depreciation** is not a relevant cost, because it is not a cash flow.
- However, **using** machinery may involve some incremental costs.
- These costs might be referred to as **user costs** and they include hire charges and any fall in resale value of owned assets, through use

RECAP 1: RELEVANT COSTING

UNISA REVISION PACK 2014:

QUESTION 8 (12 marks; 14 minutes)

Tazz (Pty) Ltd is a civil engineering and construction company based in Centurion. The company is considering tendering for a short term local municipality project to construct five small pedestrian bridges. The chief engineer has approached you as the management accountant of the company regarding this project with the following information:

1. Each bridge requires material A and material B. Material A is in stock and costs R10 000 per bridge. Material B will have to be sourced at a cost of R12 000 per bridge. Both material A and material B are regularly used by the company.

2. Each bridge requires 10 hours of type A and 6 hours of type B. Direct labour cost is R3 000 per hour for labour type A and R1 000 for labour type B. Casual labourers will be employed for the duration of the project. Due to staff shortages the company will also have to hire an architect at a cost of R10 000 to do the drawings of bridges for this project.

3. Administrative expenses for the entire project will be R10 000. General overheads of R8 000 will be allocated to the project.

4. The company will have to hire additional machinery and equipment for the project at a cost of R30 000. The company's own machinery and equipment was bought last year at a cost of R3million.

5. A competitor has tendered for this project at R115 000 per bridge.

6. The company use a cost plus pricing policy. Prices are set at total cost plus 10%.

RECAP 1: RELEVANT COSTING

UNISA REVISION PACK 2014:

REQUIRED:

(a) Calculate the selling price per bridge for the project and give reasons for the amounts excluded. (10)

(b) What other factors should the chief engineer consider before tendering for the project? (2)

RECAP 1: RELEVANT COSTING

UNISA REVISION PACK 2014:

(a) Price per unit			
Material A	R10 000	√	- Must be replaced
Material B	R12 000	√	- Must be replaced
Direct labour type A (R3 000 x 10 hours)	R30 000	√	- Direct project cost
Direct labour type B (R1 000 x 6 hours)	R6 000	√	- Direct project cost
Architect	R2 000	√	- Direct project cost
(R10 000 / 5 = R2 000 per bridge)			
Administrative expenses	R2 000	√	- Direct project cost
(R10 000 / 5 = R2 000 per bridge)			
General overheads – not direct project cost	-	√	- Allocated arbitrarily
Machinery and equipment hire	R6 000	√	- Direct project cost
(R30 000 / 5 = R6 000 per bridge)			
Own machinery and equipment	-	√	- Irrelevant as it is sunk cost
Total cost	**R68 000**		
Add mark-up (R68 000 x 10%)	**R6 800**		
Price per bridge	**R74 800**	√	

LIMITING FACTOR ANALYSIS

- A **key factor** or **limiting** factor is a scarce resource which limits the activity of an organization.

- If **sales demand** is the factor which **restricts greater production output, profit will be maximized by making exactly the amount required for sales** (and no more) **provided that each product sold earns a positive contribution.**

- If **labour supply, materials availability, machine capacity or cash availability limits production** to less than the volume which could be sold, management is faced with the **problem of deciding what to produce** and what should not be produced because there are insufficient resources to make everything.

- The **limiting factor decision** therefore **involves the determination of the contribution earned by each different product per unit of limiting factor.** In limiting factor decisions, we generally **assume that fixed costs are the same whatever production mix is selected,** so that the **only relevant costs are variable costs.**

LIMITING FACTOR ANALYSIS

STEPS TO FOLLOW:

1. Confirm the limiting factor is something other than sales demand

2. Identify the contribution earned by each product per unit of scarce resource

3. Work out the budgeted production and sales

RECAP 1 : LIMITING FACTOR ANALYSIS

Harvey Ltd is currently preparing its budget for the year ending 30 September 20X2. The company manufactures and sells three products, Beta, Delta and Gamma.

The unit selling price and cost structure of each product is budgeted as follows:

	Beta	***Delta***	***Gamma***
	R	***R***	***R***
Selling price	100	124	32
Variable costs:			
Labour	24	48	6
Materials	26	7	8
Overhead	10	5	6
	60	60	20
Contribution per unit	40	64	12

RECAP 1 : LIMITING FACTOR ANALYSIS

Direct labour rate is budgeted at R6 per hour, and fixed costs at R1 300 000 per annum. The company has a maximum production capacity of 228 000 direct labour hours.

A meeting of the board of directors has been convened to discuss the budget and to resolve the problem as to the quantity of each product which should be made and sold. The sales director presented the results of a recent market survey which reveals that market demand for the company's products will be as follows:

Product	***Units***
Beta	24 000
Delta	12 000
Gamma	60 000

The production director proposes that since Gamma only contributes R12 per unit, the product should no longer be produced, and the surplus capacity transferred to produce additional quantities of Beta and Delta. The sales director does not agree with the proposal. Gamma is considered necessary to complement the product range and to maintain customer goodwill. If Gamma is not offered, the sales director believes that sales of Beta and Delta will be seriously affected. After further discussion the board decided that a minimum of 10 000 units of each product should be produced. The remaining production capacity would then be allocated so as to achieve the maximum profit possible.

RECAP 1 : LIMITING FACTOR ANALYSIS

REQUIRED

Prepare a budget statement which clearly shows the maximum profit which could be achieved in the year ending 30 September 20X2.

RECAP 1 : LIMITING FACTOR ANALYSIS

Step 1. **Ascertain whether labour hours are a scarce resource.**

	Units demanded	***Labour hours per unit***	***Total labour hours***
Beta	24 000	4 (R24/R6)	96 000
Delta	12 000	8 (R48/R6)	96 000
Gamma	60 000	1 (R 6/R6)	60 000
			252 000

Step 2. **Rank the products.**

Since only 228 000 hours are available we need to establish which product earns the greatest contribution per labour hour.

	Beta	***Delta***	***Gamma***
Contribution	40	64	12
Labour hours	4	8	1
Contribution per labour hour	R10	R8	R12
Ranking	2nd	3rd	1st

RECAP 1 : LIMITING FACTOR ANALYSIS

Step 3. **Determine a production plan.**

The optimum production plan must take into account the requirement that 10 000 units of each product are produced, and then allocate the remaining hours according to the above ranking.

		Hours
Beta	10 000 units x 4 hours	40 000
Delta	10 000 units x 8 hours	80 000
Gamma	10 000 units x 1 hour	10 000
		130 000
Gamma	50 000 units x 1 hour (full	50 000
Beta	demand)	48 000
	12 000 units x 4 hours (balance)	228 000

Step 4. **Draw up a budget.**

BUDGET STATEMENT

	R
Contribution	
Beta (22 000 units x R40)	880 000
Delta (10 000 units x R64)	640 000
Gamma (60 000 units x R12)	720 000
	2 240 000
Fixed costs	1 300 000
Profit	940 000