Limerick BATAI

Accounting
Revision Seminar

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Production Budget

Question 9

Presented by

Jason Ryan

YouTube https://www.youtube.com/jasonryanteach
Twitter @JasonRyanTeach
Website mrryanaccounting.weebly.com
mrryanjcb.weebly.com
businesshfc.weebly.com

PAST TOPIC - QUESTION 9

	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008
Cash Budget	2023			Yes				Yes	Yes		Yes	Yes		Yes	Yes	
Production Budgets		Yes			Yes		Yes			Yes			Yes			Yes
Flexible Budgets			Yes			Yes								Yes		

Additional Resources

Remember it is important to complete questions for

1. Production budget and
2. Cash budget

Please click the link to get access to additional resource

Theory – Flexible budget

Past exam questions – production budget

Theory – Production budgets

Past exam question – Cash Budgets

Theory – Cash Budgets

2020 – Question 9 – Houghton Ltd

PART A

Part A is asking you to calculate

(i) Separate production overheads to fixed and variable elements

(ii) Separate other overheads to fixed and variable elements

(iii) Prepare a flexible budget for 90% activity level using marginal costing principles and shoe the contribution

Marginal Costing Principles				
1	Sales		x	Calculation as per question
	Less Variable Costs			Calculation as per question
2	Production Overheads	x		Calculation as per part (i)
3	Other Overhead	(+) x		Calculation as per part (ii)
4	Direct materials	(+) x		Need to calculate (Knowledge)
5	Direct wages	(+) x	(x)	Need to calculate (Knowledge)
	Contribution		x	Sales – Variable Costs
	Fixed Costs			
6	Administration	x		Given in question
7	Production Overheads	(+) x		Calculation as per part (i)
8	Other Overheads	(+) x	(x)	Calculation as per part (ii)
	Profit		x	Contribution – Fixed Costs

Separate production overheads to fixed and variable elements

There are two parts to this question

1. You need to find the variable costs and
2. You need to find the fixed coats

Variable costs

To calculate the variable costs

1. use the template below
2. And to get the variable cost per unit figure divide the € by the units

Exam Tip
When calculate the variable cost always use this layout

	Units	**€**
High	x	x
Low	(-) x	(-) x
Difference	x	x

€
Units

€0.00	Variable Cost per Unit

Step 1

The figures that we use from the question will be

Output Levels	**55%**	**75%**	**95%**
Units	27,500	37,500	47,500
Costs	**€**	**€**	**€**
Production overheads	129,000	173,000	217,000

Taken from the question

We use the High / Low method to calculate the Variable Costs Per Unit

1. We take the high figure for the units and take away the low figure and take the high figure for the costs and take away the low figure.
2. From the figures we calculate in 1 above we divide the cost by the units to get the Variable Cost Per Unit

	Units	€
High	47,500	217,000
Low	(-) 27,500	(-) 129,000
Difference	20,000	88,000

20,000
88,000

€4.40	Variable Cost per Unit

Fixed Costs

To calculate the variable costs

1. use the template below
2. You should get the same fixed costs for high and low because they are fixed (the same)

Exam Tip
When calculate the fixed cost always use this layout

Units	High	Low
Total Costs	x	x
Less VC	(-) x	(-) x
Fixed Costs	x	x

Remember

Total cost = Variable Cost + Fixed Costs

Step 2

The figures that we use from the question will be

Output Levels	**55%**	**75%**	**95%**
Units	27,500	37,500	47,500
Costs	**€**	**€**	**€**
Production overheads	129,000	173,000	217,000

Taken from the question

1. As we have the Total Cost in the question, we can calculate the Variable Cost Per Unit by taken the units is the question and multiply them by the Variable Cost Per Unit Figure (Which is calculated above.)
2. We can then take these two figures away from each other to get the Fixed Cost Figure.
3. We do it twice as a check to make sure we calculate the figure correct. These 2 figures should be the same as they are fixed costs

Step 1

Variable cost per unit

27,500 x 4.40	47,500 x 4.40
121,000	209,000

Remember

1. 27,500 and 47,500 are the units given in the question
2. €4.40 is the variable cost per unit calculated above

Step 2

Units	47,500	27,500
Total Costs	217,000	129,000
Less VC	209,000	121,000
Fixed Costs	8,000	8,000

Step 3

€8,000	Fixed Costs

Tutorial Video

Separate other overhead costs into fixed and variable elements.

NOTE – this is the same process as Part A (i) – use the same steps and templates

Variable Costs

To calculate the variable costs

1. use the template below
2. And to get the variable cost per unit figure divide the € by the units

Exam Tip
When calculate the variable cost always use this layout

	Units	**€**
High	x	x
Low	(-) x	(-) x
Difference	x	x

€
Units

€0.00	Variable Cost per Unit

Step 1

The figures that we use from the question will be

Output Levels	**55%**	**75%**	**95%**
Units	27,500	37,500	47,500
Costs	**€**	**€**	**€**
Production overheads	150,875	203,375	255,875

Taken from the question

We use the High / Low method to calculate the Variable Costs Per Unit

1. We take the high figure for the units and take away the low figure and take the high figure for the costs and take away the low figure.
2. From the figures we calculate in 1 above we divide the cost by the units to get the Variable Cost Per Unit

	Units	€
High	47,500	255,875
Low	(-) 27,500	(-) 150,875
Difference	20,000	105,000

20,000
105,000

€5.25	Variable Cost per Unit

Fixed Costs

To calculate the variable costs

1. use the template below
2. You should get the same fixed costs for high and low because they are fixed (the same)

Exam Tip
When calculate the fixed cost always use this layout

Units	High	Low
Total Costs	x	x
Less VC	(-) x	(-) x
Fixed Costs	x	x

Remember

Total cost = Variable Cost + Fixed Costs

Step 2

The figures that we use from the question will be

Output Levels	**55%**	**75%**	**95%**
Units	27,500	37,500	47,500
Costs	**€**	**€**	**€**
Production overheads	150,875	203,375	255,875

Taken from the question

1. As we have the Total Cost in the question, we can calculate the Variable Cost Per Unit by taken the units is the question and multiply them by the Variable Cost Per Unit Figure (Which is calculated above.)
2. We can then take these two figures away from each other to get the Fixed Cost Figure.
3. We do it twice as a check to make sure we calculate the figure correct. These 2 figures should be the same as they are fixed costs

Step 1

Variable cost per unit

27,500 x 5.25	47,500 x 5.25
144,375	249,375

Remember

1. 27,500 and 47,500 are the units given in the question
2. €5.25 is the variable cost per unit calculated above

Step 2

Units	47,500	27,500
Total Costs	255,875	150,875
Less VC	249,375	144,375
Fixed Costs	6,500	6,500

Step 3

€6,500	Fixed Costs

Tutorial Video

Prepare a flexible budget for 90% activity level using marginal costing principles, and show the contribution

The marginal costing principles layout is shown below but there are a few calculate that we have to do first before we prepare the statement. These calculate include

1. Calculate how many units will be produced at 90% activity
2. Calculate VCPU and full figure for Direct Materials (Full figure = Units x VCPU)
3. Calculate VCPU and full figure for Direct Wage (Full figure = Units x VCPU)
4. Calculate the full figure for Production OH. Remember the VCPU has been calculate already in Part a (i) (Full figure = Units x VCPU)
5. Calculate the full figure for Other OH. Remember the VCPU has been calculate already in Part a (ii) (Full figure = Units x VCPU)
6. Production Overhead Fixed cost has been calculate in Part a (i)
7. Other Overhead Fixed cost has been calculate in Part a (ii)
8. Administration Overhead Fixed cost is given in the question so it the same (€38,500)

Sales		x
Less Variable Costs		
Direct Materials	x	
Direct Wage/labour	(+) x	
Production Overheads	(+) x	
Other Overheads	(+) x	(-) x
Contribution		x
Less Fixed Costs		
Production Overheads	x	
Other Overheads	(+) x	
Administration Overheads	(+) x	(-) x
Profit		x

Remember the cost classification are as follows

Fixed Costs administration overheads

Variable Costs Direct Labour and Direct Materials

Mixed Costs Production Overheads and Other Overheads costs

1. Calculate how many units will be produced at 90% activity

95% = 47,500 Units

1% = 47,500 / 95

= 500

90% = 500 * 90

= 45,000 Units

At 90% activity the business will product 45,000 units

2. Calculate VCPU and full figure for Direct Materials (Full figure = Units x VCPU)

The figures that we use from the question will be

Output Levels	**55%**	**75%**	**95%**
Units	27,500	37,500	47,500
Costs	**€**	**€**	**€**
Direct Materials	151,200	206,250	261,250

Taken from the question

Units	**High**	**Low**
Total Costs	47,500	261,250
Less VC	(-) 27,500	(-) 151,200
Fixed Costs	20,000	110,000

20,000
110,000

€5.55	Variable Cost per Unit

Full Figure

45,000 Units x €5.55 Variable Cost Per Unit = **€247,500**

Exam Tip
This figure can be calculated on the marginal costing statement

Remember

45,000 units is the 90% capacity calculated in 1 above

€5.55 is the VCPU calculated in part 2 above

3. Calculate VCPU and full figure for Direct Wages (Full figure = Units x VCPU)

The figures that we use from the question will be

Output Levels	**55%**	**75%**	**95%**
Units	27,500	37,500	47,500
Costs	**€**	**€**	**€**
Direct Wage	184,250	251,250	318,250

Taken from the question

Units	**High**	**Low**
Total Costs	47,500	318,250
Less VC	(-) 27,500	(-) 184,250
Fixed Costs	20,000	134,000

20,000
134,000

€6.70	Variable Cost per Unit

Full Figure

45,000 Units x €6.70 Variable Cost Per Unit = **€301,500**

Exam Tip
This figure can be calculated on the marginal costing statement

Remember

45,000 units is the 90% capacity calculated in 1 above

€5.55 is the VCPU calculated in part 3 above

4. Calculate the full figure for Production OH.

45,000 Units x €4.40 Variable Cost Per Unit = **€198,500**

Exam Tip
This figure can be calculated on the marginal costing statement

Remember

Variable Cost Per Unit of €4.40 has been calculate in part A (i)

5. Calculate the full figure for Other OH.

45,000 Units x €5.25 Variable Cost Per Unit = **€236,250**

Exam Tip
This figure can be calculated on the marginal costing statement

Remember

Variable Cost Per Unit of €5.25 has been calculate in part A (ii)

6. Production Overhead Fixed cost

This figure has been calculate in Part a (i) and is €8,000

7. Other Overhead Fixed cost has been calculate in Part a (ii)

This figure has been calculate in Part a (ii) 6,500

8. Administration Overhead

This is a fixed cost as it is the same for each percentage activity of €38,500

Output Levels	**55%**	**75%**	**95%**
Units	27,500	37,500	47,500
Costs	**€**	**€**	**€**
Administration Overheads	38,500	38,500	38,500

Now you can prepare a flexible budget for 90% activity level using marginal costing principles, and show the contribution

Sales		x	**Workings**
Less Variable Costs			
Direct Materials	247,500		45,000 * 5.55
Direct Wage/labour	(+) 301,500		45,000 * 6.70
Production Overheads	(+) 198,000		45,000 * 4.40
Other Overheads	(+) 236,250	(-) 983,250	45,000 * 5.25
Contribution		x	
Less Fixed Costs			
Production Overheads	8,000		As per the Q
Other Overheads	(+) 6,500		See part A (i)
Administration Overheads	(+) 38,500	(-) 53,000	See part A (ii)
Profit		x	

To find the sales figure

The sales figure is 100%. It says in the question that profit is budgeted to be 20% of all sale.

'Profit is budgeted to be 20% of sales. All units produced are sold.'

This means that the total variable costs + total Fixed cost are equal to 80%

80% = 983,250 + 53,000

80% = 1,036,250

= 1,036,250 / 80

= 12,953.125

100% = 12,953.125 * 100

= 1,295,312.50

Sales		1,295,312.50	**Workings**
Less Variable Costs			
Direct Materials	247,500		45,000 * 5.55
Direct Wage/labour	(+) 301,500		45,000 * 6.70
Production Overheads	(+) 198,000		45,000 * 4.40
Other Overheads	(+) 236,250	(-) 983,250	45,000 * 5.25
Contribution		x	
Less Fixed Costs			
Production Overheads	8,000		
Other Overheads	(+) 6,500		
Administration Overheads	(+) 38,500	(-) 53,000	
Profit		x	

Now we can calculate the contribution. Remember contribution is sales less variable costs. Contribution is a crucial metric because it represents the portion of sales revenue that contributes towards covering the fixed costs and generating profits.

Sales		1,295,312.50	**Workings**
Less Variable Costs			
Direct Materials	247,500		45,000 * 5.55
Direct Wage/labour	(+) 301,500		45,000 * 6.70
Production Overheads	(+) 198,000		45,000 * 4.40
Other Overheads	(+) 236,250	(-) 983,250	45,000 * 5.25
Contribution		312,062.50	
Less Fixed Costs			
Production Overheads	8,000		
Other Overheads	(+) 6,500		
Administration Overheads	(+) 38,500	(-) 53,000	
Profit		x	

Now we can calculate the profit which is contribution less fixed costs

Sales		1,295,312.50	**Workings**
Less Variable Costs			
Direct Materials	247,500		45,000 * 5.55
Direct Wage/labour	(+) 301,500		45,000 * 6.70
Production Overheads	(+) 198,000		45,000 * 4.40
Other Overheads	(+) 236,250	(-) 983,250	45,000 * 5.25
Contribution		312,062.50	
Less Fixed Costs			
Production Overheads	8,000		
Other Overheads	(+) 6,500		
Administration Overheads	(+) 38,500	(-) 53,000	
Profit		259,062.50	

Tutorial Video

Part B – Option 1 (i)

Option one says 2 things

1. This will involve employing one new production supervisor at a cost of €40,000.
2. This will save €1.40 per unit in the production overheads.

This means

1. The new production supervisor is a fixed cost as they will receive €40,000. This means the production fixed cost will change to €40,000
2. As the €1.40 is a saving it will reduce the variable production overhead by €1.40

As we have the Marginal Costing statement already completed, we just need to make changes in line with the scenario above.

But first we need to find out how many units will be produced at 100% capacity as per the question

95% = 47,500
= 47,500 / 95
= 500
100% = 500 * 100
= 50,000

Sales		x	**Workings**
Less Variable Costs			
Direct Materials	275,000		50,000 * 5.55
Direct Wage/labour	(+) 335,000		50,000 * 6.70
Production Overheads	(+) 150,000		50,000 * 3.00 (4.40 – 1.40)
Other Overheads	(+) 262,500	(-) 1,022,500	50,000 * 5.25
Contribution		x	
Less Fixed Costs			
Production Overheads	40,000		
Other Overheads	(+) 6,500		
Administration Overheads	(+) 38,500	(-) 93,000	
Profit		x	

To find the sales figure

The sales figure is 100%. It says in the question that profit is budgeted to be 20% of all sale.

'Profit is budgeted to be 20% of sales. All units produced are sold.'

This means that the total variable costs + total Fixed cost are equal to 80%

80% = 1,022,550 + 93,000

80% = 1,115,500

= 1,115,500/ 80

= 13,943.75

100% = 13,943.75 * 100

= 1,394,375

Sales		1,394,375	**Workings**
Less Variable Costs			
Direct Materials	275,000		50,000 * 5.55
Direct Wage/labour	(+) 335,000		50,000 * 6.70
Production Overheads	(+) 150,000		50,000 * 3.00 (4.40 – 1.40)
Other Overheads	(+) 262,500	(-) 1,022,500	50,000 * 5.25
Contribution		x	
Less Fixed Costs			
Production Overheads	40,000		
Other Overheads	(+) 6,500		
Administration Overheads	(+) 38,500	(-) 93,000	
Profit		x	

Now we can calculate the contribution. Remember contribution is sales less variable costs. Contribution is a crucial metric because it represents the portion of sales revenue that contributes towards covering the fixed costs and generating profits.

Sales		1,394,375	**Workings**
Less Variable Costs			
Direct Materials	275,000		50,000 * 5.55
Direct Wage/labour	(+) 335,000		50,000 * 6.70
Production Overheads	(+) 150,000		50,000 * 3.00 (4.40 – 1.40)
Other Overheads	(+) 262,500	(-) 1,022,500	50,000 * 5.25
Contribution		371,875	
Less Fixed Costs			
Production Overheads	40,000		
Other Overheads	(+) 6,500		
Administration Overheads	(+) 38,500	(-) 93,000	
Profit		x	

Now we can calculate the profit which is contribution less fixed costs

Sales		1,394,375	**Workings**
Less Variable Costs			
Direct Materials	275,000		50,000 * 5.55
Direct Wage/labour	(+) 335,000		50,000 * 6.70
Production Overheads	(+) 150,000		50,000 * 3.00 (4.40 – 1.40)
Other Overheads	(+) 262,500	(-) 1,022,500	50,000 * 5.25
Contribution		371,875	
Less Fixed Costs			
Production Overheads	40,000		
Other Overheads	(+) 6,500		
Administration Overheads	(+) 38,500	(-) 93,000	
Profit		278,875	

Tutorial Video

Part B – Option 2 (i)

Option one says 2 things

1. Purchase of machinery which would increase the plant's capacity by 15% while
2. reducing all fixed overheads (including administration) by 5%.

This means

1. We have to find out how many units will be produced at 115%
2. Then Reduce all Fixed Overhead by 5%

As we have the Marginal Costing statement already completed, we just need to make changes in line with the scenario above.

But first we need to find out how many units will be produced at 100% capacity as per the question

100% = 50,000
= 50,000 / 100
= 500
115% = 500 * 115
= 57,500

Sales		x	**Workings**
Less Variable Costs			
Direct Materials	316,250		57,500 * 5.55
Direct Wage/labour	(+) 385,250		57,500 * 6.70
Production Overheads	(+) 253,000		57,500 * 4.40
Other Overheads	(+) 301,875	(-) 1,256,375	57,500 * 5.25
Contribution		x	
Less Fixed Costs			
Production Overheads	7,600		8,000 * 95%
Other Overheads	(+) 6,175		6,500 * 95%
Administration Overheads	(+) 36,575	(-) 50,350	38,500 * 95%
Profit		x	

To find the sales figure

The sales figure is 100%. It says in the question that profit is budgeted to be 20% of all sale.

'Profit is budgeted to be 20% of sales. All units produced are sold.'

This means that the total variable costs + total Fixed cost are equal to 80%

80% = 1,256,375 + 50,350

80% = 1,306,725

= 1,306,725/ 80

= 16,334.0625

100% = 16,334.06 * 100

= 1,633,406.25

Sales		1,633,406.25	**Workings**
Less Variable Costs			
Direct Materials	316,250		57,500 * 5.55
Direct Wage/labour	(+) 385,250		57,500 * 6.70
Production Overheads	(+) 253,000		57,500 * 4.40
Other Overheads	(+) 301,875	(-) 1,256,375	57,500 * 5.25
Contribution		x	
Less Fixed Costs			
Production Overheads	7,600		8,000 * 95%
Other Overheads	(+) 6,175		6,500 * 95%
Administration Overheads	(+) 36,575	(-) 50,350	38,500 * 95%
Profit		x	

Now we can calculate the contribution. Remember contribution is sales less variable costs. Contribution is a crucial metric because it represents the portion of sales revenue that contributes towards covering the fixed costs and generating profits.

Sales		1,633,406.25	**Workings**
Less Variable Costs			
Direct Materials	316,250		57,500 * 5.55
Direct Wage/labour	(+) 385,250		57,500 * 6.70
Production Overheads	(+) 253,000		57,500 * 4.40
Other Overheads	(+) 301,875	(-) 1,256,375	57,500 * 5.25
Contribution		377,031.25	
Less Fixed Costs			
Production Overheads	7,600		8,000 * 95%
Other Overheads	(+) 6,175		6,500 * 95%
Administration Overheads	(+) 36,575	(-) 50,350	38,500 * 95%
Profit		x	

Now we can calculate the profit which is contribution less fixed costs

Sales		1,633,406.25	**Workings**
Less Variable Costs			
Direct Materials	316,250		57,500 * 5.55
Direct Wage/labour	(+) 385,250		57,500 * 6.70
Production Overheads	(+) 253,000		57,500 * 4.40
Other Overheads	(+) 301,875	(-) 1,256,375	57,500 * 5.25
Contribution		377,031.25	
Less Fixed Costs			
Production Overheads	7,600		8,000 * 95%
Other Overheads	(+) 6,175		6,500 * 95%
Administration Overheads	(+) 36,575	(-) 50,350	38,500 * 95%
Profit		326,681.25	

Tutorial Video

Part B – Option 2 (ii)

Choose option 2 because the profit is €47,806.25 higher than in option 1.

Part C – Theory

(c) (i) What is meant by the term sensitivity analysis.

1. Sensitivity Analysis is also known as 'what if' analysis. It is a technique used by management accountants to show the effect on profit brought about by changes in the following:
    1. Selling price
    2. Sales volume
    3. Variable costs
    4. Fixed costs

The examples in part (b) of the question are examples of sensitivity analysis.

(ii) Outline why Henry Ltd would prepare a flexible budget.

1. To show management the cost levels at different levels of production. It is misleading to compare the budgeted costs at one level of activity with the actual costs at a different level of activity.
2. To compare actual costs and budgeted costs at the same level of activity, in order to d etermine if actual costs exceeded or were less than budgeted costs.
3. To compare budgeted costs and actual costs in order to identify variances. This allows corrective action to be taken.
4. To help in controlling costs or planning production levels.

Tutorial Video