

INFO 7225

MODULE 2

Managerial Accounting
(7. Budgeting)

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1,000



LEARNING OBJECTIVES

After completing this session, you should be able to

- Describe how and why managers prepare and use budgets;
- Understand the basic process companies use to create budgets and the general composition of basic budgets that are summed up in a master budget;
- Prepare operating budgets;
- Prepare financial budgets;
- Develop a standard cost;
- Compute and evaluate materials variances.

Reading Assignments

- Read chapter 7, sections 1, 2, and 5
- Think about the following questions as you read chapter 7:
 - What are the advantages to budgeting?
 - What are the differences between top-down and bottom-up approach to budgeting?
 - What are the differences between traditional budgeting process and zero-based budgeting process?
 - What are the differences between a static budget and a flexible budget?
 - How are operating budgets and financial budgets related within a master budget?

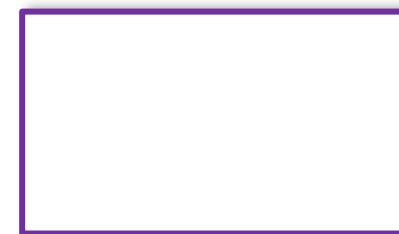
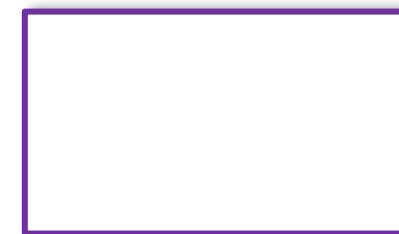
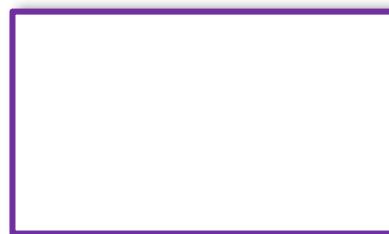
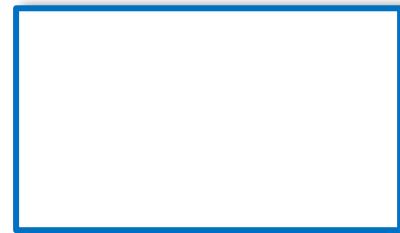
INTRODUCTION

- The master budget has two major categories:
 - 1) The **operating budget** assists in planning and monitoring the day-to-day activities of the organization by informing management of
 - ✓ How many units need to be produced
 - ✓ When and how much material needs to be ordered
 - ✓ How many labor hours need to be scheduled, and
 - ✓ The amount of overhead expected to be incurred
 - 2) The **financial budget** assists with planning and monitoring the financing requirements of the organization

INTRODUCTION

- The operating budget helps plan future revenue and expenses and results in a projected _____.
- The financial budget plans the use of assets and liabilities and results in a projected _____.
- The operating budget has several subsidiary budgets that all begin with _____.

Operating Budgets, Financial Budgets, and the Relationship between Budgets



Prepare Operating Budgets

BIG BAD BIKES Sales Budget For the Year Ended December 31, 2019				
	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Expected Sales (Units)				
Sales Price per Unit				
Total Sales Revenue				

BIG BAD BIKES Production Budget For the Year Ended December 31, 2019				
	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Expected Sales				
Desired Ending Inventory	<u>300</u>	<u>450</u>	<u>750</u>	<u>1,050</u>
Total Required Units:				
- Beginning Inventory	—	—	—	—
Required Production				

BIG BAD BIKES
Direct Materials Budget
For the Year Ended December 31, 2019

	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
Units to be Produced					
Direct Material per Unit (Pound)	<u>3.20</u>	<u>3.20</u>	<u>3.20</u>	<u>3.20</u>	_____
Total Pounds Needed for Production					
+ Desired Ending Inventory	<u>736</u>	<u>1,152</u>	<u>1,792</u>	<u>2,432</u>	<u>2,432</u>
Total Material Required					
- Beginning Inventory	<u>0</u>	_____	_____	_____	_____
Pounds of Direct Material Required					
Cost per Pound	\$ <u>1.25</u>				
Total Cost of Direct Material Purchase					

BIG BAD BIKES
Direct Labor Budget
For the Year Ended December 31, 2019

	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
Units to be Produced					
Direct Labor Hours per Unit	<u>00.75</u>	<u>00.75</u>	<u>00.75</u>	<u>00.75</u>	<u>00.75</u>
Total Required Direct Labor Hours					
Labor Cost per Hour	\$ <u>20</u>				
Total Direct Labor Cost					

Manufacturing Overhead

- Costs that support production but are not direct materials or direct labor are considered overhead.
- **Manufacturing overhead** has three components:
 - 1) **Indirect materials** (materials used in production but not traced to specific products because the net informational value from the time and effort to trace the cost to each individual product produced is impossible or inefficient)
 - 2) **Indirect labor** (labor costs of those employees associated with the manufacturing process, but whose contributions are not directly traceable to the final product), and
 - 3) **Overhead** (costs that are necessary for production but not efficient to assign to individual product production. Examples of typical overhead costs are production facility electricity, warehouse rent, and depreciation of equipment.)

Prepare Operating Budgets: Manufacturing overhead Budget

For Big Bad Bikes to create their MOH budget, they first determine that the appropriate driver for assigning overhead costs to products is direct labor hours (DLH). The overhead allocation rates for the variable overhead costs are:

- Indirect material of \$1.00 per DLH
- Indirect labor of \$1.25 per DLH
- Maintenance of \$0.25 per DLH, and
- Utilities of \$0.50 per DLH

The ***fixed overhead costs*** per quarter are:

- Supervisor salaries of \$15,000
- Fixed maintenance salaries of \$4,000
- Insurance of \$7,000, and
- Depreciation expenses of \$3,000.

BIG BAD BIKES Direct Labor Budget For the Year Ended December 31, 2019					
	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
Units to be Produced	1,300	1,150	1,800	2,800	7,050
Direct Labor Hours per Unit	00.75	00.75	00.75	00.75	00.75
Total Required Direct Labor Hours	975	862.50	1,350	2,100	5,287.50
Labor Cost per Hour	\$ 20	\$ 20	\$ 20	\$ 20	\$ 20
Total Direct Labor Cost	\$19,500	\$17,250	\$27,000	\$42,000	\$105,750

BIG BAD BIKES Manufacturing Overhead Budget For the Year Ended December 31, 2019					
	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
Variable Costs					
Indirect Material	\$				
Indirect Labor					
Maintenance					
Utilities					
Total Variable Manufacturing Costs	\$ —	\$ —	\$ —	\$ —	\$ —
Fixed Costs					
Supervisory Salaries					
Maintenance Salaries					
Insurance					
Depreciation					
Total Fixed Manufacturing Costs					
Total Manufacturing Overhead					

	BIG BAD BIKES Sales and Administrative Expense Budget For the Year Ended December 31, 2019				
	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
Budgeted Sales in Units	1,000	1,000	1,500	2,500	6,000
Variable Expenses					
Sales Commissions	\$ 2,000	\$ 2,000	\$ 3,000	\$ 5,000	\$12,000
Transportation	500	500	750	1,250	3,000
Total Variable Expenses	\$ 2,500	\$ 2,500	\$ 3,750	\$ 6,250	\$15,000
Fixed Expenses					
Sales Salaries	\$ 5,000	\$ 5,000	\$ 5,000	\$ 5,000	\$20,000
Administrative Salaries	5,000	5,000	5,000	5,000	20,000
Marketing Expenses	5,000	5,000	5,000	5,000	20,000
Insurance Expenses	1,000	1,000	1,000	1,000	4,000
Depreciation Expenses	2,000	2,000	2,000	2,000	8,000
Total Fixed Expenses	\$18,000	\$18,000	\$18,000	\$18,000	\$72,000
Total Selling and Administrative expenses	\$20,500	\$20,500	\$21,750	\$24,250	\$87,000

Prepare Budgeted Income Statement

BIG BAD BIKES
Budgeted Income Statement
For the Year Ended December 31, 2019

Sales	
Cost of Goods Sold	_____
Gross Profit	
Sales and Administrative Expenses	
Uncollectible Expense	_____
Income before Interest	
Interest Expense	
Income Tax	
Net Income	=====

BIG BAD BIKES
Budgeted Income Statement
For the Year Ended December 31, 2019

Sales	
Cost of Goods Sold	_____
Gross Profit	
Sales and Administrative Expenses	
Uncollectible Expense	_____
Income before Interest	_____
Interest Expense	
Income Tax	
Net Income	=====

BIG BAD BIKES Sales Budget For the Year Ended December 31, 2019					
	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
Expected Sales (Units)	1,000	1,000	1,500	2,500	6,000
Sales Price per Unit	\$ 70	\$ 70	\$ 75	\$ 75	
Total Sales Revenue	\$70,000	\$70,000	\$112,500	\$187,500	\$440,000

BIG BAD BIKES
Budgeted Income Statement
For the Year Ended December 31, 2019

Sales	\$440,000
Cost of Goods Sold	<u>?</u>
Gross Profit	
Sales and Administrative Expenses	
Uncollectible Expense	_____
Income before Interest	
Interest Expense	
Income Tax	
Net Income	=====

BIG BAD BIKES
Budgeted Income Statement
For the Year Ended December 31, 2019

Sales	\$440,000
Cost of Goods Sold	?
Gross Profit	
Sales and Administrative Expenses	
Uncollectible Expense	_____
Income before Interest	_____
Interest Expense	_____
Income Tax	_____
Net Income	_____

	Cost of Goods Sold	Ending Inventory	Total
Direct Materials			
Direct Labor			
Manufacturing Overhead	_____	_____	_____
Total			

BIG BAD BIKES
Budgeted Income Statement
For the Year Ended December 31, 2019

Sales	\$440,000
Cost of Goods Sold	?
Gross Profit	
Sales and Administrative Expenses	
Uncollectible Expense	
Income before Interest	
Interest Expense	
Income Tax	
Net Income	=====

BIG BAD BIKES Sales Budget For the Year Ended December 31, 2019					
	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
Expected Sales (Units)	1,000	1,000	1,500	2,500	6,000
Sales Price per Unit	\$ 70	\$ 70	\$ 75	\$ 75	
Total Sales Revenue	\$70,000	\$70,000	\$112,500	\$187,500	\$440,000

BIG BAD BIKES Direct Materials Budget For the Year Ended December 31, 2019					
	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
Units to be Produced	1,300	1,150	1,800	2,800	7,050
Direct Material per Unit	3.20	3.20	3.20	3.20	3.20
Total Pounds Needed for Production	4,160	3,680	5,760	8,960	22,560
+ Desired Ending Inventory	736	1,152	1,792	2,432	2,432
Total Material Required	4,896	4,832	7,552	11,392	24,992
- Beginning Inventory	0	736	1,152	1,792	0
Pounds of Direct Material Required	4,896	4,096	6,400	9,600	24,992
Cost per Pound	\$ 1.25	\$ 1.25	\$ 1.25	\$ 1.25	\$ 1.25
Total Cost of Direct Material Purchase	\$6,120	\$5,120	\$8,000	\$12,000	\$31,240

	Cost of Goods Sold	Ending Inventory	Total
Direct Materials			
Direct Labor			
Manufacturing Overhead			
Total	=====	=====	=====

BIG BAD BIKES
Budgeted Income Statement
For the Year Ended December 31, 2019

Sales	\$440,000
Cost of Goods Sold	<u>?</u>
Gross Profit	
Sales and Administrative Expenses	
Uncollectible Expense	<u> </u>
Income before Interest	<u> </u>
Interest Expense	
Income Tax	
Net Income	<u> </u>

BIG BAD BIKES Direct Labor Budget For the Year Ended December 31, 2019					
	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
Units to be Produced	1,300	1,150	1,800	2,800	7,050
Direct Labor Hours per Unit	00.75	00.75	00.75	00.75	00.75
Total Required Direct Labor Hours	975	862.50	1,350	2,100	5,287.50
Labor Cost per Hour	\$ 20	\$ 20	\$ 20	\$ 20	\$ 20
Total Direct Labor Cost	\$19,500	\$17,250	\$27,000	\$42,000	\$105,750

	Cost of Goods Sold	Ending Inventory	Total
Direct Materials			
Direct Labor			
Manufacturing Overhead	<u> </u>	<u> </u>	<u> </u>
Total			

BIG BAD BIKES
Budgeted Income Statement
For the Year Ended December 31, 2019

Sales	\$440,000
Cost of Goods Sold	?
Gross Profit	
Sales and Administrative Expenses	
Uncollectible Expense	_____
Income before Interest	_____
Interest Expense	_____
Income Tax	_____
Net Income	_____

BIG BAD BIKES Manufacturing Overhead Budget For the Year Ended December 31, 2019					
	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
Variable Costs					
Indirect Material	\$ 975	\$ 863	\$ 1,350	\$ 2,100	\$ 5,288
Indirect Labor	1,219	1,078	1,688	2,625	6,609
Maintenance	244	216	338	525	1,322
Utilities	488	431	675	1,050	2,644
Total Variable Manufacturing Costs	\$ 2,926	\$ 2,588	\$ 4,051	\$ 6,300	\$ 15,863
Fixed Costs					
Supervisory Salaries	\$15,000	\$15,000	\$15,000	\$15,000	\$ 60,000
Maintenance Salaries	4,000	4,000	4,000	4,000	16,000
Insurance	7,000	7,000	7,000	7,000	28,000
Depreciation	3,000	3,000	3,000	3,000	12,000
Total Fixed Manufacturing Costs	\$29,000	\$29,000	\$29,000	\$29,000	\$116,000
Total Manufacturing Overhead	\$31,925	\$31,588	\$33,050	\$35,300	\$131,863

	Cost of Goods Sold	Ending Inventory	Total
Direct Materials	\$ 24,000*		
Direct Labor	90,000**		
Manufacturing Overhead	_____	_____	_____
Total	_____	_____	_____

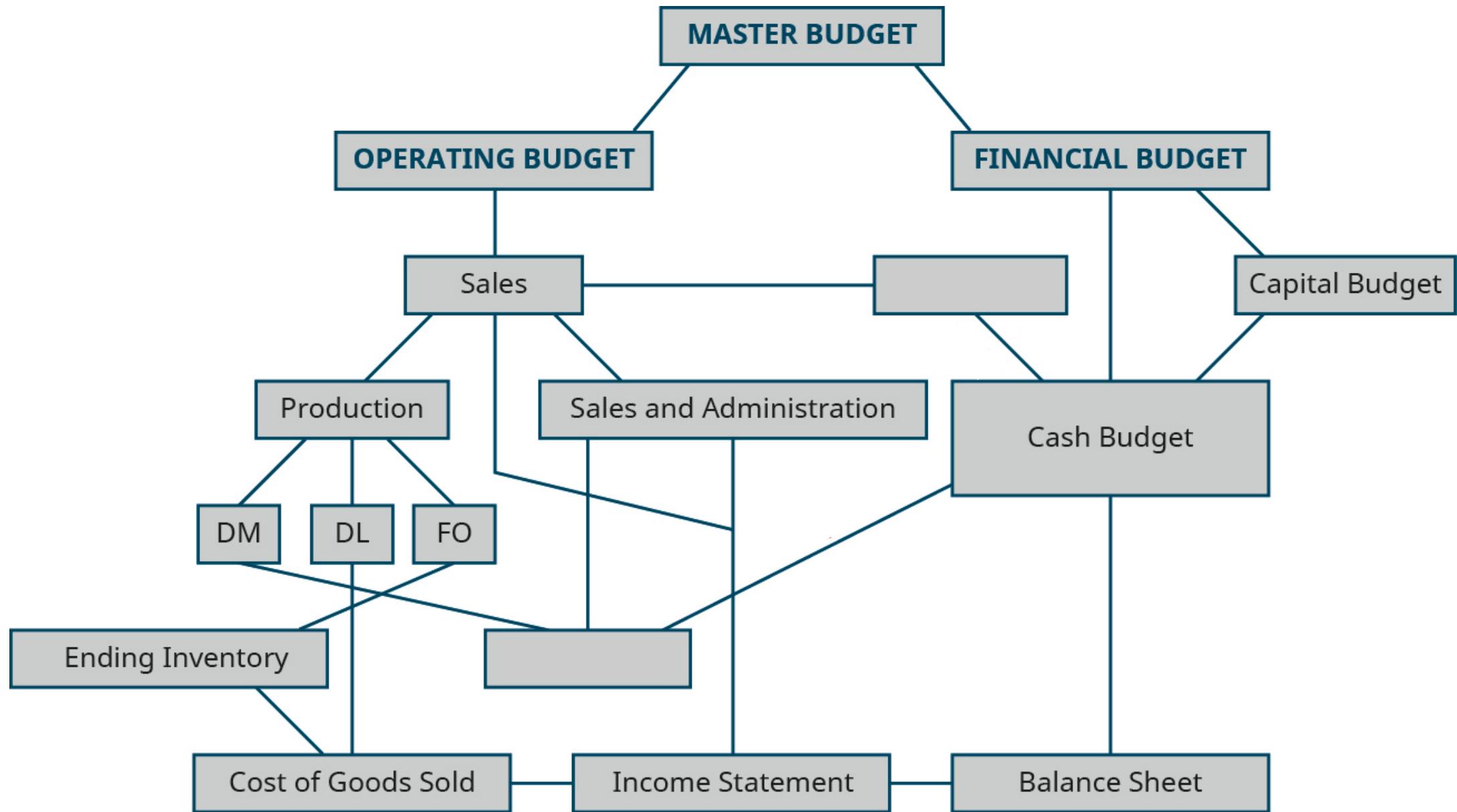
Total MFG OH cost = \$ _____
 # units produced = _____
 MFG OH per unit = \$ _____
 # of units sold = _____
 MFG OH = \$ _____ (expensed as part of COGS)
 # of units unsold (remaining in EI) = _____
 MFG OH for EI = \$ _____

BIG BAD BIKES
Budgeted Income Statement
For the Year Ended December 31, 2019

Sales	\$440,000
Cost of Goods Sold	_____
Gross Profit	
Sales and Administrative Expenses	
Uncollectible Expense	<u>22,000</u>
Income before Interest	_____
Interest Expense	954
Income Tax	4,000
Net Income	=====

Prepare Financial Budgets

Relationship between Budgets



JOB COST SHEET

General Overview of Cash Budget Components*

Cash Receipts from Sales

- + Other cash receipts (issuance of stock, borrowing money, receiving interest or dividends, from selling assets such as equipment, etc.)
- Cash Payments for Purchases or Production of Inventory
- Cash Payments for manufacturing expenses**
- Cash Payments for selling and administrative expenses**
- Cash payments for capital asset purchases
- Other cash payments (paying interest, paying loan payments, etc.)
- = Net Cash

*This is a general overview of the types of cash transactions that might appear in a cash budget and is representative of the components but not of a typical presentation of those components

**Note that depreciation, a non-cash expense, would be excluded from these expenses

	Percentage of Sales Collected			
	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Prior year, Quarter 4 Sales	30%			
Quarter 1 Sales	65%	30%		
Quarter 2 Sales		65%	30%	
Quarter 3 Sales			65%	30%
Quarter 4 Sales				65%

BIG BAD BIKES Cash Collections Schedule For the Year Ended December 31, 2019						
	Sales	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
Collections from						
prior year Quarter 4	0	0				
Quarter 1	\$ 70,000	\$45,500	\$21,000			\$ 66,500
Quarter 2	70,000		45,500	\$21,000		66,500
Quarter 3	112,500			73,125	\$ 33,750	106,875
Quarter 4	187,500				121,875	121,875
Total Collections	\$440,000	\$45,500	\$66,500	\$94,125	\$155,625	\$361,750
Accounts Receivable	\$ 78,250					

Percentage of Cash Payments for Purchases				
	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Prior year, Quarter 4 Purchases	50%			
Quarter 1 Purchases	50%	50%		
Quarter 2 Purchases		50%	50%	
Quarter 3 Purchases			50%	50%
Quarter 4 Purchases				50%

BIG BAD BIKES Cash Payments Schedule For the Year Ended December 31, 2019						
Payments	Purchases	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
Quarter 4, prior year	\$ 0	\$ 0				
Quarter 1	6,120	3,060	\$3,060			\$ 6,120
Quarter 2	5,120		2,560	\$2,560		5,120
Quarter 3	8,000			4,000	\$ 4,000	8,000
Quarter 4	12,000				6,000	6,000
Total payments	\$31,240	\$3,060	\$5,620	\$6,560	\$10,000	\$25,240
Accounts Payable	\$ 6,000					

BIG BAD BIKES
Cash Budget
For the Year Ended December 31, 2019

	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
Beginning Cash Balance	\$13,000	\$10,000	\$ 10,000	\$ 10,000	\$ 13,000
Ending Cash Balance					

BIG BAD BIKES Cash Budget For the Year Ended December 31, 2019					
	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
Beginning Cash Balance	\$13,000	\$10,000	\$ 10,000	\$ 10,000	\$ 13,000
Collections from Customers (Cash Collections Schedule)	45,500	66,500	94,125	155,625	361,750
Ending Cash Balance					

BIG BAD BIKES Cash Budget For the Year Ended December 31, 2019					
	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
Beginning Cash Balance	\$13,000	\$10,000	\$ 10,000	\$ 10,000	\$ 13,000
Collections from Customers (Cash Collections Schedule)	45,500	66,500	94,125	155,625	361,750
Issuing of Stock	5,000				5,000
Ending Cash Balance					

BIG BAD BIKES
Cash Budget
For the Year Ended December 31, 2019

	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
Beginning Cash Balance	\$13,000	\$10,000	\$ 10,000	\$ 10,000	\$ 13,000
Collections from Customers (Cash Collections Schedule)	45,500	66,500	94,125	155,625	361,750
Issuing of Stock	5,000				5,000
Total Cash Collected during the Period	\$50,500	\$66,500	\$ 94,125	\$155,625	\$366,750
Ending Cash Balance					

BIG BAD BIKES
Cash Budget
For the Year Ended December 31, 2019

	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
Beginning Cash Balance	\$13,000	\$10,000	\$ 10,000	\$ 10,000	\$ 13,000
Collections from Customers (Cash Collections Schedule)	45,500	66,500	94,125	155,625	361,750
Issuing of Stock	<u>5,000</u>				<u>5,000</u>
Total Cash Collected during the Period	\$50,500	\$66,500	\$ 94,125	\$155,625	\$366,750
Total Available Cash	\$63,500	\$76,500	\$104,125	\$165,625	\$379,750
Ending Cash Balance					

BIG BAD BIKES Cash Budget For the Year Ended December 31, 2019					
	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
Beginning Cash Balance	\$13,000	\$10,000	\$ 10,000	\$ 10,000	\$ 13,000
Collections from Customers (Cash Collections Schedule)	45,500	66,500	94,125	155,625	361,750
Issuing of Stock	<u>5,000</u>				<u>5,000</u>
Total Cash Collected during the Period	<u>\$50,500</u>	<u>\$66,500</u>	<u>\$ 94,125</u>	<u>\$155,625</u>	<u>\$366,750</u>
Total Available Cash	\$63,500	\$76,500	\$104,125	\$165,625	\$379,750
- Disbursements					
Ending Cash Balance					

BIG BAD BIKES Cash Budget For the Year Ended December 31, 2019					
	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
Beginning Cash Balance	\$13,000	\$10,000	\$ 10,000	\$ 10,000	\$ 13,000
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Issuing of Stock	5,000				5,000
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Total Available Cash	\$63,500	\$76,500	\$104,125	\$165,625	\$379,750
- Disbursements					
Direct Materials (Cash Payments Schedule)	3,060	5,620	6,560	10,000	25,240
Ending Cash Balance					

BIG BAD BIKES Cash Budget For the Year Ended December 31, 2019					
	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
Beginning Cash Balance	\$13,000	\$10,000	\$ 10,000	\$ 10,000	\$ 13,000
Collections from Customers (Cash Collections Schedule)	45,500	66,500	94,125	155,625	361,750
Issuing of Stock	5,000				5,000
Total Cash Collected during the Period	\$50,500	\$66,500	\$ 94,125	\$155,625	\$366,750
Total Available Cash	\$63,500	\$76,500	\$104,125	\$165,625	\$379,750
- Disbursements					
Direct Materials (Cash Payments Schedule)	3,060	5,620	6,560	10,000	25,240
Direct Labor (Direct Labor Budget)	19,500	17,250	27,000	42,000	105,750
Ending Cash Balance					

BIG BAD BIKES Cash Budget For the Year Ended December 31, 2019					
	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
Beginning Cash Balance	\$13,000	\$10,000	\$ 10,000	\$ 10,000	\$ 13,000
Collections from Customers (Cash Collections Schedule)	45,500	66,500	94,125	155,625	361,750
Issuing of Stock	5,000				5,000
Total Cash Collected during the Period	\$50,500	\$66,500	\$ 94,125	\$155,625	\$366,750
Total Available Cash	\$63,500	\$76,500	\$104,125	\$165,625	\$379,750
- Disbursements					
Direct Materials (Cash Payments Schedule)	3,060	5,620	6,560	10,000	25,240
Direct Labor (Direct Labor Budget)	19,500	17,250	27,000	42,000	105,750
Manufacturing Overhead Less Depreciation (MFG OH Budget)	28,925	28,588	30,050	32,300	119,863
Ending Cash Balance					

BIG BAD BIKES Cash Budget For the Year Ended December 31, 2019					
	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
Beginning Cash Balance	\$13,000	\$10,000	\$ 10,000	\$ 10,000	\$ 13,000
Collections from Customers (Cash Collections Schedule)	45,500	66,500	94,125	155,625	361,750
Issuing of Stock 5,000	<u>5,000</u>	<u>5,000</u>	<u>5,000</u>	<u>5,000</u>	<u>5,000</u>
Total Cash Collected during the Period	\$50,500	\$66,500	\$ 94,125	\$155,625	\$366,750
Total Available Cash	\$63,500	\$76,500	\$104,125	\$165,625	\$379,750
- Disbursements					
Direct Materials (Cash Payments Schedule)	3,060	5,620	6,560	10,000	25,240
Direct Labor (Direct Labor Budget)	19,500	17,250	27,000	42,000	105,750
Manufacturing Overhead Less Depreciation (MFG OH Budget)	28,925	28,588	30,050	32,300	119,863
Selling and Administrative Expenses Less Depreciation (Sales and Administrative Expense Budget)	18,500	18,500	19,750	22,250	79,000
Ending Cash Balance					

BIG BAD BIKES Cash Budget For the Year Ended December 31, 2019					
	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
Beginning Cash Balance	\$13,000	\$10,000	\$ 10,000	\$ 10,000	\$ 13,000
Collections from Customers (Cash Collections Schedule)	45,500	66,500	94,125	155,625	361,750
Issuing of Stock 5,000	<u>5,000</u>	<u>5,000</u>	<u>5,000</u>	<u>5,000</u>	<u>5,000</u>
Total Cash Collected during the Period	\$50,500	\$66,500	\$ 94,125	\$155,625	\$366,750
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Manufacturing Overhead Less Depreciation (MFG OH Budget)	28,925	28,588	30,050	32,300	119,863
Selling and Administrative Expenses Less Depreciation (Sales and Administrative Expense Budget)	18,500	18,500	19,750	22,250	79,000
Income Tax Expense	1,000	1,000	1,000	1,000	4,000
Ending Cash Balance					

BIG BAD BIKES Cash Budget For the Year Ended December 31, 2019					
	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
Beginning Cash Balance	\$13,000	\$10,000	\$ 10,000	\$ 10,000	\$ 13,000
Collections from Customers (Cash Collections Schedule)	45,500	66,500	94,125	155,625	361,750
Issuing of Stock 5,000					5,000
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Total Available Cash	\$63,500	\$76,500	\$104,125	\$165,625	\$379,750
- Disbursements					
Direct Materials (Cash Payments Schedule)	3,060	5,620	6,560	10,000	25,240
Direct Labor (Direct Labor Budget)	19,500	17,250	27,000	42,000	105,750
Manufacturing Overhead Less Depreciation (MFG OH Budget)	28,925	28,588	30,050	32,300	119,863
Selling and Administrative Expenses Less Depreciation (Sales and Administrative Expense Budget)	18,500	18,500	19,750	22,250	79,000
Income Tax Expense	1,000	1,000	1,000	1,000	4,000
Purchase of Copier (Capital Asset Budget)			8,500		8,500
Ending Cash Balance					

BIG BAD BIKES Cash Budget For the Year Ended December 31, 2019					
	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
Beginning Cash Balance	\$13,000	\$10,000	\$ 10,000	\$ 10,000	\$ 13,000
Collections from Customers (Cash Collections Schedule)	45,500	66,500	94,125	155,625	361,750
Issuing of Stock	5,000				5,000
Total Cash Collected during the Period	\$50,500	\$66,500	\$ 94,125	\$155,625	\$366,750
Total Available Cash	\$63,500	\$76,500	\$104,125	\$165,625	\$379,750
- Disbursements					
Direct Materials (Cash Payments Schedule)	3,060	5,620	6,560	10,000	25,240
Direct Labor (Direct Labor Budget)	19,500	17,250	27,000	42,000	105,750
Manufacturing Overhead Less Depreciation (MFG OH Budget)	28,925	28,588	30,050	32,300	119,863
Selling and Administrative Expenses Less Depreciation (Sales and Administrative Expense Budget)	18,500	18,500	19,750	22,250	79,000
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Purchase of Copier (Capital Asset Budget)			8,500		8,500
Total Disbursements	\$70,985	\$70,958	\$ 92,860	\$107,550	\$342,353
Ending Cash Balance					

BIG BAD BIKES Cash Budget For the Year Ended December 31, 2019					
	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
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Total Disbursements	\$70,985	\$70,958	\$ 92,860	\$107,550	\$342,353
Excess (deficiency) of Available Cash	(\$ 7,485)	\$ 5,542	\$ 11,265	\$ 58,075	\$ 37,397
Ending Cash Balance					

BIG BAD BIKES Cash Budget For the Year Ended December 31, 2019					
	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
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Financing + Borrowings					
- Repayments Including Interest					
Ending Cash Balance					

BIG BAD BIKES Cash Budget For the Year Ended December 31, 2019					
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Excess (deficiency) of Available Cash	(\$ 7,485)	\$ 5,542	\$ 11,265	\$ 58,075	\$ 37,397
Financing					
+ Borrowings	17,485	4,458			21,943
- Repayments Including Interest					
Ending Cash Balance					

BIG BAD BIKES Cash Budget For the Year Ended December 31, 2019					
	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
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Excess (deficiency) of Available Cash	(\$ 7,485)	\$ 5,542	\$ 11,265	\$ 58,075	\$ 37,397
Financing					
+ Borrowings	17,485	4,458			21,943
- Repayments Including Interest			(1,265)	(21,632)	(22,897)
Ending Cash Balance					

BIG BAD BIKES Cash Budget For the Year Ended December 31, 2019					
	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
Beginning Cash Balance	\$13,000	\$10,000	\$ 10,000	\$ 10,000	\$ 13,000
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Issuing of Stock	5,000				5,000
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Total Available Cash	\$63,500	\$76,500	\$104,125	\$165,625	\$379,750
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Total Disbursements	\$70,985	\$70,958	\$ 92,860	\$107,550	\$342,353
Excess (deficiency) of Available Cash	(\$ 7,485)	\$ 5,542	\$ 11,265	\$ 58,075	\$ 37,397
Financing					
+ Borrowings	17,485	4,458			21,943
- Repayments Including Interest			(1,265)	(21,632)	(22,897)
Ending Cash Balance	\$10,000	\$10,000	\$ 10,000	\$ 36,443	\$ 36,443

Common Changes in the Budgeted Balance Sheet

Information Source	Balance Sheet Change
Cash balance	ending cash balance from the cash budget
Accounts Receivable balance	uncollected receivables from the cash collections schedule
Inventory	ending balance in inventory as shown from calculations to create the income statement
Machinery & Equipment	ending balance in the capital asset budget
Accounts Payable	unpaid purchases from the cash payments schedule

BIG BAD BIKES
Budgeted Balance Sheet
December 31, 2019

	Jan. 1	Dec. 31
Cash	\$13,000	\$ 36,443
Accounts Receivable	0	78,250
- Allowance for Doubtful Accounts		(22,000)
Inventory	0	42,629
Machinery and Equipment	15,000	23,500
Accumulated Depreciation	<u>(2,000)</u>	<u>(22,000)</u>
Total Assets	<u>\$26,000</u>	<u>\$136,822</u>
Accounts Payable	\$ 0	\$ 6,000
Line of Credit		
Common Stock	15,000	20,000
Retained Earnings	<u>11,000</u>	<u>110,822</u>
Total Liability and Owner's Equity	<u>\$26,000</u>	<u>\$136,822</u>

Review/Summary

Prepare Operating Budgets

- The _____ budget is the first budget developed, and the estimated sales in turn guide the _____ budget.
- The production budget shows the quantity of goods produced for each time period and leads to computing when and how much _____ needs to be ordered, when and how much _____ needs to be scheduled, and when and how much manufacturing overhead needs to be planned.
- The sales and administrative budget plans for the _____ expenses.
- All operating budgets combine to develop the budgeted _____ statement.

Prepare Financial Budgets

- The financial budget include the _____ budget and the _____ budget.
- The cash _____ schedule and cash _____ schedule are computed and combined with other budgets to develop the cash budget.
- Information from financial budgets and the budgeted income statement are used to develop the budgeted _____.

Budgets Are Used to Evaluate Goals

- Management's evaluations of _____ results versus the estimated _____ results help assess performance and plan for the future.

INFO 7225

MODULE 2

Managerial Accounting

(8. Standard Costs & Variance Analysis)

Professor Shiaoming Shi

College of Engineering

Northeastern University

1,000

Q3

Q4



Reading Assignments

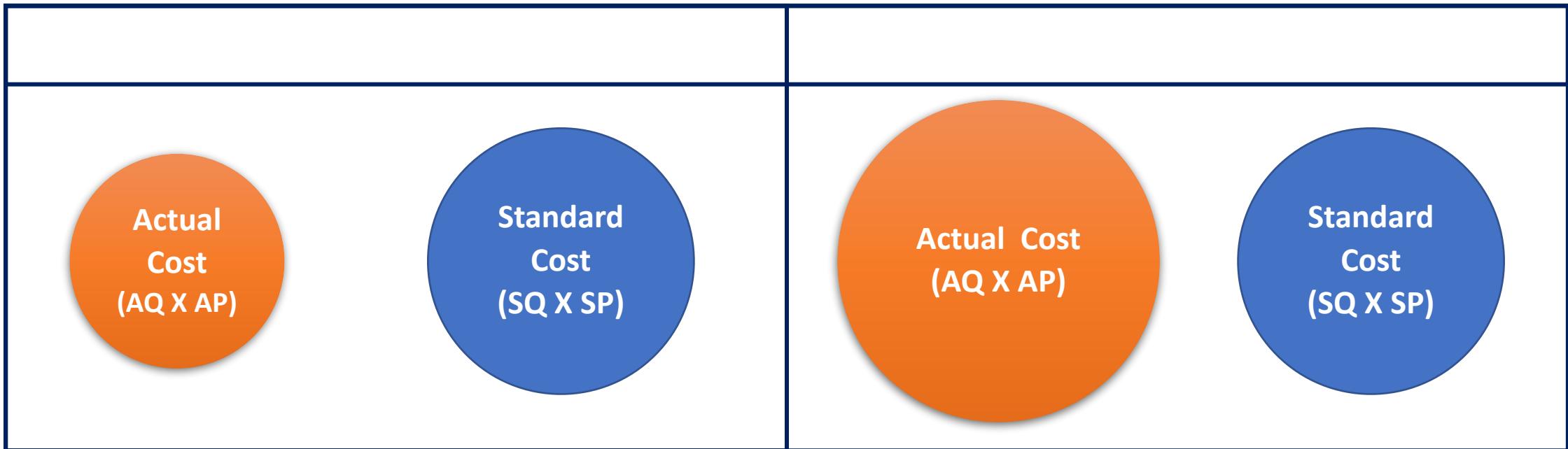
- Read chapter 8, sections 1, 2 and 5
- Think about the following questions as you read chapter 8:
 - What two components are needed to determine a standard for materials?
 - What two components are needed to determine a standard for labor?
 - What elements require consideration before establishing an overhead standard?
 - What causes a favorable variance and an unfavorable variance?
 - When might a favorable variance not be a good outcome?
 - When might an unfavorable variance be a good outcome?

Standard Costs and Variance Analysis

What is the difference between a budget and a standard?

- A budget usually refers to a company's _____ for costs, revenues, and cash flows associated with the overall operations of the organization, or a subsection of the corporation such as a division.
- A standard usually refers to a company's projected costs for _____ of a product or service and includes the expected (or standard) cost for the various cost components of each unit, such as materials, labor, and overhead.
- Standard costs provide information that is useful in _____. Standard costs are compared to actual costs, and _____ between the two are termed **variances**. Favorable variances result when actual costs are _____ than standard costs, and vice versa.

Favorable and Unfavorable Variances



- AQ, “actual quantity” of input used to produce the output
- AP, “actual price” of the input used to produce the output
- SQ and SP refer to the “standard” quantity and price

Example 1. Developing a Standard Cost Card

Use the information provided to create a standard cost card for production of one deluxe bicycle from Bicycles Unlimited.

To make one bicycle it takes four pounds of material. The material can usually be purchased for \$5.25 per pound. The labor necessary to build a bicycle consists of two types. The first type of labor is assembly, which takes 2.75 hours. These workers are paid \$11.00 per hour. The second type of labor is finishing, which takes 4 hours. These workers are paid \$15.00 per hour. Overhead is applied using labor hours. The variable overhead rate is \$5.00 per labor hour. The fixed overhead rate is \$3.00 per hour.

STANDARD COST CARD			
Product:			
Manufacturing Information	Standard Quantity	Standard Price	Cost Summary
Direct Materials (per unit)			
Direct Labor (per unit)			
Manufacturing Overhead			
Variable Overhead			
Fixed Overhead			
Standard Cost per Bicycle			

Variance Analysis

Direct Materials Variances

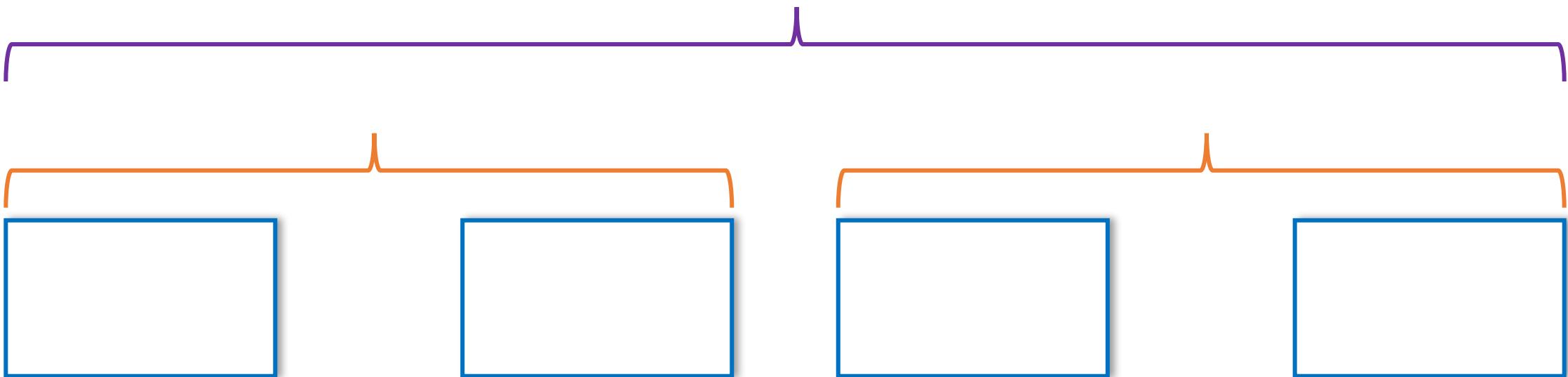
Total Variance =

Direct Labor Variances

Total Variance =

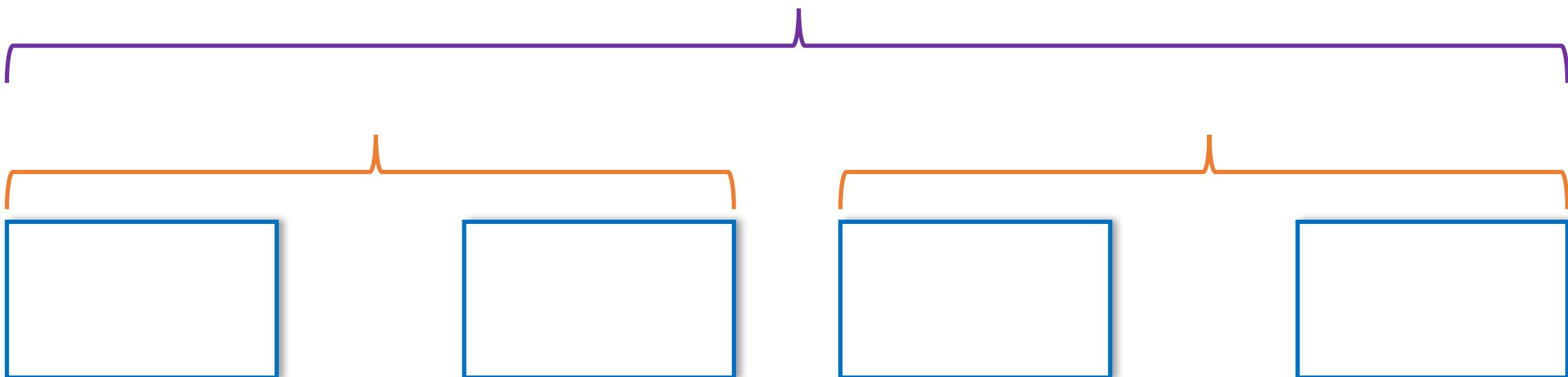
Example 2. Compute Materials Variances

Biglow Company makes a hair shampoo called Sweet and Fresh. Each bottle has a standard material cost of 8 ounces at \$0.85 per ounce. During May, Biglow manufactured 11,000 bottles. They bought 89,000 ounces of material at a cost of \$74,760. All 89,000 ounces were used to make the 11,000 bottles. Calculate the total variance, material price variance, and the material quantity variance.



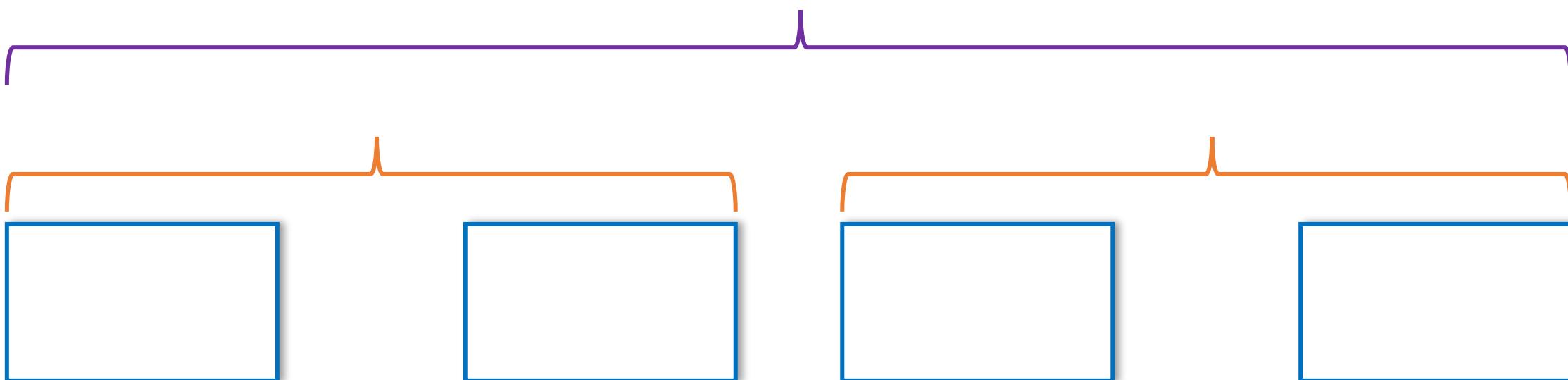
Example 3a.

Standard Material Cost	Actual Material Cost
Output - Number of rail sections	3,400
Standard quantity of input per rail section- 40' long pieces of pipe	X 1.25
Standard quantity of input (pipes) to achieve output (rail sections)	4,250
Standard price per unit of input (pipe)	X \$80
Standard cost of direct materials	<u><u>\$340,000</u></u>
	Actual quantity of input 4,100
	Actual price per unit of input x \$90
	Actual cost of direct materials <u><u>\$369,000</u></u>



Example 3b.

Standard Labor Cost	Actual Labor Cost
Output - Number of rail sections	3,400
Standard hours per rail section	X 3.00
Standard hours to achieve output	10,200
Standard rate per hour of labor	X \$18
Standard cost of direct labor	\$183,600
	Actual hours of labor 12,500
	Actual rate per hour x \$14
	Actual cost of direct labor <u>\$175,000</u>



Factory (Manufacturing) Overhead Variances

- Overhead has both variable and fixed components (unlike direct labor and direct material that are exclusively variable in nature).
 - The variable components may consist of items like indirect material, indirect labor, and factory supplies.
 - Fixed factory overhead might include rent, depreciation, insurance, maintenance, and so forth.
- Because variable and fixed costs behave in a completely different manner, it stands to reason that proper evaluation of variances between expected and actual overhead costs must take into account the intrinsic cost behavior.
- As a result, variance analysis for overhead is split between variances related to variable overhead and variances related to fixed overhead.

Example 4. Overhead Variance Analysis

Total VOH Variance =

Total FOH Variance =

Budgeted data:

Percent of capacity	100%
Direct labor hours	2,000
Units of output	1,000
Variable overhead	\$ 4,000
Fixed overhead	\$ 6,000
Total overhead	\$10,000

Actual output information:

Percent of capacity	100%
Direct labor hours	2,500
Units of output	1,000
Variable overhead	\$ 7,000
Fixed overhead	\$ 6,000
Total overhead	\$13,000

Summary/Review

Standard Costs and Variances

- Standards are budgeted unit amounts for price paid and amount used.
- Variances are the difference between actual and standard amounts.
- Variance can be favorable or unfavorable.

Direct Materials Variances

- Two components: direct materials price variance and direct materials quantity variance.
- The direct materials price variance is caused by paying too much or too little for material.
- The direct materials quantity variance is caused by using too much or too little material.

Direct Labor Variances

- Two components: direct labor rate variance and direct labor time (efficiency) variance.
 - Rate paid vs. standard rate
 - Actual hours vs. standard/budgeted hours

Manufacturing/Factory OH Variances

- Two set of OH variances: variable and fixed
- The variable variances are caused by the overhead application rate and the activity level against which the rate was applied.
- There are two fixed overhead variances. One is caused by spending two much or too little on fixed overhead. The other is caused by actual production being above or below the expected production level.

Thank you!
Questions?