



commerce  
undergraduate  
society

# COMM 294 FINAL REVIEW SESSION – ANSWER KEY

BY LINH VO



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I. INTRODUCTION

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4<sup>th</sup> year Accounting

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## II. BUDGETING

1. Sales Budget
2. Expected Cash Collections

	Account Receivable/Due in the Month from previous sale
+	Account Payable/Due now from this purchase
=	Expected Cash Disbursement

3. Production Budget

	Budgeted Sales
+	Desired Ending Inventory
=	Total Need
-	Beginning Inventory
=	Required Production

4. Direct Material Budget

	Required Production
x	Material per unit
=	DM for production need
+	Desired Ending DM
=	Total DM need
-	Beginning DM
=	DM need to be purchased



## 5. Direct Labour Budget

	Unit of production (production budget)
x	DL hour/unit
=	DL Required

## 6. Manufacturing OH budgeted

	Budgeted DLH
x	Variable OH rate
=	Variable MOH
+	Fixed MOH
=	Total MOH
-	Non-cash cost (depreciation)
=	Cash disbursement for MOH

## 7. Expected Cash Disbursement for the Month

	Account Payable/Due in the Month from previous purchase
+	Account Payable/Due now from this purchase
=	Expected Cash Disbursement

**Question 1:** CMP Ltd. sells electronics to raise fund for final review sessions. CMP Ltd. sells on credit and for cash. Roy, the director, wants you to forecast the April cash collection and disbursement. Cecilia, his VP Finance, gives you the below information:

Forecast Sale Unit for April	575
Forecast Sales Unit for May	950
Cash Sales in March	225,000
A/R Ending Balance in March	1,042,500
A/R Ending Balance in March related to Jan Sales	187,500
Ending A/P March	10,000

	M0	M1	M2	M3	Uncollectible	
Sales in Cash	25%					
Collection of A/R	40%	30%	20%	8%	2%	
DLH/unit		2	hours			
Selling price		2,000	dollars			
Wage		11	dollars			
Commission		5%	on Sales dollars			
Store rental/month		10,000	dollars			
Shipping cost/unit		10	dollars			
Inventory cost/unit		1,000	dollars			
Desired level of End Inventory		15%	of next month forecasted sale			
M0 = Month of Sales						
M1 = One month after Sales						
M2 = Two months after Sales						
M3 = Three months after Sales						

Please show your work.

	Forecast
	April
Sales = 575x2000	1,150,000
Cash = 1150000 x .25	287,500
A/R Collected April Sales= (1150000 - 287500)*.4	345,000
A/R Collected March Sales = (225000/.25 - 225000) *.3	202,500
A/R Collected February Sales (Note 1)	300,000
A/R Collected January Sales = (187500/.1*.08)	150,000
<b>Cash Collection</b>	<b>1,285,000</b>
Sales in Unit	575
Desired End Inv =950*.15	143
Total Inventory Needed	718
Beginning Inventory =575*.15	(86)
<b>Total Inventory Purchased</b>	<b>632.000</b>
<b>Cash for Inventory</b>	<b>632,000</b>
Begin A/P	10,000
Direct Labour Cost =575*2*11	12,650
Shipping Cost = 10 * 575	5,750
Commission = 5% * 1150000	57,500
Store rental	10,000
<b>Cash Disbursement</b>	<b>727,900</b>

Note 1	
A/R related to Jan Sales	187,500
A/R related to Feb Sales	<b>450,000</b>
A/R related to March Sales	405,000
A/R Balance in March	1,042,500
A/R Collection in April related to Feb Sales = 450000/.3*.2	300,000

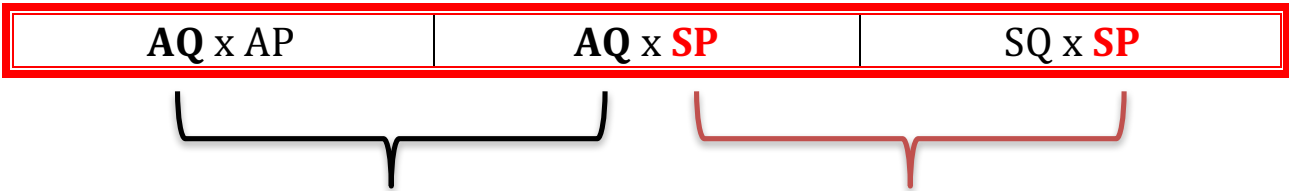
### III. STANDARD COSTING

Actual costs – Standard costs, if:  
 Actual costs > Standard costs = Unfavourable (+)  
 Actual costs < Standard costs = Favourable (-)

AQ = Actual Quantity  
 AP = Actual Price

SQ = Standard Quantity  
 SP = Standard Price

$(AQ \times AP) - (AQ \times SP)$ $=$ $AQ \times (AP - SP)$	$(AQ \times SP) - (SQ \times SP)$ $=$ $SP \times (AQ - SQ)$
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Price Variance Labour Rate Variance VOH Rate Variance	Quantity Variance Labour Efficiency Variance VOH Efficiency Variance
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**Question 2:** It's now May. Roy, the director of CMP Ltd., wants to know who to praise and who to punish. He asks you to compute the inventory, labour, and shipping variances, and provide some reasons to why it's unfavourable or favourable. Cecillia, the VP Finance, also provides you with these information:



	Budgeted	Actual
Sales Revenue	1,150,000	1,400,000
Inventory Purchase	632,000	750,000
Direct Labour Cost	12,650	24,000
Shipping Cost	5,750	7,700
Sales in Units	575	700
Inventory Purchase	632	700
Direct Labour Hour	1,150	1,190
Shipping Cost per Unit	10	11

Desired level of ending inventory: 15% of next month forecast sale

Next month forecast sale: 950

Last month ending inventory: 86



## Solutions

Inventory Variance	AQ	AP	SQ*	SP		
	700	1071	843	1,000		
	<b>Price Variance</b>		<b>Quantity Variance</b>			
	AQxAP	AQxSP	AQxSP	SQxSP		
	750000	700,000	700,000	843,000		
	50,000	<b>Unfavour</b>	(143,000)	<b>Favour</b>		
		<i>Not enough inventory due to last min sales surge</i>		<i>Buy less than desired ending inventory level</i>		
Labour Variance	A Hour	A Wage	S Hour**	S Wage		
	1190	20	1400	11		
	<b>Labour Rate Variance</b>		<b>Labour Efficiency</b>			
	AQxAP	AQxSP	AQxSP	SQxSP		
	24,000	13,090	13,090	15,400		
	10,910	<b>Unfavour</b>	(2,310)	<b>Favour</b>		
		<i>Overtime</i>		<i>Saleperson is more efficient</i>		
Shipping cost/unit	AVOH	AVOH rate	SVOH	SVOH rate		
	700	11	700	10		
	<b>VOH Rate Variance</b>		<b>VOH Efficiency</b>			
	AQxAP	AQxSP	AQxSP	SQxSP		
	7,700	7,000	7,000	7,000		
	700	<b>Unfavour</b>	-			
		<i>Rush service</i>		<i>does not take two shipments per electronics device</i>		
*Standard Inventory (flexible budget) = 700 sales + .15*950 since we need 15% ending inventory						
** Standard hour (flexible budget) = 700 units x 2 hours/unit = 1400 hours						



#### IV. REPORTING FOR CONTROL: SEGMENTED REPORTING

	<b>Electronics</b>	<b>Tutor</b>	<b>Total</b>
Sales	ABC	XYZ	ABCXYZ
- Variable Costs	(ABC)	(XYZ)	(ABCXYZ)
= Segment Contribution Margin	ABC	XYZ	ABCXYZ
- Controllable/Traceable FC	(ABC)	(XYZ)	(ABCXYZ)
= Controllable Segment Margin	ABC	XYZ	ABCXYZ
- Uncontrollable/Traceable FC	(ABC)	(XYZ)	(ABCXYZ)
= Segment Margin	ABC	XYZ	ABCXYZ
- Common Fixed Costs			(ABCXYZ)
= Net Operating Income			ABCXYZ

### Performance Measures

#### Return on Investment

$$ROI = \frac{\text{Net Operating Income}}{\text{Average Operating Assets}}$$

Average Operating Assets:  $\frac{(\text{Current year assets} + \text{Last year assets})}{2}$

- Can increase ROI by increasing sales, reducing costs, or reducing operating assets
- Manager may reject profitable investment opportunity
- Manager may not know how to increase ROI
- Manager inherit committed cost that they can't control

## Residual Income

Operating Income – (Average Assets x Minimum Required Rate of Return)

- Residual Income encourages managers to invest in profitable projects that would be rejected under ROI.
- Evaluate based on historical accounting data which can lead to poor evaluation
- Need to be compared with external benchmark to see what earnings should be
- Require adjustments to GAAP to calculate RI which increases the cost of preparing information
- Does not incorporate non-financial factors
- Cannot be used to compare performance of different-sized divisions

**Question 3:** Roy wants to know the performance of different divisions in May. Since Tutor Division is making a loss, Roy considers dropping the division. Cecillia provides you the below information. Please help save the Tutoring division.

	Electronics	Tutor	Total
Sales	1,400,000	50,000	1,450,000
COGS	(750,000)	-	(750,000)
Gross Margin	650,000	50,000	700,000
Rent (Note 1)	(30,000)	(15,000)	(45,000)
Salaries (Note 2)	(29,000)	(35,000)	(64,000)



Marketing (Note 3)	(84,600)	(5,400)	(90,000)
Commissions	(70,000)	-	(70,000)
Operating Income	436,400	(5,400)	431,000

Note 1

Rent for Electronics Store	15,000
Rent for Tutoring Rooms	5,000
Rent for Inventory Warehouse	25,000

Note 2

Salaries for Roy, the director (\$20,000) is divided equally to both divisions

Note 3

Marketing expense is allocated based on percentage of revenue but 20% is traced to tutoring and 80% is to electronics

- **Solution:**

	Electronics	Tutor	Total
Sales	1,400,000	50,000	1,450,000
<i>Variable Costs</i>	(750,000)	0	(750,000)
Commission	(70,000)	0	(70,000)
Segment CM	580,000	50,000	630,000
<i>Direct FC</i>			
Rent	(40,000)	(5,000)	(45,000)
Salary	(19,000)	(25,000)	(44,000)
Marketing	(72,000)	(18,000)	(90,000)
Segment Margin	449,000	2,000	451,000
<i>Common FC</i>			
Director's salary			(20,000)
Net Operating Income			431,000

## Transfer Pricing

Transfer pricing transactions between two divisions will not change the company's overall net income.

***Minimum Transfer Price = Selling Division's Lowest Acceptable Transfer Price***

$$\geq \text{Unit VC} + \text{Relevant FC} + \frac{\text{CM from Lost Outside Sales}}{\text{Total Unit Transferred}}$$

***Maximum Transfer Price = Buying Division's Highest Acceptable Transfer Price***

$$\leq \text{Cost of buying from outside suppliers}$$

***If Max TP > Min TP, Transfer! If Max TP < Min TP, Don't Transfer!***

**Question 4:** Tutoring division wants to buy some overhead projectors and computers for the review sessions, so Nunu, the manager of the division, is negotiating with Galen, the manager of Electronics division.

Nunu: I can get the equipment elsewhere at \$1,700 each so I suggest you give us some good deal.

Galen: We can sell it to customers for \$2,000. Why should I sell it to you?

\*Both start fighting\* so Roy asks you to be the mediator and solve this. You turn to Cecillia for further information:

Equipment Units	125 units
Outside seller	1,700 dollars
Warehouse Capacity	1,000 units
Bulk discount, 10% discount from inventory suppliers if you buy 50 units each time	
Forecast Sales for Electronics	575 units

Direct Material (Inventory)	1,000 dollars/unit
Direct Labour Hour	2 hours/unit
Wage	11 dollars/hour
OH cost per unit	140 dollars/unit

OH cost includes 5% commission per every \$ of sale to customers. This does not happen if it's an internal transaction. The rest of the OH cost consists of 25% of variable and 75% of fixed MOH

Solution:

Total units to store	700	< Warehouse capacity
=> No Opportunity Cost		
VOH = $(140 - .05 \cdot 2000) \cdot .25$	10	
Unit VC = $1000 \cdot .9 + 2 \cdot 11 + 10$	932	
Relevant FC	0	
Bulk discount for 25 units	2500	
Savings per unit	20	

Maximum TP	1,700
Minimum TP = $932 - 20$	912
Unit VC + Relevant FC + CM Lost/Total Unit Transferred	

Minimum TP < Maximum TP --> Transfer!

## V. DECISION MAKING: RELEVANT COSTS AND BENEFITS

Relevant costs = costs that differ or can be avoided between alternatives

### Accept or reject an order

Incremental Costs < Incremental Benefits: Accept  
Incremental Costs > Incremental Benefits: Reject

Incremental Costs = VC + Relevant FC + Opportunity Cost

Incremental Benefits = Order price, revenue received from order

**Question 5:** A salesperson comes to Galen and presents an offer from a customer. Since this is a sale to customer, CMP still needs to pay commission to the salesperson and a bonus of \$1,000 since it's a big order. Information below:

# of units in order	500 units
Proposed price	1,800 dollars
Warehouse Capacity	1,000 units

Bulk discount, 10% discount from inventory suppliers if you buy 50 units each time

Forecast Sales for Electronics	575 units
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Direct Material (Inventory)	1,000 dollars/unit
Direct Labour Hour	2 hours/unit
Wage	11 dollars/hour





OH cost per unit 140 dollars/unit

OH cost includes 5% commission per every \$ of sale to customers. The rest of the OH cost consists of 25% of variable and 75% of fixed MOH

Solution:

VOH = $(140 - .05*2000)*.25+1800*.05$	100	
CM of 75 units	70,100	
= $25*(2000 - 1000 - 2*11 - .05*2000 - 10)$		
+ $50*(2000-1000*.9-2*11-.05*2000 -10)$		
Order Relevant Costs		
DM	450,000	
DL	11,000	
VOH	50,000	
Opportunity Cost	70,100	
Relevant FC	<u>1,000</u>	=bonus for salesperson
	582,100	
Order Relevant Benefit		
Revenue	900,000	= 500*1800

→ Yes, accept the order!



## Adding/Dropping Segment

Fixed Cost Saving > Lost Segment Contribution Margin, then drop!

**Question 6:** Looking at the performance of Tutoring division, Roy is considering to eliminate the division and focus solely on Electronics sales. Please help convince Roy to keep the Tutoring division. Cecillia provides you with the following information.

	Tutor
Revenue	50,000
COGS	<u>(10,000)</u>
Gross Margin	40,000
Rent (Note 1)	(20,000)
Salaries (Note 2)	(35,000)
Marketing (Note 3)	(20,000)
Commissions (Note 4)	<u>(1,000)</u>
Operating Income	(36,000)

### Note 1

Allocation of head office rent 15,000

Rent for Tutoring Rooms 5,000

### Note 2

50% of salaries for Roy, the director (\$20,000) is allocated to Tutoring

### Note 3

20% of marketing expense is allocated to tutoring division. Cecillia says that the marketing material for this division only costs \$5000



Solution:

	Keep	Drop	Difference
Sales	50,000	-	(50,000)
Variable Costs	(10,000)	-	10,000
Commission	(1,000)	-	1,000
Segment CM	39,000	-	(39,000)
<i>Direct FC</i>			
Rent	(5,000)	-	5,000
Salary	(25,000)	-	25,000
Marketing	(5,000)	-	5,000
Segment Margin	4,000	-	(4,000)
<i>Common FC</i>			
Head office Rent	(15,000)	(15,000)	-
General Marketing	(100,000)	(100,000)	-
Director's salary	(20,000)	(20,000)	-
Net Operating Income	(131,000)	(135,000)	(4,000)

--> Keep the division because the benefit is 39,000 > FC of 35,000



## Make or Buy/ Scrap or Keep

**Question 7:** Nunu, the manager of Tutoring Division, looks at the budget for the year, and she wonders if it's possible to replace the overhead projectors at \$1,600 offered by Electronics Division. Installation will be 5% of the purchase price. Sales tax is 12%. According to Galen, these new overhead projectors will reduce 25% of energy costs and only needs to be serviced twice a year at a fee of \$500 each time. Nunu estimates that the old projectors can be sold for \$450 a piece. She plans to replace 10 projectors. Currently, Nunu pays \$200/month for electricity, and \$175 per month for servicing. Should she do it?

Solution:

One-time cost outflow

Purchase Price = $1600 \times 10$	16,000
Installation = $16000 \times .05$	800
Tax = $16000 \times .12$	1,920
Proceeds = $450 \times 10$	<u>(4,500)</u>
Total	14,220

Annual savings

Electricity = $25\% \times 200 \times 12$	600
Service = $175 \times 12 - 500 \times 2$	<u>1,100</u>
Total	1,800

Break-even after 7.9000 years

## Sell / Process Further

Extra Costs > Extra Revenue → Sell  
Extra Costs < Extra Revenue → Process Further

Ignore all costs up to the Split-up point

**Question 8:** Another customer comes to CMP and makes an offer. He is looking to buy computers with preloaded course materials prepared by CMP tutors. Since it's a rush order, CMP will have to pay an extra mark-up of 15% for the computers (priced at \$1000), and pay the tutors an extra 20% on top of normal wages (\$20/hour). It takes the tutor 10 hours to prepare course materials. However, the course materials can be used by CMP later for other purposes. The customer offers \$5000 for two computers with two different course materials. Normal computers are sold for \$2000/each. Should CMP accept?

Solution:

Extra Cost: Total extra cost = \$380

Computer =  $.15 * 1000 * 2 = 300$

Wage =  $10 * 20 * .2 * 2 = 80$

Extra Revenue:

$\$5000 - \$2000 * 2 = \$1000$

Extra Cost < Extra Revenue → Accept the order

## Utilization of Constrained Resources

Maximize the total contribution margin of the product/sale mix  
Focus on **Contribution Margin per unit of Constrained Resources**  
Produce the product with highest CM per unit of constrained resources first, then move down the list.

**Question 9:** After the previous order of computers preloaded with study materials, CMP executives think that they can make more profit by doing that. They brainstorm, do research, and give you this information. Please help them decide.

Total Tutor Hour	32	hours
Overtime hour*	8	hours
Normal wage	20	dollars
Overtime wage	25	dollars
Computers Cost	1000	dollars
Technician Time	500	hours
Technician wage	25	Dollars

**	Material (hr)	Loading (hr)	# of Demand	Selling Price
Econ 101	8	4	100	2,200
Econ 102	9	3	90	2,200
Comm 291	11	6	95	2,400
Comm 294	12	6	30	2,500

\*Each course is allocated 8 hours of normal tutor hour

\*\* Time needed for tutor to prepare material, and time needed for technician to load the course onto the computer

Production plan	# of unit	Total tech time
Econ 101	57	228
Econ 102	90	270
Comm 291	0	0
Comm 294	0	0

Course	Econ 101	Econ 102	Comm 291	Comm 294
Revenue	220,000	198,000	228,000	75,000
Comp. Cost	(100,000)	(90,000)	(95,000)	(30,000)
Tutor Cost	(160)	(160)	(160)	(160)
Tutor OT	-	(25)	(75)	(100)
Tech cost	(10,000)	(6,750)	(14,250)	(4,500)
CM	109,840	101,065	118,515	40,240
CM per tech hour	274.60	374.31	207.92	223.56

## VI. TIPS AND TRICKS

### **1) Practice makes perfect!**

- Practice midterms
- Assignments and in-class questions
- Textbook exercises
- 2016 CMP Review Package: [Question](#) – [Answer](#)

### **2) Office hour and other help available!**

- Professor's review tutorial
- Professor's office hour
- CMP office hour

### **3) Relax, eat well, and get enough sleep!**

