

**C 5 – Homework Problem: Complete Prior to Class
HIGH-LOW METHOD - ANSWER KEY**

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	<u>JAN</u>	<u>FEB</u>	<u>MAR</u>
Number of units sold	250	400	300
Sales	6,250	10,000	7,500
Cost of Goods Sold	<u>3,000</u>	<u>4,200</u>	<u>3,500</u>
Gross Margin	3,250	5,800	4,000
Operating expenses	<u>1,000</u>	<u>1,450</u>	<u>1,000</u>
Net Income	2,250	4,350	3,000
	=====	=====	=====

Using the High-Low method, calculate the:

- Variable cost per unit for COGS
Use: change in cost / change in activity formula
 $(4200 - 3000) / (400 - 250) = 8$
- Variable cost per unit for Operating expenses
Use: change in cost / change in activity formula
 $(1450 - 1000) / (400 - 250) = 3$
- Variable cost per unit for all the expenses combined.
Add VC portion of all costs together. Add 1 and 2 above.
There are only two expenses in this problem.
 $8 + 3 = 11$
- Fixed cost portion for COGS
Use: $Y = a + bx$ formula, then change to: $Y - bx = a$
Then substitute either high or low data that you used in #1 above.
Using high in this case.
 $4200 - (400 \times 8) = 1000$
- Fixed cost portion for Operating expenses
Use: $Y = a + bx$ formula, then change to: $Y - bx = a$
Then substitute either high or low data that you used in #2 above.
Using low in this case.
 $1000 - (250 \times 3) = 250$
- Fixed cost in total for January
Add the FC portion of all costs together.
 $1000 + 250 = 1250$
- Fixed cost in total for February
The FC should be the same every month because FC remains the same even if activity changes.
- Contribution margin for January.
The VC changes as activity changes, therefore, the CM changes as activity changes. For January: $S - VC = CM$ or $Net + FC = CM$
 $6250 - (11 \times 250) = 3500$ or $2250 + 1250 = 3500$
- Contribution margin for February
The VC changes as activity changes, therefore, the CM changes as activity changes. For February: $S - VC = CM$ or $Net + FC = CM$
 $10000 - (11 \times 400) = 5600$ or $4350 + 1250 = 5600$

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HIGH-LOW METHOD AND CONTRIBUTION MARGIN – ANSWER KEY

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Comparative Income Statement
 Four Months Ended July 31, 2002

	Actual			Projected
	April	May	June	July
Sales in units	380	300	450	350
Sales revenue	\$22,800	\$18,000	\$27,000	\$21,000
Less Expense A	16,680	13,800	19,200	15,600
Gross Margin	6,120	4,200	7,800	5,400
Less operating expenses:				
Expense B	2,005	2,000	2,000	2,000
Expense C	3,420	2,700	4,050	3,150
Total expenses	5,425	4,700	6,050	5,150
Net Income	\$ 695	\$ (500)	\$ 1,750	\$ 250

THIS PROBLEM REQUIRES THE USE THE HIGH-LOW METHOD

- What type of income statement format is shown above?
 - Traditional** (Organized by cost function; GAAP based; external use.)
 - Contribution (Organized by cost behavior; not GAAP; internal use).

2. Using the $Y = a + bx$ format, show the Cost Formula for each cost and for the company in total.

	Y	=	a	+	b	x
Expense A:	Y	=	3000	+	36	x
Expense B:	Y	=	2000	+	0	x
Expense C:	Y	=	0	+	9	x
COMPANY TOTALS:	Y	=	5000	+	45	x

4. Based upon your analysis identify each expense as a FC, VC or MC.

- Expense A is a: FC VC MC ← circle one
- Expense B is a: FC VC MC ← circle one
- Expense C is a: FC VC MC ← circle one

5. Using your cost formulas fill in all the numerical data for July above.

6. On a separate sheet of paper, prepare a Comparative Contribution Margin Income Statement for the three months (May - July), including the Per Unit information AND percentages.

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HIGH-LOW METHOD AND CONTRIBUTION MARGIN – ANSWER KEY

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Comparative Contribution Margin Income Statement
Three Months Ended July 31, 2002

	<u>Actual</u>		<u>Projected</u>	<u>Per Unit</u>	<u>Percent</u>
	May	June	July		
Sales in units	300	450	350		
Sales	\$18,000	\$27,000	\$21,000	\$ 60	100
Variable costs:	-----	-----	-----	-----	----
Expense A	10,800	16,200	12,600	36	60
Expense C	2,700	4,050	3,150	9	15
	-----	-----	-----	-----	----
Total Variable Costs	13,500	20,250	15,750	45	75
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Contribution Margin	4,500	6,750	5,250	\$ 15	25%
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Fixed Costs:					
Expense A	3,000	3,000	3,000		
Expense B	2,000	2,000	2,000		
	-----	-----	-----		
Total Fixed costs	5,000	5,000	5,000		
	-----	-----	-----		
Net Income	\$ (500)	\$ 1,750	\$ 250		
	=====	=====	=====		