

1. a.)Change in Fixed Cost and Sales Volume Acoustic Concepts is currently selling 400 speakers per month (monthly sales of \$100,000). The sales manager feels that a \$10,000 increase in the month advertising budget would increase monthly sales by \$30,000 to a total of 520 units. Should the advertising budget be increased? The following table shows the effects of the proposed change in the monthly advertising budget:

	Current Sales	Sales With Additional Advertising Budget	Difference	Percent of Sales
Sales.....	\$100,000	\$130,000	\$30,000	100%
Less variable expenses.....	<u>60,000</u>	<u>78,000*</u>	<u>18,000</u>	<u>60%</u>
Contribution margin.....	40,000	52,000	12,000	<u>40%</u>
Less fixed expenses.....	<u>35,000</u>	<u>45,000†</u>	<u>10,000</u>	
Net operating income.....	<u>\$ 5,000</u>	<u>\$ 7,000</u>	<u>\$ 2,000</u>	

*520 units x \$150 per unit = \$78,000.

†\$35,000 + additional \$10,000 monthly advertising budget = \$45,000.

Assuming no other factors need to be considered, the increase in the advertising budget should be approved since it would increase net operating income by \$2,000. There are two shorter ways to present this solution. The first alternative solution follows:

Alternative Solution 1

Expected total contribution margin:	
\$130,000 x 40% CM ratio	\$52,000
Present total contribution margin:	
\$100,000 x 40% Cm ratio	<u>40,000</u>
Incremental contribution margin	12,000
Change in fixed expense:	
Less incremental advertising expense	<u>10,000</u>
Increased net operating income	\$ 2,000

Since in this case only the fixed costs and the sales volume change, the solution be presented in an even shorter format, as follows:

Alternative Solution 2

Incremental contribution margin:	
\$30,000 x 40% Cm ratio	\$12,000
Less incremental advertising expense.....	<u>10,000</u>
Increased net operating income	\$ 2,000

Notice that this approach does not depend on knowledge of previous sales. Also note that it is unnecessary under either shorter approach to prepare an income statement. Both of the alternative solutions above involved an **incremental analysis** - they consider only those items of revenue, cost, and volume that will change if the new program is implemented. Although in each case a new income statement could have been prepared, the incremental approach is simpler and more direct and focuses attention on the specific changes involved in the decision.

b.) Change in Variable Costs and Sales Volume Refer to the original data. Recall that Acoustic Concepts is currently selling 400 speakers per month. Management is considering the use of higher-quality components, which would increase variable costs (and thereby reduce the contribution margin) by \$10 per speaker. However, the sales manager predicts that the higher overall quality would increase sales to 480 speakers per month. Should the higher-quality components be used?

The \$10 increase in variable costs will decrease the unit contribution margin by \$10—from \$100 down to \$90.

Solution

Expected total contribution margin with higher-quality components:

480 speakers x \$90 per speaker \$43,200

Present total contribution margin:

400 speakers x \$100 per speaker 40,000

Increase in total contribution margin \$ 3,200

According to this analysis, the higher-quality components should be used. Since fixed costs will not change, the \$3,200 increase in contribution margin shown above should result in a \$3,200 increase in net operating income.

c.) Change in Fixed Cost, Sales Price, and Sales Volume Refer to the original data and recall again that the company is currently selling 400 speakers per month. To increase sales, the sales manager would like to cut the selling price by \$20 per speaker and increase the advertising budget by \$15,000 per month. The sales manager believes that if these two steps are taken, unit sales will increase by 50% to 600 speakers per month. Should the changes be made?

A decrease of \$20 per speaker in the selling price will cause the unit contribution margin to decrease from \$100 to \$80.

Solution

Expected total contribution margin with lower selling price:	
600 speakers x \$80 per speaker	\$48,000
Present total contribution margin:	
400 speakers x \$100 per speaker	<u>40,000</u>
Incremental contribution margin	8,000
Change in fixed expenses:	
Less incremental advertising expenses	<u>15,000</u>
Reduction in net operating income	\$(7,000)

According to this analysis, the changes should not be made. The same solution can be obtained by preparing comparative income statements as follows:

	Present 400 Speakers per Month		Expected 600 Speakers per Month		Difference
	Total	Per Unit	Total	Per unit	
Sales.....	\$100,00	\$250	\$138,000	\$230	\$38,000
Less variable Expenses.....	<u>60,000</u>	<u>150</u>	<u>90,000</u>	<u>150</u>	<u>30,000</u>
Contribution margin.....	40,000	<u>\$100</u>	48,000	<u>\$ 80</u>	8,000
Less fixed expenses.....	<u>35,000</u>		<u>50,000*</u>		<u>15,000</u>
Net operating income (loss)...	\$ 5,000		\$(2,000)		(\$7,000)

*35,000 + additional monthly advertising budget of \$15,000 = \$50,000

Notice that the effect on the net operating income is the same as that obtained by the incremental analysis above.

d.) Change in Variable Cost, Fixed Cost, and Sales Volume Refer to the original data. As before, the company is currently selling 400 speakers per month. The sales manager would like to pay a sales commission of \$15 per speaker sold, rather than the flat salaries that no total \$6,000 per month. The sales manager is confident that the change will increase monthly sales by 15% to 460 speakers per month. Should the change be made?

Solution Changing the sales staff from a salaried basis to a commission basis will affect both fixed and variable expenses. Fixed expenses will decrease by \$6,000, from \$35,000 to \$29,000. Variable expenses will increase by \$15, from \$150 to \$165, and the unit contribution margin will decrease from \$100 to \$85.

Expected total contribution margin with sales staff on commissions:
 460 speakers x \$85 per speakers \$39,100
 Present total contribution margin:
 400 speakers x \$100 per speaker 40,000
 Decrease in total contribution margin (900)
 Change in fixed expenses:
 Add salaries avoided if a commission is paid 6,000
 Increase in net operating income \$ 5,100

According to this analysis, the changes should be made. Again, the same answer can be obtained by preparing comparative income statements:

	Present 400 Speakers per Month		Expected 460 Speakers per Month		Difference
	Total	Per Unit	Total	Per unit	
Sales.....	\$100,00	\$250	\$115,000	\$250	\$15,900
Less variable Expenses.....	<u>60,000</u>	<u>150</u>	<u>75,900</u>	<u>165</u>	<u>15,900</u>
Contribution margin.....	40,000	<u>\$100</u>	39,100	<u>\$ 85</u>	900
Less fixed expenses.....	<u>35,000</u>		<u>29,000</u>		<u>(6,000)*</u>
Net operating income.....	\$ 5,000		\$10,100		\$5,100

*Note: A reduction in fixed expenses has the effect of increasing net operating income.

e.) Change in Regular Sales Price Refer to the original data where Acoustic Concepts is currently selling 400 speakers per month. The company has an opportunity to make a bulk sale of 150 speakers to a wholesaler if an acceptable price can be agreed on. This sale would not disturb the company's regular sales and would not affect the company's total fixed expenses. What price per speaker should be quoted to the wholesaler if Acoustic Concepts wants to increase its monthly profits by \$3,000?

Solution

Variable cost per speaker	\$150
Desired profit per speaker	
$\$3,000 \div 150$ speakers	<u>20</u>
Quoted price per speaker	\$170

Notice that fixed expenses are not included in the computation. This is because fixed expenses are not affected by the bulk sale, so all of the additional revenue that is in excess of variable costs increases the company's profits.