

Chapter 3

Required:

1. Using the high-low method, estimate the variable and fixed cost elements of the annual cost of the truck operation.
2. Express the variable and fixed costs in the form $Y = a + bX$.
3. If a truck were driven 80,000 kilometers during a year, what total cost would you expect to be incurred?

EXERCISE 3-8 High-Low Method; Predicting Cost [LO1, LO3]

The Lakeshore Hotel's guest-days of occupancy and custodial supplies expense over the last seven months were:

Month	Guest-Days of Occupancy	Custodial Supplies Expense
March	4,000	\$7,500
April	6,500	\$8,250
May	8,000	\$10,500
June	10,500	\$12,000
July	12,000	\$13,500
August	9,000	\$10,750
September	7,500	\$9,750

Guest-days is a measure of the overall activity at the hotel. For example, a guest who stays at the hotel for three days is counted as three guest-days.

Required:

1. Using the high-low method, estimate a cost formula for custodial supplies expense.
2. Using the cost formula you derived above, what amount of custodial supplies expense would you expect to be incurred at an occupancy level of 11,000 guest-days?

EXERCISE 3-9 Scattergraph Analysis; High-Low Method [LO2, LO3]

Refer to the data for Lakeshore Hotel in Exercise 3-8.

Required:

1. Prepare a scattergraph using the data from Exercise 3-8. Plot cost on the vertical axis and activity on the horizontal axis. Using a ruler, fit a straight line to your plotted points.
2. Using the quick-and-dirty method, what is the approximate monthly fixed cost? The approximate variable cost per guest-day?
3. Scrutinize the points on your graph and explain why the high-low method would or would not yield an accurate cost formula in this situation.

Required:

Using least-squares regression, estimate the fixed cost and variable cost elements of monthly car wash costs. The fixed cost element should be estimated to the nearest dollar and the variable cost element to the nearest cent.

EXERCISE 3A-2 Least-Squares Regression [LO1, LO5]

George Caloz & Frères, located in Grenchen, Switzerland, makes prestige high-end custom watches in small lots. One of the company's products, a platinum diving watch, goes through an etching process. The company has observed etching costs (expressed in Swiss Francs, SFr) as follows over the last six weeks:

Week	Units	Total Etching Cost
1	4	SFr18
2	3	17
3	8	25
4	6	20
5	7	24
6	2	16
	<u>30</u>	<u>SFr120</u>

For planning purposes, management would like to know the amount of variable etching cost per unit and the total fixed etching cost per week.

Required:

1. Using the least-squares regression method, estimate the variable and fixed elements of etching cost.
2. Express the cost data in (1) above in the form $Y = a + bX$.
3. If the company processes five units next week, what would be the expected total etching cost?

PROBLEM 4-23 Sales Mix; Break-Even Analysis; Margin of Safety [LO7, LO9]

Island Novelties, Inc., of Palau makes two products, Hawaiian Fantasy and Tahitian Joy. Present revenue, cost, and sales data for the two products follow:

	Hawaiian Fantasy	Tahitian Joy
Selling price per unit	\$15	\$100
Variable expenses per unit	\$9	\$20
Number of units sold annually	20,000	5,000

Fixed expenses total \$475,800 per year. The Republic of Palau uses the U.S. dollar as its currency.

Required:

- Assuming the sales mix given above, do the following:
 - Prepare a contribution format income statement showing both dollar and percent columns for each product and for the company as a whole.
 - Compute the break-even point in dollars for the company as a whole and the margin of safety in both dollars and percent.
- The company has developed a new product to be called Samoan Delight. Assume that the company could sell 10,000 units at \$45 each. The variable expenses would be \$36 each. The company's fixed expenses would not change.
 - Prepare another contribution format income statement, including sales of the Samoan Delight (sales of the other two products would not change).
 - Compute the company's new break-even point in dollars and the new margin of safety in both dollars and percent.
- The president of the company examines your figures and says, "There's something strange here. Our fixed expenses haven't changed and you show greater total contribution margin if we add the new product, but you also show our break-even point going up. With greater contribution margin, the break-even point should go down, not up. You've made a mistake somewhere." Explain to the president what has happened.