ANSWERS TO QUESTIONS

1. (a) Cost behavior analysis is the study of how specific costs respond to changes in the level of activity within a company.
(b) Cost behavior analysis is important to management in planning business operations and in deciding between alternative courses of action.

2. (a) The activity index identifies the activity that causes changes in the behavior of costs. Once the index is determined, it is possible to classify the behavior of costs in response to changes in activity levels into three categories: variable, fixed, or mixed.
(b) Variable costs may be defined in total or on a per-unit basis. Variable costs in total vary directly and proportionately with changes in the activity level. Variable costs per unit remain the same at every level of activity.

3. Fixed costs remain the same in total regardless of changes in the activity level. In contrast, fixed costs per unit vary inversely with activity. As volume increases, fixed costs per unit decline and vice versa.

4. (a) The relevant range is the range of activity that a company expects to operate during the year.
(b) Disagree. The behavior of both fixed and variable costs are linear only over a certain range of activity.

5. This is true. Most companies operate within the relevant range. Within this range, it is possible to establish a linear (straight-line) relationship for both variable and fixed costs. If a relevant range cannot be established, segregation of costs into fixed and variable becomes extremely difficult.

6. Apartment rent is fixed because the cost per month remains the same regardless of how much Rick uses the apartment. Rent on a Hertz rental truck is a mixed or semivariable cost because the cost usually includes a per diem charge (a fixed cost) plus an activity charge based on miles driven (a variable cost).

7. For CVP analysis, mixed costs must be classified into their fixed and variable elements. One approach to the classification of mixed costs is the high-low method.

8. Variable cost per unit is $1.20, or ($60,000 ÷ 50,000). At any level of activity, fixed costs are $52,000 per month [$160,000 – (90,000 X $1.20)].

9. No. Only two of the basic components of cost-volume-profit (CVP) analysis, unit selling prices and variable cost per unit, relate to unit data. The other components, volume and total fixed costs, are not based on per-unit amounts.

10. There is no truth in Bob's statement. Contribution margin is sales less variable costs. It is the revenue that remains to cover fixed costs and to produce income (profit) for the company.

11. Contribution margin per unit is $12 ($40 – $28). The contribution margin ratio is 30% ($12 ÷ $40).

12. Disagree. Knowledge of the break-even point is useful to management in deciding whether to introduce new product lines, change sales prices on established products, and enter new market areas.

13. $25,000 ÷ 25% = $100,000

14. (a) The breakeven point involves the plotting of three lines over the full range of activity: the total revenue line, the total fixed cost line, and the total cost line. The breakeven point is determined at the intersection of the total revenue and total cost lines.
(b) The breakeven point in units is obtained by drawing a vertical line from the breakeven point to the horizontal axis. The breakeven point in sales dollars is obtained by drawing a horizontal line from the breakeven point to the vertical axis.

15. Margin of safety is the difference between actual or expected sales and sales at the breakeven point. 1,250 X $12 = $15,000; $15,000 – $12,000 = $3,000; $3,000 ÷ $15,000 = 20%.

16. At breakeven sales, the contribution margin ratio is:

$$\frac{\$180,000}{\$600,000} = 30\%$$

The sales volume to achieve net income of $60,000 is as follows:

$$\frac{\$180,000 + \$60,000}{.30} = \$800,000$$

17.

EATON COMPANY
CVP Income Statement

Sales		$900,000
Variable expenses		
Cost of goods sold	$350,000	
Operating expenses	140,000	
Total variable expenses		490,000
Contribution margin		$410,000

***18.** Under absorption costing, both variable and fixed manufacturing costs are considered to be product costs. Under variable costing, only variable manufacturing costs are product costs and fixed manufacturing costs are expensed when incurred.

***19.** (a) The rationale for variable costing centers on the purpose of fixed manufacturing costs, which is to have productive facilities available for use. Since these costs are incurred whether a company operates at zero or 100% capacity, it is argued that they should be expensed when they are incurred. Variable costing is useful in product costing internally by management and it is useful in controlling manufacturing costs.
(b) Variable costing cannot be used in product costing in financial statements prepared in accordance with generally accepted accounting principles because it does not comply with the matching principle and thus understates inventory costs.

SOLUTIONS TO BRIEF EXERCISES

BRIEF EXERCISE 22-1

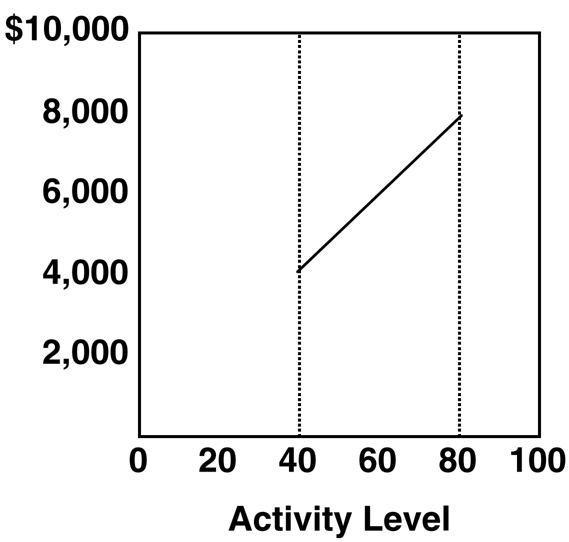
Indirect labor is a variable cost because it increases in total directly and proportionately with the change in the activity level.

Supervisory salaries is a fixed cost because it remains the same in total regardless of changes in the activity level.

Maintenance is a mixed cost because it increases in total but not proportionately with changes in the activity level.

BRIEF EXERCISE 22-2

VARIABLE COST
Relevant Range



FIXED COST
Relevant Range