## AC 202 Management Accounting
## Exercise 7: CVP Analysis & Differential Analysis

**Q. 1** The Doral Company manufactures and sells pens. Currently, 5,000,000 units are sold per year at $0.50 per unit. Fixed costs are $900,000 per year. Variable costs are $0.30 per unit.

**Required:**

a) What is the current annual operating income?
b) What is the present breakeven point in revenues?

**Q. 2** The Rapid Meal has two restaurants that are open 24 hours a day. Fixed costs for the two restaurants together total $450,000 per year. Service varies from a cup of coffee to full meals. The average sales check per customer is $8.00. The average cost of food and other variable costs for each customer is $3.20. Target operating income is $150,000.

**Required:**

a) How many customers are needed to break even?
b) Compute the revenue needed to earn the target operating income.
c) How many customers are needed to earn the target operating income?

**Q. 3** Mirabella Cosmetics manufactures and sells a face cream to small ethnic stores in the greater New York area. It presents the monthly operating income statement shown here to George Lopez, a potential investor in the business. Help Mr. Lopez understand Mirabella's cost structure.

**Mirabella Cosmetics**

**Operating Income Statement, June 20x5**

| | | |
|---|---|---|
| Units sold | | 10,000 |
| Revenues | | $100,000 |
| Cost of goods sold | | |
| Variable manufacturing costs | $55,000 | |
| Fixed manufacturing costs | 20,000 | |
| Total | | 75,000 |
| Gross margin | | 25,000 |
| Operating costs | | |
| Variable marketing costs | $ 5,000 | |
| Fixed marketing & administration costs | 10,000 | |
| Total operating costs | | 15,000 |
| Operating income | | $10,000 |

**Required:**

a) Recast the income statement to emphasize contribution margin.
b) Calculate the contribution margin percentage, the contribution margin per unit and breakeven point in units and revenues for June 20x5.
c) What is the margin of safety (in units) for June 20x5?

**Q. 4** ABC Company sells two types of products, X and Y. However, sizable differences exist in selling prices and variable marketing costs:

| | Product X | | Product Y | |
|---|---|---|---|---|
| Selling price | | $210 | | $120 |
| Variable costs: | | | | |
| Manufacturing | $25 | | $25 | |
| Marketing | 65 | 90 | 15 | 40 |
| Contribution margin | | $120 | | $ 80 |

The fixed costs are $14,000,000. The planned sales mix in units is 60% product X and 40% product Y.

**Required:**

a) What is ABC breakeven point in units, assuming that the planned 60% / 40% sales mix is attained?
b) If the sales mix is attained, what is the operating income when 200,000 units are sold?

**Q.5** Wildlife Escapes generates average revenue of $4,000 per person on its five-day package tours to wildlife parks in Kenya. The variable costs per person are:

| | |
|---|---|
| Airfare | $1,500 |
| Hotel accommodations | 1,000 |
| Meals | 300 |
| Ground transportation | 600 |
| Park tickets and other costs | 200 |
| Total | $3,600 |

Annual fixed costs total $480,000.

**Required:**

a) Calculate the number of package tours that must be sold to break even.
b) Calculate the revenue needed to earn a target operating income of $100,000.

**Q.6** Florida Favorites Company produces toy alligators and toy dolphins. Fixed costs are $1,290,000 per year. Sales revenue and variable costs per unit are as follow:

| | Alligators | Dolphins |
|---|---|---|
| Sales Price | $20 | $25 |
| Variable Costs | 8 | 10 |

**Required**: Suppose the company currently sells 140,000 alligators per year and 60,000 dolphins per year. Assuming the sales mix stays constant how many alligators and Dolphins must the company sell to break even?

**Q.7** Universal Products Inc. incurs the following costs in making the basket element for its "SunFun" line of picnic accessories:

| | Total Cost for 20,000 Units | Cost Per Unit |
|---|---|---|
| Direct materials | $100,000 | $5 |
| Direct labor | 120,000 | 6 |
| Variable factory overhead | 40,000 | 2 |
| Fixed factory overhead | 140,000 | 7 |
| Total costs | $400,000 | $20 |

Another manufacturer offers to sell Universal the same basket for $15 per unit for 20,000 units.

**Required: Answer each question independently.**

a. Determine whether Universal should make or buy the basket, assuming all the capacity now used to make the basket would become idle if it were purchased.
b. Determine whether Universal should make or buy the basket, assuming the capacity now used to make the basket would become idle if it were purchased and that $60,000 of the fixed overhead could be avoided by not making the basket.

**Q. 8** Relay Corporation manufactures boxes. Relay can manufacture 300,000 boxes a year at variable costs of $750,000 and fixed costs of $450,000. Fixed costs will remain the same between 200,000 and 300,000 boxes. Based on Relay's predictions, 240,000 boxes will be sold at the regular price of $5.00 each. Relay is approached by a new customer that offers to purchase 60,000 boxes at $3 per unit. Should Relay accept the special order?

**Q. 9** The Woody Company manufactures slippers and sells them at $10 a pair. Variable manufacturing cost is $4.50 a pair, and allocated fixed manufacturing cost is $1.50 a pair. It has enough idle capacity available to accept a one-time-only special order of 20,000 pairs of slippers at $6 a pair. Woody will not incur any marketing costs as a result of the special order. Should Woody accept the special order?