

- Cox and Kings travel agency specializes in flight between India and Malaysia. It books passengers on Malaysian Air. Cox and Kings fixed costs are Rs.10,00,000 per month. Malaysian Air charges a passenger Rs.20,000 per round trip ticket.  
 Calculate the number of tickets Cox and Kings must sell each month to (a) Breakeven and (b) make a target operating income of Rs.4,00,000 per month in each of the following independent cases.
  - Cox and king variable costs are Rs.400 per ticket. Malaysian Air pays Cox and Kings 10% commission on ticket price
  - Cox and Kings variable costs are Rs.200 per ticket. Malaysian Air pays Cox and Kings 10% commission on ticket price.
  - Cox and Kings variable costs are Rs.200 per ticket. Malaysian Air pays Rs.500 fixed commission per ticket to Cox and kings. Comment on the results.
  - Cox and Kings variable costs are Rs.200 per ticket. It receives Rs.500 commission per ticket from Malaysian Air. It charges its customer a delivery fee of Rs.50 per ticket. Comment on the results.
- Borosil Ltd., a manufacturer of quality bowls, has steady growth in sales for the past four years. However, increasing competition has led Mr. Aashish, the president, to believe that an aggressive market campaign will be necessary next year to maintain the company's present growth. To prepare for the next year's marketing campaign, the company's controller has prepared and presented Mr. Aashish with the following data for the current year

Variable Cost (per Bowl)	
Direct Material	6.50
Direct Manufacturing Labour	16.00
Variable Overhead (manufacturing, marketing, distribution and customer service)	<u>5.00</u>
	27.50
Fixed Costs	
Manufacturing	50,000
Marketing, Distribution and Customer Service	<u>2,20,000</u>
Total fixed Costs	<u>2,70,000</u>
Selling Price	Rs.50
Expected Sales,	20000 units
Income Tax Rate	40%

**Required**

- What is the projected net income for the current year
- What is the breakeven point in units for the current year
- Mr. Aashish has set the revenue target for the next year at level of Rs.11,00,000 (or 22,000 bowls). He believes an additional marketing costs of Rs.22,500 for advertising in the next year, with all other costs remaining constant will be necessary to attain the revenue target. What will be the net income for the next year if an additional Rs.22,500 is spent and the revenue target is met
- What will be the breakeven point in revenues for the next year if an additional Rs.22,500 is spent for advertising
- If the additional Rs.22,500 is spent, what are required next year revenues for net income to equal current year's net income
- At a sales level of 22,000 units what maximum amount can be spent on advertising if net income of Rs.1,20,000 is desired, next year?

3. Tata Power produces the same power take off units in two plants, a new plant in Orissa and an older plant in Delhi. The Tata Power is expected to produce and sell 1,92,000 power takeoff during the coming year. The following data are available for the two plants.

	Orissa	Delhi
Selling Price	15000	15000
Variable Manufacturing cost per unit	7,200	8,800
Fixed manufacturing cost per unit	3,000	1,500
Variable marketing and distribution cost p.u.	1,400	1,400
Fixed marketing and distribution cost p.u.	<u>1,900</u>	<u>1,450</u>
Total Cost per unit	<u>13,500</u>	<u>13,150</u>
Operating income per unit	<u>1,500</u>	<u>1,850</u>
Production rate per day	400 units	320 units

All fixed costs per units are calculated based on normal year consisting of 240 working days. When the number of working days exceeds 240, variable manufacturing costs increase by Rs.300 per unit in Orissa and Rs.800 per unit in Delhi. Capacity for each plant is 300 working days per year.

Wishing to take advantage of the higher operating income per unit at Delhi, Tata Power's manager has decided to manufacture 96,000 units at each plant. This production plan results in Delhi operating at capacity (320 units per day \* 300 days) and Orissa Operating at its normal volume (400 units per day \* 240 days)

#### Calculate

- (i) Calculate the BEP in units for both the plants
- (ii) Calculate the operating income that would result from the production manager's plan to produce 96,000 units at each plant
- (iii) Determine how the production of the 1,92,000 units should be allocated between Orissa and Delhi plants to maximize operating income for Tata Power. Show your calculations.

4. Trans Western Airlines is considering a proposal to initiate air service between Phoenix, Arizona, and Las Vegas, Nevada. The route would be designed primarily to serve the recreation and tourist travelers who frequently travel between the two cities. By offering low-cost tourist fares, the airline hopes to persuade persons who now travel by other modes of transportation to switch and fly Trans Western on this route.

In addition, the airline expects to attract business travelers during the hours of 7 A.M. to 6 P.M. on Mondays through Fridays. The fare price schedule, or tariff, would be designed to charge a higher fare during business-travel hours so that tourist demand would be reduced during those hours. The company believes that a business fare of \$100 one way during business hours and a fare of \$60 for all other hours would equalize the passenger load during business-travel and tourist-travel hours.

To operate the route, the airline would need two 200-passenger jet aircraft. The aircraft would be leased at an annual cost of \$10,000,000 each. Other committed costs for ground service would amount to \$5,000,000 per year.

Operation of each aircraft requires a flight crew whose salaries are based primarily on the hours of flying time. The costs of the flight crew are approximately \$800 per hour of flying time. Fuel costs are also a function of flying time. These costs are estimated at \$1,000 per hours of flying time. Flying time between Phoenix and Las Vegas is estimated at 45 minutes each way.

The flexible costs associated with processing each passenger amount to \$5. This amount includes ticket processing , agent commission, and baggage handling. Food and beverage service cost \$10 per passenger and will be offered at no charge on flights during business hours. The airline expects to recover the cost of this service on non-business-hour flights through charges levied for alcoholic beverages.

- (1) If six business flights and four tourist flights are offered each way every weekday, and 12 tourist flights are offered each way every Saturday and Sunday, what is the average number of passengers that must be carried on each flight to break even?
- (2) What is the breakeven load factor (percentage of available seats occupied) on a route?
- (3) If Trans Western Airlines operates the Phoenix-Las Vegas route, its aircraft on that route will be idle between midnight and 6 A.M. The airline is considering offering a “Red Die” special, which would leave Phoenix daily at midnight and return by 6 A.M. The marketing division estimates that if the fare were no more than \$40, the load factor would be 50% for each Red Die flight. Operating costs would be the same for this flight, but advertising costs of \$10,000 per week would be required for promotion of the service. No food or beverage costs would be borne by the company. Management wants to know the minimum fare that would be required to break even on the Red Die special, assuming that the marketing division’s passenger estimates are correct.

5. Solve

**3-16 CVP computations.** Fill in the blanks for each of the following independent cases.

Case	Revenues	Variable Costs	Fixed Costs	Total Costs	Operating Income	Contribution Margin Percentage
a.		\$500		\$ 800	\$1,200	
b.	\$2,000		\$300		\$ 200	
c.	\$1,000	\$700		\$1,000		
d.	\$1,500		\$300			40%

6. Solve

**3-20 CVP exercises.** 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.

Consider each case separately:

1. a. What is the current annual operating income?
- b. What is the present breakeven point in revenues?

Compute the new operating income for each of the following changes:

2. A \$0.04 per unit increase in variable costs
3. A 10% increase in fixed costs and a 10% increase in units sold
4. A 20% decrease in fixed costs, a 20% decrease in selling price, a 10% decrease in variable cost per unit, and a 40% increase in units sold

Compute the new breakeven point in units for each of the following changes:

5. A 10% increase in fixed costs
6. A 10% increase in selling price and a \$20,000 increase in fixed costs