**1. Breakeven Analysis**.

The Midtown Filling Station is a gasoline retailer in Denton, Texas. Louie DePalma, proprietor of Midtown, has decided to prepare a financial analysis of the potential of a 24-hour convenience store operation. Opening such a center would require remodeling the filling station and the hiring of additional cash register attendants, but mechanics would still work only from 8 am to 5 pm. Estimated first year expenses for the Midtown's service and convenience center are:

|  |  |
| --- | --- |
| Cash register attendant salary expense | $ 30,000 |
| Mechanic salary expense | 80,000 |
| Supplies | 8,000 |
| Equipment | 10,000 |
| Remodeling | 45,000 |
| Electricity, heat, and taxes | 15,000 |
| Total expenses | $188,000 |

Mechanic and attendant salary expenses are estimated on an hourly basis, reflecting any additional salary and overtime costs. Supplies and remodeling expenses are above and beyond those required for normal facility operations. Equipment costs represent a prorated share of the centers fixed equipment-leasing costs. Electricity costs of $3,000 reflect additional anticipated usage, whereas heat and taxes of $2,000 reflect an allocated share of fixed expenses.

Calculate breakeven revenue for the proposed 24 hour service and convenience center.

2. **Degree of Operating Leverage.**

Ion Generating, Inc., produces ion generators and control (detection) devices for industrial applications such as chemical labs. It is contemplating an expansion into the home security market by producing a smoke detector based off of the same technology that would sell at a price of $50. The production of each smoke detector would require $20 in materials, and 0.4 hours of labor at the rate of $25 per hour. Energy, supervisory and other variable overhead costs would amount to $10 per unit. The accounting department has derived an allocated fixed overhead charge of $7.50 per smoke detector (at a projected volume of 300,000 units) to account for the expected increase in fixed costs.

A. What is Ion Generating's breakeven sales volume (in units) for smoke detectors?  
B. Calculate the degree of operating leverage at a projected volume of 300,000 units and explain what the DOL means.