Assignment 1

# Exercise for Chapter 1:

Tom Johnson Manufacturing intends to increase capacity through the addition of new equipment. Two vendors have presented proposals. The fixed cost for proposal A is $50,000, and for proposal B, $70,000. The variable cost for A is $12, and for B, $10. The revenue generated by each unit is $20.

1. What is the Break-Even point (BEP) in units for proposal A?

*Proposal A:*

*- Fixed Cost: $50,000*

*- Variable Cost: $12 per unit*

*Revenue per unit for both: $20*

*- BEP for Proposal A = $50,000 / ($20 - $12) = 6,250 units*

1. What is the BEP in units for proposal B?

*Proposal B:*

*- Fixed Cost: $70,000*

*- Variable Cost: $10 per unit*

*Revenue per unit for both: $20*

*- BEP for Proposal B = $70,000 / ($20 - $10) = 7,000 units*

1. If the expected volume is 8,500 units, which proposal should be chosen?

*Proposal A Total Cost: $50,000 (Fixed Cost) + ($12/unit \* 8,500 units) = $50,000 + $102,000 = $152,000*

*Proposal B Total Cost: $70,000 (Fixed Cost) + ($10/unit \* 8,500 units) = $70,000 + $85,000 = $155,000*

*Recommendation: Choose Proposal A since it results in a lower cost.*

1. If the expected volume is 15,000 units, which proposal should be chosen?

*Proposal A Total Cost: $50,000 (Fixed Cost) + ($12/unit \* 15,000 units) = $50,000 + $180,000 = $230,000*

*Proposal B Total Cost: $70,000 (Fixed Cost) + ($10/unit \* 15,000 units) = $70,000 + $150,000 = $220,000*

*Recommendation: Choose Proposal B as it becomes more cost-effective at higher volumes.*

# Exercise for Chapter 2:

Solve the following LP problem by using the graphical procedure and by using

Excel:

Maximize profit = 2*X* +*Y*

subject to the constraints

3X+6Y ≤ 32

7X+Y ≤ 20

3X−Y ≥ 3

X, Y≥ 0

*X = 1, Y = 1*

*Z = 2X +Y = 2(1) + 1 = 3*

*The Solver solution matched the graphical method, confirming the results are accurate.*

A screenshot of a computer

AI-generated content may be incorrect.