Breakeven and Sensitivity Analysis Homework Exercise (KEY)

Use the attached Horse Boarding Enterprise Budget to answer the following questions. Nellie has estimated the revenues and expenses of her horse boarding operation on this enterprise budget. But she didn't know a few of the numbers so she had to make some "educated guesses". Help Nellie make management decisions for her horse boarding operation. **Show your work to receive full credit.**

1. What is the minimum monthly boarding price that Nellie must charge her customers to breakeven in the short run?

   (Hint: Total Revenues = Number of Head x 12 months x Monthly Boarding Price)

   Total Revenues = Total Variable Costs

   Number of Head x 12 months x Monthly Boarding Price = Total Variable Costs

   Monthly Boarding Price = Total Variable Costs / (Number of Head x 12 months)

   Monthly Boarding Price = $96,235.83 / (18 head x 12 months) = $445.54/month

2. What is the minimum number of horses that Nellie needs to board per month so that she can cover her operating costs. Assume that she charges $500/horse per month and that all costs remain the same.

   Total Revenues = Total Variable Costs

   Number of Head x 12 months x Monthly Boarding Price = Total Variable Costs

   Number of Head = Total Variable Costs / (12 months x Monthly Boarding Price)

   Number of Head = $96,235.83 / (12 months x $500/month) = 16 horses

3. Nellie wants to be able to cover her total costs so that she can stay in business for many years (the long run). What monthly price per horse does she need to charge her customers so that she can cover her total costs?

   Total Revenues = Total Costs

   Number of Head x 12 months x Monthly Boarding Price = Total Costs

   Monthly Boarding Price = Total Costs / (Number of Head x 12 months)

   Monthly Boarding Price = $116,235.83 / (18 head x 12 months) = $538.13/month

4. Calculate the minimum monthly rate per horse that Nellie needs to charge so that she can cover her total costs and pay herself a salary of $20,000 per year.

   Total Revenues = Total Costs + Desired Profit

   Number of Head x 12 months x Monthly Boarding Price = Total Costs + Desired Profit

   Monthly Boarding Price = (Total Costs + Desired Profit)/ (Number of Head x 12 months)

   Monthly Boarding Price = ($116,235.83+$20,000) / (18 head x 12 months) = $630.72/month

5. It is supposed to be a very dry year, so Nellie expects her grass hay price to increase. What will happen to her Return Above Variable Costs if her grass hay price increases by 20%? Use the spreadsheet to do the calculations for you.

   a. What is her new grass hay price going to be if it increases by 20%?

      New Grass Hay Price = $185/ton x (1 + 20%) = $222/ton

   b. What is her new Return Above Variable Costs after you plug in the new grass hay price?

      New RAVC = $9,486.79

   c. How much did her Return Above Variable Costs decrease due to the higher grass hay price?

      $11,764.17 - $9,486.79 = $2,277.38 decrease

6. What will happen to Nellie's Return Above Total Cost if she can reduce the hours of labor needed per horse by 15%? (Assume her grass hay price is the original $185/ton)

a. What is her new labor per horse (hours) going to be if it decreases by 15%?

New Hours/Horse = 300 hours x (1 – 15%) = 255 hours/horse

b. What is her new Return Above Variable Costs after you plug in the new labor needs?

New RAVC = $20,107.17

c. How much did her Return Above Variable Costs increase due to the lower labor needs?

$20,107.17 - $11,764.17 = $8,343 increase

Extra Credit

Use Goal Seek in Excel to answer the following questions.

A. Calculate the minimum boarding price that Nellie needs to charge so that she can cover her total costs in the long run. Show the information you entered into Goal Seek:

Set Cell: I48 (enter the correct cell reference – example: H5)

Equal To: $0 (enter the correct number – example $0)

By Changing Cell: F10 (enter the correct cell reference)

Minimum Boarding Price: $ $445.54/month

B. Calculate the minimum boarding price that Nellie must charge to earn a Return Above Total Costs of $30,000/year.

Set Cell: I51 (enter the correct cell reference – example: H5)

Equal To: $30,000 (enter the correct number – example $0)

By Changing Cell: F10 (enter the correct cell reference)

Minimum Boarding Price: $ 677.02 /month

C. We haven't done an example like this, but I know that you can figure it out on your own. Nellie expects that she will have to pay a higher price for her grass hay this year. What is the maximum price ($/ton) that she can pay for grass hay and still be able to cover her total variable costs?

Set Cell: I48 (enter the correct cell reference – example: H5)

Equal To: $0 (enter the correct number – example $0)

By Changing Cell: F20 (enter the correct cell reference)

Maximum Grass Hay Price: $ $376.13/ton