

Math 075 Animal Feeds Project

The Problem

All classes of livestock require the basic nutrients; protein, carbohydrates, lipids, minerals, vitamins, and water. Crude protein is essential to raising healthy livestock and is measured as either a % of the total ration or on an amount per day basis. In this problem, we will use protein hired by Clayton Farms to be in charge of animal nutrition. The feed orders that you are responsible for have specific dietary requirements that need to be met by combining different ingredients. Because of differences in ingredient prices, you need to determine the least expensive formulation that will meet the nutritional requirements of the feed orders. Clayton Farms has just received an order for 20 tons of feed with 18% crude protein. In this problem, there are two constraints, weight and crude protein. The available ingredients and their respective prices are given in the table below:

Ingredient	% Crude Protein by Weight	Cost in Dollars per Ton
Barley	11%	131.81
Corn	9%	133.63
Cotton Seed Meal	41%	257.00
Soybean Meal	48%	301.00

Find the combination of two ingredients that satisfies the crude protein requirement for the least amount of investment. You will need to convince the owner of Clayton Farms that you have indeed found the least expensive option.

The Paper

You will need to write a report for your new employer at Clayton Farms explaining your problem solving strategies and your solution.

Your paper should be typed, with graphs created in something like demos; it should also include the following:

1) Clear introduction

- State the problem that you are trying to solve. Write the paper as if you were explaining the problem to someone who has no prior knowledge of the problem.

2) Solution

- Explain how you intend to solve the problem and clearly identify the variables in each situation, do not assume that the reader understands what "x" is.
- Explain how you derived each formula that you use in order to solve the problem.
- Use graphs to help explain your solution. Be sure to clearly label the graphs and axes.

3) Conclusion

- State the answer in a complete sentence that makes sense in the context of the problem.

4) Sources

- Be sure to cite any sources of help you received.

The project is due Sunday, September 2nd at 11:59pm

The Rubric (How you will be graded)

Grading Guidelines for Project Paper	excellent	good	satisfactory	poor	insufficient
Introduction outlines the situation and what questions are to be addressed. Writing is logical and organized.	5	4	3	2	1
Variables used are defined, equations are explained. An outline of the solving process is given.	5	4	3	2	1
Solution is correct.	5	4	3	2	1
Graphs are labeled and used to support the solution. They look professional (not hand drawn).	5	4	3	2	1
The answer is given in a complete sentence, with units.	5	4	3	2	1