State of Iowa   CONTESTENT NAME _____
DEPARTMENT OF EDUCATION
Career Education Division   CONTESTANT SCHOOL _____
Grimes State Office Building
Des Moines, IA 50319

COMPUTER APPLICATION
(15 minutes)

NO CALCULATORS ARE PERMITTED.

You have a confined dairy herd of 100 cows in a free stall barn. The average animal weight is 1200 lb/cow. You will construct a manure storage tank that will hold a depth of 25 feet of manure and you wish to completely store ½-year of the manure production.

Use the given Excel spreadsheet to assist in predicting the dimensions of a manure storage tank and the amount of nutrients (N, P_2O_5, K_2O) in the tank. Follow this procedure:

1. Enter you name and school into the spreadsheet.

2. Enter the values for manure production and nutrient content into the spreadsheet. They can be found in Table 2 of Pm-1811, "Managing Manure Nutrients for Crop Production."

3. In cell B12, enter a formula to calculate the diameter of the tank necessary to hold ½-year of manure production from the cows. The volume of the tank can be calculated by:

$$Volume = (\pi)(depth)\frac{(diameter)^2}{4}$$

4. Assume the value of nitrogen (as anhydrous) is $0.20 per lb. Enter this into the spreadsheet.

5. Determine the value ($) of the total pounds of nitrogen in the storage tank as if it were anhydrous by entering a formula that multiplies the per-pound value of nitrogen by the total pounds of nitrogen. Enter of formula in cell B27 to make this calculation.

6. Print out the completed spreadsheet.

7. **QUESTION.** Using the spreadsheet, answer the following question. If the value of nitrogen were changed to $0.24 per lb, what would the total value of nitrogen in the tank be? Write the answer below.

ANSWER: _____

8. Hand in this page and the printout to the judge.

Evaluation Score Sheet

Items		Points	
		Possible	Earned
1.	Data entered correctly	7	_____
2.	Diameter correctly calculated..	7	_____
3.	Nitrogen value correctly calculated..	5	_____
4.	Printout..	3	_____
4.	Question answered	3	_____
	Total	25	