Math 104Q

Group Work on Systems of Equations: Which Honda Should You Buy?

You plan to purchase a brand new Honda Civic, and are trying to decide between two models: the **Honda Civic Ex** ,and the electric hybrid model **Honda Civic Hybrid**. The Honda Civic Hybrid costs $20,800 compared to the Honda Civic Ex which costs $18,500. However the overall gas mileage for the Honda Civic Hybrid is about 48 mpg (miles per gallon of gas), compared to about 28 mpg for the Honda Civic Ex. (mileage varies depending on driving conditions)

1. Organize the above information in the following table. Assume that gasoline is $2.00 per gallon when calculating the cost of gas per mile for each car.

Car	Purchase Price	Miles per gallon	Cost of Gas per mile
Honda Civic Ex			
Honda Civic Hybrid			

2. Calculate the annual cost of gas for each of the Honda Civic models if you drive 10,000 miles per year?

Honda Civic Ex: _____

Honda Civic Hybrid: _____

3. Calculate the total cost (purchase price plus gas cost) of operating each model for one year? For five years?

	One year cost	Five year cost
Honda Civic Ex:	. _____	_____ .
Honda Civic Hybrid:	. _____ .	. _____ .

4. Based on your calculations in Exercise 3, which of the two Honda Civic models seems to be a better deal? Explain your answer.

5. Denote by x the number of years you own a car, and by y the total cost of operation the car for x years. For simplicity we assume that the total cost of operating the car is the sum of its purchase price and the total gas cost. For each model, write an equation expressing the relationship between y and x.

Honda Civic Ex:

Honda Civic Hybrid:

6. Solve the system of equations in Exercise 5.

7. Graph the lines represented by the system of equations in Exercise 5 and plot the solution. How does this solution compare with your solution from Exercise 6?

8. If you are like me, and like to keep your cars for at least ten years, which of the two Honda Civic models would be a better deal for you? Explain how the graphs from Exercise 7 affect your answer. Would your answer be the same if you only planned to keep the car for six years? Why?