

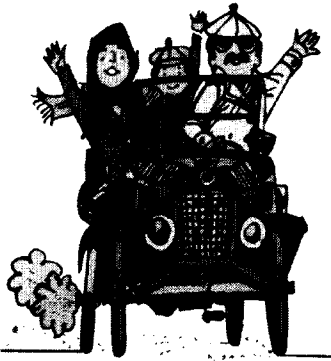
Car Pool

Surveys
Scatter Plots
Mode
Data Analysis
Decimals
Fractions

Standards: Problem Solving, Communication, Reasoning, Connections, Computation and Estimation, Algebra, Statistics, Measurement

Materials: fx-7400G, 4-Lane road.

Calculator Use: RUN and STAT Menus, LISTS



Energy conservation is becoming a dominant issue. We, as Americans, consume more energy for vehicle travel than any other country in the world. Provide 3 explanations to support this claim. **A.**

You will be surveying the number of occupants in a vehicle. For this activity, consider only vehicles that can hold at least 4 people, including the driver. Vans that do not have ample windows to permit viewing passengers should be eliminated. Are there are other decisions you might need to consider? **B.**

Decide how many vehicles you will use in the survey. Too small a number will not provide adequate information. Too many vehicles may take too long. How many vehicles will you use in your survey? **C.** _____

You might decide to take every car as it passes. This assumes you or your group can record results quickly which mandates practice and organization. You could elect to do every fifth car. This provides additional time to gather the information, but it also takes longer to conclude the survey.

Decisions like these are similar to those that individuals in the work world must make daily as they gather data.

The information for this survey can be gathered in a variety of manners.

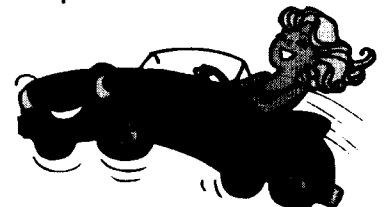
As a passenger, you could record the number of people in cars that are going in the opposite direction from yours. It is not easy, but it can be done.

You could remain stationary and gather data as vehicles pass your location.

You might decide to survey traffic going only in one direction (east or west).

Suppose your class could do the survey at a 4 lane local road. You might have 4 groups: near outside lane, near passing lane, far outside lane, and far passing lane. The information from these 4 groups could be compared to see if there are any differences. You might be surprised.

? represents a high level question



Car Pool

How to Enter a List

Enter the STAT menu.
Place cursor in List 1 row 1.
Enter value.
Press **EXE**.
Enter next value.
Press **EXE**.
Repeat process for remaining values.

How to Change Lists for a Scatter Plot

In the STAT Menu,
Press F1 (GRPH).
▷ (right of F4).
F4 (SET) see screen below



Highlight XList.
Press F1 (LIST1).
Highlight YList.
Press F2 (LIST2).
Press QUIT key.
You have set Stat Graph1 to use List 1 as the XList and List 2 as the YList.

How to Draw a Scatter Plot

Enter the STAT menu
Press F1 (GRPH)
▷ (right of F4)
F6 (SET)
Highlight G-Type
Press F1 (Scat)
Press QUIT
F1 (GRPH)
F1 (GPH1)

Number of people in car	close outside lane	close inside lane	far inside lane	far outside lane
1				
2				
3				
more than 3				

Table 1

List your data in Table 1. **D.**

Enter the values 1, 2, 3, and 4 into List 1 of the fx-7400G.
Enter your data for the close outside lane into List 2.
Enter the data for the close inside lane into List 3.
Enter the data for the far inside lane into List 4.
Enter the data for the far outside lane into List 5.

Create a scatter plot for each lane.

All the scatter plots will use List 1 as the XList. The scatter plot for the close outside lane will use List 2 as the YList. The scatter plot for the close inside lane will use List 3 as the YList. The scatter plot for the far inside lane will use List 4 as the YList, and the scatter plot for the far outside lane will use List 5 as the YList. Be sure to change the YList prior to graphing each scatter plot.



Compare and contrast the scatter plots for each lane. **E.**



What occupancy category (1,2,3, more than 3 passengers) was the most frequent? **F.** _____
Was this true in all class surveys? **G.** _____ Why do you suppose that is? **H.**

Suppose all vehicles in this survey are driven 300 miles a week and travel 25 miles on a gallon of fuel. Using only 1 car and assuming gas sells for $\$1.39\frac{9}{10}$. How much money is spent on fuel in a week? **I.** _____

Using all the vehicles from your survey, how much money is spent on fuel each week if gas costs $\$1.39\frac{9}{10}$ per gallon? **J.** _____

ASSUME you could mandate that 4 people must ride in one car. Three people in 1 car would join with one person driving alone and that 2 pairs are placed into one car. Using the data from your survey and making the maximum number of combinations to yield exactly 4 people in a vehicle (you might have 1, 2, or 3 people left over who would automatically be placed together in an additional vehicle), how many vehicles would have been on the road during the survey? **K.** _____

Now, using the same rates, how much is spent on fuel for a week? **L.** _____



Does car pooling pay off? **M.**