Math 160/263 Minitab Assignment # 3 - Unix Version

Chapter 2 - Correlation and Linear Regression

Worksheet Name - data3.MTW

1. The city and highway gas mileages for 29 midsize cars and 26 four-wheel-drive sport utility vehicles from the 1998 model year are given in data3.MTW.

   (a) Make an **LPLOt** of highway mileage against ciy mileage, using different symbols for the the midsize cars and SUVs.

   (b) Briefly describe the direction, form, and strength of the relationship between city and highway mileage.

   There is one clear outlier. This is the Volkswagen Pasat with disel engine. Because this is the only vehicle with a diesel engine, remove it from the data before doing any further analysis.

   (c) Find the **CORRelation** between city mileage and highway mileage for the entire set of data, for the midsize cars alone, and for the SUVs alone.

   (d) Briefly explain why the three correlations are similar.

2. The average numbers of steps per second for a group of top female runners at different speeds are also given in data3.MTW. The speeds are in feet per second.

   (a) We would like to predict steps per second from running speed. Make a **PLOT** of the data with this goal in mind.

   (b) Briefly describe the direction, form and strength of the relationship between speed and steps per second.

   (c) Find the least-squares **REGRession** line of steps per second on running speed, and draw this line on the scatterplot.

   (d) Does running speed explain most of the variation in the number of steps that a runner takes per second? Find r^2 and use it to answer this question.

   (e) If we wanted to predict running speed from a runner's steps per second, would we use the same line? Explain. Would r^2 stay the same?