

22S:008 Exam 2, Part II, April 9, 1999

Name: _____ Please circle one. Section: 11:30, 12:30 or 2:30

You may only use Minitab to answer these questions. Do not open any other software—no email, no Netscape, no nothing!

Do not print anything on the Lab printers. Please enter all of your answers from the computer screen onto these exam pages.

1. Enter the dataset named `Realprop.mtw` from the 22S-008 MTW data folder. These data give four variables, market value, square footage, assessed value, and grade for 60 houses.
 - a) (3 pts) What is the equation for the fitted regression plane that predicts `Market` from `Sq.ft` and `Assessed` together?

residual = _____ fitted value = _____
 - b) (2 pts) What are the residual and fitted values for the house with `Sq.ft = 538` and `Assessed = 28.2`?

residual = _____ fitted value = _____
 - c) (2 pts) What is the value of the residual standard deviation for the model fit in part a)?

residual standard deviation = _____
2. Again use the dataset named `Realprop.mtw` from the 22S-008 MTW data folder.
 - a) (2 pts) Create a new variable called `Sq.ft.sq` that is the square of the variable `Sq.ft`. What is the value of `Sq.ft.sq` for the third house in the dataset?

`Sq.ft.sq` = _____
 - b) (3 pts) What is the equation for the fitted quadratic regression curve that predicts `Market` from a quadratic curve in `Sq.ft`?

 - c) (2 pts) What is the correlation coefficient between `Sq.ft` and `Market`?

correlation coefficient = _____

3. Enter the dataset named P&G2 . mtw from the 22S-008 MTW data folder. (Be sure you enter P&G2 and not P&G1) These data are cap tightness of hair conditioner bottles from the Iowa City Proctor & Gamble plant. They are in subgroups of size 4. These data were collected after a process improvement had been implemented.
- (3 pts) Display the standard deviation control chart for these data. What is the value of **average of the subgroup standard deviations**? average subgroup standard deviation = _____
 - (3 pts) What is the value of the “three sigma” upper control limit on the s chart? UCL = _____
 - (3 pts) Is there evidence that the variability for this process is in-control or do we have evidence of special causes?
 - (3 pts) Display the mean control chart for these data. What is the value of the **grand mean** for these data? grand mean = _____
 - (3 pts) What is the value of the “three sigma” lower control limit on the mean chart? LCL = _____
 - (3 pts) Is there evidence that the mean level for this process is in-control or do we have evidence of special causes in this process?