

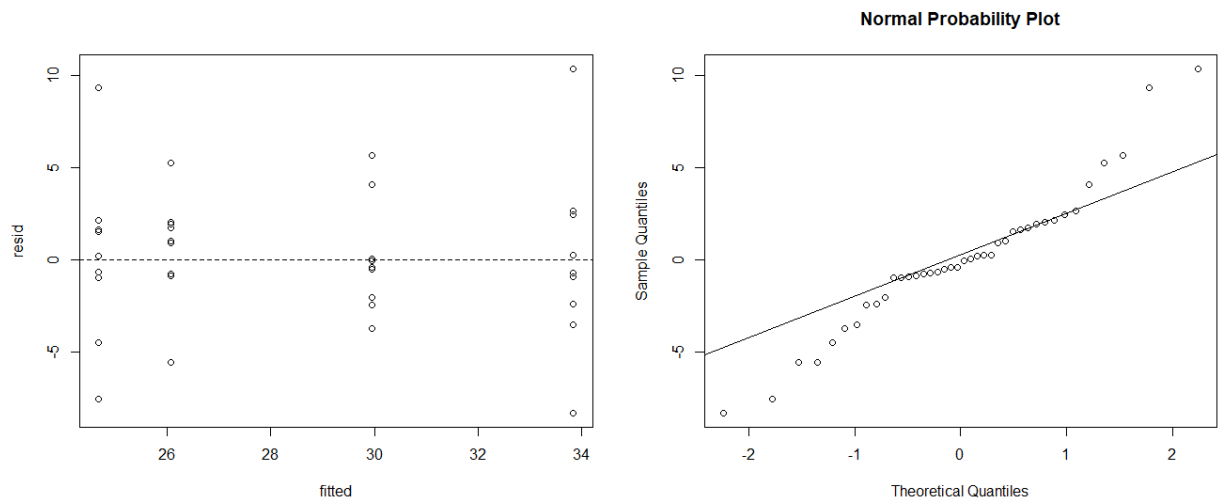
## STAT423/523 HW3

1. (Chapter 10, Section 10.1, Exercise 6. “Origin of Precambrian Iron Formations”) Carry out the ANOVA to investigate if the average Fe percentage for any of the four iron formations is different.
- How many treatments are there? How many replications for each treatment?
  - State the null and alternative hypothesis for the average Fe percentage for any of the four iron formations.
  - Construct the ANOVA table using the summary statistics provided below. (You can also use R software. The dataset “iron” is on blackboard.)

$$\sum \sum x_{ij}^2 = 33882.24$$

Treatment	Mean
Carbonate	$\bar{x}_{1.} = 26.08$
Hematite	$\bar{x}_{2.} = 33.84$
Magnetite	$\bar{x}_{3.} = 29.95$
Silicate	$\bar{x}_{3.} = 24.69$

- Make a decision about the test and interpret.
- Do the following diagnostic plots suggest that the model assumptions are inappropriate? Justify each assumption separately.



2. An experiment was run to compare  $I = 3$  types of boxes (treatment) with respect to compression strength. Each treatment is replicated 7 times.

a. Complete the ANOVA table by filling in the blanks with the correct values.

Source	Df	SS	MS	F	P-Value
Treatment			0.0668		
Error			0.0151		
Total					

- b. Let  $\mu_i$  be the true average compression strength for box type  $i = 1, 2, 3$ . Construct the Tukey's interval for each pair of the  $\mu_i - \mu_j$ . Use the sample mean from the table.

Treatment	Mean
1	$\bar{x}_{1.} = 21.714$
2	$\bar{x}_{2.} = 21.525$
3	$\bar{x}_{3.} = 21.750$
Total	$\bar{x}_{..} = 21.682$

- c. Apply the T Method and draw the underscore plot for comparing the treatments. Briefly explain your results.