STAT 217: Quiz 14

1. Refer to the data below. Is this a replicated or an unreplicated design? Explain how you know.

```
##     strength pressure temperature
## 1       9.60      120         250
## 2       9.69      130         250
## 3       8.43      140         250
## 4       9.98      150         250
## 5      11.28      120         260
## 6      10.10      130         260
## 7      11.01      140         260
## 8      10.44      150         260
## 9       9.00      120         270
## 10      9.57      130         270
## 11      9.03      140         270
## 12      9.80      150         270
```

2. Is this a balanced design? Briefly explain how you know.

3. Below is a partial anova table. Fill in the missing blanks.

```
Source                  df      SS
pressure                --      .58
temperature             --      4.66
pressure*temperature    --      2.15
Residual                --      ---
```

4. What did you get in the residual row above? Specifically explain why this is an issue.

5. Below is the interaction plot for these data. How would **you** deal with the issue identified above?

```
with(adhesive, interaction.plot(temperature, pressure,strength))
```
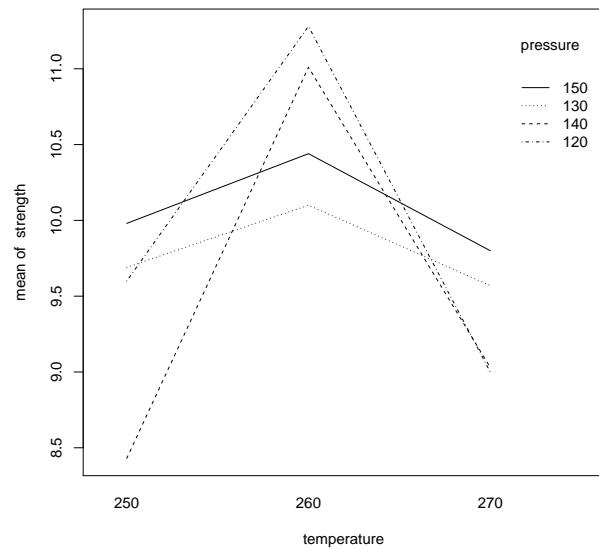
6. Below is the additive model, fit with Anova(lm.adhesive). In the temperature row, what distribution does the test statistic follow under the null hypothesis?

```
## Anova Table (Type II tests)
##
## Response: strength
##            Sum Sq Df F value Pr(>F)
## pressure     0.58  3    0.54  0.673
## temperature  4.66  2    6.49  0.032 *
## Residuals    2.15  6
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

7. Interpret the p-value in the temperature row of the Anova above. Refer to the example provided in class.