

STAT 217: Worksheet 4

This data set gives the number of warp breaks per loom, where a loom corresponds to a fixed length of yarn. The loom is set at a tension of low, medium or high. 54 measurements are taken. The researcher wants to know if the machine tension is related to the number of warp breaks.

1. Fill in the blanks on the following ANOVA table.

Analysis of Variance Table

Response: warpbreaks\$breaks

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
tension	--	-----	1017.13	-----	0.001753
Residuals	--	7198.6	-----		

2. What is the residual sums of squares (RSS) for the single mean model?
3. What is the residual sums of squares (RSS) for the separate means model?
4. Given the answers to the above two questions, how can you find the sums of squares given in the tension row of the table above?
5. Explain, relating your answer to the sums of squares, why the F-value is large (and the p-value small).
6. Write a conclusion to answer the research question.