Lab
One-Way ANOVA   **Name:** _____

Check the course calendar for the due date. I do not accept late labs!

A large company buys thousands of lightbulbs every year. The company is currently considering four brands of lightbulbs to choose from. Before the company decides which lightbulbs to buy, it wants to investigate if the mean lifetimes of the four types of lightbulbs are the same. The companys research department randomly selected a few bulbs of each type and tested them. The following table lists the number of hours (in thousands) that each of the bulbs in each brand lasted before being burned out.

Brand 1	Brand 2	Brand 3	Brand 4
23	19	23	26
24	23	27	24
19	18	25	21
26	24	26	29
22	20	23	28
23	22	21	24
25	19	27	28

At the 2.5% significance level, test the null hypothesis that the mean lifetime of bulbs for each of these four brands is the same. Assume that all the assumptions required to apply the one-way ANOVA procedure hold true.

1. (2 points)   What statements represent the null and alternative hypotheses?

                                                        1. _____

2. (1 point)   What value of α should you use for the hypothesis test?

                                                        2. _____

3. (1 point)   What is the formula for the test statistic?

                                                        3. _____

4. (1 point)   What is the value of the test statistic? Round to the hundredths.

                                                        4. _____

5. (1 point) What p-value is obtained from performing one-way ANOVA test? Round to the ten-thousandths.

                                                        5. _____

6. (1 point) Sketch a graph of the sampling distribution AND the p-value HERE.

7. (1 point) Did you reject H_0 or fail to reject H_0?

7. _____

8. (2 points) Interpret the decision.

A university employment office wants to compare the time taken by graduates with three different majors to find their first full-time job after graduation. The following table lists the time (in days) taken to find their first full-time job after graduation for a random sample of eight business majors, seven computer science majors, and six engineering majors who graduated in May 2009.

BUSINESS	COMPUTER SCIENCE	ENGINEERING
136	156	126
162	113	151
135	124	163
180	128	146
148	144	178
127	147	134
176	120	
144		

At the 5% significance level, can you conclude that the mean time taken to find their first full-time job for all May 2009 graduates in these fields is the same?

9. (2 points)   What statements represent the null and alternative hypotheses?

9. _____

10. (1 point)   What value of α should you use for the hypothesis test?

10. _____

11. (1 point)   What is the formula for the test statistic?

11. _____

12. (1 point)   What is the value of the test statistic? Round to the hundredths.

12. _____

13. (1 point) What p-value is obtained from performing one-way ANOVA test? Round to the ten-thousandths.

13. —————————

14. (1 point) Sketch a graph of the sampling distribution AND the p-value HERE.

15. (1 point) Did you reject H_0 or fail to reject H_0?

15. —————————

16. (2 points) Interpret the decision.