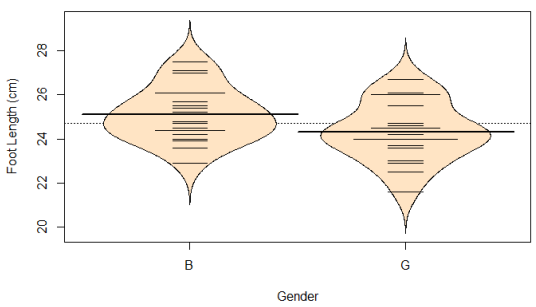
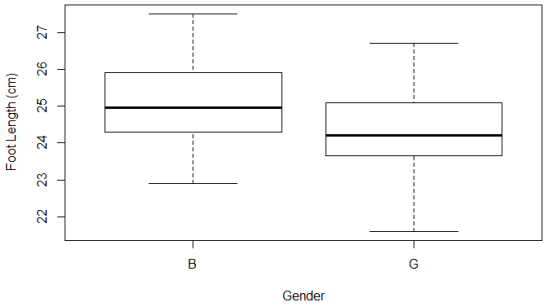
Name:_____

Stat 217: Homework 2

Due Friday, September 11 in class

A study was conducted by a statistician named Mary C. Meyer, in a 4th grade classroom in Ann Arbor, MI in October 1977. She measured a variety of things on the children in the room: their birth month, year, the length and width of their longer foot, and gender. For this assignment answer the questions below to investigate evidence for a difference in the average foot length between boys and girls.






```
> favstats(length~sex,data=KidsFeet)
  sex  min    Q1 median   Q3  max     mean       sd  n missing
1   B 22.9 24.35  24.95 25.8 27.5 25.10500 1.216758 20       0
2   G 21.6 23.65  24.20 25.1 26.7 24.32105 1.330238 19       0
```

```
> t.test(length~sex,data=KidsFeet,var.equal=T)
    Two Sample t-test
data:  length by gender
t = 1.9219, df = 37, p-value = 0.06234
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.04252336  1.61041809
sample estimates:
mean in group B mean in group G
       25.10500        24.32105
```

1. Using the plots above, describe the shape of the distributions and decide whether a Parametric or Non-Parametric Test would be more appropriate.

2. T-Test: Regardless to your answer above- conduct a Parametric Two-Sample T-Test for a difference in means at the 5% significance level using the R output above.

   a. State the null and alternative hypothesis. (Use proper notation)

   H_0:

   H_a:

b. Check the assumptions. Be sure to justify/provide evidence for your answers.

c. What is the test statistic? What is the p-value?

d. Make a decision and state your conclusion in the context of the problem.

e. What is the scope of inference in the context of the problem?

f. What is the 95% confidence interval for the true difference in average foot length?

g. Interpret the above confidence interval in the context of the problem.

h. Did your interval support the decision you made in the hypothesis test (part e)? How do you know?