Stats_101B_HW1_Charles_Liu

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Exercise 6 (Problem 2.29)

a)

```
C2F6_125 <- c(2.7, 4.6, 2.6, 3.0, 3.2, 3.8)
C2F6_200 <- c(4.6, 3.4, 2.9, 3.5, 4.1, 5.1)

t.test(C2F6_125, C2F6_200)
```

```
##
##  Welch Two Sample t-test
##
## data:  C2F6_125 and C2F6_200
## t = -1.3498, df = 9.9404, p-value = 0.207
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  -1.6354454  0.4021121
## sample estimates:
## mean of x mean of y
##  3.316667  3.933333
```

No, C2F6 Flow Rate does not affect average etch uniformity.

b)

```
t.test(C2F6_125, C2F6_200)$p.value # Our p-value is approximately 0.21
```

```
## [1] 0.2070179
```

c)

```
var.test(C2F6_125, C2F6_200, alternative = "two.sided")
```

```
##
##  F test to compare two variances
##
## data:  C2F6_125 and C2F6_200
## F = 0.85623, num df = 5, denom df = 5, p-value = 0.8689
## alternative hypothesis: true ratio of variances is not equal to 1
## 95 percent confidence interval:
##  0.1198124 6.1189129
## sample estimates:
```

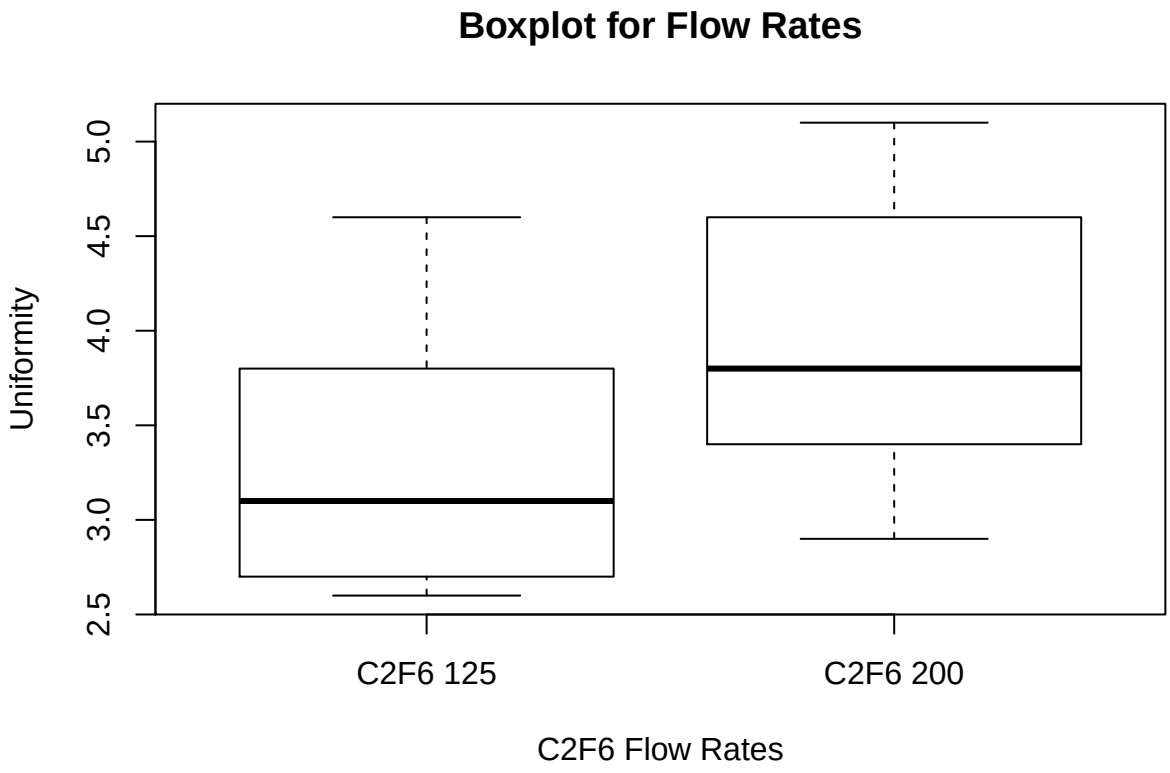
```
## ratio of variances
##          0.8562253
```

```
# F0 = 0.86 and our p-value = 0.87
```

Do NOT reject the Null Hypothesis. The C2F6 Flow Rate does not affect wafer-to-wafer variability.

d)

```
boxplot(C2F6_125, C2F6_200, main = "Boxplot for Flow Rates", names = c("C2F6 125", "C2F6 200"), xlab =
```



The boxplot shown indicates that there is little to no difference in uniformity for the two types of flow rates.