Question 2

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Part A

```
oneway_test <- oneway.test(react ~ group, data = lung, var.equal = TRUE)
```

$$H_0 : \mu_a = \mu_b = \mu_c$$
$$H_0 : \mu_a \neq \mu_b \; or \; \mu_a \neq \mu_c, \; or \; \mu_b \neq \mu_c$$

We reject the null hypothesis that there is no mean difference between groups A, B and C ($\alpha = 0.05$. At least one group mean is different from another.

Part B

```
aov <- aov(react ~ group, data = lung)
hsd <- PostHocTest(aov, method = "hsd")
p1 <- hsd$group[1,4]
p2 <- hsd$group[2,4]
```

After comparing the groups, two p-values were significant, (A to B and A to C, with $\alpha = 0.05$), and with the number of groups being at least 3 (number of comparisons at least 3) then we should perform a post-hoc Tukey-HSD test for multiple comparisons. After performing a post-hoc Tukey's HSD test, group A is still significantly different than group B (p = 0.0382469), and group A is still significantly different than group C p = 0.0217454)

Part C

```
oneway_test <- oneway.test(react ~ group, data = lung, var.equal = FALSE)
```

In this case it is not necessary to do any more post-hoc analyses, the p-value is non-significant, post-hoc analyses will not make our result significant.