Chapter 2 Worksheet

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Twin Study

Read case study 2.1.2. Read in the data.

```
library(Sleuth3)
data("case0202")
```

1. Create a vector containing the difference in the left-hippocampus in `Affected` and `Unaffected` twins.
2. Use the function `t.test()` to run a one-sample t-test against a null hypothesis of a mean difference of 0. You should read about this function with `help(t.test)`.
3. Now let's do this t-test the hard way. What are the mean and standard deviations of the difference in the left hippocampus between unaffected and affected twins? What is the sample size?
4. What is the t-statistic? Save it as the variable `tstat`.
5. What is the degrees of freedom? Save it as a variable `degfr`.
6. Use the `pt()` function to get the same p-value as in part 2.

Beak Study

Read about Case 2.1.1. Read it into R

```
library(Sleuth3)
data(case0201)
case0201$Year <- factor(case0201$Year)
```

1. Make a boxplot of `Year` (x-axis) against `Depth` (y-axis). Do the Depths from the two years look like they might have the same variance?
2. Now consider the following output of `t.test()`.

```
t.test(formula = Depth ~ Year, data = case0201, var.equal = TRUE)
```

Write out a statistical conclusion from the above procedure.