R problems

Math

1. What is `1+NA`?

2. What is `2/0`?

3. What is `log(0)`?

4. What is `(2+5)/10`?

5. What is `(2+5/10)`?

Parsing errors

1. What is `2/*1`?

2. What is `2/+1`?

3. What is `((2+2)/(3+4)`?

Variables

1. What is a in the below:
   ```
   a <- 2
   b <- 3
   a * b
   a <- a + b
   ```

2. How many items are in `c(1,NULL,2,NULL,4)`?

3. What is `c` in the following:
   ```
   c <- 1
   'c'<- 2
   ```

4. What happens when I type the following: `2 <- 3`?

Vectors

1. What is the value of `seq_along(c(3,1,2))`?

2. Is `rep(c(1, 2), each = 4)` the same as `rep(c(1, 2), times = 4)`?

3. What are the values of `d` and `e` in the following:
   ```
   a <- 1:5
   b <- c(1:1,3,3,2)
   d <- a[b]
   e <- b[a]
   ```

4. What is the value of `c(1:3,4:6)[0]`?

5. What is the value of `5[1:3]`?

6. What is the value of `1:6[rep(c(TRUE,FALSE),3)]`?

7. What is the value of `c(1,3,5,2,4,6) > 2`

8. What are the values of `b` and `c` in the following:
   ```
   a <- 1:10
   b <- a > 3 & a < 8
   c <- a > 3 & a <= 2
   ```

Matrices

1. What is the value of `a[,1]` in the following:
   ```
   a <- matrix(1:6, nrow=2)
   ```

2. What is the value of a[2,] (from previous)?

Dataframe Structure and indexing

1. What are the dimensions of the `Orange` dataframe?

2. What are the names of the variables in the `iris` dataframe?

3. What are the rownames of the `iris` dataframe?

4. What is the first row of data from the `PlantGrowth` dataframe?

Data summaries

1. What is the mean `weight` in the `PlantGrowth` dataframe?

2. How many unique values are there for the `group` variable in the `PlantGrowth` dataframe?

3. What is the range of the `weight` variable in the `PlantGrowth` dataframe?

4. What is the correlation between `height` and `weight` in the `women` dataframe?

5. How many `spontaneous` abortions are reported at each level of `education` in the `infert` dataframe?

6. Which state had the highest `Murder` rate in the `USArrests` dataset?

Plotting

1. How would we draw a scatterplot of `height` and `weight` for the `women` dataframe?

2. How would we make it red?

3. How would we make a boxplot of `circumference` by `Tree` in the `Orange` dataframe?

4. How would we plot the `anscombe` sets?

Scale construction

1. Combining `spontaneous` and `induced`, what is the mean number of abortions for individuals in the `infert` dataframe?

Regression

1. What is the effect of `UrbanPop` on `Murder` rate in the `USArrests` dataframe?

2. What are the effects of `Catholic` and `Education` on `Fertility` in the `swiss` dataframe? Is there an interaction?

3. What are the effects of `supp` and `dose` on `len` in the `ToothGrowth` dataframe? Is there an interaction?

Regression plotting

1. How would you draw a plot of the effect of `speed` on stopping `distance` in the `cars` dataframe?

2. How would we plot the effects (on `len`) of `dose` for each type of `supp` in the `ToothGrowth` dataframe?

GLM

1. Are either `age` or `education` significant predictors of having had a previous `spontaneous` abortion in the `infert` dataframe?

2. What about as predictors of an `induced` abortion?

3. How would we draw a plot of the predicted probability of each type of abortion (`spontaneous` and `induced`) across `age`? And how would we draw appropriate uncertainty intervals?