Biological Stats 2: Lab 1

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Start a new project. (call it biostats2 or something similar)
Open a new R markdown file. Save it. (name it lastname_lab1.Rmd or something similar)
At the top of the script, add comments with your name and lab 1.
Work in pairs or individually.
Submit your .Rmd file via myCourses before class on Tuesday next week.

Lab exercise 1/4

Write code that evaluates the following when run.

$$7 + 5(4 + 3)$$

$$e^{-5(0.2+0.15)}$$

$$\frac{\sqrt{1 + 2(3 + 2)}}{\ln(3^2 + 2)}$$

Lab exercise 2/4

(Instructions also in lab-exercise-01.pdf)

Create vectors using `seq()`, `rep()`, and mathematical operators. Only use `c()` when absolutely necessary.
hint Remember you can get help on a function by typing `?functionname`

- Positive integers from 1 to 99

- Odd integers between 1 and 99

- The numbers 1,1,1, 2,2,2, 3,3,3

- The numbers -5,-4,-3,-5,-4,-3,-5,-4,-3

- The fractions 1, 1/2, 1/3, 1/4, …, 1/10

- The cubes 1, 8, 27, 64, 125, 216

Lab exercise 3/4

Complete the following using the vector `y`:

```
y <- c(3,2,15,-1,22,1,9,17,5)
```

- Display the first and last values.

- Find the last value for a vector of any length.

- Display the values that are greater than the mean of `y`.

- Display the positions (indices) of the values greater than the mean.

- Are all the values positive?

- Are any of the values equal to the mean?

- Are any of the values equal to the median?

Lab exercise 4/4 (data frames using `hills`)

1. Display the first 5 rows of the `hills` dataframe.

2. Find the fastest time.

3. Display the hill races (and distance, climbs, and times) with the 3 fastest times.

4. Extract and display the record time for Cairngorm.

5. Find how many hill races have a climb greater than the mean.

6. Display the names of the hill races that have a climb greater than the mean.

7. Display the names and times of the races that are at least 10 miles long and have a climb greater than 4000 feet.

8. Find the standard deviation of the record times for all races except for the highest climb, the Bens of Jura.

9. Display the range (minimum and maximum) of the average speed for the races.

10. Find the race that had the fastest average speed.

11. **BONUS** Find the mean of the record times for races whose names start with letters A through K.