

Name: \_\_\_\_\_

Date: \_\_\_\_\_

## LAB 2C: Which song plays next? Response Sheet

Directions: Record your responses to the lab questions in the spaces provided.

### A new direction

#### Estimate what ... ?

- (1) Why do we *put a song back* each time we make a selection?
  
  
  
  
  
  
  
  
  
- (2) What would happen in our little experiment if we did not do this?

### Calculating probabilities

#### Estimating probabilities

#### Getting ready

```
rap <- rep("rap", times = 39)
```

- (3) Write and run a similar line of code to simulate the rock songs in our playlist of 100.

### Put the songs in the playlist

- (4) Fill in the blanks to combine your different songs:

```
songs <- _____(rap, _____)
```

### Pick a song, any song

- (5) Run this code 10 times and compute the proportion of "rap" songs you drew from the 10.
  
  
  
  
  
  
- (6) Once everyone in your class has computed their *proportions*, calculate the *range of proportions* (the largest *proportion* minus the smallest *proportion*) for your class and write it down.

### Now do() it some more

- (7) Fill in the blanks below to do the sample code from the previous slide 50 times:

```
do(_____) * sample(_____, _____ = _____, _____ = _____)
```

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(8) Write and run code *assigning* the 50 selected songs the name `draws` and then View your file.

(9) What is the variable name?

(10) Fill in the blank below to tally how often each genre was selected:

`tally(~_____, data = draws)`

(11) Compute the proportion of "rap" songs for your 50 draws and find out if the *range* for your class's proportions is bigger or smaller than when we drew 10 songs.

### Proportions vs. Probability

#### Non-random Randomness

#### Playing with seeds

(12) What value of `set.seed` did you and your partner use and what was the proportion of "rap" songs you obtained?

Redo the 50 simulations one last time but have each partner choose a different number for `set.seed()`.

(13) Are the proportions still the same? If so, can you find two different values for `set.seed` that give different answers?

### On your own

(14) Write and run code estimating the probability that a randomly chosen student went to the movies using 500 simulations.

(15) Write down both the code and the output that estimates the probability that a randomly chosen student went to the movies using 500 simulations. You might find it helpful to write your answer in an R Script (*File -> New File -> R Script*).