Group Quiz #1

Each student in your group needs to take the role of writer/recorder for portion of the quiz (as indicated). They will be responsible for helping the group come to consensus and also for writing the group's agreed upon response.

Writer/Recorder (#1–2): _____ (name)

1. To ensure that light rail passengers are paying fares, the Metro Transit Police randomly choose one of the three on-campus stops (*West Bank*, *East Bank*, and *Stadium Village*) to board the light rail and check passengers' proof of payment. There is a $180 fine for attempting to ride without a valid fare.

   The transit police have randomly chosen the East Bank stop for the last five consecutive inspections. Which of the three on-campus stops is *least likely* to be chosen for the next inspection (assuming the selection process is truly random)? Explain.

2. Albert Hoffman's wife has a Spotify playlist with five songs:
   - *November Rain* by Guns 'N Roses
   - *Ain't No Mountain High Enough* by Nicholas Ashford and Valerie Simpson
   - *Call Me Maybe* by Carly Rae Jepsen
   - *Rainbow Connection* by Kermit the Frog
   - *Statistician's Blues* by Todd Snider

   Using the Shuffle play feature, Spotify has played *Rainbow Connection* five times in a row. Does this prove that the Shuffle play feature is not playing songs randomly? Explain. (Assume that Spotify samples songs with replacement.)

Use for Questions 3–12

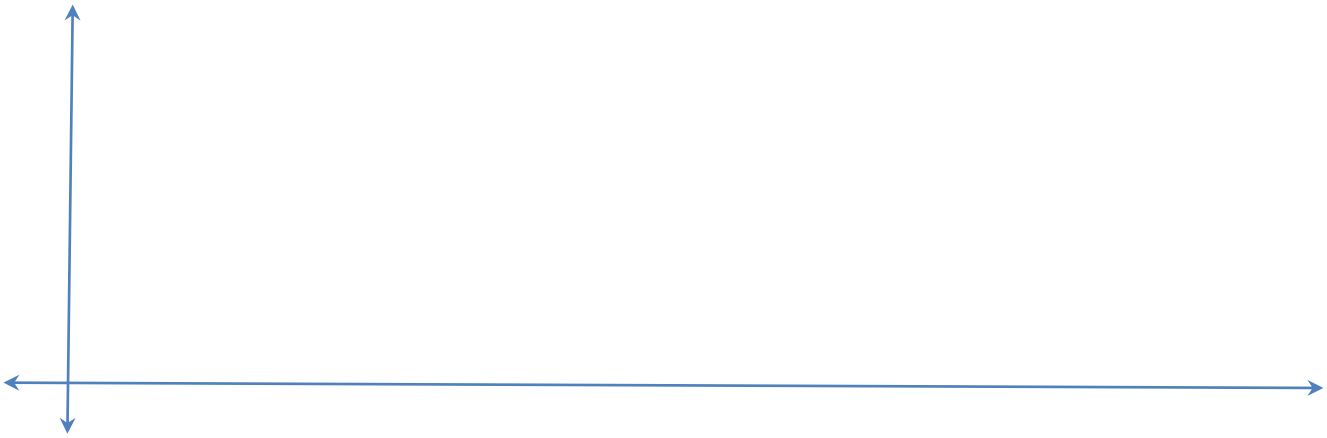
The *Western Regional Climate Center* reports precipitation at the start of each hour in several cities in the Pacific Northwest. Here are three cities and their recorded precipitation:

- Seattle, WA is reported to have measurable rain in 9.4% of recorded hours.
- Olympia, WA is reported to have measurable rain in 13.4% of recorded hours.
- Astoria, OR is reported to have measurable rain in 16% of recorded hours.

Writer/Recorder (#3–6): _____ (name)

3. Suppose you were to visit **Seattle, WA** for one week (168 hours). Use TinkerPlots™ and the *Western Regional Climate Center* data for Seattle to create a model for the number of hours it rains in the week. In the space below, draw a picture of the sampler that you will use to generate outcomes.

4. Use your Seattle rain model to simulate 200 trials. For each trial, collect the *number of hours* it rained in the week. On the axes below, sketch a plot of the results. Be sure to label and scale both axes appropriately.



5. Based on the plotted results from your simulation, what is the mean number of hours that it rains in Seattle?

6. Use evidence from your plot to provide a range of likely results from the Seattle rain model (i.e., consider where most of the results fall).

Writer/Recorder (#7–9): _____ (name)

Suppose you were to visit **Olympia, WA** for one week (168 hours). Use TinkerPlots™ and the *Western Regional Climate Center* data for Olympia to create a model for the number of hours it rains. (You do ***not*** need to draw a picture of the sampler you used to simulate Olympia rain hours.)

7. Use your Olympia rain model to simulate 200 trials. For each trial, collect the *number of hours* it rained in the week. On the axes below, sketch a plot of the results. Be sure to label and scale both axes appropriately.

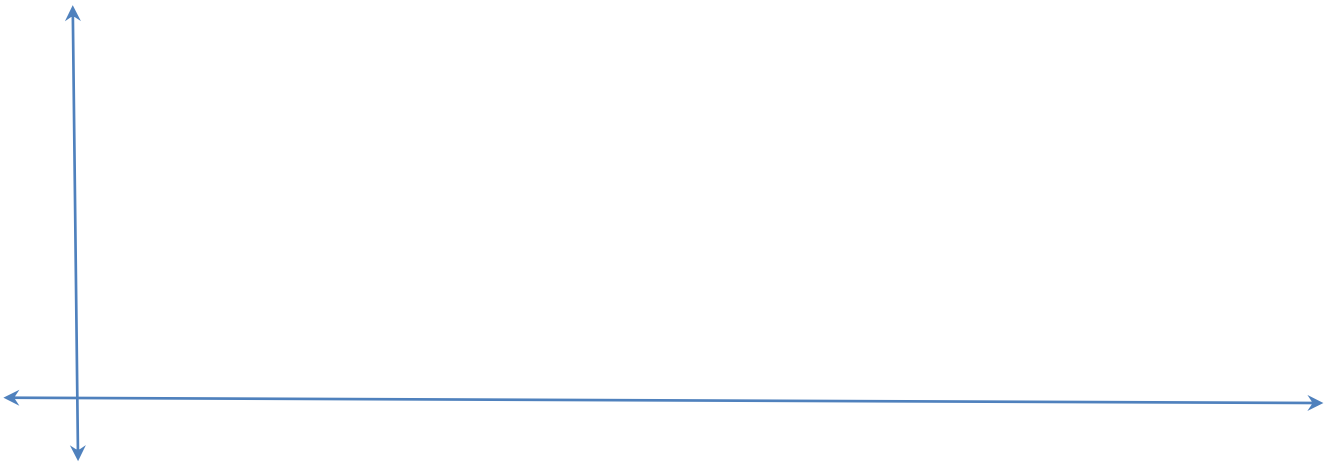
8. Based on the plotted results from your simulation, what is the mean number of hours that it rains in Olympia?

9. Use evidence from your plot to provide a range of likely results from the Olympia rain model (i.e., consider where most of the results fall).

Writer/Recorder (#10–12): _____ (name)

Suppose you were to visit **Astoria, OR** for one week (168 hours). Use TinkerPlots™ and the *Western Regional Climate Center* data for Astoria to create a model for the number of hours it rains. (You do not need to draw a picture of the sampler you used to simulate Astoria rain hours.)

10. Use your Astoria rain model to simulate 200 trials. For each trial, collect the *number of hours* it rained in the week. On the axes below, sketch a plot of the results. Be sure to label and scale both axes appropriately.



11. Based on the plotted results from your simulation, what is the mean number of hours that it rains in Astoria?

12. Use evidence from your plot to provide a range of likely results from the Astoria rain model (i.e., consider where most of the results fall).

Writer/Recorder (#13–15): _____ (name)

Use for Questions 13–15
Suppose Albert Hoffman visited a city in the Pacific Northwest for one week. He took data in the same way that the *Western Regional Climate Center* collects their data. He claims that on his vacation it rained only 15 out of the 168 hours.

13. If Albert Hoffman claimed his vacation was in **Seattle, WA**, would you believe his claim? Use the results of your simulation and the range of values you gave in Question #6 to justify your answer.

14. If Albert Hoffman claimed his vacation was in **Olympia, WA**, would you believe his claim? Use the results of your simulation and the range of values you gave in Question #9 to justify your answer.

15. If Albert Hoffman claimed his vacation was in **Astoria, OR**, would you believe his claim? Use the results of your simulation and the range of values you gave in Question #12 to justify your answer.