I. **Pre-class material** Either read the indicated textbook sections OR watch the indicated video.

(a) **Sections to Read** (All content from Blitzstein and Hwang's *Introduction to Probability* unless otherwise noted). A digital copy of the textbook is available for free via the authors' website.

- Read Section 1.8
- If you've never used R or RStudio before (or you want a refresher), read Chapter 3: R and RStudio Basics in Chester Ismay's *Getting Used to R, RStudio, and R Markdown*. You might also want to read Chapter 4: R Markdown and Chapter 5: Intro to R using R Markdown in the same text.

(b) **Videos to Watch** (All videos from Blitzstein's Math 110 YouTube channel, unless otherwise noted)

- If you've never used R and RStudio before, complete this R and RStudio tutorial from the Stat2Labs page

II. **Objectives** (By the end of the day's class, students should be able to do the following:)

- Identify and use the 4 components of the RStudio interface
- Manipulate vectors, sample random elements, and perform basic simulation in R via RStudio
- Use R to solve problems similar to the "Birthday Problem"

III. **Reflection Questions** (Submit answers on Gradescope `https://www.gradescope.com/courses/425901`)

1) Go to `rstudio.grinnell.edu`. (If you already have R and RStudio installed on your personal computer, you may use that instead of the Grinnell RStudio server.)
2) Under the files tab, select New File, then R Markdown... Title your R Markdown document "STA 335 DA 9-2', enter your name in the Author box, and select the PDF output format.
3) Under the files tab, select Save As... and fill in the file name with `STA_335_DA_9-2`
4) You should see your RStudio Server directory in the navigation window (If you haven't use the Grinnell Rstudio server before, this is a private file system that can host all kinds of documents for you). Create a new folder called STA 335 and save the file in this folder. (You are free to reorganize your directory later if you'd like)
5) Delete all text from line 12 onward (This is the text that comes with the default Rmarkdown template. Later, we'll talk about how to create a blank template).
6) On line 12, insert a new R code chunk (either by using the green 'insert' button at the top of the pane, or `Ctrl+Alt+I` on Windows, `Cmd+Option+I` on Mac)
7) In the code chunk, type the following:

```
(1 + 2^3)*sqrt(4)-log(5)+exp(-6)/cos(pi)
```

then run the code chunk (either by using the green arrow in the upper right of the chunk or `Cntr+Enter` on Windows, `Cmd+Return` on Mac.

8) Create a new code chunk below the previous one. Type and run the following:

```
x <- 1:5
y <- c(2,4,6,8,10)
x
y
sum(x)
mean(y)
2*x - y
```

9) Create a new code chunk below the previous one. Type and run the following:

```
n <- 5
sample(x, 5)
sample(x, 5, replace = T)
```

10) On a new line (not in a new code chunk), type the following

```
An important formula:
$$\sqrt{2 \pi} = \int_{-\infty}^{\infty} e^{-x^2/ 2} dx$$
```

11) At the top of the pane, click the blue Knit button (or `Ctrl+Shift+K` on Windows, `Cmd+Shift+K` on Mac)
12) In the viewer pane (lower right), select `STA_335_DA_9-2.pdf` (note: the .pdf, not the .R3md), click on the More gear, then click Export... Download the .pdf file to your computer.
13) Upload the .pdf file to Gradescope.

IV. **Additional Feedback** Are there any topics you would like further clarification about? Do you have any additional questions based on the readings / videos? *If not, you may leave this section blank.*