Group Work 08

```
library(bayesrules) # R package for our textbook
library(tidyverse) # Collection of packages for tidying and plotting data
library(janitor) # Helper functions like tabyl
library(rstan) # for fitting models
library(rstanarm) # for fitting standard regression models
library(broom.mixed) # for tidy() function
library(bayesplot) # helpful plotting functions
library(tidybayes) # helpful for wrangling Bayesian model output
library(patchwork)
```

1 BR 13.2

Calculate and interpret the odds for each event of interest below.

(a) The probability of rain tomorrow is 0.8.
(b) The probability of flipping 2 Heads in a row is 0.25.
(c) The log(odds) that your bus will be on time are 0.
(d) The log(odds) that a person is left-handed are -1.386.

2 BR 13.14 (adapted)

We return to the `pulse_of_the_nation` survey data in the {bayesrules} package which includes a variable on whether or not a person believes in `ghosts` (spooky!) You are going to build a logistic regression model using `age`, `education`, and `books` as predictors.

(a) Perform an appropriate EDA of the relationship between `ghosts` and each of the predictors
(b) Specify the full Bayesian model
(c) Fit the model specified in (b) using `stan_glm`. Include MCMC convergence diagnostics.
(d) Report the `tidy` coefficient table with 90% credible intervals and interpret the coefficients in context

(e) Check the fit of the model using an appropriate posterior predictive check

3 Mon

4 Mon

5 Wed

6 Wed