Question 0

```
# This is a code chunk.
# Furthermore, the '#' is used for comments and turns the text green.
# Comments are not executed when running the contents of a code chunk.
# Comments are important - read them!

# Assign the value 2 to X:
X <- 2
# Display X
X
```

```
## [1] 2
```

```
# Define Y as a vector containing the values 1,2,3,4
Y <- c(1,2,3,4)
# Display Y
Y
```

```
## [1] 1 2 3 4
```

```
# Values of a vector need not be numbers.
# For example, S is defined as the sample space from the "Family Planning" in the lecture notes:
S <- c("MMM","FFF","MFM","FMM","MMF","MFF","FMF","FFM")
# Display S
S
```

```
## [1] "MMM" "FFF" "MFM" "FMM" "MMF" "MFF" "FMF" "FFM"
```

Question 1 part (a)

```
# Replace "NULL" with the proper code.
A <- c("LLL", "RRR", "SSS")
B <- c("LRS", "LSR", "RSL", "RLS", "SRL", "SLR")
C <- c("RRL", "RRS", "RLR", "RSR", "SRR", "LRR")
D <- c("RRL", "RRS", "RLR", "RSR", "SRR", "LRR", "LLR", "LLS", "LRL", "LSL", "RLL", "SLL", "SSL", "SSR", "SRS",
```

Question 1 part (b)

```
# Replace "NULL" with the proper code.
E <- union(C,D)
G <- intersect(C,D)
```

Question 2

```
# Type "?c" below and run the code chunk.
?c
```

Read the description. What could the letter 'c' stand for in this function? **Type your answer below:** c{base} combines values into a vector or list. It is the default method where C stands for combine.

Question 3 part (a)

```
# This code is a function that simulates n rolls of two fair multi-sided dice.
# Each roll, the dice results are added together and stored in a vector called results.
dice_roll <- function(sides=6,rolls=1) {
  # initialize the results vector (empty to begin)
  results <- c()
  # initiate a for loop to run 'rolls' times
```

```
  for (i in 1:rolls) {
    # simulate the rolling of two die (randomly select two values from {1,2,3,..,'sides'})
    roll <- sample(1:sides,size=2,replace=TRUE)
    # sum the results of the roll (result will be a number between 2 and 2*sides) and put the total in the resul
    results <- c(results,sum(roll))
  }
  # print the results
  return(results)
}
# Execute this code chunk before proceeding.
```

Question 3 part (b)

```
# Test the dice_roll function below
dice_roll(sides =8, rolls=1)
```

```
## [1] 6
```

```
dice_roll(sides =9, rolls=10)
```

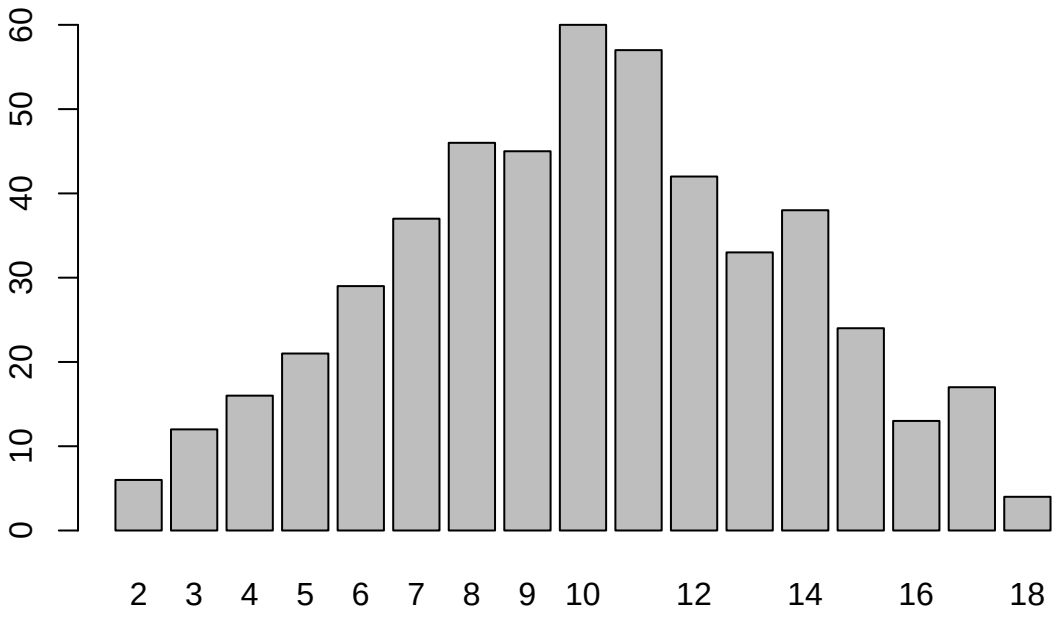
```
##  [1]  9  6 11 15 14 12 11  9 10 14
```

Question 3 part (c)

```
# Replace "NULL" with the proper code.
rolls_500 <- dice_roll(sides = 9, rolls = 500)
table(rolls_500)
```

```
## rolls_500
##  2  3  4  5  6  7  8  9 10 11 12 13 14 15 16 17 18
##  6 12 16 21 29 37 46 45 60 57 42 33 38 24 13 17  4
```

```
barplot(table(rolls_500))
```



Submission Instructions

1. Save this file. (Quick key combo for that is "control" (or "command" on a Mac) and "s")
2. Run the following code chunk to produce a pdf.
3. Both of these files are likely in the "Downloads" folder (unless you moved them). Check the contents of each file and upload both the Rmd and pdf files to Gradescope.