```r
#Homework 1 Sarah Cha

#read in cars.csv
cars = read.csv("cars.csv")

# 1. What are the variables in the file?
head(cars)
# Answer: mpg, cyl, disp, hp, drat, wt, qsec, vs, am, gear, carb

# 2. Find the mean, median, minimum, maximum, 1st quartile and 3rd
 quartile for the mpg variable.
summary(cars$mpg)
# Answer: mean: 19.49, median: 18.70, min: 10.40, max: 33.90, 1st Qu:
 15.20, 3rd Qu: 21.50

# 3. Create a histogram of the mpg variable.
hist(cars$mpg)

# 4. What is the standard deviation of mpg variable?
sd(cars$mpg)
# Answer: 6.047446

# 5. What is the variance of mpg variable?
var(cars$mpg)
# Answer: 36.5716

# 6. What is the relationship of the standard deviation to the variance?
 Why does the standard deviation and variance of the mpg variable differ?

# Answer: variance is the standard deviation squared. they differ because
 the variance is the squared differences.

# 7. How many data points are there for the cyl variable?
length(which(!is.na(cars$cyl)))
# Answer: 23

# 8. What is the mean of the cyl variable?
mean(cars$cyl, na.rm=T)
# Answer: 6.26087
```