Enter the following data into a text file; choose a name for it, say, reading.txt, and store it in a folder which is to be the working directory of R:

```
speed comp
5     60
7     76
15    76
12    90
8     81
7     75
10    95
11    98
9     88
13    73
10    90
6     66
11    91
8     83
10    100
8     85
7     76
6     69
11    91
8     78
```

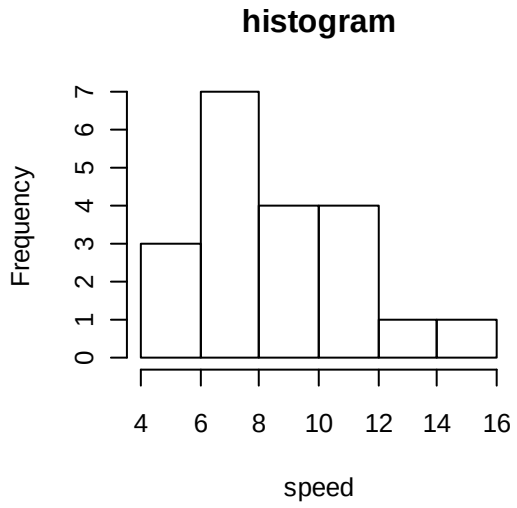
Enter, save, and run the following R "script" in the R editor:

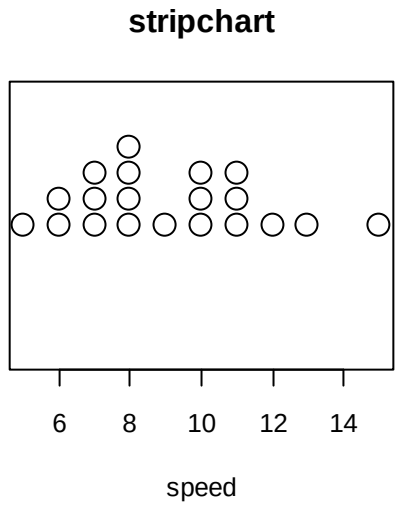
```
# R program to enter data and calculate summary
# statistics and exploratory plots. Data are from
# exercise 5.38, p. 281.  The two variables are
# reading test scores (speed: reading speed, comp:
# reading (comprehension) for incoming high school
# freshmen.

# Import the data into an R "data frame" named "Reading".
# The text file "reading.txt" should be in the working
# directory of R.  Change the working directory using the
# menu in the R console (File menu).  The argument
# "header=TRUE" indicates that the first line of the data
# file contains variable names.  The "attach()" command
# makes the variable names available for referencing the
# data vectors.  Otherwise they must be referred to as
# Reading$speed, etc.

Reading=read.table("reading.txt",header=TRUE)
attach(Reading)

#=========================================
#     PART 1.  SPEED
#=========================================

# Summary stats for the variable "speed".
summary(speed)
mean(speed)
var(speed)
sd(speed)
stem(speed)

# Plots for the variable "speed".
layout(matrix(1:4,nrow=2,ncol=2))  # Four panels (2 rows 2 cols).
hist(speed,main="histogram")       # R inserts panels by columns.
boxplot(speed,ylab="speed",main="boxplot")    # Row 2, col 1.
stripchart(speed,method="stack",xlab="speed",
```

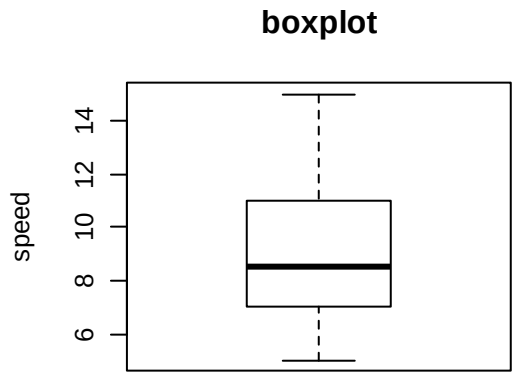
```
   main="stripchart",pch=1,cex=2)             # Row 1, col 2.
qqnorm(speed,main="normal q-q plot")          # Row 2, col 2.

#=======================================
#     PART 2.  COMP
#=======================================

# Summary stats for the variable "comp".
summary(comp)
mean(comp)
var(comp)
sd(comp)
stem(comp)

# Plots for the variable "comp".
X11()   #  Opens a new graphics window.
layout(matrix(1:4,nrow=2,ncol=2))
hist(comp,main="histogram")
boxplot(comp,ylab="comp",main="boxplot")
stripchart(comp,method="stack",xlab="comp",main="stripchart",pch=1,cex=2)
qqnorm(comp,main="normal q-q plot")

#=======================================
#     PART 3.  BIVARIATE
#=======================================

# Scatterplot of comp (vertical axis) versus speed (horizontal axis)
X11()   #  Opens a new graphics window.
plot(speed,comp,type="p")
detach(Reading)
```

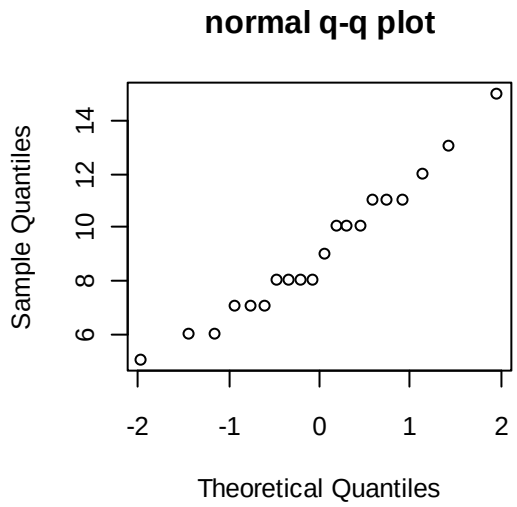
Results of Part 1:

```
> summary(speed)
   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
    5.0     7.0     8.5     9.1    11.0    15.0
> mean(speed)
[1] 9.1
> var(speed)
[1] 6.621053
> sd(speed)
[1] 2.573141
> stem(speed)

  The decimal point is 1 digit(s) to the right of the |

  0 | 56677788889
  1 | 00011123
  1 | 5
```



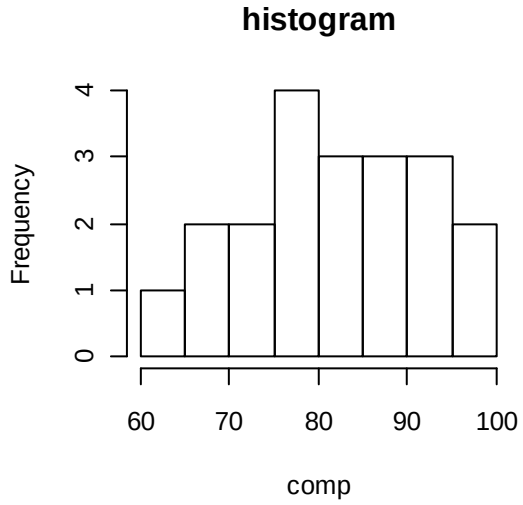


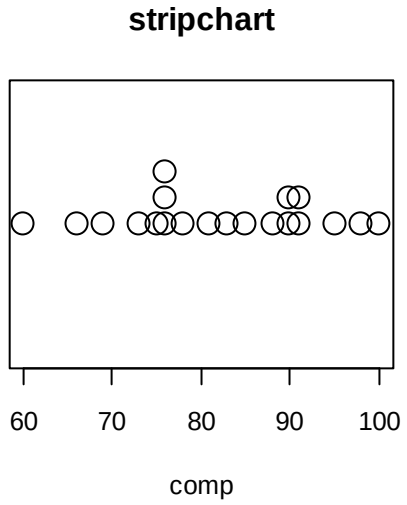


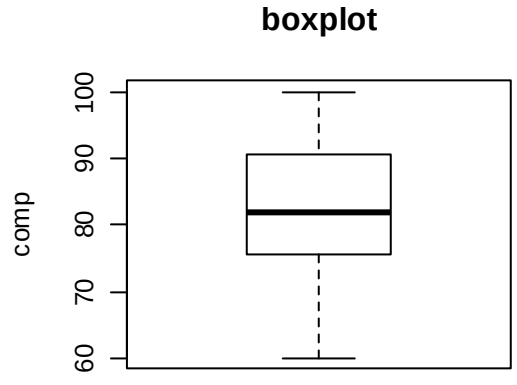


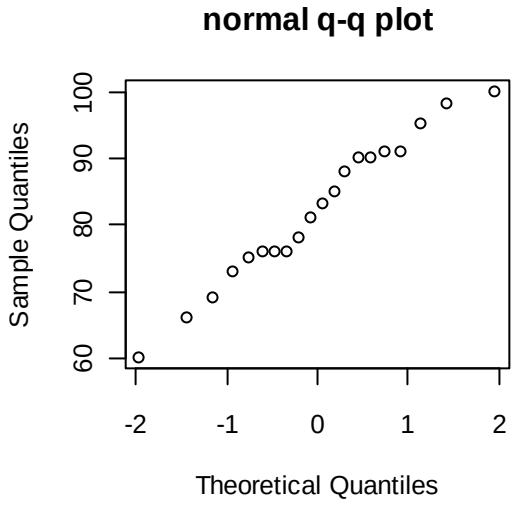
Results of Part 2:

```
> summary(comp)
   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
  60.00   75.75   82.00   82.05   90.25  100.00
> mean(comp)
[1] 82.05
> var(comp)
[1] 118.3658
> sd(comp)
[1] 10.87960
> stem(comp)

  The decimal point is 1 digit(s) to the right of the |

   6 | 069
   7 | 356668
   8 | 1358
   9 | 001158
  10 | 0
```









Results of Part 3: