Homework 1 Instructions:

- You must include comments in your code.
- It is NOT ok to copy code from the internet and claim it is your own.
- It is NOT ok to share your code with others in this class.
- It is NOT ok to turn in code someone else wrote for you.
- You may only use functions and objects that we have discussed in class so far.
- If your code does not run, you will get a zero on the assignment.
- If your code inputs data from an input file, be sure and include the file on drop box.
- Turn in all problems in an assignment in a single script file, clearly labeling each problem.

1. An individual wishes to take out a loan, today, of P at a monthly interest rate i. The loan is to be paid back in n monthly installments of size R, beginning one month from now. The size of the monthly payment can be found as

$$R = P\frac{i}{1-(1+i)^{-n}}$$

   Write R code to find the monthly payment for a general loan and use this to find the monthly payment for loans of

   (a) \$1500 with monthly interest rate of 1% and 10 payments

   (b) \$200,000 at a monthly interest rate of .003 based on 300 monthly payments

2. Using rep() and seq() as needed, create the following vectors

   (a) 0 0 0 0 0 1 1 1 1 1 2 2 2 2 2 3 3 3 3 3 4 4 4 4 4

   (b) 1 2 3 4 5 1 2 3 4 5 1 2 3 4 5 1 2 3 4 5 1 2 3 4 5

   (c) 1 2 3 4 5 2 3 4 5 6 3 4 5 6 7 4 5 6 7 8 5 6 7 8 9

3. The following are a sample of observations on incoming solar radiation at a greenhouse:

   11.1 10.6 6.3 8.8 10.7 11.2 8.9 12.2

   (a) Assign the data to an object called *solar.radiation*.

   (b) Find the mean, median and variance of the radiation observations.

(c) Add 10 to each observation of *solar.radiation*, and assign the results to *sr10*. Find the mean, median and variance of *sr10*.

(d) Multiply each observation by -2, and assign the result to *srm2*. Find the mean, median and variance of *srm2*.

(e) Plot histograms of *solar.radiation*, *sr10*, and *srm2* using *hist()*.