Sample means and confidence intervals NAME:

The following data concerns the record high temperatures for each state. We will consider this set to be the population and we will practice sampling from it.
(source: 1996 Information Please Almanac)

State	High temperature (F)	State	High temperature (F)
Alabama	112	Montana	117
Alaska	100	Nebraska	118
Arizona	127	Nevada	122
Arkansas	120	New Hampshire	106
California	134	New Jersey	110
Colorado	118	New Mexico	116
Connecticut	106	New York	108
Delaware	110	North Carolina	110
Florida	109	North Dakota	121
Georgia	113	Ohio	113
Hawaii	100	Oklahoma	120
Idaho	118	Oregon	119
Illinois	117	Pennsylvania	111
Indiana	116	Rhode Island	104
Iowa	118	South Carolina	111
Kansas	121	South Dakota	120
Kentucky	114	Tennessee	113
Louisiana	114	Texas	120
Maine	105	Utah	117
Maryland	109	Vermont	105
Massachusetts	107	Virginia	110
Michigan	112	Washington	118
Minnesota	114	West Virginia	112
Mississippi	115	Wisconsin	114
Missouri	118	Wyoming	114

1. The mean of these 50 numbers is 113.92 degrees. Is this a parameter or statistic? Why?

2. Suppose we took a random sample of size ten. The sample individuals are displayed in the table below. Find the average high temperature for this sample. (Round to two decimal places.) Is this a parameter or a statistic? Why?

State	High temperature F	State	High temperature F
Alaska	100	Massachusetts	107
Connecticut	106	New Hampshire	106
Florida	109	New York	108
Hawaii	100	Rhode Island	104
Maine	105	Vermont	105

3. Now, the whole point of sampling is to infer about the entire population. (Let's pretend we do not know the population information and we needed to use our sample.) Write a 95% confidence statement for the mean high temperature using your value for the mean of the sample and a margin of error of 1.87 degrees. (We will learn later how to find the margin of error for mean problems.)

4. Does your 95% confidence interval contain the true population mean? Of all the possible samples, what percent of the resulting CI's will **not** contain the true population mean?

5. Another random sample is shown below. Find the sample mean (to two decimal places) and form a 95% confidence statement using a margin of error of 1.89 degrees.

State	High temperature F	State	High temperature F
Alabama	112	New Mexico	116
Colorado	118	Oregon	119
Florida	109	Pennsylvania	111
Kentucky	114	Tennessee	113
Louisiana	114	Wisconsin	114

6. Does your 95% confidence interval contain the true population mean? Of all the possible samples, what percent of the resulting CI's **will** contain the true population mean?