1) These are the weights of 20 Frogs.

138 125 128 119 133 125 119 117 78 93 98 113 91 119 107 89 105 107 88 143
Use your calculator and complete the following steps to create a 96 percent confidence interval for the mean weigh of all frogs in this region.
2) What point estimate of the mean does this sample give?_____
3) Find the Critical Value. Draw distribution and label areas and t-scores.

5) Find the margin of Error using the formula.

5) Write out the confidence interval in inequality form.

6) Interpret the meaning of this confidence interval.

1) Does this data satisfy the requirements for making a confidence interval for a Mean?
a) Use StatCrunch to generate a box plot, Histogram, and QQPlot.
b) Type or hand write a sentence using each graph to justify your answer.
c) Use StatCrunch to find the Summary Statistics.
d) Have StatCrunch make the Confidence Interval and be sure it matches your answer above.
Use STATS -> T-Stats, ->1-Sample -> With DATA and select Confidence interval and 96%.
e) Copy each of these outputs into a spreadsheet.
DATA, BOXPLOT, HISTOGRAM, QQPLOT,SUMMARY STATISTICS, and CONFIDENCE INTERVAL
f) Select print setup, and then fit to 1 page wide by 1 page tall or fit to one page. Move graphs to fit on one page nicely.

You may work with classmates and get help at the Math Lab on this quiz.

1) (20 Points)  Wildlife scientists studying a certain species of frogs knows that past records indicate the adults should weigh an average of 118 grams with a standard deviation of 18 grams. The researchers collect a random sample of 36 adult frogs and weigh them. In their sample the mean weight was only 112 grams.

a) Calculate the z–score for a frog that weights 112 grams and lable the x and z values on the graph. If one frog is randomly selected find the probability that it's weight is below 112 grams.

x

```
←—+———+———+———+———+———+———+—→
  -3    -2   -1    0    1    2    3    z
```
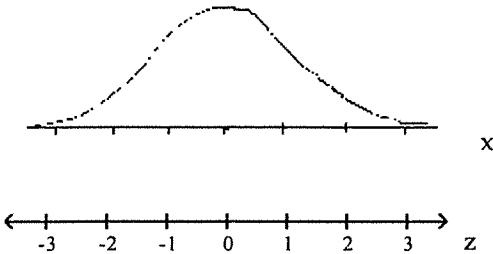
b) In a sample of 36 frogs how many do you expect to weigh less than 112 grams.

c) If we consider the distribution of all samples of size 36. State the meaning and value for each of the following symbols.

$\mu_{\bar{x}}$ = _____means

$\sigma_{\bar{x}}$ = _____ means

d) If 36 frogs are randomly selected and their mean weight is 112 grams, find the z–score of a mean of 112 grams the distribution of sample means. Then find the probability that their **mean** weight is below 112 grams. Show proper notation and calculator inputs.

$\bar{x}$

```
z   -3    -2   -1    0    1    2    3
←—+———+———+———+———+———+———+—→
```
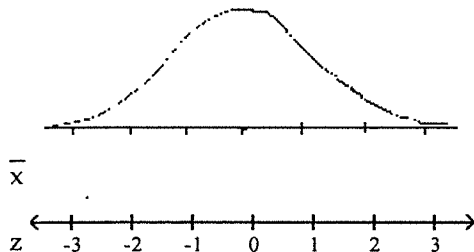
e) What weight will separate frogs in the lowest 4% from the other 96% of the distibution. Find both z and x and graph.

x

```
←—+———+———+———+———+———+———+—→
  -3    -2   -1    0    1    2    3    z
```
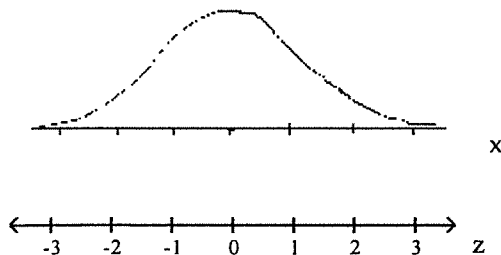
f) One of the scientists is alarmed, fearing that environmental changes may be adversely affecting the frogs. Do you think this sample result is unusually low? Explain.