FRQ STRATEGY

(1) Identify the 5 FRQ’s(don’t do them yet!, just label them, most likely they will be one of the following:

 **Describe/Compare(C.U.S.S.)**

 **ExpDesign(survey/experiment)**

 **Probability(could be anything)**

 **Test or Confidence Interval**

 **Linear Regression(scatterplots/interpret)**

The #6 FRQ(Investigative Task) will most likely have many topics combined.

(2) Choose the 2 FRQ’s you are most confident with and do those completely, then spend about 5-10 minutes on #6(DON’T LEAVE #6 BLANK), next go back and do the other 3 FRQ’s completely, finally finish #6 if you still have time remaining.

HINTS for getting started on an FRQ

**Data Analysis FRQ’s….Describe/Compare(C.U.S.S.)**

The problem will probably have a graph or possibly 2 or more graphs and want you to compare them. Make sure to mention the mean and median, use phrases like, “less than”, “greater than”, “both \_\_\_\_\_\_\_\_ are similar”….etc. Always use CONTEXT! Do not say things like, “The mean is” or “it is skewed left”. You must say, “The mean IQ score for adults is” or “The IQ scores for adults is skewed left”. Remember C.U.S.S. is Center, Unusual Features(outliers), Shape, Spread(range).

**Exp Design FRQ’s.**

This could be a survey or an experiment. Might ask you to design an experiment, drawing a flow map is helpful, make sure to explain your RANDOMIZE step well. Easiest way is to place names or #’s in a hat and draw out the desired amount. Try to avoid using random digit table(more writing is needed for that).

Experiment Design types are:

 *Block Design*(subjects placed in similar groups such as male/female or caffeine/no caffeine, then randomly placed in to treatments)

*Completely Randomized*(no blocks used, subjects randomly placed into treatments)

*Matched Pairs*(subjects receive both treatment)

\*REMEMBER CONTROL GROUP IS OFTEN A SEPARATE TREATMENT GROUP TO TELL IF TREATMENTS ACTUALLY HAVE AN EFFECT\*

Confounding is a vocab term usually forgotten by students. When you cannot tell which variable is driving the response they are confounded. Example: Mr. Pines put fertilizer on his grass, he also started watering it more than usual. The grass starts growing, what is the reason for the improvement? The fertilizer and water are confounded.

Survey type questions usually test you on sampling methods. SRS, stratified, cluster, etc. Some are better than others at depending on the context of the problem.

Make sure you are familiar with types of bias in poor sampling methods.

**Probability**

When you see the word “normal” and a mean and standard deviation given use the z-score formula, normalcdf, and the probability will be your answer. Remember how to use invNorm on your calculator as well. Try to draw a normal curve and shade on these types.

Be on the lookout for a z-score formula problem that has a sample size more than one. Make sure that the Stdev is divided by $\sqrt{n}$

If you see the words “or”, “and”, “given” could be the P(A I B) type stuff. Those formulas are all on formula sheet. Make sure you are familiar with special cases where A and B are independent or mutually exclusive.

Be on the lookout for the tree diagram type problem(usually mentions a disease and testing positive or negative) If the problem mentions different scenarios, probably is tree diagram.

If they have 2 topics with probabilities and then a probability for “both” happening its probably a venn diagram type.

If they have more than one person in the problem might be the team type or head to head type problem where you have to combine the means or take the difference between the means. Remember ALWAYS, square the StDev’s, add them, then square root them. Then use the new mean and Stdev in the z-score formula.

If you see words like “at least” “exactly” “more than” it’s probably BINOMIAL. Check POTI to see if it fits. Make sure you know how to use your calc( binomcdf and binompdf)

If you see words like “until the first success” it is probably GEOMETRIC.(not very common on the AP test though)

**Linear Regression**

A good possibility that they give you COMPUTER OUTPUT thing. Make sure you can write your equation from this. Know what everything is on it and what to cross out.

Know how to interpret r,r2, a, b. These are on the TOP 10 PHRASES SHEET. Most likely these questions will be in MC but I have seen them on FRQs.

Make sure you know how to make sense of a residual plot and how to get one on your calc if asked for it.

**Hyp Test or Confidence Interval.**

If it says give statistical evidence it is a full hypothesis test, do the HAN SOLO completely. Only do a C.I. if they tell you to do a C.I.

Use context, do a good job on your Assumptions/Conditions.

Popular Significance Tests: 2-sample t test, 2-prop Z test, paired t-test, chi-square independence or homogeneity test. 1-prop z test, 1-prop z interval

Not likely to see these: 1 sample z test, 2-sample z test, z interval, 2-prop z interval, linreg t test, 2-sample z interval.

Remember that a proportion problem is ALWAYS a Z type, means are usually a t type test since stDev is almost always unknown.