BLIZZARD BAG – DAY 2
Complete these Free Response Questions

AP Statistics

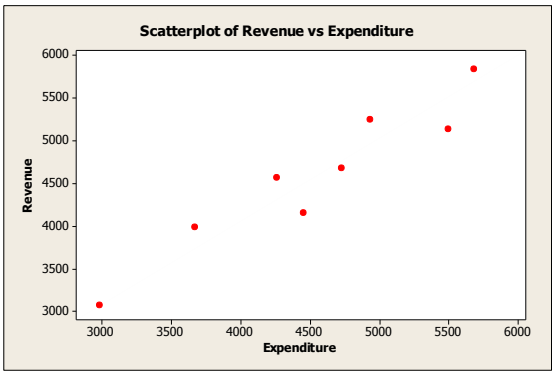
Practice AP FRQs

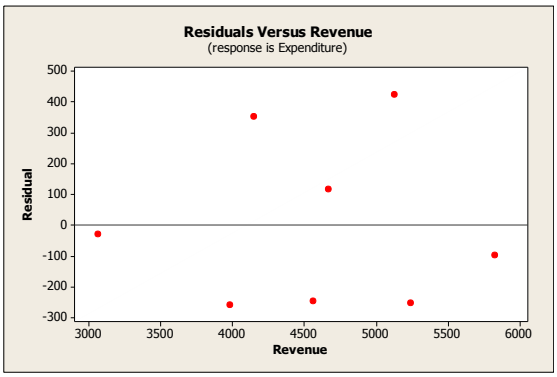
Directions: Show all work on other paper. Respond to these questions as if they were AP Exam questions.

1. The table below shows the per capita revenue (amount of money raised per person through taxes and fees), in dollars, and per capita expenditure (amount of money spent per person), in dollars, for randomly selected states in a recent year.

State	KY	LA	MN	MT	SC	TX	VT	WY
Revenue	4561	3985	5243	4668	4152	3066	5127	5830
Expenditure	4261	3671	4937	4730	4451	2980	5499	5681

The scatterplot, least-squares regression output, and residual plot are shown below.



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Predictor      Coef  SE Coef       T       P
Constant     -65.4     604.4   -0.11   0.917
Revenue     1.0028    0.1300    7.71   0.000

S = 294.720   R-Sq = 90.8%   R-Sq(adj) = 89.3%
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(a) Consider the information for Per Capita Expenditure versus Per Capita Revenue. Is the linear model a reasonable model for these data? Explain.

(b) The residual with the largest absolute value is for Vermont. What is the residual for this state? Show your work. Explain what it means in terms of the model.

(c) In this same year Alaska collected $9,757 per capita in revenue. Should this model be used to predict per capita expenditures for this state? Explain your reasoning.

(d) Interpret the value of *s*, given in the computer output, in the context of this problem.

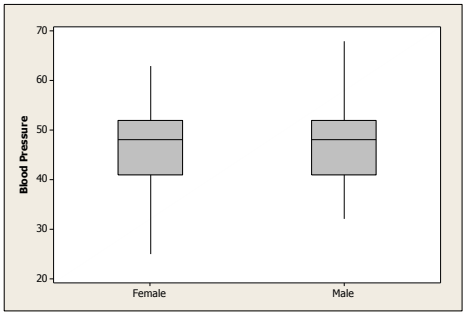
2. A certain large city wants to set up a citywide program to recycle newspapers, glass, and plastics as a way to reduce the amount of landfill, preserve the environment, and ultimately save the city some money. An analyst for one of the companies interested in bidding on the recycling contract has computed that they would be able to make a profit, if the mean weekly household contribution to recycling exceeds 20 pounds. If this company can make a profit, then it is financially feasible for them to spend the money necessary to build a recycling plant, set up a collection system, and hire the necessary workers.

   (a) Identify the appropriate hypotheses for this situation.

   (b) Describe Type I error and Type II error in this setting.

   (c) Describe the economic consequences to the company for each of the errors listed in part (b).

3. A random sample of 100 low birth weight ($n = 44$) and female ($n = 56$) infants was taken at a large urban hospital and the systolic blood pressure was recorded. Boxplots of the data are given below.



   (a) Based on the boxplots, do you think that systolic blood pressure is distributed approximately Normal for both female and male low birth weight infants? Explain your reasoning.

   (b) Using only the boxplots shown, which would you expect to have a larger mean systolic blood pressure? Explain your answer.

   (c) It is thought that the mean systolic blood pressure for males is significantly higher than the mean systolic blood pressure for females. Using the summary statistics below, is there enough evidence to support this conjecture?

	N	Mean	StDev
BP Male	44	47.9	11.8
BP Female	56	46.5	11.1