

MTH 3220 Lab 1 **Answer Sheet**

Due Thu., Sept. 5

1 **Part A**

1.1 **Exhaust Hydrocarbons Data Set**

1. NA
2. Give the endpoints of the 95% one-sample t confidence interval for μ below.

Based on the confidence interval, is it plausible that the true (unknown) mean μ is as high as 0.62 g/mi (Yes/No)?

2 **Part B**

2.1 **Political Poll Results**

1. Give the endpoints of the **95% CI** for the true (unknown) population proportion that supports Carsen.

95% confidence interval =

Based on the confidence interval, how big is the **margin of error** in the estimate 0.52 of the true population proportion?

3 **Part C**

3.1 **Radioactivity Data Set**

1. NA
2. Give the value of the test statistic: $t =$

Give the p-value for the test: p-value =

Based on the p-value, using level of significance $\alpha = 0.05$, should we reject or fail to reject H_0 (Reject/Fail to Reject)?

Based on the conclusion of the hypothesis test, is there statistically significant evidence that the true (unknown) mean ^{137}Cs concentration is less than 215 pCi/L (Yes/No)?
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3. **Don't** print the histogram or normal probability plot. Just answer the following questions.

Based on the plots, does the normality assumption required for the one-sample t test appear to be justified (Yes/No)?

Does that bring into question the conclusion drawn from the hypothesis test (Yes/No)?
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4 Part D

4.1 Fruits and Vegetables Data Set

1. NA

2. **Don't** print the side-by-side boxplots. Just answer the following question.

Based on the boxplots, which type of food appears to have a higher moisture content (fruits or vegetables)?

3. Please answer the following questions.

- a) For the two-sample t test:

Test statistic value = Degrees of freedom =

P-value =

State the conclusion (using $\alpha = 0.05$):

Which type of food (fruits or vegetables), if any, has higher moisture content?

b) For the two-sample t confidence interval:

Lower endpoint = _____ Upper endpoint = _____

4. **Don't** print the histograms. Just answer the following questions.

Based on the plots, does the normality assumption required for the two-sample t test and CI appear to be justified (Yes/No)? _____

Does that bring into question the conclusions drawn from the hypothesis test and CI (Yes/No)? _____