

# 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  $\mu$  below.

Based on the confidence interval, is it plausible that the true (unknown) mean  $\mu$  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  $^{137}\text{Cs}$  concentration is less than 215 pCi/L (Yes/No)?  
.....

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)?  
.....

## 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)? \_\_\_\_\_