College Prep Stats **Chapter 8 Project**

Group Project (maximum of 3 students)

Data Set 17 "**Weight**" in **Weights and Volumes of Cola** (P. 785) (**Keep 5 decimal places**)

Direction: Use α = 0.05 significance level. Your report should exactly follow the order of the tasks. The project must be all typed!!! No hand writing will be accepted. All the required formulas are provided and MUST be "Copy" and "Paste" to the "*Calculate test statistic*" part. It will lose ALL 10 points if you fail to do so in copying-pasting-reediting the formula part.

Total points: 115

Names: Names in FULL MUST be ALL typed or the project will be returned. (10 pts)

Task #1

Data Set with its name (5 pts)

Regular Coke claimed that only 20% of the Regular Coke is weighted less than 0. 8110 oz.

a) Write the test hypothesis H_0 and H_1 (5 pts)
***H*₀:** ***H*₁:**

b) Find the sample proportion (5 pts)

c) Test statistic formula and calculation (5 pts)
Select the appropriate formula here and then plug the variables values in and then calculate

d) Find the P-Value (5 pts)

P-Value =

e) Short conclusion, **keep one and delete one** (5 pts)

Reject ***H*₀** Fail to reject ***H*₀**

f) State the final conclusion in simple, non-technical terms. (5 pts)

Task #2

Data Set with its name (5 pts)

Diet Pepsi claimed that the mean weight of its product is at most 0.785 oz.

a) Write the test hypothesis H_0 and H_1 (5 pts)
***H*₀:** ***H*₁:**

b) Find the sample mean (5 pts)

g) Test statistic formula and calculation (5 pts)

Select the appropriate formula here and then plug the variables values in and then calculate

c) Find the P-Value (5 pts)

P-Value =

d) Short conclusion, **keep one and delete one** (5 pts)

Reject $\boldsymbol{H_0}$ Fail to reject $\boldsymbol{H_0}$

e) State the final conclusion in simple, non-technical terms. (5 pts)

Task #3

Data Set with its name (5 pts)

Diet Coke labeled its product as weight of 0.787 oz.

a) Write the test hypothesis H_0 and H_1 (5 pts)
$\boldsymbol{H_0}$: $\boldsymbol{H_1}$:

b) Find the sample mean (5 pts)

c) Test statistic formula and calculation (5 pts)
Select the appropriate formula here and then plug the variables values in and then calculate

d) Find the P-Value (5 pts)
P-Value =

e) Short conclusion, **keep one and delete one** (5 pts)

Reject $\boldsymbol{H_0}$ Fail to reject $\boldsymbol{H_0}$

f) State the final conclusion in simple, non-technical terms. (5 pts)

Test Statistic Formulas

$z = \frac{\hat{p}-p}{\sqrt{\frac{pq}{n}}} =$ $z = \frac{\bar{x}-\mu}{\frac{\sigma}{\sqrt{n}}} =$ $t = \frac{\bar{x}-\mu}{\frac{s}{\sqrt{n}}} =$

$\boldsymbol{p}$ = < > ≠ ≈ $\boldsymbol{\mu}$ = < > ≠ ≈

Sample of the Project Report Format

Task #1

Alpha Pepsi (Sorted)

0.8139	0.8142	0.8149	0.8162	0.8163	0.8170	0.8172	0.8192	0.8192
0.8200	0.8211	0.8211	0.8211	0.8214	0.8216	0.8227	0.8227	0.8227
0.8233	0.8233	0.8244	0.8244	0.8247	0.8247	0.8256	0.8258	0.8260
0.8260	0.8271	0.8291	0.8291	0.8302	0.8317	0.8319	0.8388	0.8401

Alpha Pepsi claimed that only 25% of the Alpha Pepsi is weighted less than 0. 8150 oz.

a) Write the test hypothesis H_0 and H_1 (5 pts)

$\boldsymbol{H_0}$**:** $\boldsymbol{p = 0.25}$ $\boldsymbol{H_1}$**:** $\boldsymbol{p \neq 0.25}$

b) Find the sample proportion (5 pts)

$\boldsymbol{\hat{p} = 3/36 = 0.08333}$

c) Test statistic formula and calculation (5 pts)

$$\boldsymbol{z = \frac{\hat{p} - p}{\sqrt{\frac{pq}{n}}} = \frac{0.08333 - 0.25}{\sqrt{\frac{0.25 * 0.75}{36}}} = -2.30940}$$

d) Find the P-Value (5 pts)

P-Value = 0.02092 < 0.05

e) Short conclusion, **keep one and delete one** (5 pts)

Reject $\boldsymbol{H_0}$

f) State the final conclusion in simple, non-technical terms. (5 pts)

There is sufficient evidence to warrant rejection of the claim made by the Alpha Pepsi that only 25% of the Alpha Pepsi is weighted less than 0. 8150 oz.

Sample of the Project Report Format

Task #2

Beta Pepsi

0.8388	0.8260	0.8317	0.8247	0.8200	0.8172	0.8227	0.8244	0.8244
0.8319	0.8247	0.8214	0.8291	0.8227	0.8211	0.8258	0.8156	0.8211
0.8170	0.8216	0.8302	0.8192	0.8192	0.8271	0.8251	0.8227	0.8256
0.8139	0.8260	0.8227	0.8136	0.8218	0.8182	0.8215	0.8189	0.8211

Beta Pepsi claimed that the mean weight of its product is at least 0.82 oz.

a) Write the test hypothesis H_0 and H_1 (5 pts)

$\boldsymbol{H_0}$**:** $\boldsymbol{\mu = 0.82}$ $\boldsymbol{H_1}$**:** $\boldsymbol{\mu > 0.82}$

b) Find the sample mean (5 pts)

$\boldsymbol{\bar{x} = 0.823019}$

c) Test statistic formula and calculation (5 pts)

$$\boldsymbol{t = \frac{\bar{x} - \mu}{\frac{s}{\sqrt{n}}} = \frac{0.823019 - 0.82}{\frac{0.005209}{\sqrt{36}}} = 3.47744}$$

d) Find the P-Value (5 pts)

P-Value = 0.00069 < 0.05

e) Short conclusion, **keep one and delete one** (5 pts)

Reject $\boldsymbol{H_0}$

f) State the final conclusion in simple, non-technical terms. (5 pts)

The sample data support the claim made by the Beta Pepsi that the mean weight of its product is at least 0.82 oz.

Data Set 17: Weights and Volumes of Cola

Weights are in pounds and volumes are in ounces.

STATDISK: Data set name is Cola.
Minitab: Worksheet name is COLA.MTW.
Excel: Workbook name is COLA.XLS.
TI-83/84 Plus: App name is COLA, and the file names are the same as for text files.
Text file names: CRGWT, CRGVL, CDTWT, CDTVL, PRGWT, PRGVL, PDTWT, PDTVL.

Weight Regular Coke	Volume Regular Coke	Weight Diet Coke	Volume Diet Coke	Weight Regular Pepsi	Volume Regular Pepsi	Weight Diet Pepsi	Volume Diet Pepsi
0.8192	12.3	0.7773	12.1	0.8258	12.4	0.7925	12.3
0.8150	12.1	0.7758	12.1	0.8156	12.2	0.7868	12.2
0.8163	12.2	0.7896	12.3	0.8211	12.2	0.7846	12.2
0.8211	12.3	0.7868	12.3	0.8170	12.2	0.7938	12.3
0.8181	12.2	0.7844	12.2	0.8216	12.2	0.7861	12.2
0.8247	12.3	0.7861	12.3	0.8302	12.4	0.7844	12.2
0.8062	12.0	0.7806	12.2	0.8192	12.2	0.7795	12.2
0.8128	12.1	0.7830	12.2	0.8192	12.2	0.7883	12.3
0.8172	12.2	0.7852	12.2	0.8271	12.3	0.7879	12.2
0.8110	12.1	0.7879	12.3	0.8251	12.3	0.7850	12.3
0.8251	12.3	0.7881	12.3	0.8227	12.2	0.7899	12.3
0.8264	12.3	0.7826	12.3	0.8256	12.3	0.7877	12.2
0.7901	11.8	0.7923	12.3	0.8139	12.2	0.7852	12.2
0.8244	12.3	0.7852	12.3	0.8260	12.3	0.7756	12.1
0.8073	12.1	0.7872	12.3	0.8227	12.2	0.7837	12.2
0.8079	12.1	0.7813	12.2	0.8388	12.5	0.7879	12.2
0.8044	12.0	0.7885	12.3	0.8260	12.3	0.7839	12.2
0.8170	12.2	0.7760	12.1	0.8317	12.4	0.7817	12.2
0.8161	12.2	0.7822	12.2	0.8247	12.3	0.7822	12.2
0.8194	12.2	0.7874	12.3	0.8200	12.2	0.7742	12.1
0.8189	12.2	0.7822	12.2	0.8172	12.2	0.7833	12.2
0.8194	12.2	0.7839	12.2	0.8227	12.3	0.7835	12.2
0.8176	12.2	0.7802	12.1	0.8244	12.3	0.7855	12.2
0.8284	12.4	0.7892	12.3	0.8244	12.2	0.7859	12.2
0.8165	12.2	0.7874	12.2	0.8319	12.4	0.7775	12.1
0.8143	12.2	0.7907	12.3	0.8247	12.3	0.7833	12.2
0.8229	12.3	0.7771	12.1	0.8214	12.2	0.7835	12.2
0.8150	12.2	0.7870	12.2	0.8291	12.4	0.7826	12.2
0.8152	12.2	0.7833	12.3	0.8227	12.3	0.7815	12.2
0.8244	12.3	0.7822	12.2	0.8211	12.3	0.7791	12.1
0.8207	12.2	0.7837	12.3	0.8401	12.5	0.7866	12.3
0.8152	12.2	0.7910	12.4	0.8233	12.3	0.7855	12.2
0.8126	12.1	0.7879	12.3	0.8291	12.4	0.7848	12.2
0.8295	12.4	0.7923	12.4	0.8172	12.2	0.7806	12.2
0.8161	12.2	0.7859	12.3	0.8233	12.4	0.7773	12.1
0.8192	12.2	0.7811	12.2	0.8211	12.3	0.7775	12.1

Grading Rubric

	10	6	3	0	
Name	All team members' FULL names Exactly the same as Tyler are typed	Some of team members' name(s) use(s) abbreviation	Some of the team member(s) name showed in another project group	No any name of the student is typed	
	5	3	1	0	
Data Set	Data set names are all labeled. No missing data value	No Data set names are labeled. No missing data value	Missing data value(s)	No data set is provided or cut-paste the data set from the data image	
	5	4	3	2	0
Part a)	Set both H_0 and H_1 in correct variables names and tailed H_0: $p = 0.6$ H_1: $p > 0.6$	Set both H_0 and H_1 in correct variables names but wrong tailed H_0: $p = 0.6$ H_1: $p \neq 0.6$	Missing variables in both H_0 and H_1 but correct tailed H_0: $= 0.6$ H_1: > 0.6	Both of H_0 and H_1 are set incorrectly, but including the correct variables names H_0: $p > 0.6$ H_1: $p = 0.6$	H_0 and H_1 are not set or no variables and no tailed H_0: 0.6 H_1: 0.6
Part b)	Correct sample proportion or mean	N/A	N/A	Wrong sample proportion or mean	N/A
Part c)	Provide both test statistic formula and calculation result	Missing the test statistic formula but correct calculation result	Including the test statistic formula but wrong calculation result	Missing the test statistic formula and wrong calculation result	Missing all
Part d)	Correct P-value and comparing with significance level	Correct P-value and without comparing with significance level	N/A	Wrong P-value	N/A
Part e)	Correct short conclusion and delete the other short one	Correct short conclusion is clearly labeled but not delete the other short one	N/A	None of the short conclusions is labeled and the other short one is not deleted	N/A
Part f)	Provide the correct conclusion format sentence in a full conclusion	Provide the correct conclusion format sentence in a partial conclusion	Not Provide the correct conclusion format sentence in a full conclusion	Not Provide the correct conclusion format sentence in a partial conclusion	Not provide conclusion