College Prep Stats: Chapter 9 Project

Prompt: Several claims have been made regarding our school district, and as a statistics class it is our job to test these claims. The data is collected for the four given claims. Assume those data sets meet the requirement of the corresponding tests. All significance levels are at 0.05. The following should be clearly communicated for each claim (**Keep 4 decimal places**):

- Names all Typed (10 pts, valid only if you work on at least one entire claim)
- Data Set for Each Claim (5 pts, valid only if you work on the entire claim)
- Hypotheses (5 pts)
- Test Statistic and calculation result (5 pts)
- P-Value with (5 pts)
- Short conclusion stated (5 pts)
- Conclusion stated in simple language (5 pts)

All written aspects should be typed. Maximum 4 students in a project group. (Total 130 Points)

Claim 1: A higher percentage of blue cars that are parked in front of the school are opposed to parked in the back

Front

NB	NB	NB	B	NB	B
NB	B	NB	B	NB	B
NB	NB	B	NB	NB	NB
NB	NB	NB	NB	B	NB
B	NB	NB	NB	NB	NB
NB	NB	NB	NB	NB	B

Back

NB	NB	NB	NB	NB	NB
NB	B	NB	B	NB	NB
NB	NB	NB	NB	NB	NB
NB	NB	NB	NB	NB	NB
NB	NB	NB	NB	B	NB
B	NB	NB	NB	NB	B

Claim 2: When walking from the LRC to the Math Office, it is faster to go straight instead of turning (in seconds).

Straight	61	58	58	58	62	74	59	63	66	70	69	64	65	58	56
Turn	60	58	59	51	61	72	59	64	65	72	67	64	63	57	56

Claim 3: There is smaller average number of pages in a non-fiction book as compared to a fiction book.

Non-fiction

278	285	279	281	187	47
226	174	171	164	221	123
151	260	317	191	264	131
214	287	385	120	128	176
62	248	239	158	238	111
155	90	379	283	320	112

Fiction

342	196	161	525	344	505
404	256	219	196	389	231
247	197	270	487	411	341
373	200	204	273	243	328
341	121	222	325	376	424
165	319	300	195	353	520

Claim 4: Freshman classrooms recycled more waste paper in pound in October than in September.

September

5	6	7	11	12	6
12	5	12	12	12	5.5
5	9	8.25	12	1.5	3
11	5	12	12	3.75	3
10	4	12	12	5	1

October

12	9.5	5	9	8	1.25
12	7	11.5	11.75	6.5	3.5
9	4	11.75	3.5	3.5	4
11	6.2	9	9	2.5	2
10	7	11	7	4	3.5

This project report **MUST BE ALL TYPED**. Your testing report format should look like:

Project Report Template

Names: John Smith, Mary Hardy (10 pts)

Data Set (5 pts)

Straight	61	58	58	58	62	74	59	63	66	70	69	64	65	58	56
Turn	60	58	59	51	61	72	59	64	65	72	67	64	63	57	56

Claim X *A higher percentage of blue cars that are parked in front of the school are opposed to parked in the back*

a) Hypotheses (5 pts) **H_o:** **$\mu 1 = \mu 2$** **H_1:** **$\mu 1 \neq \mu 2$**

Significance Level $\alpha = 0.05$

b) Test Statistic Calculation (5 pts)

$$t = \frac{\bar{d} - \mu_d}{\frac{s}{\sqrt{n}}} = 4.5678$$

c) P-Value (5 pts)

P-Value = 0.1234 > 0.05

(you will lose 3 points for NOT comparing the significance level IMMEDIATELY after you get P-Value!!!)

d) Short conclusion stated (5 pts)

Fail to reject H_o

(you will lose 3 points for NOT deleting the other short conclusion!!!)

e) Conclusion stated in simple language (5 pts)

There is sufficient evidence support (to warrant rejection of) the claim that the "Harry Potter" is easier to read than "War and Peace".

$$z = \frac{\hat{p}_1 - \hat{p}_2}{\sqrt{\bar{p}\bar{q}\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}} = \qquad t = \frac{\bar{d} - \mu_d}{\frac{s}{\sqrt{n}}} = \qquad t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}} =$$

Grading Rubic

	10	6	0		
Name	All team members' FULL names Exactly the same as Tyler are typed	All team members' FULL names are typed Exactly as Tyler but all in lower case	Otherwise		
	5	0			
Data Set	Only show the work on the entire claim	Otherwise			
	5	4	3	2	0
Part a)	Set both H_0 and H_1 in correct variables names and tailed H0: p = 0.6 H1: p > 0.6	Set both H_0 and H_1 in correct variables names but wrong tailed H_0: p = 0.6 H1: p ≠ 0.6	Missing or using wrong variables in either or both H_0 and H_1 but correct tailed H_0: = 0.6 H1: > 0.6	Both of H_0 and H_1 are set incorrectly, but including the correct variables names H0: p > 0.6 H1: p = 0.6	H_0 and H_1 are not set or no/wrong variables and no tailed H0: 0.6 H1: 0.6
Part b)	Provide both test statistic formula and calculation result	Missing the test statistic formula but correct calculation result	The test statistic formula is correct but wrong calculation result	Missing or wrong test statistic formula and wrong calculation result	Otherwise
Part c)	Correct P-value and comparing with significance level	Correct P-value and without comparing with significance level immediately	Correct P-value but wrong comparing with significance level	N/A	Wrong P-value
Part d)	Correct short conclusion and delete the other short one	N/A	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
Part e)	Provide the correct conclusion format sentence in a full conclusion	N/A	Correct conclusion format sentence but without the detail claim	N/A	Wrong conclusion