**College Prep Stats: Chapter 9 Project**

Prompt: Several claims have been made regarding our school, 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. Make sure that your work is neat, organized, and easy to understand. The following should be clearly communicated for each:

* Significance Level (0.05 for all testings) (10 pts)
* Test Statistic with all work shown (10 pts)
* P-Value with (10 pts)
* Conclusion stated mathematically (10 pts)
* Conclusion stated in simple language (10 pts)
* Names all Typed (10 pts)
* Format (10 pts)
* Data Set for Each Claim (10 pts)
* Claim (10 pts)
* Hypotheses (10 pts)

**All written aspects should be typed. (Total 260 Points)**

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

 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 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 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 first instead of turning. (reformat the date table such that it has one “Straight” and one “Turn” column)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 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 fewer average number of pages in a non-fiction book as compared to a fiction book.

Fiction

Non-fiction

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 678 | 285 | 479 | 281 | 387 | 47 |
| 326 | 174 | 1171 | 164 | 221 | 123 |
| 151 | 360 | 517 | 191 | 464 | 31 |
| 314 | 287 | 485 | 120 | 128 | 176 |
| 62 | 248 | 239 | 155 | 238 | 111 |
| 155 | 90 | 479 | 283 | 320 | 112 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 342 | 196 | 161 | 525 | 344 | 525 |
| 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 October than in September.

October

September

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 5 lb. | 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 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 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:

It is highly suggested that DO NOT CHANGE THE BLUE HIGHLIGHTED AREAS AND SPACING!!!

**Names: John Smith, Mary Hardy**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 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 1** *A higher percentage of the cars that are parked in front of the school are blue as opposed to the back parking lot.*

**Hypotheses** H0: $μ\_{1}=μ\_{2}$ H1: $μ\_{1}\ne μ\_{2}$

**Significance Level** *α* = 0.05

**Test Statistic with all work shown** $t=\frac{\overbar{d}-μ\_{d}}{\frac{s}{\sqrt{n}}}=\frac{3.87-3.56}{\frac{1.32}{\sqrt{25}}}=1.776$

 **(you will lose at least 3 points for NOT using the “Equation Editor” to type the test statistic formula!!!)**

T-Test

**(you will lose at least 3 points for NOT providing the “Calculator Command”!!!)**

**P-Value** *P-Value = 0.4121 > 0.05*

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

**Conclusion stated mathematically** *(Fail to) Reject H0*

**Conclusion stated in simple language** *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{\overbar{p}\overbar{q}\left(\frac{1}{n\_{1}}+\frac{1}{n\_{2}}\right)}}=\frac{8-4}{\sqrt{9\*6\left(\frac{1}{5}+\frac{1}{7}\right)}}=$$t=\frac{\overbar{d}-μ\_{d}}{\frac{s}{\sqrt{n}}}=\frac{5-8}{\frac{4}{\sqrt{18}}}=$$t=\frac{\overbar{x}\_{1}-\overbar{x}\_{2}}{\sqrt{\frac{s\_{1}^{2}}{n\_{1}}+\frac{s\_{2}^{2}}{n\_{2}}}}=\frac{24-45}{\sqrt{\frac{3.2^{2}}{25}+\frac{5.4^{2}}{35}}}=$