

**Instructions:** Show all work. State any formulas used. If you use the calculator, you should say which function you used, and what you entered into it, as well as any output. I can only give partial correct for incorrect answers if I have something to grade.

1. What assumption is made when conducting a pooled T-test?

*that the standard deviations of the two samples is the same*

2. Conduct an appropriate hypothesis test comparing two types of steel to determine whether they have the same true average strength. Clearly state the appropriate hypotheses and compare to a 1% significance level.

Type	Sample Average	Sample Standard Deviation	Sample Size
A	60.1	1.2	45
B	59.7	1.4	56

$H_0: \mu_1 = \mu_2$   
 $H_a: \mu_1 \neq \mu_2$

*2-SampZTest*

$\sigma_1: 1.2$

$\sigma_2: 1.4$

$\bar{x}_1 = 60.1$

$n_1 = 45$

$\bar{x}_2 = 59.7$

$n_2 = 56$

$\mu_1 \neq \mu_2$

$\Rightarrow$

$z = 1.545$

$p = .1222$

*Stats*

*2-SampTTest*

$\bar{x}_1 = 60.1$

$s_{x_1} = 1.2$

$n_1 = 45$

$\bar{x}_2 = 59.7$

$s_{x_2} = 1.4$

$n_2 = 56$

$\mu_1 \neq \mu_2$

$\Rightarrow t = 1.545$

$p = .12547$

*not pooled*

*fail to reject  $H_0$   
 no evidence  
 the steels  
 are different*

3. Calculate the 80% confidence interval for the difference between the two steel means.

*2-SampTInt*

*same as above*

*c-level: .8*

$(.06604, .73396)$

*2-SampZInt*

*same as above*

*c-level: .8*

$(.06828, .73172)$