



## Guided Example:

10 different athletes were randomly selected to join a 3-month diet program to gain weight. The results are given in the following table.

<b>Before Diet:</b>	185	170	190	200	180	195	175	200	215	220
<b>After Diet:</b>	200	180	190	195	195	180	200	225	220	215

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After entering these data in  $L_1$  and  $L_2$ , followed by the difference in  $L_3$ , we should have the following:

<b>Before Diet</b> $\rightarrow L_1$	185	170	190	200	180	195	175	200	215	220
<b>After Diet</b> $\rightarrow L_2$	200	180	190	195	195	180	200	225	220	215
<b>Difference</b> $\rightarrow L_3$	-15	-10	0	5	-15	15	-25	-25	-5	5

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- Using  $L_3$ , find  $\bar{d}$ . Round to the nearest whole number. Answer:  $\bar{d} = -7$
  - Using  $L_3$ , find  $S_d$ . Round to the nearest whole number. Answer:  $S_d = 13$
  - Using these results, find the 98% confidence interval for the mean of all differences  $\mu_d$ . Round to the one decimal place value.  
Answer:  $-18.6 < \mu_d < 4.6$
  - test the claim at  $\alpha = .01$  that this diet plan is effective to help athletes to gain weight.  
Answer:  
 $H_0 : \mu_d \geq 0$   
 $H_1 : \mu_d < 0$ , LTT, Claim
  - Using TVAL and T-Test, find C.V., C.T.S., and P-value.  
Answer: C.V. =  $-2.821$ , C.T.S. =  $-1.703$ , and p-value =  $.061$
  - Conclusion: C.T.S. is in NCR. P-Value  $> \alpha$ .  $H_0$  is valid.  $H_1$  is invalid. Reject the claim.
  - Suggest a couple of values for  $\alpha$  that reverses the conclusion.  
Answer: Pick any value such that p-value  $\leq \alpha$  such as  $\alpha = 0.08$ , or  $\alpha = 0.1$ .