Paired Samples t-test

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1. For each scenario below, identify whether the groups are independent or dependent:

(1/1 point)

1a. A researcher wants to know if reaction time is the same for men and women. She measures the reaction time of 30 female and 30 male drivers.

Independent ✔ **Answer:** Independent

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Pre-Lab
Pre-Lab due May 03, 2016 at 17:00 UTC

Lab
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Problem Set
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(1/1 point)

1b. A researcher wants to know if reaction time changes after drinking an alcoholic beverage. He measures the reaction time of 40 middle-aged drivers before and after consuming 8 ounces of beer.

Dependent ✔ **Answer:** Dependent

(1/1 point)

1c. A researcher wants to know if students that take AP Calculus will score higher on their first college math exam than students who do not take AP Calculus. She compares exam scores on two groups of students, where the only difference between groups is whether they took AP Calculus or not.

Independent ✔ **Answer:** Independent

2. Does chewing gum make you less accurate while target shooting? Each of the following subjects shot at a target (to earn a maximum score of 100) in random order, once while chewing gum and once while not chewing. Assume all test conditions are met.

Participant	Chewing Gum	No Gum
1	79	80
2	95	94
3	85	87
4	82	84

(1/1 point)

2a. What is the null hypothesis for this test? (difference score = accuracy while chewing - accuracy without gum)

- $\delta \neq 0$
- $\delta = 0$ ✔
- $\delta \leq 0$
- $\delta \geq 0$

(1/1 point)

2b. What is the average difference score for this sample?

- -1 ✔
- -2
- +1
- -5

(1/1 point)

2c. What is the standard error for this test?

- 5.990
- 0.879
- 1.412
- 0.707 ✔

(1/1 point)

2d. What is the value of the t-statistic and the appropriate conclusion for the test, assuming $\alpha = 0.05$?

- t = 2.871; Chewing gum did result in a decrease in accuracy.
- ✔ t = -1.414; Chewing gum did not result in a decrease in accuracy.
- t = 1.837; Chewing gum did not result in a decrease in accuracy.
- t = 1.414; Chewing gum did not result in a decrease in accuracy.