Statistics Chapter 10
Sections 10.1 – 10.2

Identify the following examples as either "Independent" or "Dependent". Describe why the situation is either "I" or "D".

Notes

1. A principal at a local high school would like to compare average AP exam scores between one high school vs another.

   1.

2. Several students would like to get in better physical shape. Half of them work out on their own whereas the other half enroll in a training course designed to make them stronger.

   2.

3. A local company would like to test the effectiveness of a new bug repellent vs an older brand. The company pays 100 volunteers to put the old repellent on one arm and the new repellent on another arm. The volunteers then put both arms in a bin filled with mosquitos assigned randomly to each volunteer.

   3.

4. A professor at CSU Fresno would like to investigate whether or not cell phones in view influences a student's ability to complete a classroom task. The professor tells half of his/her students to take notes with their cellphones on their desks. The other half are asked to store their cellphone in their backpacks or purse.

   4.

5. A clothing company in Washington would like to test out the effectiveness of a new water repellent material that is used on their jackets. The company creates 100 jackets with both the old and new material (both materials look identical). The company gives the jackets to 100 employees and are asked to wear it during the "rainy" months in Washington.

   5.

6. At five weather stations located on Trail Ridge Road in the Rocky Mountains National Park, the peak wind gusts for January and April are recorded below.

Station	1	2	3	4	5
January	139	122	126	64	78
April	104	113	100	88	61

Does the information above indicate that the peak wind gusts are higher in January than in April? Let the level of significance be 0.05.

a. Is this an Independent or Dependent situation? Why?

b. According to the problem what is the relation between the wind gusts in January vs. April? (Define the relation using inequalities)

c. Describe using the relation in (b) the MEAN DIFFERENCE between the January and April wind gusts. (make sure to keep the inequality)

d. Is the problem above a hypothesis test or estimation? Why?

e. Do Step 1 for the Test/Estimation.

f. Step 2. What are the three items you must check in this step?

g. Are you going to use 2 lists or 1 list to complete Step 2?

h. Now complete Step 2.

    a. Part 1

    b. Part 2

    c. Part 3

i. In this problem, will you refer to the z-score chart or t-score chart if necessary? Why?

j. Step 3. What do you have to complete in this step for this problem? (2 items if it's an estimation and 3 if it is a test)

k. Which equation are you going to use?

l. When can you reject the Null Hypothesis?

m. If the calculator displays $p = 8.345$ E-4, what does that mean?

n. What is the calculator function you will use for this problem?

o. Now do Step 3.

    a. Part 1

    b. Part 2

    c. Part 3 (if necessary)

p. Step 4. When you are done with your statement, what do you have to include?

q. Now complete Step 4.

7. Do professional golfers play better in their first round? Below is a random sample of scores from finalists in the British Open. (Source: Golfers Almanac)

4th Round	73	68	73	71	71	72	68	68	74
1st Round	66	70	64	71	65	71	71	71	71

Estimate with 95% confidence the difference in scores between the 1st round and the 4th round for finalists in the British Open.

a. Is this an Independent or Dependent situation? Why?

b. According to the problem what is the relation between the golf scores in 1st round vs. 4th round? (Define the relation using inequalities)

c. Describe using the relation in (b) the MEAN DIFFERENCE between 4th round and 1st round of golfing. (make sure to keep the inequality)

d. Is the problem above a hypothesis test or estimation? Why?

e. Do Step 1 for the Test/Estimation.

f. Step 2. What are the three items you must check in this step?

g. Are you going to use 2 lists or 1 list to complete Step 2?

h. Now complete Step 2.

    a. Part 1

    b. Part 2

    c. Part 3

i. In this problem, will you refer to the z-score chart or t-score chart if necessary? Why?

j. Step 3. What do you have to complete in this step for this problem? (2 items if it's an estimation and 3 if it is a test)

k. Which equation are you going to use?

l. What is the calculator function you will use for this problem?

m. Now do Step 3.

    a. Part 1

    b. Part 2

  c. Part 3 (if necessary)

n. Step 4. When you are done with your statement, what do you have to include?

o. Now complete Step 4.