Time Frame: 50 minutes

Subject Matter:  *t* - Test TELL ME

Objective: TSWBAT test means for small samples, using the *t* test.

Standards: DA – 4.10

 Materials: PowerPoint Presentation, Calculator, and Worksheets

SHOW ME

Presentation of Information

The teacher will discuss the following problems.

1. A researcher estimates that the average height of the buildings of 30 or more stories in a large city is at least 700 feet. A random sample of 10 buildings is selected, and the heights in feet are shown. At $α=0.025$, is there enough evidence to reject the claim?

485 511 841 725 615 520 535 635 616 583

1. Cushman and Wakefield reported that the average annual rent for office space in Tampa was $17.63 per square foot. A real estate agent selected a random sample of 15 rental properties (offices) and found the mean rent was $18.72 per square foot, and the standard deviation was $3.62. At $α=0.05$, test the claim that there is no difference in the rents.

CW in *t* Test March 14, 2011 WORK IN PAIR

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. The average undergraduate cost for tuition, fees, and room and board for 2-year institutions last year was $13,252. The following year, a random sample of 20 two – year institutions had a mean of $15,560 and a standard deviation of $3,500. Is there sufficient evidence at the $α=0.01$ level to conclude that the mean cost has increased?
2. A large university reports that the mean salary of parents of an entering class is $91,600. To see how this compare to his university, a president surveys 28 randomly selected families and finds that their average income is $88,500. If the standard deviation is $10,000, can the president conclude that there is difference? Using $α=0.10$, is he correct?
3. Last year the average cost of making a movie was $54.8 million. This year, a random sample of 15 recent action movies had an average production cost of $62.3 million with a standard deviation of $9.5 million A the $α=0.05$ level of significance, can it be concluded that it cost more than the average to produce an action movie?

Classwork in *t –* Test

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: March 14, 2011

Steps that you need to follow in this assignment:

1. Interview 5 person in the class. Write their full name and birthday.
2. Gather data:

Ask each person about the following:

* 1. The number of friends they have in facebook.
	2. The number of hours they spend in the computer in every week.
	3. The number of times they receive and write comments/messages in facebook every week.
1. Answer each hypothesis for A, B, & C. (Make an educated guess).

 A. The average number of friends in facebook of the students in this class is \_\_\_\_\_\_\_.

 B. The average number of hours spent by the students in this class is \_\_\_\_\_\_\_\_ hours.

 C. The average number of comments/messages that every student receives and writes for

 every week in this class is \_\_\_\_\_\_\_\_.

Person Interviewed

1. Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Birthday: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Birthday: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Birthday: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Birthday: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Birthday: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Data for number of friends in facebook each of the 5 person interviewed.

Person 1: \_\_\_\_\_\_\_

Person 2: \_\_\_\_\_\_\_

Person 3: \_\_\_\_\_\_\_

Person 4: \_\_\_\_\_\_\_

Person 5: \_\_\_\_\_\_\_

Data for number of hours spent in the computer in every week.

Person 1: \_\_\_\_\_\_\_

Person 2: \_\_\_\_\_\_\_

Person 3: \_\_\_\_\_\_\_

Person 4: \_\_\_\_\_\_\_

Person 5: \_\_\_\_\_\_\_

Data for the number of times he/she receives and writes comments/messages in facebook every week.

Person 1: \_\_\_\_\_\_\_

Person 2: \_\_\_\_\_\_\_

Person 3: \_\_\_\_\_\_\_

Person 4: \_\_\_\_\_\_\_

Person 5: \_\_\_\_\_\_\_

Using *t –* Test Distribution, test your hypotheses.

1. For number of friends in facebook each of the 5 person interviewed.

Step 1: State the hypothesis and identify the claim. (Your educated guess above)

 $H\_{0}:μ\ne \\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_$ $H\_{1}:μ=\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_$; Claim: Two-tailed test

Step 2: Identify the critical value at $α=0.05$ d.f. = n – 1 = \_\_\_\_\_\_.

Formula: $t= \frac{\overbar{x}-μ}{{s}/{\sqrt{n}}}$

To find $\overbar{x}$ and $s$ follow these steps

1. Plug data in L1

Go to STAT $\rightarrow $ Edit $\rightarrow $L1

1. Go to STAT $\rightarrow $CALC $\rightarrow $1 – Var Stats $\rightarrow $

Enter $\rightarrow $ Enter

1. You will see the $\overbar{x}$ and $s\_{x}$

To find $μ$, see your value of $μ$ step 1.

$n$ is the number of people you interview

Step 3: Solve for the t-Test value.

 Step 4: Make a Decision

 Step 5: Summary

1. For the average number of hours spent by the students in this class.

Step 1: State the hypothesis and identify the claim. (Your educated guess above)

 $H\_{0}:μ\ne \\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_$ $H\_{1}:μ=\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_$; Claim: Two-tailed test

Step 2: Identify the critical value at $α=0.05$ d.f. = n – 1 = \_\_\_\_\_\_.

Formula: $t= \frac{\overbar{x}-μ}{{s}/{\sqrt{n}}}$

To find $\overbar{x}$ and $s$ follow these steps

1. Plug data in L1

Go to STAT $\rightarrow $ Edit $\rightarrow $L1

1. Go to STAT $\rightarrow $CALC $\rightarrow $1 – Var Stats $\rightarrow $

Enter $\rightarrow $ Enter

1. You will see the $\overbar{x}$ and $s\_{x}$

To find $μ$, see your value of $μ$ step 1.

$n$ is the number of people you interview

Step 3: Solve for the t-Test value.

 Step 4: Make a Decision

 Step 5: Summary

1. For the average number of comments/messages that every student receives and writes in every week.

Step 1: State the hypothesis and identify the claim. (Your educated guess above)

 $H\_{0}:μ\ne \\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_$ $H\_{1}:μ=\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_$; Claim: Two-tailed test

Step 2: Identify the critical value at $α=0.05$ d.f. = n – 1 = \_\_\_\_\_\_.

Formula: $t= \frac{\overbar{x}-μ}{{s}/{\sqrt{n}}}$

To find $\overbar{x}$ and $s$ follow these steps

1. Plug data in L1

Go to STAT $\rightarrow $ Edit $\rightarrow $L1

1. Go to STAT $\rightarrow $CALC $\rightarrow $1 – Var Stats $\rightarrow $

Enter $\rightarrow $ Enter

1. You will see the $\overbar{x}$ and $s\_{x}$

To find $μ$, see your value of $μ$ step 1.

$n$ is the number of people you interview

Step 3: Solve for the t-Test value.

 Step 4: Make a Decision

 Step 5: Summary