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. Finding the critical value.
2. Find the critical value for $α=0.05$ with d.f. = 16 for a right – tailed *t* test.
3. Find the critical *t* value for $α=0.01$ with d.f. = 22 for a left – tailed test.
4. Find the critical values for $α=0.10$ with d.f. = 18 for a two – tailed *t* test.
5. Find the critical value for $α=0.05$ with d.f. = 28 for a right – tailed *t* test.
6. Test means for small samples.

Formula:

$t= \frac{\overbar{x}-μ}{{s}/{\sqrt{n}}}$ The degree of freedom are d.f. = n – 1.

1. A job placement director claims that the average starting salary for nurses is $24,000. A sample of 10 nurses has a mean of $23,450 and a standard deviation of $400. Is there enough evidence to reject the director’s claim at $α=0.05$?
2. An educator claims that the average salary of substitute teachers in school districts in Allegheny County, Pennsylvania, is less than $60 per day. A random sample of 8 school districts is selected, and the daily salaries (in dollars) are shown. Is there enough evidence to support the educator’s claim at $α=0.10$?

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1. The average amount of rainfall during the summer months for the northeast part of the United States is 11.52 inches. A researcher selects a random sample of 10 cities in the northeast and finds the average amount of rainfall for 1995 was 7.42 inches. The standard deviation for the sample is 1.3 inches. At $α=0.05$, can it be concluded that for 1995 the mean rainfall was below 11.52 inches?
2. A state executive claims that the average number of acres in western Pennsylvania state park is less than 2000 acres. A random sample of 5 parks is selected, and the number of acres is shown. At $α=0.01$, is there enough evidence to support the claim?

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1. The average salary of graduates entering the actuarial field is reported to be $40,000. To test this, a statistics professor surveys 20 graduates and finds their average salary to be $43,228 with a standard deviation of $4,000. At $α=0.05$, has he shown the reported salary incorrect?
2. A survey of 15 U.S. large cities finds that the average commute time one way is 25.4 minutes. A chamber of commerce executive feels that the commute in his city is less and wants to publicize this. He randomly selects 25 commuters and finds the average is 22.1 minutes with a standard deviation of 5.3 minutes. Using $α=0.10$, si he correct?