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| lEARNING TASK NO. 4  **HYPOTHESIS TESTING** | NAME: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  PROGRAM: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  DATE: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

1. Suppose we would like to determine if the typical amount spent per customer for dinner at a new restaurant in town is more than Php 1000.00. A sample of 29 customers over a three-week period was randomly selected and the average amount spent was Php 1125.00. Assume that the distribution is normal with a standard deviation of Php 128.00. Using a 0.05 level of significance, is the amount spent by the samples significantly greater than Php 1000.00?

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1. Suppose an editor of a publishing company claims that the mean time to write a textbook is at most 15 months. A sample of 16 textbook authors is randomly selected and it is found that the mean time taken by them to write a textbook was 12.5 months with a standard deviation of 3.6 months. If the time to write a textbook is normally distributed, use a 0.05 level of significance to determine if there is significant difference between the sample mean and the population mean?

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1. According to a 1990 demographic report, the average U. S. household spends $90 per day. Suppose you recently took a random sample of 48 households in Huntsville and the results revealed a mean of $84.50. If the standard deviation is known to be $14.50, can it be concluded that the average amount spent by the respondents is less than the national average?

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1. As an optometrist, you were able to land your first job in a large private clinic together with 38 other optometrists with a starting salary of Php 25,300.00. You then learned that in the country, the average salary an optometrist gets per month is at Php 28,530.00 with a standard deviation of Php3,500.00. Should you be concerned that the clinic is actually paying lower than what others in your profession might be getting?

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1. Historically, evening long-distance calls from a particular city have averaged 15.2 minutes per call. In a random sample of 35 calls, the sample mean time was 14.3 minutes. Assume the standard deviation is known to be 5 minutes. Is there a significant difference between the sample mean and the population mean?

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1. If a production line operates with a mean filling weight of 16 ounces per container. Since over- or under-filling can be dangerous, a quality control inspector samples 30 items to determine whether or not the filling weight has to be adjusted. The sample revealed a mean of 16.32 ounces. From past data, the standard deviation is known to be .8 ounces. Using a 0.10 level of significance, can it be concluded that the process is out of control (not equal to 16 ounces)?

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1. A local researcher studied the Mathematics achievement of Amerasians and Filipinos. According to the study, the mean score on a mathematics test given to 120 Amerasian freshmen high school students was 67.5 with a standard deviation of 5.6. The same test was given to 180 Filipino freshmen high school students and the mean score obtained was 68.9 with a standard deviation of 7.8. Using the 5% level of significance, does the data show that Filipino freshmen high school students perform better in Mathematics than their Amerasian counterparts?

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1. An insurance company wants to know if the average speed which men drives cars is higher than that of women drivers. The company took random samples of 29 cars driven by men on a highway and found the mean speed to be 95.2 kph with a standard deviation of 3.08. Another sample of 28 cars driven by women on the same highway gave a mean speed of 91 kph with a standard deviation of 3.5. Test at 1% level of significance if the speed of the cars driven by men on this highway is higher than that of cars driven by women.

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1. There are two convenience stores in a certain area. The company’s PR wanted to check if the customers are equally satisfied with the service provided at these two stores. Samples of 13 and 15 customers were selected from stores A and B respectively. Store A got a satisfaction rating of 8.7 (out of 10) with a standard deviation of 0.65. Store B got a 9.0 rating with a standard deviation of 0.5. Are the customers in Store A significantly less satisfied than those in B?

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1. A professor who teaches Algebra offered his students a two-hour lecture on Math anxiety and ways to overcome it. The following table shows the test score in Algebra of seven students before and after they attended the lecture. Test at 2.5% level of significance if attending the lecture helps improve the score in Algebra.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Student** | **Allan** | **Bobby** | **Carlo** | **Dante** | **Efren** | **Frank** | **Gabby** |
| **Before** | 56 | 69 | 48 | 74 | 65 | 71 | 58 |
| **After** | 62 | 73 | 44 | 85 | 71 | 70 | 69 |

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