**PROBLEM 1:**

NBC TV news, in a segment on the price of gasoline, reported last evening that the mean price nationwide is $1.50 per gallon for self-serve regular unleaded. A random sample of 35 stations in the Milwaukee, WI, area revealed that the mean price was $1.52 per gallon and that the standard deviation was $0.05 per gallon. At the .05 significance level, can we conclude that the price of gasoline is higher in the Milwaukee area? Calculate the *p-*value and interpret.

**PROBLEM 2:**

|  |  |
| --- | --- |
| Suppose Babsie generated the following probability distribution: **X** | **p(x)** |
| 5 | .25 |
| 7 | .30 |
| 10 | .25 |
| 12 | .05 |
| 15 | .15 |

a. Is this probability distribution discrete or continuous? Explain your reasoning.

b. Calculate the expected value of X. Show your work!

c. Calculate the variance of X. Show your work!

d. Calculate the standard deviation. Show your work!

**PROBLEM 3:**

Babsie is a public affairs specialist at Park University. A press release issued by Babsie based on some research claims that Park University students study at least as much as the national average for students at four year universities. Across the nation, 73 percent of all students at four year universities study at least four hours per week. Seventy percent of one hundred randomly selected Park University students surveyed claimed to study more than four hours per week. Should the University retract its previous statement? Explain why or why not. *Answer using a 95 percent confidence interval.*

**PROBLEM 4:**

The weights (in pounds) of a sample of five boxes being sent by UPS are: 12, 6, 7, 3, and 10.

a. Compute the mean for this sample. Show your work!

b. Compute the range for this sample. Show your work!

c. Compute the variance for this sample. Show your work!

d. Compute the standard deviation for this sample. Show your work!

**PROBLEM 5: SHORT-ANSWER QUESTIONS**

1. In hypothesis testing, what is a Type I error? Type II error?
2. List the characteristics of a normal distribution.
3. What is the difference between the Empirical Rule and Chebyshev’s rule?
4. In a *standard* normal distribution, what is the value of the mean and standard deviation?