What is the 95% (conservative) confidence interval for the population proportion of all teens who rate singing as their favorite activity?

Activity	**Number of Responses**
Singing	159
Running	249
Dancing	213
Reading	412
Playing a Game	367
Total	1400

Question 14

For the next three questions, use the following information to determine your answers: A survey was sent out to compare the proportion of adults who use their car horns when driving for two age populations (1 = younger adults, defined as between 20 and 39 years old and 2 = older adults, defined as over 60 years old). The following data was obtained from those who responded.

Calculate the 90% confidence interval using the standard normal distribution. Note that $\hat{p}_1 = 0.52$, $\hat{p}_2 = .35$, and $s.e.(\hat{p}_1 - \hat{p}_2) = 0.0338$. Round to the fourth decimal point. Please enter you answer in the following format: (lower_value, upper_value)

	Uses the horn?	Uses the horn?	
Group	Yes	No	Tota
1 = younger adults	261	240	501
2 = older adults	123	229	352

Question 16

Calculate the p-value and determine if we should **accept** or **reject** H0 under alpha = 0.05.

Question 18

For the next two questions use the following information to determine your answers.

A research group is curious about their city's participation in flu shot clinics. They suspect that there is a difference between average amount of attendees at their city's flu shot clinics when compared to their sister city. However, they must conduct a study to determine if that is true. From a sample of 20 clinics in the sister city, the sample mean of the clinic attendees is 156 and the sample standard deviation is 36. From a sample of 22 clinics in the researchers' city, the sample mean of clinic attendees is 162 and the sample standard deviation is 41.

Which of the following represents the hypotheses that we will be testing, assuming that p1 represents the population mean of all attendees of flu clinics in the researcher's' city and that p2 represents the population mean of all attendees of flu clinics in the sister city.

1 point

H0: $\mu1 = \mu2$ versus Ha: $\mu1 \neq \mu2$

H0: $\mu1 = \mu2$ versus Ha: $\mu1 > \mu2$

H0: $\mu1 = \mu2$ versus Ha: $\mu1 < \mu2$

Determine if the researchers should **accept** or **reject** H0 under alpha = 0.05. Note that the standard error is 11.8831 and the graph is two-tailed.

Question 24

For the next two questions use the following information to determine your answers. A random sample of 230 workers at a company were surveyed about their satisfaction with their life. The answer about their satisfaction (not, somewhat, very) was recorded along with their annual wages (1 = $20K - $35K, 2 = $35K - $50K, 3 = $50K - $75K, 4 = $75K - $90K). Below is the gathered data.

Assuming there's no relationship between income and life satisfaction, how many people who earn between $20K - $35K would you expect to be Not Satisfied with life? Please round to the second decimal place.

	$20K-$35K	$35K-$50K	$50K-$75K	$75K-$90K
Very Satisfied	13	11	19	15
Somewhat Satisfied	29	31	28	12
Not Satisfied	34	20	10	8
Total	76	62	57	35

Pearson's Chi-square test				
X-squared = 20.0043	df = 6	p_value < 0.001		

Question 25

Based on the information above, determine if you should **accept** or **reject** the null hypothesis that there is no relationship between income and life satisfaction when alpha = 0.05?

When statisticians fail to reject the null hypothesis when they should have rejected the null hypothesis, are they committing a Type I or Type II error?

1 point

Type I

Type II

What is the 95% (non-conservative) confidence interval for the population proportion of all teens who get 6 to 8 hours of sleep per night on average?

Hours of Sleep	Number of Responses
Less than 4	119
4 to 6	404
6 to 8	460
8 to 10	298
More than 10	87
Total	1368

For the next three questions, use the following information to determine your answers: A survey was sent out to re-evalute the proportion of people who play games on pc computers, as the last study on the topic had been gathered four years prior. The current study, with 861 participants, found that 53% of people who responded play on a pc computer.

Calculate the 90% confidence interval. Enter your answer in the following format: (lower_value, upper_value). Please round your values to the fourth decimal point.

Question 11
Calculate the p-value and determine if we should **accept** or **reject** H0 under alpha = 0.05.

For the next three questions, use the following information to determine your answers: The length of a movie falls on a normal distribution. About 95% of movies fall between 75 minutes and 163 minutes.

What is the mean value for average movie length in minutes? Your answer should be a whole number.

What is the value of the standard deviation for average movie length in minutes? Please round to the second decimal place.

For the next three questions use the following information to determine your answers. A research group is curious about features that can be attributed to music genres. A music streaming service provides a few different attributes for songs such as speechness, danceability, and valence. They suspect that there is a difference between the average valence (positive or negative emotion) of metal songs compared to blues songs. However, they must conduct a study to determine if that is true. From a sample of 87 metal songs, the sample mean for valence is 0.451 and the sample standard deviation is 0.139. From a sample of 94 blues songs, the sample mean for valence is 0.581 and the sample standard deviation is 0.167.

Assume that sample1 comes from the sample metal songs and that sample2 comes from the sample blues songs

Compute the 90% confidence interval. Please round the values to the fourth decimal point and format your response as follows: (lower_value, upper_value)

Question 28
Calculate the p-value and determine if we should accept or reject H0 under alpha = 0.10.