A random sample of 12 graduates of a certain secretarial school typed an average of 84.6 words per minute with a standard deviation of 7.5 words per minute. Assuming a normal distribution for the number of words typed per minute, find a 95% confidence interval for the average number of words typed by all graduates of this school.

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The confidence interval is $\square < \mu < \square$.

(Round to two decimal places as needed.)

A random sample of size $n_1 = 24$, taken from a normal population with a standard deviation $\sigma_1 = 6$, has a mean $\bar{x}_1 = 72$. A second random sample of size $n_2 = 31$, taken from a different normal population with a standard deviation $\sigma_2 = 4$, has a mean $\bar{x}_2 = 37$. Find a 94% confidence interval for $\mu_1 - \mu_2$.

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The confidence interval is $\square < \mu_1 - \mu_2 < \square$.
(Round to one decimal place as needed.)

Two catalysts in a batch chemical process are being compared for their effect on the output of the process reaction. A sample of 11 batches was prepared using catalyst 1 and gave an average yield of 83 with a sample standard deviation of 3. A sample of 15 batches was prepared using catalyst 2 and gave an average yield of 74 and a sample standard deviation of 4. Find a 99% confidence interval for the difference between the population means, assuming that the populations are approximately normally distributed with equal variances.

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Let μ_1 be the population mean for catalyst 1 and let μ_2 be the population mean for catalyst 2.

The confidence interval is $\square < \mu_1 - \mu_2 < \square$.

(Round to two decimal places as needed.)

The following data represent the length of time, in days, to recovery for patients randomly treated with one of two medications to clear up severe bladder infections. Find a 99% confidence interval for the difference $\mu_2 - \mu_1$ between in the mean recovery times for the two medications, assuming normal populations with equal variances.

Medication 1	$n_1 = 11$	$\bar{x}_1 = 17$	$s_1^2 = 1.9$
Medication 2	$n_2 = 12$	$\bar{x}_2 = 19$	$s_2^2 = 1.3$

The confidence interval is $\square < \mu_2 - \mu_1 < \square$.

(Round to two decimal places as needed.)

An electrical firm manufactures light bulbs that have a length of life that is approximately normally distributed with a standard deviation of 35 hours. How large a sample is needed if we wish to be 92% confident that our sample mean will be within 7 hours of the true mean?

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The required sample size is ☐.

(Round up to the nearest whole number as needed.)

A random sample of 10 chocolate energy bars of a certain brand has, on average, 260 calories per bar, with a standard deviation of 15 calories. Construct a 95% confidence interval for the true mean calorie content of this brand of energy bar. Assume that the distribution of the calorie content is approximately normal.

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Standard Normal Distribution Table (Page 2)

The confidence interval is $\square < \mu < \square$.

(Round to one decimal place as needed.)

A taxi company is trying to decide whether to purchase brand A or brand B tires for its fleet of taxis. To estimate the difference in the two brands, an experiment is conducted using 8 of each brand, assigned at random to the left and right rear wheels of 8 taxis. The tires are run until they wear out and the distances, in kilometers, are recorded in the accompanying data set. Find a 99% confidence interval for $\mu_1 - \mu_2$. Assume that the differences of the distances are approximately normally distributed.

Click here to view the data set.
Click here to view page 1 of the table of critical values of the t-distribution.

Let μ_1 be the population mean for brand A and let μ_2 be the population mean for brand B.

The confidence interval is $\square < \mu_1 - \mu_2 < \square$.
(Round to one decimal place as needed.)

The heights of a random sample of 50 college students showed a mean of 170.8 centimeters and a standard deviation of 6.7 centimeters.

(a) Construct a 98% confidence interval for the mean height of all college students.
(b) What can we assert with 98% confidence about the possible size of our error if we estimate the mean height of all college students to be 170.8 centimeters?
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(a) The confidence interval is $\square < \mu < \square$.
(Round to two decimal places as needed.)

A random sample of 100 automobile owners in a region shows that an automobile is driven on average 22,500 kilometers per year with a standard deviation of 4200 kilometers. Assume the distribution of measurements to be approximately normal.

(a) Construct a 95% confidence interval for the average number of kilometers an automobile is driven annually in the region.

(b) What can we assert with 95% confidence about the possible size of our error if we estimate the average number of kilometers driven by car owners in the region to be 22,500 kilometers per year?

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(a) The confidence interval is $\square < \mu < \square$.

(Round to the nearest integer as needed.)

A machine produces metal pieces that are cylindrical in shape. A sample of pieces is taken, and the diameters are found to be 1.06, 0.95, 0.94, 1.04, 0.96, 0.96, 1.06, 1.06, and 1.05 centimeters. Find a 90% confidence interval for the mean diameter of pieces from this machine, assuming an approximately normal distribution.

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The confidence interval is $\square < \mu < \square$.

(Round to three decimal places as needed.)

An electrical firm manufactures light bulbs that have a length of life that is approximately normally distributed with a standard deviation of 25 hours. If a sample of 40 bulbs has an average life of 730 hours, find a 96% confidence interval for the population mean of all bulbs produced by this firm.

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A study is to be made to estimate the proportion of residents of a certain city and its suburbs who favor the construction of a nuclear power plant near the city. How large a sample is needed if one wishes to be at least 95% confident that the estimate is within 0.12 of the true proportion of residents who favor the construction of the nuclear power plant?

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The sample should be ☐ people.
(Round up to the nearest whole number.)

Ten engineering schools in a country were surveyed. The sample contained 275 electrical engineers, 80 being women; 200 chemical engineers, 20 being women. Compute a 99% confidence interval for the difference between the proportions of women in these two fields of engineering. Is there a significant difference between the two proportions?

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Let p_1 be the population proportion of electrical engineers that are women in the schools that were surveyed and let p_2 be the population proportion of chemical engineers that are women in the schools that were surveyed.

The 99% confidence interval is $\square < p_1 - p_2 < \square$.
(Round to three decimal places as needed.)

A random sample of 17 chocolate energy bars of a certain brand has, on average, 260 calories per bar, with a standard deviation of 25 calories. Assume that the distribution of the calorie content is approximately normal. Construct a 99% confidence interval for σ.

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The confidence interval is $\square < \sigma < \square$.
(Round to two decimal places as needed.)

A manufacturer of MP3 players conducts a set of comprehensive tests on the electrical functions of its product. All MP3 players must pass all tests prior to being sold. Of a random sample of 700 MP3 players, 14 failed one or more tests. Find a 99% confidence interval for the proportion of MP3 players from the population that pass all tests.

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The 99% confidence interval is $\square < p < \square$.
(Round to three decimal places as needed.)