1. Consider two sets of samples drawn from the same population that are randomly selected. Set X has a sample size = 10, and set Y has a sample size = 100. Which of the following statements is accurate about the confidence interval for the mean of the samples?

   1 point

   ⦿ The confidence interval for set X is **larger** than the confidence interval for set Y.

   ○ The confidence interval for set X is **smaller** than the confidence interval for set Y.

   ○ The confidence interval for set X **equals** the confidence interval for set Y.

   ○ There isn't enough information to answer the question.

2. Suppose you have a sample of 100 heights of individuals from a specific population. Assume the **population standard deviation** is 1 cm, and the **sample mean** is 175cm from a **random sample** of 100 individuals. What expression describes the margin of error for a confidence level of 99%?

   1 point

   ○ $z_{0.01} \cdot \frac{1}{10}$

   ○ $z_{0.005} \cdot \frac{1}{100}$

   ⦿ $z_{0.005} \cdot \frac{1}{10}$

   ○ $z_{0.1} \cdot \frac{1}{100}$

3. To calculate a confidence interval for the **mean** of a population, what assumptions must be made? **Select all that apply.**

   1 point

   ☑ The sample is a random sample.

   ☐ The population must follow a normal distribution.

   ☐ The sample size must be big enough (usually over 30).

   ☐ The sample must have a mean = 0 and a standard deviation = 1.

4. You have a sample size of 20 from a population with unknown mean and standard deviation. You measured that the **sample mean** $\overline{X} = 50$ and the **sample standard deviation is** $s = 10$. A confidence interval of 95% of confidence level is given by:

   1 point

   Hint: $t_{0.975} = 2.093$

   ○ $(48.95, 51.05)$

   ⦿ $(45.32, 54.68)$

   ○ $(45.2, 54.8)$

   ○ $(48.9, 51.1)$

5. A manufacturing company takes a sample of 100 items in its product warehouse and determines that 22% of the sample contains a defect. Calculate the **proportion margin of error** with a 95% confidence interval.

   1 point

   Hint: $z_{\alpha/2} = 1.96$

   ○ 0.0336

   ⦿ 0.0812

   ○ 0.0919

   ○ 0.3363