

Instructions: Show all work. If you use your calculator, give calculator commands used. Use exact answers, or round appropriately. Answer all parts of each question.

1. How does a t-distribution differ from a normal distribution? Give at least 3 ways.

T: depends on sample size, always centered at zero, has bigger tails

2. When should we use the t-distribution for calculating confidence intervals instead of the normal distribution?

When the sample size is small
when the sample standard deviation is used rather than the population standard deviation

3. Suppose we sampled 14 people and found a mean weight of 167 pounds with a standard deviation of 14.8 pounds.

- a. What is the 95% confidence interval for this situation?

T Interval Stat
 $\bar{x} = 167$ $n = 14$ $(158.45, 175.55)$
 $S_x = 14.8$ C-level: .95

- b. What is the 80% confidence interval?

Change C-level to : .8
 $(161.66, 172.34)$

- c. What is the 99% confidence interval?

Change C-level to : .99
 $(155.09, 178.91)$

4. Find the 95% confidence interval for a sample of 1000 with a sample proportion of 36%.

1 Prop Z Int

$X = .36 \times 1000 = 360$ $(.33025, .38975)$
 $n = 1000$
 C-level: .95

5. Why do hypothesis testing?

because we want to know if the data we've collected is likely to be the result of chance effects or reflects a meaningful difference.