CONFIDENCE INTERVAL for μ when σ IS NOT KNOWN **Name Last** **First**

Point Estimate = $\overline{x}$	Confidence Level **CL** is area in the middle	Standard Error
Error Bound = (Critical Value)(Standard Error) EBM = $t\left(\frac{s}{\sqrt{n}}\right)$	Critical Value : t value that creates an area equal to CL in the middle; Use t distribution , degrees of freedom df = n – 1 Use POSITIVE value of t	$\frac{s}{\sqrt{n}}$
Confidence Interval Point Estimate ± Error Bound $\overline{x}$ ± EBM	TI-84: t = invT(*area to left, df*) TI-83 PRGM INVT Press Enter on Home Screen and then input "area to left" and "df" at prompts.	

The traffic commissioner wants to know the population average speed of all vehicles driving on River Rd. Police use radar to observe the speeds for a sample of **n** vehicles on River Rd.

For the vehicles in the sample, the average speed is 31.3 miles per hour with standard deviation 7.0 mph. Construct a confidence interval estimate of the true population average speed of all vehicles on River Rd.

X = _____

population parameter: μ = _____

random variable $\overline{X}$ = _____

1. Use a 98% confidence level and use n = 20 vehicles in the sample (this is example 3 in chapter 8 notes)

2. Use a 90% confidence level and use n = 20 vehicles in the sample (keep same values for xbar and s)

3. Use a 90% confidence level and use n = 12 vehicles in the sample (keep same values for xbar and s)

4. *Compare 1 & 2:* For a constant sample size, if the confidence level is increased
   (a) the confidence interval becomes: wider narrower no change
   (b) the error bound becomes: larger smaller no change

5. *Compare 1 & 2:* For a constant sample size, if the confidence level is decreased
   (a) the confidence interval becomes: wider narrower no change
   (b) the error bound becomes: larger smaller no change

6. *Compare 2 & 3:* If the confidence level is held constant and the sample size is increased
   (a) the confidence interval becomes: wider narrower no change
   (b) the error bound becomes: larger smaller no change

7. *Compare 2 & 3:* If the confidence level is held constant and the sample size is decreased
   (a) the confidence interval becomes: wider narrower no change
   (b) the error bound becomes: larger smaller no change